

(Deemed to be University) (Established Under Section 3 of UGC Act 1956) Pollachi Main Road, Eachanari Post, Coimbatore - 641021 (For the candidates admitted from 2018 onwards)

DEPARTMENT OF CS, CA&IT

Semester – V

16CTU504B MULTIMEDIA AND ITS APPLICATIONS 3H – 3C

Instruction Hours / week: L: 3 T: 0 P: 0 Marks: Int : **40** Ext : **60** Total: **100**

SCOPE

Acquire basic knowledge on Multimedia devices. Understand current trends in multimedia by experiencing a variety of applications and development packages.

OBJECTIVES

- This course in curriculum is an introduction to the multimedia and its applications.
- This course enables students to understand how the web pages are designed interactively.
- How to critically evaluate website quality, learn how to create and maintain quality web pages learn to create and manipulate images.
- To gain the skills and project-based experience needed for entry into web design and development careers.

UNIT I

Multimedia – An overview: Introduction – Multimedia presentation and production – Characteristics of Multimedia presentation – Hardware and Software requirements – Uses of Multimedia. Text: Types of text – Font- Text file formats. Image: Image data representation – Image file formats – image processing software. Graphics: Advantages of graphics – Uses – Component of a graphics system.

UNIT II

Audio: Sound waves – types and properties of sound – components of audio system – Digital audio – Musical Instrument Digital Interface (MIDI) – Audio file formats – Audio processing software. Video: Motion video – Television systems – Video file formats – video processing software. Animation: Uses of animation – computer based animation –Animation file formats – Animation software.

UNIT III

Introducing photoshop elements: About elements – welcome screen – create mode – menu bar – toolbox – options bar – panels. Organizing images: Obtaining images – tagging images –

searching for images – opening and saving images. Selecting areas – Layers – Text and drawing tools.

UNIT IV

Understanding flash: Understanding flash basic elements – creating a simple animation. Learning Flash toolbox: Learning the toolbox – using tools. Learning flash panels: Understanding the panels. Using timeline and layers: Understanding how timeline works – Understanding layers. Drawing objects: Drawing lines and fills – using colors – Rotating, skewing and scaling – grouping objects. Creating animation – How animation Works – creating motion tweens – creating shape tweens. Understanding masks – creating masks.

UNIT V

Creating symbols and using the library: Learning about symbols – creating symbols – using libraries. Learning Basic Actionscript concepts: Actionscript basics – data type basics. Learning basic actionscript programming: Applying Actionscript – Using Actionscript to control actions – Using Actionscript to control properties – Understanding Actions and Event Handlers.

Suggested Readings

- 1. Ranjan Parekh (2013). Principles of Multimedia (2nd ed.). TataMcGraw Hill.
- 2. Nick Vandome (2011). Photoshop Elements 9. TataMcGraw Hill.
- 3. Brian Underdahl (2002). Macromedia Flash MX A Beginners Guide. Dreamtech Press.
- 4. Tay Vaughan (2002). Fundamentals of Multimedia (5th ed.). TataMcGraw Hill.
- 5. Bill Sanders (2001). Flash 5 Actionscript (1st ed.). New Delhi DreamTech Press.

Websites

- 1. en.wikipedia.org/wiki/Multimedia
- 2. <u>www.arena-multimedia.com/</u>
- 3. www.nextwavemultimedia.com/



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SUBJECT : MULTIMEDIA AND ITS APPLICATION

SEMESTER : V

SUBJECT CODE: 16CTU504B

CLASS : III B.SC (CT)

Lecture Support S.No. Duration **Topics to be Covered** Materials (Hours) Unit – I Multimedia – An overview: Introduction T1: 1 Multimedia presentation and T1: 1 1 1 production Characteristics of Multimedia T1: 2-4 presentation Hardware and Software Requirements T1:5 2 1 ➢ Uses of Multimedia T1: 6 Text – Introduction, Types of text T1: 39 Font 3 1 T1: 45-46 \succ Text File formats T1: 49-52 T1: 55-56 **Image:**Introduction, Image data representation 4 1 T1: 137-138 \succ Image file formats T1: 139-143 Image processing software **Graphics:** Advantages of graphics T1: 155 ➢ Uses of Graphics T1: 156 5 1 T1: 157 Components of a graphics system Recapitulation and Discussion of important 6 1

LECTURE PLAN

		questions	
	Tota	l No. of Hours Planned for Unit-I	6 Hrs
		Unit – II	
S.No.	Lecture Duration (Hours)	Topics to be Covered	Support Materials
		Audio: Introduction, Sound waves	T1: 248-249
1	1	 Types and properties of sound 	T1: 251-258
		Components of audio system	T1: 261-266
		 Digital audio 	T1: 267-268
2	1	 Musical Instrument Digital Interface (MIDI) 	T1: 270-275
		Audio file formats	T1: 317-323
		Audio processing software	T1: 332-334
3	1	Video: Introduction, Motion video	T1: 340
		Television systems	T1: 353-354
1	1	Video file formats	T1: 384-388
Т	I	Video processing software	T1: 393-395
5	1	Animation: Introduction	T1: 399-400
5	I	Uses of animation	
		Computer based animation	T1: 404-410
6	1	Animation file formats, Animation	T1: 422-426
		software	
7	1	Recapitulation and Discussion of important	
	-	questions	
Total No. of Hours Planned for Unit-II			7 Hrs
		Unit – III	
S.No.	Lecture Duration (Hours)	Topics to be Covered	Support Materials
1	1	Introducing Photoshop elements: About	T2: 7-9
L		elements	

		Welcome screen,Create mode	T2: 10-15
		Menu bar, Toolbox, Options bar, Panels	T2: 18-21
		Organizing images: Obtaining images	T2: 27-29
2	1	 Tagging images, Searching for images, 	T2: 38-40,
		Opening and saving images	42-43, 46-47
3	1	Selecting Areas: Marquee, Lasso	T2: 109-111
0	1	Magic wand, Selection brush	T2: 112-115
		> Quick selection, Smart brush, Inverting	T2: 115-120
4	1	a selection, Feathering, Editing	
		Selections	
		Layers: Layering images, Layers panel,	T2: 121-124
		Adding layers	
5	1	Fill and adjustment layers, Working	T2: 125-127
		with layers	
		Layer masks, Opacity, Saving layers	T2: 128-132
		Text and Drawing Tools: Adding and	T2: 133-140
		formatting text, Distorting text, Text	
6	1	and shape masks, Adding shapes	
		 Layer styles, Paint bucket tool, 	T2: 141-144
		Gradient tool	
		Brush and pencil tools, Impressionist	T2: 145-148
7	1	brush tool, Working with color	
1	I	Recapitulation and Discussion of important	
		questions	
Total No. of Hours Planned for Unit-III			7 Hrs
		Unit – IV	
S No	Lecture		Support
5.10.	Duration (Hours)	Topics to be Covered	Materials
1	1	Understanding Flash: Understanding Flash	T3. 10. 24
1	1	basic elements – Creating a simple animation	10.10-44

0	1	Learning Flash Toolbox: Learning the	T3: 25-47
4	I	toolbox , Using tools	
		Learning Flash Panels: Understanding	T3: 55-72
3	1	the panels	
	Ĩ	Using timeline and layers:	T3: 77-88
		Understanding how timeline works	
		Understanding layers	T3: 89-98
4	1	Drawing objects: Drawing lines and fills	T3: 103-109
	-	Using colors	T3: 110-118
		Rotating- skewing and scaling	T3: 119-123
		Grouping objects	T3: 124-128
5	1	Creating animation – How animation	T3: 133-137
		works	
		Creating motion tweens	T3: 142-145
6	1	Creating shape tweens	T3: 146-151
0	1	Understanding masks - Creating	T3: 168-176
		masks	
7	1	Recapitulation and Discussion of important	
		questions	
	Total No. of Hours Planned for Unit-IV		
		Unit – V	
S No	Lecture		Support
5.110.	(Hours)	Topics to be Covered	Materials
		Creating symbols and using the library:	T3: 183-187
1			
1	1	Learning about symbols	
	1	Learning about symbols Creating symbols 	T3: 189-197
	1	Learning about symbols Creating symbols Using libraries 	T3: 189-197 T3: 202-210
0	1	Learning about symbols Creating symbols Using libraries Learning Basic ActionScript concepts	T3: 189-197 T3: 202-210 T3: 295-298
2	1	Learning about symbols Creating symbols Using libraries Learning Basic ActionScript concepts ActionScript basics 	T3: 189-197 T3: 202-210 T3: 295-298 T3: 299-310

		 Learning Programm 	basic hing, Applying A	ActionScript ActionScript	T3: 321-325
		 Using Act 	ionScript to Co	ontrol actions	T3: 329-335
4	1	 Using Act properties 	ionscript to Co s	ntrol	T3: 336-339
		 Understar Handlers 	nding Actions a	and Event	T3: 340-342
5	1	Recapitulation a Questions	and Discussion	of Important	
6	1	Discussion of Previous ESE question papers			
7	1	Discussion of Previous ESE question papers			
8	1	Discussion of Previous ESE question papers			
		Total No. of Ho	ours Planned fo	or Unit-V	8 Hrs
		Total No. of Ho	ours Planned fo	or the Course	48 Hrs

Text Books

T1:Ranjan Parekh, 2013, Principles of Multimedia, 2nd Edition, Tata McGraw hill .

T2: Nick Vandome, 2011, Photoshop Elements 9, Tata McGraw hill.

T3: Brian Underdahl, 2002, Macromedia Flash MX – A Beginners Guide, Dreamtech Press.

T4: Tay Vaughan (2002). Fundamentals of Multimedia (5th ed.). TataMcGraw Hill.

T5: Bill Sanders (2001). Flash 5 Actionscript (1st ed.). New Delhi DreamTech Press.

Websites

- 1. en.wikipedia.org/wiki/Multimedia
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- 3. www.nextwavemultimedia.com/

Class: III BSc IT Course Code: 16CTU504B Course Name: Multimedia and its Applications Unit: I(Multimedia) Batch- 2016-2019

UNIT – I

Multimedia – An overview: Introduction – Multimedia presentation and production – Characteristics of Multimedia presentation – Hardware and Software Requirements – Uses of Multimedia. Text: Types of text - Font - Text File formats. Image: Image data representation – Image file formats – Image processing software. Graphics: Advantages of graphics – Uses – Components of a graphics system.

INTRODUCTION

The word 'multimedia' comes from the Latin words *multus* which means 'numerous' and *media* which means 'middle' or center. Multimedia therefore means 'multiple intermediaries' Multimedia is a combination of following elements. They are

- Text (e.g. books, letters, newspapers)
- Images and graphics (e.g. photographs, charts, maps, logos, sketches)
- Sound (e.g. radio, gramophone records and audio cassettes)
- Video and animation (e.g. TV, video cassettes and motion pictures)

MULTIMEDIA PRESENTATION AND PRODUCTION

The multimedia presentation is basically a digital show in which the contents are expressed through various media types like text, images, audio, video etc., The end users who execute and watch the presentation are called viewers or target audience.

The multimedia presentation is basically playback on a personal computer either from hard disk or the CD-ROM. Sometimes when the audience consists of the large number of people, the presentation may be projected on a big screen using a projection system. Before a presentation can be viewed, however it has to be created. This process is known as multimedia production.

The production work is carried out by a team of professionals equipped with the required skills and knowledge. These professionals are called the developers or the authors and the development work is called the authoring.

CHARACTERISTICS OF MULTIMEDIA PRESENTATION

Multimedia is any combination of text, graphics, art, sound and video elements. The following are the important characteristics of Multimedia presentation. They are

- Multiple media
- Non-linearity

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- Interactivity
- Digital representation
- Integrity

Multiple Media

In addition to text, pictures are also started being used to communicate ideas. Pictures were subdivided into two types.

- i. A real-world picture captured by a camera is called images.
- ii. A hand-drawn picture like sketches, diagrams and portraits called graphics.

Text, images and graphics are together referred to as static elements, because they do not change overtime. With further improve in technology, time varying elements like sound and movies were used. Movies are again divided into two classes. They are

- Motion pictures
- Animation

Legitimate multimedia presentation should contain at least one static media like text, images or graphics and at least one time varying media like audio, video or animation.

Non-Linearity

Non-Linearity is the capability of jumping or navigating from within a presentation with one point without appreciable delay.TV shows and motion pictures are considered linear presentation because the user or viewer has to watch the information being prescribed. The user cannot modify the content. In a multimedia presentation the user can instantly navigate to different parts of the presentation and display the frames in any way, without appreciable delay, due to which it is called a non-linear presentation.

Interactivity

In a non-linear presentation user will have to specify the desire to watch the presentation. The presentation should be capable of user inputs and capable of change the content of the presentation. Interactivity is considered to be one of salient features on which next generation e-learning tools are expected to reply for greater effectively.

Digital Representation

Magnetic tapes are called the sequential access storage devices (i.e.) data is recorded sequentially along the length of the tape. When a specific potion of the data is required to be played back, the portion before that needs to be skipped. Multimedia requires instant access to different portion of

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the presentation. This is done by random access storage devices like hardware, floppy disks, and compact disks. Digital representations has other advantages, software based programs can be used to edit the digitized media in various ways to appearances and compress the file sizes to increase the performance efficiency.

Integrity

An important characteristic of a multimedia presentation is integrity. This means that although there may be several media types present and playing simultaneously, they need to be integrated or be part of a single entity which is the presentation. It should not be able to separate out the various media and control them independently; rather they should be controlled from within the frame work of the presentation. Moreover, the presentation should decide how the individual elements can be controlled

HARDWARE & SOFTWARE REQUIRMENTS:

Hardware and software requirements of a multimedia personal computer can be classified into tow classes. They are:

a. Multimedia playback

b. Multimedia production

Multimedia playback:

□ **Processor** – At least Pentium class and minimum of 8MB RAM-to-32MB RAM.

 \Box Hard disk drive(HDD) – Atleast 540MB having 15M/s. access time and should be able to provide 1.5MB per second sustained throughput.

□ **The monitor and video display adapter** should confirm through SVGA standards and support 800x600 display modes with true color.

□ **CD-ROM drives** having a speed of at least 4X but highest speed like 36X are recommended.

□ PC should have a **sound card** with attached speakers standard 101 keys keyboard and mouse.

 \Box Multimedia PC system software should be compatible with windows 95 or higher, with standard software with playback of media files in standard formats.(e.g.) Windows Media Player.

Multimedia production:

 $\hfill\square$ **Processor - Pentium** II or higher, memory should be at least 128MB with 256MB recommended.

 \Box Hard disk drive (HDD) – Typical requirements would be around 10GB with 40GB recommended.

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□ **The monitor and video display adapter** should confirm through SVGA standards and should be able to support 800x600 display mode with true color, RAM should be 4MB to 8MB.

□ **CD-ROM drive** having a speed of at least 4X to 36X, PC should have a CD writer.

□ PC should have a **sound card** with attached speakers standard 101 keys keyboard and mouse.

□ Multimedia PC system software should be compatible with windows or higher, with standard software with playback of media files in standard formats. (e.g.)Windows Media Player.

□ **Editing software** is used to manipulate media components to suit the developers, requirements. (e.g.) Adobe Photoshop, Flash, Cool Edit, and sound Forge.

□ **Authoring softwares** are used to integrate all the edited media into single presentations and build navigational pathways for accessing the media.

 \Box To display the web content **web browsers** will be required. (e.g.) MS Internet Explorer, to create web content HTML, and java Script editors might be required (e.g.) Macromedia, dream viewer.

USES OF MULTIMEDIA

Multimedia has found extensive applications in various and varied fields. The following are some of the main areas where this technology is applied.

- Home entertainment
- Educational purposes
- Industrial training
- Information kioks
- Corporate presentations
- Business
- Tourism and Travel industry
- Electronic Commerce
- Communication and Networks
- Medicine and Healthcare
- Engineering Applications
- Content based storage and retrieval (CBSR) systems.

Home Entertainment

Application of Multimedia technology related to home entertainment includes computer based games for kids, interactive encyclopedia's, storytelling, cartoons etc., Computer games are one of the best application of Multimedia because of the high amount of interactivity involved.

Educational purposes

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These applications include learning packages and simulation of lab experiments (especially those which cannot be easily performed). The multisensory perceptions of such study material are expected to provide a good grasp of the subject matter and interactivity elements to provide for better retention.

Industrial Training

These applications involve computer based training (CBT) for employee both technical and marketing. Successful organizations are required t maintain a high level of staff training and development. Some of the advantages of industrial training courses are:

- (i) Many people can use each of these courses.
- (ii) They do not need to spend time away from office.
- (iii) People can learn at their own pace.
- (iv) Full time instructions are not required.

(v) Because the best instructors could be used to make these CBT's they could be of a high quality.

Information kiosk

These are devices where information is accessed through a touch screen and viewed on a monitor. Examples can be include multi-lingual product, catalog's for placing orders or for dispensing important information Bio's can also be used to capture statistical data for an in-depth marketing research to be carried out on customer trends.

Corporate presentations

Corporate presentations are emphasizing the salient features and activities of a company, its products, business partners like suppliers and retailers can be built by incorporate multimedia elements along with textual descriptions.

Business

Items like glass utensils are difficult to stock; industrial equipment can be displayed through perspectives buyers by company sales people through multimedia presentations.

Tourism and Travel industries

Travel companies can market packaged tools by showing prospective customers, glimpses of the places they would like to visit, details on lodging, fooding, special attractions. A multimedia system implementing intelligent travel agent software will enable the user to their travel need and budget.

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Electronic Commerce

Like the travel industry, customized presentations for consumer and industrial products can be created and distributed to prospective customers.

TEXT

INTRODUCTION

In multimedia presentations, text can be combined with other media in a powerful way to present information and express moods. Internally text is represented via binary codes as per the **ASCII table**. The ASCII table is however quite limited in its scope and a new standard has been developed to eventually replace the ASCII standard. This standard is called the **Unicode** standard and is capable of representing international characters from various languages throughout the world. We also generate text automatically from a scanned version of a paper document or image using Optical Character Recognition (**OCR**) software.

TYPES OF TEXT

There are three types of text that can be used to produce pages of a document:

- Unformatted text
- Formatted text
- Hypertext

Unformatted Text:

Also known as plaintext, this comprise of fixed sized characters from a limited character set. The character set is called **ASCII table** which is short for American Standard Code for Information Interchange and is one of the most widely used character sets. It basically consists of a table where each character is represented by a unique 7-bit binary code. The characters include a to z, A to Z, 0 to 9, and other punctuation characters like parenthesis, ampersand, single and double quotes, mathematical operators, etc. All the characters are of the same height. In addition, the ASCII character set also includes a number of control characters. These include BS (backspace), LF (linefeed), CR (carriage return), SP (space), DEL (delete), ESC (escape), FF (form feed) and others.

Formatted Text:

Formatted text are those where apart from the actual alphanumeric characters, other control characters are used to change the appearance of the characters, e.g. bold, underline, italics, varying shapes, sizes, and colors etc., Most text processing software use such formatting options to change text appearance. It is also extensively used in the publishing sector for the preparation of papers, books, magazines, journals, and so on.

Hypertext:

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The term Hypertext is used to mean certain extra capabilities imparted to normal or standard text. Like normal text, a hypertext document can be used to reconstruct knowledge through sequential reading but additionally it can be used to link multiple documents in such a way that the user can navigate non-sequentially from one document to the other for cross-references. These links are called **hyperlinks**. Microsoft Home Page The underlined text string on which the user clicks the mouse is called an **anchor** and the document which opens as a result of clicking is called the **target document**. On the web target documents are specified by a specific nomenclature called Web site address technically known as **Uniform Resource Locators** or URL. **Node or Anchor:** The anchor is the actual visual element (text) which provides an entry point to another document. In most cases the appearance of the text is changed from the surrounding text to designate a hypertext, e.g. by default it is colored blue with an underline. Moreover the mouse pointer changes to a finger icon when placed over a hypertext. The user usually clicks over the hypertext in order to activate it and open a new document in the document viewer. In some cases instead of text an anchor can be an image, a video or some other non-textual element (**hypermedia**).

Pointer or Link These provide connection to other information units known as **target** documents. A link has to be defined at the time of creating the hyperlink, so that when the user clicks on an anchor the appropriate target document can be fetched and displayed. Usually some information about the target document should be available to the user before clicking on the anchor. If the destination is a text document, a short description of the content can be represented.

TEXT FILE FORMATS

The following text formats are usually used for textual documents.

TXT (Text)

Unformatted text document created by an editor like Notepad on Windows platform. This documents can be used to transfer textual information between different platforms like Windows, DOS, and UNIX,

DOC (Document)

Developed by Microsoft as a native format for storing documents created by the MS Word package.Contains a rich set of formatting capabilities.

RTF (**Rich Text Format**)

Developed by Microsoft in 1987 for cross platform document exchanges. It is the default format for Mac OS X's default editor TextEdit. RTF control codes are human readable, similar to HTML code. ***table 2.3 pgno:50****

PDF (Portable Document Format)

Developed by Adobe Systems for cross platform exchange of documents. In addition to text the format also supports images and graphics. PDF is an open standard and anyone may write

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programs that can read and write PDFs without any associated royalty charges. ******pg no 51*****table 2.4

PostScript (PS)

Postscript is a **page description language** used mainly for desktop publishing. A page description language is a high-level language that can describe the contents of a page such that it can be accurately displayed on output devices usually a printer. A PostScript interpreter inside the printer converted the vercorsbacki into the raster dots to be printed. This allows arbitrary scaling, rotating and other transformations

IMAGE PROCESSING SOFTWARE

An image-processing software like Adobe Photoshop, offers a variety of tools and graphical interfaces to perform image-processing tasks. We discuss below some of the salient features.

Object SelectionSelection tools enable us to select a specific portion out image and manipulate it or copy it to another image. The selection border may be geometrical in shape like rectangular, circular, polygonal, or it may be irregular in shape. Selections may also be done based on color instead of shapes. Selected portions are frequently copied from one image to another or even to another location within the same image. When copying and pasting a selected portion, a parameter called **feathering** is used to determine whether the boundary of the selected portion has a clear and crisp border or a fuzzy border. In case of a fuzzy border, some of the background pixels from the neighbourhood of the selection is also copied along with the selection.

ColorSelectionColor-selection functions are used to select foreground and background colors from a **colorpalette** usually by clicking. They also usually allow specifying colors by their values in *RGB*, *CMYK*, *HSB* or Lab color models. A **colorswatch** is usually available as a rectangular grid of some frequently used colors. An **out-of-gamutwarning** is indicated beside a selected RGB color if the color cannot be mapped to the *CMYK* gamut, i.e., the color cannot be printed out. An **eyedropper** tool enables one to select a color from existing image.

Painting and Drawing ToolsThe painting and drawing tools are used to paint lines, shapes, or fill regions with specified colors. Painting strokes are usually controlled by a **paintbrush** with parameters like **diameter** and hardness. Brush diameter controls the thickness of the lines, while **hardness** determines whether the lines have clearly defined or fuzzy boundaries. A parameter

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like **tolerance** controls how much of a region is filled with a color when the mouse is clicked within the region. An **airbrush** tool might be provided to simulate spray painting.

Anti-aliasingAliasing means a false presentation of visual data. When displaying images with curves and diagonal lines on the screen one can often find that these lines look jagged instead of smooth. A sort of staircase effect replaces what should be smooth curves and diagonal lines, and hence, this effect is known as **aliasing**. Anti-aliasing is a method to counter this staircase effect and restore the smooth appearances of curves and diagonal lines. To understand how anti-aliasing works, we first need to determine the cause of aliasing. When the images are displayed on the screen, they have to be projected on a rectangular grid of pixel blocks. These blocks cannot accurately follow the smooth curves of the image, making them look jaggedThe rectangular shape of the pixels, however, cannot be changed as they form part of the display device hardware. To rectify this effect, anti-aliasing methods reassign pixel values in the neighborhood of the aliased areas, thereby creating a gradual toning effect between the curved shapes and the background. Instead of an abrupt transition from black to white which accentuates the jagged appearance, intermediate shades of gray are inserted between them to create an optical illusion of a smoothening effect. See Fig. 3.92

Fig. 3-92Anti-aliasing techniques produce a smoother look

DitheringDithering is a technique to improve the appearance of an image having a limited number of colors, like an indexed color image, especially when transformed from an image with higher color depth. In this case, the colors which are not available in the palette are simulated by varying the concentration of the dots of the existing colors. For example, the density of red dots on a white background can be controlled in various degrees to produce different shades of pink, although pink as a separate color may not be available in the color palette. In Fig. 3.93, when the 24-bit image is converted to the 8-bit version, color bands appear because the intermediate shades cannot be represented using small bit depths. In these cases, using dithering may produce significant improvements in the image quality by changing the distribution of the dots in the transition regions to make the clear border of the bands fuzzy and less apparent.

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Fig. 3-93(*a*) Original 24-bit image (b) 8-bit version showing color bands (c) 8-bit version with dithering (Refer Plate 8)

Half-toning The essential technique of shades by varying the dot size and spacing is also referred to as half-toning, usually when used in the context Of printing. Since, a typical printing press does not support the full tonal variation of an 8-bit grayscaleimage, a stepped tonal variation is simulated by passing the light from an image through a perforated screen to obtain a subset of the total number of shades. For example, as seen in Fig. 3.94, from a continuous gradient of white to black, 5 regularly spaced perforations can be used to obtain 5 representative sub-set of shades, viz., 0%, 25%, 50%, 75%, 100%. Now the subset of gray shades is represented by the printing equipment by varying the dot size of the ink, viz., brighter shades by more whitespace and darker shades by more black dots. The spacing between the dots can also be varied to obtain more number of shades. Also note that all these shades of gray are obtained from two colors, black and white, by varying the distribution of the dots, and hence, is an illustration of dithering as well.

Gradients The gradient tool allows creation of various types of gradients like linear, circular, diamond shaped, etc. A gradient editor allows selection of various colors and their spans within the gradient. See Fig. 3.95(a).

Text The type tool is used to write text in varying sizes, fonts and orientations, along with added effects like emboss and drop-shadow. The text can be filled either with a single color or gradients or patterns. SeeFig.3.95(b).

Fig. 3-95Variations in (a) Gradients and (b) Text

Transformation These transformation tools are used to transform specific portions of an image in various ways like moving, rotating, scaling, skewing, distorting, etc. The entire canvas of the image can also be rotated or its dimensions can be modified.

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Tonal Adjustments Tonal adjustment functions allow improving the brightness and contrast of the image using histogram equalization. A histogram is a plot of the number of pixels against the intensities ranging from 0 to 255. If an image histogram is clumped towards the center instead of being spread out over the entire range, it indicates that the image does not have pure black or pure white regions and hence, low on brightness and contrast. To improve brightness/contrast, a set of sliders are provided which work by mapping the final values to initial values. For example, if a slider at its initial default value of 255 is dragged to the left to a final value of say 200, all the values from 200 to 255 are mapped to 255, thereby increasing the brightness of the corresponding pixels. Another set of sliders work just opposite and are used to decrease contrast/brightness Of high contrast regions by mapping initial values to final values, e.g., converting 255 to 200 for the previous example.

ColorAdjustmentsColor adjustment functions allow changing the color content of images. The color balance function enables increasing and decreasing the amounts of primary and secondary colors in an image using sliders. The hue saturation function allows the independent variation of hue, saturation, and lightness Parameters. A replace color function might allow selection of specific portions of an image and change their color content.

Retouching A set of retouching tools are provided to make small changes for finishing jobs, e.g., change brightness/contrast, color hues, saturation, blurring/sharpening, and smudging in small, specific portions of an image.

Layers The concept of image layers allow the user to edit portions of an image independent of other portions, by splitting the image into separate layers. Layers can be thought to be sheets of transparent plastic Stacked on top of one another. One can draw, edit, paste, and reposition elements on one layer without disturbing the others. Layers can be made invisible, duplicated, deleted, or made transparent. Multiple layerscan also be merged into a single layer. Each layer can be individually selected and edited without disturbing the content of other layers. Contents in upper layers appear on top of contents in lower layers as one from above. The layers can be

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viewed and manipulated using a Layers palette. Opacity of layers can also reduced so that content of the underlying layers can be made partially visible. See Fig, 3.96(a).

Fig. 3.96(a) Layers (b) Channels (Refer Plate 8)

ColorChannelsColor channels separate out the pixels of the primary colors of an image and allow the user to edit each color independently. Whatever changes are done, for example, to the blue channel affects only the blue pixels in the image. Channels can be viewed and manipulated individually using a Channels palette. Each channel contains 8-bit information and, therefore, appears as a grayscale image. Superposition of all three channels create the 24-bit color image. See Fig. 3.96(b).

Cloning Clone tools allow duplicating specific portions of an image. Clone tools can also help remove unwanted objects from images by cloning the background over those objects. See Fig. 3.97.

Fig.3.97 Cloning

MasksMasks allow the user to select areas of an image and protect these from editing changes applied to the rest of the image. A mask is analogous to a piece of opaque plastic placed on paper before applying paint over it so that the area beneath the plastic is protected from the paint. Masks enable us, for example, to apply filters on specific portions of an image, while protecting the remaining portions .In Fig. 3.98, the mask is visible over the image on the left as a translucent red covering, which indicates the protected area, while the circular hole in the center and the angled lines indicate the unprotected area. When an editing operation is done on the image, e.g., changing its color, the masked area remain unchanged while the change takes place within the unprotected region. A mask can be saved in the channels palette and can contain 256 levels of transparencies. Such a channel is referred to as an **alpha channel**.

Erase and Move Erase tools allow removing specific portions of an image. Erasing a portion exposes contents on lower layers. Move tools enable selecting portions of an image and moving them to different locations by dragging.

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ThresholdingThresholding is a technique of converting color than or grayscale images to binary images.it requires setting up a thresholdinglevel such that and all pixels lighter than the threshold are converted to white and all pixels darker than the value are converted to black. By adjusting the threshold value, varying details of image objects can be made visible with respect to other objects which are made invisible. See Fig. 3.99.

Fig. 3-99Thresholding using different levels (a) 70 (b) 128 (c) 180

FiltersFilters are algorithms that accept image data and transform the data in pre-defined ways to create special effects. See Fig. 3.100.

Fig.3.100*Image filters: (a) Original (b) Radial blur (c) Mosaic (d) Glass (e) Emboss (f) Zigzag (g) Pointillize*

GRAPHICS

Introduction

After the text the next element that comes under the purview of multimedia is the picture. A picture being "worth a thousand words" can impart a large amount of information in a compact way. It is a fact that most people dislike going through text especially on a computer screen, and so it has been the endeavor of most multimedia developers to supplement words with pictures in presentations. The pictures that we see in our everyday life can be broadly classified into two groups: those that depict some real-world situation typically captured by a camera, and those that have been drawn or painted and can depict any fictitious scenario. The first type of picture is called an image and the second type is called graphics. Images are the subject matter of this chapter while graphics are dealt with in the next chapter. Digital images are considered to be made of a collection of structural elements called pixels arranged in the form of a grid of rows and columns. The term image is used henceforth to mean digital image unless specified Otherwise. Images are acquired into a computer system using digitizing devices like scanners and digital cameras. After acquisition, such images are processed using mathematical algorithms. For the sake of processing, images are considered to be two dimensional (2D) matrices of elements, each element having specific values. The objectives of image processing are frequently to enhance the quality of images like improving the brightness, contrast, and color composition, as

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also to manipulate the image based on the requirement of the end user like rotating, scaling, and cropping a region of interest. After processing, the image is displayed on an output device like a monitor or printer. Characteristics of the output devices determine how the image is actually displayed to the end-user. For storing the images on the computer hard disk, a number of file formats along with a variety of compression schemes are available. Developers choose the specific file format and scheme depending on their requirements and constraints.



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Image Data Representation.

Digital image is a 2-dimensional (2D) array of points each associated with a value. The arrangement can be represented by a function f(x,y) where (x, y) are spatial coordinates of a point within the image and the function f denotes the value of the specified point. The point is referred to as a pixel and the value is the intensitylevelof the pixel, i.e., a measure of how bright the point is. Analog images in the real world (e.g., a painting on paper, a conventional photograph on film) are continuous entities (at least at distance scales used in our daily lives), but their digital representations are a collection of discrete points, each specified by a pair of coordinate values and an intensity value. Hence, we say that an image is made up of a finite collection of pixels, so the pixels are considered to be the structural units or building blocks of an image (similar to molecules making up of a real-world object). Typically, an image is represented as a grid of square blocks, where each blockrepresents one pixel. See Fig. 3.1. It depicts an image composed of 8 x 8 or 64 pixels, each pixel P having a specific value v and location L. The pixel value v is usually depicted by an integer or a floating-point number, and physically represents the brightness or color of the image at that point. The location L is represented as a pair of coordinates, measured with respect to an origin O -located at the top-left corner, the X-axis from left to right and the Y-axis from top to bottom. Thus, the pixel highlighted in the below Figure, has a location (5, 4), while its value can be represented in a different form depending on the type of image as explained below.



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An image as a close collection of pixels

Images can broadly be divided into three types depending on the range of pixel values:

- **Binary** images, whose pixel values are either 0 or
- Grayscale images, whose pixel values are integer numbers within the range 0 to 255.
- **Color** images, whose pixel values are made up of three sub-units, within the range 0 to 255.

Typesofimage: (a) Binary (b) Grayscale (c) Color (Refer Plate 1)

Consider in the above Fig. 3.2 where the same image is depicted in three versions: (a) binary, (b) grayscale, and (c) color. An 8-pixel-by-8 pixel region from each image (enclosed in red square) is magnified as shown below. Theblocks in the magnified regions are the actual pixels. These pixels are represented by specific values. A binary images is seen to consist of either white or black blocks. The corresponding pixel values are represented as a2D matrix by inserting '1 ' for the white blocks and '0' for the black blocks, as shown below the region, enabling a binary image to be stored using I-bit information. For the grayscale image a region from the same part of the image is seen to contain blocks of various shades of gray. Usually, a grayscale image is represented using 8-bit information, so pixel values can range from 0 (for pure black) to 255 (for pure white), since $2^8 = 256$. Higher values indicate lighter shades while lower values indicate darker shades. The pixel values in the figure are seen to range in value from around 220 for the lighter blocks to around 50 for the darker blocks. For the color image, a region from the same part of the image is seen to contain blocks of various shades of color ranging from blue for the sky to brown for the rock. The pixel representation of such a color image consists of three different matrices each having values ranging from 0 to 255, i.e., each pixel is represented by three subunit values. The first matrix called R represents amount of red in the image, the second called G represents the amount of green in the image, and the third called B represents the amount of blue in the image. A combination of the three colors is required to display the actual colors in the image. Such a color image is said to be in RGB mode. The details of such representation will be explained in subsequent sections. For the time being, notice that blue portions corresponding to high values in the B matrix while brown portions correspond to high values in the R and G matrices. Also, a specific pixel is represented by three 8-bit numbers, e.g. the pixel at the top-left corner has a value (117, 171, 231). So a color image requires 24-bit

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information to be stored. Programming languages like **MATLAB** can be used to manipulate image data using a variety of operations and functions. This is discussed in Section 3.4 below.

GRAPHICS

Introduction

While the term "image" refers to a real-world picture usually taken by a camera and later on digitized for computer usage, a "graphic" denotes something that is hand-drawn. A traditional graphic would be a drawing or sketch on paper by an individual, which can range from simple line drawings like charts and architectural drawings to complex color portraits that can almost resemble an image, e o., Mona Lisa. Hence, "graphics" implies a synthetic pictorial representation. When represented digitally a graphic can be broadly categorized into two types: raster graphic and vector graphic. A raster graphic has similar properties to an image, i.e., it is represented internally as a collection of pixels. An example would be a drawing on paper subsequently digitized using a scanner. The input, editing, and output stages of a raster graphic would be almost identical to that of an image.

We are going to consider the second type of graphics called vector graphics. These kinds of graphics are generated using computer software tools and hence belong to the digital domain from the start, i.e., does not need to go through a digitization phase. Moreover, instead of being a collection of pixels, these graphics are internally represented as mathematical entities or vectors, e.g., equations, arrays, matrices etc. Such a representation has a lot of advantages, for example, they have compact file sizes and can be scaled to any size without degradation in quality.

To display graphics on a monitor screen requires a graphics interpreter that can interpret the mathematical relations and generate pixels to display the objects on the screen. To locate graphical objects accurately on the screen requires a coordinate system consisting of a pair of perpendicular axes and a pair of coordinates for each point on the object. When displaying graphical objects, the system does not usually need to create everything from scratch but makes use of a set of pre-defined primitives like lines, curves, polygons etc., and expresses other objects as combinations of these. Algorithms for generating primitives include linedrawing algorithms, circle-drawing algorithms, algorithms for filling a specified shape with a specified color, or algorithms for clipping lines against a rectangle.

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Once a graphical shape is drawn on the screen, transformations might be applied to them, e.g., translation, rotation, scaling, reflection and shear. To draw 3D graphics, we require a 3D coordinate system with three perpendicular axes along three directions: length, width, and height. To display the 3D objects onto a 2D viewing screen requires a set of projection techniques.

Advantages of Graphics

A vector representation of graphics provides a number of advantages:

- Because of the fact that they are not represented as pixel data but simply as a set of equations and their related parameters, means that internally they could be represented as textual data, and hence are very**compact**. The small file sizes of graphics make them an ideal choice where quick processing or limited bandwidth and storage capabilities are of primary concern, e.g., Internet and Web-based applications. For example, a graphic of a cycle wheel could be represented as a concentric circle with a number of straight lines radiating outwards from the center for the spokes.
- A graphic has the ability to **adapt** to varying magnification scales or zoom factors. An image (or raster graphic) is composed of a fixed number of pixels and when magnified, the distance between them increases. This leads to a degradation of the image quality referred to as **pixelation**. A graphic, however, does not undergo pixilation: no matter how much it is magnified it retains its crisp and smooth look throughout because when displayed on the screen, pixels are created dynamically from mathematical entities and number of pixels are adjusted to suit the magnification factor.
- Since the graphic is generated using software tools, an application has complete knowledge of equations used to create the graphic and value of the related parameters, e.g., the radius of a circle, the coordinates of the center, the points where a line intersects the circle, etc. Hence, appearance of the graphic may be changed very quickly by writing programs, e.g., multiply the radius by 3 and move the center by 5 units along the Y-axis. This makes graphics ideal for **animation**-based applications.
- A user can input mathematical relations and ask the system to create graphical objects to represent them pictorially. This is the basis for plotting charts and graphs based on user-specified data. The data may either be specified either by a relation, e.g., $y = e^x$ or

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by a table of values, which the system can be asked to plot and even find out a matching relation. An existing graphic can be changed by changing its related parameters. This makes graphics suitable for **interactive** applications.

• Extensions of simple two-dimensional graphics by including the third dimension have led to the generation of **3D graphics** and animation. These graphical objects are defined using 3D geometry, which enables them to be rotated and viewed from any angle in 3D space. These have been widely used in ComputerAided Design (CAD) applications as well as in the film and game industry. File formats like 3D Studio MAX have been developed to exploit the capability.

Uses of Graphics

Due to the advantages of graphics it has been applied to a large number of uses in various applications:

User Interfaces Allows creation of point-and-click items of a graphical user interface like menus, button, windows, selection lists, etc. Complex tasks can be achieved by clicking or dragging the cursor over items in the GUI.

Office Automation With the advent of desktop publishing, the pictorial representation of data like charts, graphs, logos, histograms, tables, etc., have found increasing use in office automation applications.

Design and Drafting Tools Application software now allow users to design and create their own graphical 2D and 3D models using CAD tools. This has found extensive use in fields of architectural, mechanical, electrical, electronic, and computer science.

Simulation and Animation Graphical animations are used increasingly nowadays to study related to atomic structure and nuclear reactions, fluid flow, chemical molecular transformations, physical phenomena pertaining to optics, acoustics, etc., astrophysics, physiological systems and organ function Simulation packages are used for training. e.g., flight simulations for pilots, as well as for studying phenomena which is difficult to replicate physically, e.g., radioactivity, nuclear fission, process control applications, simulation of power plants, steel fabrications, missile guidance, etc.

Art and Commerce Computer graphics are nowadays extensively used to design and create artwork for interior decorations of private homes, offices, hotels, super-markets, etc., as well as for fashion design, tailoring, printing applications like calendars, diaries, etc. Film and

television commercials use graphics to design program banners, advertisements, and special effects.

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Components of a Graphics System

A graphics system has a number of components to display graphic elements on the screen. See Fig. 4.1 A graphics system has a number of components to display graphic elements on the screen. See Fig. 4.1. A repository, called an **application database**, stores elementary shapes like lines, shapes, curves, polygons, circles, etc., collectively called **primitives**. The primitives are frequently used to create more complicated Objects and their presence in the application database ensures that the developer does not need to create these every time but can simply select and use them from the repository when required. An application Program with which the user interacts, is used to create, store, and retrieve graphical objects. Depending on user requirements, the application program uses sets of primitives from the database to create the final graphics on the screen. The program also manipulates the parameters of the primitives to produce a customized graphics object, e.g., the color, line style, position, dimensions, etc. These are collectively called attributes of the Primitives. A graphics interpreter interprets the mathematical entities and generates the required pixels for displaying the graphical object on the screen, a process called **rendering**. The graphics interpreter is also responsible for changing the view of the graphics based on user interaction with the program, e.g., zooming or panning. Finally the **display hardware**, e.g., a monitor, displays the rendered graphics on the screen, usually using structural units like **pixels**. The quality of the graphics is determined to a large extent by the resolution supported by the hardware.

	Graphics		Modified			
Application	primitives	Application	attributes	Graphics	pixels	Display
database		program		interpreter		hardware

Components of a graphics system

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Possible Questions

Part - B (8 Marks)

- 1. Define Multimedia. Explain various components of Multimedia.
- 2. Discuss the uses of Multimedia.
- 3. What is meant by text and Explain different file formats of text.
- 4. Describe about Image Data Representation.
- 5. Discuss on Image File Format.
- 6. Explain Image Processing Software.
- 7. Define Graphics. Discuss on uses of Graphics.

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DEPARTMENT OF COMPUTER SCIENCE,CA & IT CLASS : III B.Sc COMPUTER TECHNOLOGY BATCH : 2016-2019

Part -A Online Examinations SUBJECT: MULTIMEDIA AND ITS APPLICATION UNIT-I

(1 mark questions) SUBJECT CODE: 16CTU504B

S.NO	Question	opt1	opt2	opt3	opt4	Answer
1	The people who weave multimedia into meaningful tapestries are	Multimedia producers	Multimedia developers	Multimedia Projectors	Multimedia Creatures	Multimedia developers
2	Forerunner of WWW is	Memex	Internet Explorer	Web browser	Intranet	Memex
3	Multimedia elements are typically seen together into a project using	Editing Tools	Unauthoring tools	Integrated Tools	Authoring tools	Authoring tools
4	GML Stands for	Generalized Markup language	Generalized Multimedia language	Generalized Makeup language	Global Markup language	Generalize d Markup Language
5	Adobe illustrator is tool	Editing	Video	Publishing	Audio	Publishing
6	is a video production tool.	Sound forge	Premiere	Flash	Photoshop	Premiere
7	is a Audio production tool.	Sound forge	Premiere	Flash	Photoshop	Sound forge
8	is a Animation tool.	Sound forge	Premiere	Flash	Photoshop	Flash
9	is a Graphics tool.	Sound forge	Premiere	Flash	Photoshop	Photoshop
10	3D Studio Max is a tool for	Authoring	Timeline window	Media files	Character Animation	Character Animation
11	are monitors that have a textured coating across the glass surface.	Track balls	Joystick	Touch screen	MICR	Touch screen
12	Cool Edit is a popular tool	Audio	Video	Editing	Movie	Audio

13	Painting software is dedicated to producing	vector images	animations	3-D images	bitmap images	bitmap images
14	is a flow control or iconic metaphor	Director	Authorware	Java 3D	Flash	Authorware
15	Nodes are for links to other pages	Anchors	Viewpoint	Images	Transition effect	Anchors
16	is used for special effects	Filters	Frames	Layers	Styles	Filters
17	is a Movie making tool	Sound Forge	Quicktime	Premier	Flash	Premier
18	is an area of memory where data such as text and images is temporarily stored when you cut or copy them within an application	file	directory	clipboard	desktop	clipboard
19	Placing real-appearing computer graphics and vide objects into scenes	Augmented reality	Telemedicine	Audio cues	Teleconferenci ng	Augmented reality
20	QoS means	Quality of server	Quantity of Service	Quality of Service	Quantity of Server	Quality of Service
21	aims to develop smart clothing	Augmented reality	Telemedicine	Audio cues	Digital Fashion	Digital Fashion
22	invented the motion picture camera	Thomas Alva Edison	Alexander	Babbage	James Watt	Thomas Alva Edison
23	Online System" was demonstrated by	Thomas Alva Edison	Marconi	Douglas Engelbart	Vannevar Bush	Douglas Engelbart
24	Java is platform language	Dependent	Independent	Compiled	Executed	Independen t
25	Who proposed the World wide web?	Douglas Engelbart	Vannevar Bush	Tim Berner	Nicholas	Tim Berner
26	was accepted as the international standard for digital image compression	GIF	JPEG	MPEG	BMP	JPEG

27	is a text which contains links to other texts	Hyperimage	Hypermedia	Image	Hypertext	Hypertext
28	is now called Pro Audio	Cakewalk	Cubase	CoolEdit	Cool Edit Pro	Cakewalk
29	is a music sequencing and editing program	Sound forge	Cubase	CoolEdit	Cool Edit Pro	Cubase
30	is a component of multimedia	Video	Distributed network	Teleconferen cing	Telemedicine	Video
31	Sound Forge is a digital audio editing suite created by	Adobe	Macromedia	Microsoft	Sony	Sony
32	is a powerful audio mixing, recording, and editing software	Fireworks	Protools	Cakewalk	Cubase	Protools
33	is a powerful publishing tool for creating and editing vector graphics	Adobe Photoshop	Adobe Flash	Adobe Audition	Adobe Illustrator	Adobe Illustrator
34	Which of the following tool is called as Filters factory	Adobe Photoshop	Adobe Flash	Adobe Audition	Adobe Illustrator	Adobe Photoshop
35	In addition, Photoshop comes with a sub program called	Adobe Audition	Adobe Flash	Adobe Imageready	Adobe Illustrator	Adobe Imageready
36	All products of Adobe Systems support feature	Animation	Layers	Filters	Sound editing	Layers
37	is a graphics editor developed by Macromedia	Photoshop	Imageready	Fireworks	Illustrator	Fireworks
38	In tool video and audio are arranged in tracks like a musical score	Adobe Premiere	Imageready	Fireworks	Illustrator	Adobe Premiere
39	is a rendering package created by Pixar	3D studio max	Maya	Softimage XSI	RenderMan	RenderMan
40	is a complete modeling package with realistic clothes and fur	3D studio max	Maya	Softimage XSI	RenderMan	Maya
41	Elements in the movie are called in Flash.	Objects	Symbols	Tools	Functions	Symbols
42	uses a movie metaphor to create interactive presentations	Adobe Premiere	Imageready	Fireworks	Director	Director

43	uses a type of flowcharting metaphor	Macromedia Director	Authorware	Quest	Macromedia Flash	Quest
44	The content of files are not editable	PPT	BMP	DOC	PDF	PDF
45	allows to create interactive shockwave movies to play over the web	Authoring	Flash	Director	Photoshop	Director
46	Motion picture camera was invented in the year	1990	1927	1887	1880	1887
47	Gifcon is an example for	GSM	Gif animation package	Authoring tool	Video file	Gif animation package
48	Silent films appeared from the year	1925	1810	1920	1910	1910
49	Van Dam created an early hypertext editor called	HTML	VBSCRIPT	FRESS	XML	FRESS
50	is a leading research institution investigating digital video and multimedia.	Apple Multimedia Lab	Bell Lab	MIT Media Lab	Microsoft Lab	MIT Media Lab
51	PDAs were introduced in the year	1990	1991	1992	1995	1991
52	Which among the following is not a digital audio tool?	Cool edit	Soundforge	Cubase	Protools	Cubase
53	Which version of cool edit pro supports MIDI files	2.1	2.0	3.1	3.0	2.0
54	Netscape is a	Web Browser	Design tool	Editing tool	Publishing tool	Web browser
55	Illustrator CS5 is of generation	fifteenth	fifth	fourth	fourteenth	fifteenth
56	Which is not a product of Adobe?	In design	Fireworks	Photoshop	Imageready	Fireworks
57	is a set of different stacked elements that contains different parts of an image	Sprite	Frames	Scene	Layer	Layer
58	features allows two or more separate images into one	Merging layers	merging images	merging frames	merging scenes	merging images

59	is a technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view.	Augmented reality	Telemedicine	augmented interaction	Teleconferenci ng	Augmented reality
60	Each item in a Tree View is called	branch	subtree	leaf	node	node
		1				
--	--	---				

	-	-	

VIDEO

INTRODUCTION:

After text, image, graphics and audio, the next element to be included in a multimedia presentation is video. Video is a combination of a sequence of imagesand associated audio. Hence, in most cases concepts and theories applicable for images and audio are also applicable for video. In this chapter, the term "video" is used to mean "motion video" the media type consisting of images and sound, as in "video-CD" instead of indicating the visual signals sent to the monitor from a processing system as in " video adapter". One of the major difficulties in incorporating video in presentations is to deal with its size. Since it typically consists of a large number of images as well as audio tracks, sizes of video files can span several GBs of disk space. So, compressing video files is essential and only after the advent of efficient compression software and hardware, and powerful processors did the use of video in PC based applications gain momentum. Initially video was recorded in analog form using analog video cameras. Later on, these were replaced by electrinoc sensors called Charge Coupled Devices(CCD) in digital video cameras. Color video cameras produce three separate signals corresponding to red, green and blue components of the incident light using optical splitters. Due to technical problems of transmitting these separate color signals over large distances as in television transmission, another form of the signal called **composite video** was mostly used where the signals were transformed into a luminance (brightness) and chrominance (color) information and combined on a single cable or channel for transmission. Compositing video signals also had another advantage- the option of using chroma sub-sampling whereby color information is reduced to decrease the bandwidth of the transmitted signal. To standardize these parameters, a number of standards like ITU-R(CCIR), ATSC, DVB and SMPTE have been developed. Each of these systems use different color spaces to represent the luma and chroma information, which can be derived through various linear combinations from RGB signals. Often a video-editing, software is used to modify and enhance video quality by manipulating adjustable parameters like brightness, contrast, color, frame dimensions, and frame rate, and these can subsequently be stored using specific file formats like AVI, MOV or MPEG. These topics have been discussed in detail in the following sections.

MOTION VIDEO:

Motion video(or simply video) is a combination of image and audio. It consists of a set of still images called frames displayed to the user one after another at a specific speed, known as the frame rate measured in number of frames per second(fps). If displayed fast enough, our eye cannot distinguish the individual frames but because of persistance of vision, merges the

individual frames with each other thereby creating an illusion of motion. The frame rate should range between 20 and 30 for percieving smooth realistic motion. Audio is added and synchronized with the apparent movement of images. The recording and editing of sound has long been in the domain of the PC. Doing so with motion video has only recently gained acceptance. This is because of the enormous file size required by video. For example, one second of 24-bit, 640*480 mode video and its associated audio requires 27 MB of space, viz, (640*480 pixels)*(24 bits/pixels)*(30 frames/second). Thus, a 20-minute clip fills up 32 GB of disk space. Moreover, it requires processing at 30 MB/s. The only solution to this problem is to compress the data, but compression hardware and software were very expensive in the early days of video editing. As a result, video was played in very small-sized windows of 160*120 pixels, which occupied only 1/16th of the total screen. It was only after the advent of the pentium 2 processor coupled with cost reduction of video compression hardware, that full-screen digital video finally became a reality.

Motion video is conceptually similarto but physically different from motion picture. **Motion picture** is recorded on celluloid film and displayed in cinema theaters by projecting on a screen, whereas motion video is represented in the form of electrical signals as an output from video cameras. These signals can either be recorded on magnetic media like video casettes and played back usind VCP, or transmitted directly as TV broadcast signals and received by a television set. Motion video is also conceptually similar to **animation**, the difference being that while video represents a sequence of a real-world images captured by a movie camera, which depict an event that physically took place in reality, an animation sequence consists of images drawn by artists, using pen or paper, or software. So the events do not depict any real sequence of events taking place in the physical world.



TELEVISION SYSTEMS:

1.NTSC:

NTSC (National Television Systems Commitee) is a television broadcasting system used in a number of countries including korea, Japan, Canada, North America, Parts of South America,

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Mexico, and the caribbean islands, created by an industry-wide standardization body. It was set up in 1940 by the Federal Communication Commission(FCC) in the United states to establish a nationwide standard for black-and-white TV transmission. It specified a standard using 525 horizontal lines. 30 frames per second, 2 interfaced fields per frame(also called 2:1 interfacing), 262.5 lines per field, 60 fields per second, an aspect ratio of 4:3 and frequency modulation for the audio signal(frequency modulation is a form of modulation which represents information as variations in the instantaneous frequency of a carrier wave). In 1950, the committee was reconstituted to establish a standard for color TV transmission, which would be at the same time compatible with the existing format for B/W TV. As per the recommendations of the committee, color information was added to the black-and-white image by adding a color sub-carrier to the video signal. Due to this, a discrepancy between the real time and the time stamped on the video was introduced, leading to the concept of Non-drop frame mode and Drop frame mode . NTSC uses a chroma sub-sampling scheme. It is derived from the gamma-corrected red, green and blue signals, as given by equation and reproduced below

Y=0.299R + 0.587G +0.114B

Since the human eye is most sensitive to variations in luminance, the Y signal is allowed a bandwidth of 0-4.2 MHZ. The chrominance part of the signal is represented by two 3.58 MHZ sub-components known as I(in-phase) and Q(Quadrature). The I and Q signals are amplitude modulated in quadrature(QAM) onto the sub-carrier wave. The I signal is in phase with the carrier wave and the Q is in quadrature, that is 90 degrees out of phase with the sub-carrier signal. I physically represents the orange-cyan axis(positive I is orange, negative I is cyan) and is bandlimited to 1.3 MHZ while Q physically represents the magenta-green axis(positive Q is magenta, negative Q is green) and its bandwidth is limited to 0.6 MHZ. The true part of a given point on the screen is defined by the phase of the sub-carrier at that point. Since I and Q are clearly phase-sensitive, some sort of phase reference must be supplied. This reference is supplied after each horizontal scan and included at the back portion (called "back porch") of the horizontal sync pulse, and is known as the "Color burst".

I and Q can be defined in terms of R, G and B as shown in the equation.

I=0.74Cr - 0.27Cb = 0.74(R-Y) - 0.27(B-Y) = 0.597R - 0.274G - 0.321B

Q=0.48Cr + 0.41Cb = 0.48(R-Y) + 0.41(B-Y) = 0.211R - 0.523G + 0.311B

NTSC has the following variants:

1. NTSC-M uses 525 lines/frame, 29.97 frames per second and a color sub-carrier of 4.43 MHZ, instead of 3.58 MHZ. NTSC-M is also called NTSC 4.43

2. NTSC-J is used in Japan is same as NTSC-M except for the fact that in NTSC-J, the black level amnd blanking levels are identical, while in NTSC-M, the black level is slightly higher than blanking level.

2. PAL:

PAL(Phase Alternation Lines- sometimes the terms Alternate or Alternating are also used) is a TV broadcasting standard used in Europe, Asia, Africa, and Australia. PAL was developed by walter Bruch at Telefunken in Germany, and first introduced in 1967. French electronics manufacturer Thomson later bought Telefunken. The PAL system uses 625 horizontal lines at 25 frames per second, 2:1 interlacing with 2 fields per frame. 4:3 aspect ratio and a chroma sub-sampling scheme of 4:2:2. similar to NTSC, PAL also uses a luminance component Y derived from equation (6,6) and reproduced below:

$$Y = 0.299R + 0.587G + 0.114B$$

The chrominance part of the signal is represented by two 4.43 MHZ sub-components known as U(in-phase) and V(quadrature). The U and V signals are amplitude modulated in quadrature onto the sub-carrier wave . both U and V are bandlimited to 1.3 MHZ each, while the compatible video signal may have bandwidths of 4.2, 5, 5.5, or 6 MHZ depending on the specific standard used.

U and V can be defined in terms of R,G and B as shown in the equation

U = 0.492Cb = 0.492(B-Y) = -0.147R - 0.289G + 0.436B

V = 0.877Cr = 0.877(R-Y) = 0.615R-0.515G-0.1B

PAL has a number of variants: PAL-A,PAL-G,PAL-I,PAL-D,PAL-N,PAL-Nc all use the 625/50 systems with active lines 576 (576i). The differences are as follows:

1. PAL-B uses video bandwidth of 5 MHZ, sound carrier at 5.5 MHZ and channel bandwidth of 7 MHZ.

2. PAL-G uses video bandwidth of 5 MHZ, sound carrier at 5.5 MHZ and channel bandwidth of 8 MHZ.

3. PAL-I uses video bandwidth of 5.5MHZ, sound carrier at 6 MHZ and channel bandwidth of 8 MHZ.

 $4.\ PAL-D$ uses video bandwidth of $6\ MHZ$, sound carrier at $6.5\ MHZ$ and channel bandwidth of $8\ MHZ.$

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5. PAL-N uses video bandwidth of 5 MHZ , sound carrier at 5.5 MHZ and channel bandwidth of 6 MHZ.

6. PAL-Nc uses video bandwidth of 4.2 MHZ , sound carrier at 4.5 MHZ and channel bandwidth of 6 MHZ.

7. PAL-M uses video bandwidth of 4.2 MHZ, sound carrier at 4.5 MHZ and channel bandwidth of 6 MHZ. but the 525/60 system with active lines 480(480i).

8. In recent years, a variant called PAL-60 has been developed which uses the color coding of PAL but the number of scan lines(525) and refresh rate of NTSC(60). Strictly speaking , however, the refresh rate is not 60HZ but 59.94HZ.

3. SECAM:

SECAM(Sequential Couleur Avec Memoire), French for "sequential color with memory", is a TV broadcasting standard used in France, Russia, and the Middle East. A team led by Henri de France, working at Compagnie Francaise de Television (later bought by Thomson) invented SECAM. It gets the information about the other color difference signal from the preceding line transmitted, which is stored in the memory inside the receiving set. The chrominance part of the signal is represented by two sub-components Db and Dr, which are bandlimited to 1.3 MHZ each, while the composite video signal may have bandwidths of 5 or 6 MHZ depending on the specific standard used. Db and Dr can be defined in terms of R,G and B as shown in the equation.

Db= 1.5Cb= 1.5(B-Y)= -0.450R - 0.833G + 1.333B

Dr = -1.9Cr = -1.9(R - Y) = -1.333R + 1.116G + 0.271B

VIDEO FILE FORMATS

The most popular video file formats are discussed below. Many of these are essentially multimedia container file formats. A container or wrapper format acts as a container for storing a number of different file formats, each of which might be encoded using different encoding algorithms. Hence, opening a container format does not essentially imply that the contained files can be played back, unless the respective decoders are present. The specifications for a container format, therefore, specify how to store files rather than to encode files.

1. AVI:

AVI(Audio/video Interleaved), the native video file format on the windows platform, is AVI or audio-video interleaved. The name implies that in the same file both audio and video media is stored. Since, a video clip can contain both types of media. The term "Interleaved"

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means that within the file the video data and the corresponding audio data are kept in small chunks instead of widely separate blocks. The reason for this is when a part of the video is played back from the file. the diskheads should be able to quickly access the corresponding audio portion without much delay. Hence to avoid delay due to head seek time, the audio data is kept as close to the video data as possible, otherwise synchronization between the visual and audio media would be disturbed. This architecture is called video for windows. AVI is an uncompressed format.

2. MOV:

MOV(Quicktime Movie) is a multimedia framework developed by Apple that is capable of handling various media formats like video, image, audio, text and interactivity. Quicktime is integrated with Mac OS and freely downloadable for windows. The quicktime file format(MOV) acts as a multimedia container, with support for the following

- audio CODECs: AIFF,ALE,CDDA,MIDI,MP3,MP4AAC,AU,WAV etc.
- video CODECs: 3GP,AVI,H.261,H.263,H.264,Sorenson,Cinepak,etc

In 1998, the ISO approved the QuickTime file format as the basis of the MPEG-4 file format. Since MOV and MP4 used the same MPEG-4 CODECs, they were largely interchangable. version 6 of Quicktime was released with MPEG-4 support. With QuickTime's open architecture, third-party developers can create components, or plug-ins to QuickTime. These third-party components expand the functionality of QuickTime, allowing QuickTime to play additional media types, eg., DivX, Xvid, etc.

QuickTime ver.	Windows OS ver.	Formats supported
5(2001)	95	MPEG-1,MP3,Flash 4,Sorenson 3,Virtual reality panorama
6(2002)	NT 4	MPEG-4 part-2,AAC,Flash 5,JPEG 2000,3GPP
6.5(2003)	98/ME	MPEG-4 part-2,AAC,Flash 5,JPEG 2000,3GPP,3GPP2,ALE
7(2005)	2000/XP/Vista/7	H.264,MPEG-4 AVC

3. MPG:

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MPG(Motion Pictures Experts Group) is a file format based on MPEG-1 compression standard. MPEG-1 is designed for CD-ROM based applications and video-CDs and provides a quality comparable tio VHS quality. The DAT filE format of video-CDs is a representation of MPEG-1 CODEC.

4. VOB:

VOB(Video Object) is a container file format based on MPEG-2 compression standard. MPEG-2 is designed for DVD applications and provides a quality comparable to SVHS quality. There is no explicit MPEG-2 file extension. It is represented as VOB in DVD-video, as H.262 in video-conference streams, and M2TS in Blu-Ray video discs. A VOB file can contain audio, video, subtitles, and navigation menus multiplexed together within a single file. Content on a DVD- Video is broken into a set of 1GB files for compatibility with various Operating Systems.

5.RM:

RM(Real Media) file format was developed by Real Networks for playing video files from Web pages. RealVideo is usually paired with RealAudio into a RealMedia(RM) container. It supports streaming which means that the video file starts playing even before they are fully downloaded from the internet. It is usually streamed over the internet using the RTSP protocol to manage the connection and RealNetwork's own proprietary protocol RDT(Real Data Transport) to actually send the data. A program called Real palyer is required to play vack an RM file.

6. WMV:

WMV(Windows Media Video) is a set of proprietary streaming video technologies developed by Microsoft and part of the Windows Media Framework. In most cases, WMV along with audio in Windows Media Audio (WMA) format is encapsulated in ASF container format. Other than Windows Media Player, some third-party players like Mplayer for Linux can also play back WMV files. The main competitors of WMV are MPEG-4 AVC, RealVideo, DivX, and Xvid. The first version of the CODEC, WMV 7, introduced in 1999 was based upon Microsoft's implementation of MPEG-4 part-2. The WMV 9(VC-1) CODEC has been implemented in 3 versions based on simple, main, and advanced profiles are shown below.

profile	Level	Maximum Bitrate	Resolutions/ Framerate
Simple	Low	96 kbit/s	176x144/15(QCIF)
	Medium	384 kbit/s	240x176/30, 352x288/15(CIF)

Main	Low	2 Mbit/s	320x240/24(QVGA)
	Medium	10 Mbit/s	720x480/30(480p), 720x576/25(576p)
	High	20 Mbit/s	1920x1080/30(1080p)
Advanced	1.0	2 Mbit/s	352x288/30(CIF)
	1.1	10 Mbit/s	720x480/30(NTSC-SD), 720x576/25(PAL-SD)
	1.2	20 Mbit/s	720x480/60(480p), 1280x720/30(720p)
	1.3	45 Mbit/s	1920x1080/24(1080p), 1920x1080/30(1080i), 1280x720/60(720p) 1920x1080/30(1080i),
	1.4	135 mbit/s	1920x1080/60(1080p), 2048x 1536/24

7. FLV:

FLV(Flash Video) is a container format to deliver video over the internet that can be played in Adobe Flash Player. The audio and video files contained within the FLV container are mostly encoded using proprietary CODECs like Sorenson Spark and TrueMotion VP6, although the latest versions supports H.264 and HE-AAC. FLV has become the format of choice for disturbing video on the web and notable users include Youtube, Google Video, Yahoo Video, etc.

File Format	Release Date	Video CODECs	Audio CODECs	Player ver.
FLV	2003	Sorenson Spark	MP3, ADPCM	7
FLV	2005	Sorenson Spark, VP6	MP3, ADPCM	8
FLV	2007	Sorenson Spark, VP6,H.264	MP3,ADPCM,AAC	9
F4V	2007	H.264	MP3,AAC	9
FLV	2008	Sorenson Spark, VP6, H.264	MP3,ADPCM,AAC,Speex	10
F4V	2008	H.264	MP3,AAC	10

8. 3GPP,3GPP2:

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3GPP (3rd generation Partnership Project) is a multimedia container format defined by the 3rd generation Partnership Project for storing audio and video on 3G mobile phones. 3GP files are used for phones based on GSM services while 3GPP2 files are used for phones based on CDMA services. Both 3GPP and 3GPP2 file formats are essentially based on the MP4 container format which is in turn based on the ISO base file structure specified in MPEG-4 Part-12 specification. The 3GP container also supports the 3GPP Timed Text Format, which is based on MPEG-4 Part-17 for streamable text on 3G phones for subtitles and karaoke song texts.

9. OGV:

OGV (Ogg Theora) is a free and open video CODEC developed by Xiph foundation. Based on On2 Technologies VP3 CODEC, Ogg Theora competes with MPEG-4, Realvideo and Windows Media Player, Mplayer and Xine. Theora is usually bundled with audio in Vorbis format into the Ogg container, and disturbed free withoput any licensing and royalty fees.

10. MKV:

MKV (Matroska) is a open standard container format which can hold an unlimited number of audio,video, pictures, and subtitle tracks within a single file. The files have file extensions. MKV for video and .MKV for audio. Similar to other container formats like MP4 and ASF, Matroska is, however, entirely open source. Matroska was derived from a project named MCF but is different from it as it is based on a binary derivatives of XML called EBML(extensible binary meta language).

11. M4V:

M4V (MPEG-4 Video/part-2) is a file format using compression technology, based on DCT, similar to MPEG-1 Video and MPEG-2 Video.

12. MP4:

MP4 is a file format is used as a container for storing a variety of media types. MP4 files allow streaming over the internet as well as muntiplexing of multiple video and audio streams in one file, variable frame and bitrates, subtitles, and still images. Approximately any kind of data can be embedded in MP4 files, but those that are recommended (for compatibility reasons) are the following:

- 1. video- MPEG-4 part-2, MPEG-2 and MPEG-1.
- 2. Audio- MPEG-4 AAC, MP3,MP2, MPEG-1 part 3, MPEG-2 part-3, CELP(speech), TwinVQ(very low bitrates), SAOL(midi)
- 3. Pictures- JPEG, PNG

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- 4. Subtitles- MPEG-4 Timed Text, and/or xmt/bt text format.
- 5. Systems- Allows animation, interactivity and DVD-like menus.

VIDEO PROCESSING SOFTWARE

A Video-processing software allows the user to open, edit, manipulate, save digital video files in various formats. Most of the commercially available software packages like Adobe premiere, support non-destructive editing, meaning that the original clips are not altered in any way rather a copy of the clips are made and kept in temporary memory and all editing operations are done on those temporary files. After all editing operations are completed, an export file is created from the temporary files. This section discusses some of the salient features of a typical video editing software.

Timeline structure Most video-editing software permit a timeline structure for video-editing. A series of horizontal lines, called tracks or channels, are presented to the user, and each of these lines serving as timeslots where the video and audio clips to be edited are to be placed. Each media clip is represented as a rectangular shape standing for the collection of frames making up the clip. A playback head moves along the timeline from left to right, and the portion of the video data under the head is played back in a separate playback or **monitor window.**

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A separate window might be provided for editing a source clip. Clips placed one after another horizontally on the same track are to be played consecutively, while clips placed one above or below another vertically on different tracks, are played back simultaneously. The numbering of the tracks decide the layering order of the clips, that is clips in higher numbered tracks appear in front of clips in lower numbered tracks.

Trimming:

One of the basic operations supported is trimming a clip to discard unwanted portions. The user is asked to select two points along a clip: the start point and the endpoint by specifying an in-point marker and an out-point marker. The trimming operation keeps all frames between these

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points and deletes the rest of the frames. This usually results in the length of the clip on the timeline getting shortened creating a gap between the edited clip and the following clips, which is subsequently filled up by drawing the consecutive clips forward.

Splitting:

A Video editor allows a user to split a video clip into any number of parts. The user is usually required to specify the points where the clip is to be split by clicking at specific points of the rectangle using an appropriate tool selected from the tool palette. After splitting, the user can drag the different pieces and place them at different locations on the same track or different tracks.

Transitions:

A Video editor enables the user to insert various types of transitions between two video clips. Transitions like dissolve, Wipes, blinds, etc., may be dragged from a separate transition palette and placed between two superposing clips on the timeline often in a specially designated track called the transition track. When played back, the end part of the first clip would be seen to gradually merge to the beginning part of the second clip through the applied transition.

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Audio Content:

A Video editor enables the audio content of a video clip to be separated from the visual content. The audio content is displayed on a separate audio track in the timeline structure, from where it may be replaced by some other audio data.

Speed and Opacity:

A Video editor usually allows the playback speed of a clip to be changed, that is to simulate slow-motion or fast-motion. This is usually done by selecting the clip on the timeline and specifying a percentage by which the speed is to be changed. If the speed is decreased then the length of the speed is correspondingly increased as a slower speed implies a larger duration for playing that clip. A clip is usually opaque. That is with opacity 100%. However, there might be provisions to decrease opacity where by the clip becomes partially transparent. Any clip at a

lower channel would be partially visible through the semi-transparent regions of a clip on a higher channel.

Filters:

Visual filters like blur, emboss, lens flare, etc., could be applied on video clips. Also, the extent of these filters could be varied over the length of the clip. that is a blur filter could be gradually increased from the beginning to the end of a clip. The video effects are usually chosen from an effects panel and applied to a clip on the timeline. Key-frames can be added over the video clip and at each key-frame, the percentage of the effects to be applied could be specified.

Superimposing Content:

An image or another clip can be superimposed over a video clip. For example, a logo can be placed at a specific position of the video frame so that it is always visible. The white background of a superimposed image can be made transparent so that the video is visible behind the image. Additionally some editors allow the superimposed image to be animated. that is the image can be made to gradually move from left to right or from top to bottom of the video frame over time. In some cases, the image can also be transformed in other ways.

Eg., rotated by specific angles or scaled up or down.



KARPAGAM ACADEMY OF HIGHER EDUCATION COIMBATORE - 21

DEPARTMENT OF COMPUTER SCIENCE, CA & IT

CLASS : III B.Sc COMPUTER TECHNOLOGY

BATCH: 2016-2019

Part -A Online Examinations SUBJECT: MULTIMEDIA AND ITS APPLICATION

(1 mark questions) SUBJECT CODE: 16CTU504B

UNIT-II

S.NO	Question	opt1	opt2	opt3	opt4	Answer
1	VR stands for	Virtual reality	visual random	Video raster	video response	Virtual reality
2	VRML stands for	virtual reality modeling language	visual response modeling language	video raster mode language	video raster modeling language	virtual reality modeling language
3	Which of the following is not a stage of multimedia production?	Planning and costing	designing and producing	Marketing	delivering	Marketing
4	is responsible for an entire team of videographers, sound technicians, lighting designers.	Sound editor	Video specialists	Technician	Supervisor	Video specialists
5	Person who make multimedia program come alive with sound effects?	Video specialist	Audio Specialists	Technician	Supervisor	Audio Specialists

6	Diverse range of skills are called as	Skill	Knowledge	Strength	Multimedia skill set	Multimedia skill set
7	Person responsible for overall development and implementation of a project is	Executive	Music composer	Marketing Director	Project Manager	Project Manager
8	Interface designer creates a	Software device	Music	Video	Animation	Software device
9	Flash is the best animation tool	3D	2D	Multidimensio nal	Aftereffects	2D
10	GIF stands for	Graphics Image File format	Geometric Image file format	Geographic Image File format	Graphics Internal File format	Graphics Image File format
11	<u>tool</u> allows the elements organized as objects in a structural framework or process.	Icon-or object based tool	Event-driven tools	Card or Page- based tools	Time-based tools	Icon-or object based tool
12	In which tool,the elements are organized along a timeline?	Icon-or object based tool	Event-driven tools	Card or Page- based tools	Time-based tools	Time-based tools
13	is useful for slide shows and presentations	Slide show metaphor	Icon based metaphor	Scripting metaphor	Card metaphor	Slide show metaphor
14	Sequence of elements of can be arranged using a Cast and a Score in	Director	Editor	Timer	Casting	Director
15	movies are generally good for cross platform delivery	Editing	Picture	Director	Casting	Director

16	is an internal scripting language of Director	Lingo	Java	РНР	ASP	Lingo
17	is contain resources for a movie such as still images, sound files, text, palettes.	Cast	Editing	Score	Timing	Cast
18	is a sequencer for displaying, animating ad playing cast members	Score	Loss	sprite	Action script	Score
19	provides elaborate and complex visual effects and transitions, adjustments of color palettes and tempo control	Action script	Loss	sprite	Score	Score
20	is a object oriented scripting language	cast	score	lingo	sprite	lingo
21	is used to enable interactivity and programmed control	Cast	score	lingo	sprite	lingo
22	With we can control operations on the Internet such as sending mail, reading documents and images	Cast	lingo	sprite	Score	lingo
23	Using scripts you can chain together separate Director documents and call other files as subroutines	lingo	cast	sprite	Score	lingo
24	Macromedia Director stores multimedia elements in its	stage	cast	score	sprite	cast
25	Dreamweaver is a multimedia tools used for creating	interactive automobile dashboards	multimedia enabled web sites	foreign language testing	database reconciliation	multimedia enabled web sites

26	is used to create interactive movies using score metaphore	Director	Flash	Photoshop	Illustrator	Flash
27	With event driven tools, you build a flowchart by dragging appropriate icons from a library and then add content	Object based	Icon based	time based	Card based	Icon based
28	With tools elements and events are organized along a timeline	Object based	Icon based	time based	Card based	time based
29	some tools lets you program jumps to any location in a sequence , thereby adding navigation and interactive control	Icon based tool	Time based tool	card based tool	object based tool	Time based tool
30	is a powerful, complex, and full featured authoring tool	Macromedia Director	Photoshop	Soundforge	Protool	Macromedia Director
31	Macromedia Director timeline is called the	cast	stage	lingo	score	score
32	A particular instance of an element in the score is a	cast	stage	lingo	sprite	sprite
33	A Scripting language is considered	a very low level language	an assembler language	a subset of HTML	a very high level language	a very high level language
34	The native language of Web is	HTML	С	C++	XML	HTML
35	A is collection of characters of a single size and style belonging to a particular typeface family	styles	font	attributes	tools	font
36	A is a family of graphics characters that usually includes many type sizes and styles	typeface	font	tools	datas	typeface

37	Still images can be generated by	bitmaps	text documents	linear	jpeg	bitmaps
38	are used for photo realistic images	documents	bitmaps	linear	jpeg	bitmaps
39	are used for lines, boxes, circles, polygons	bitmaps	vector drawn	linear	jpeg	vector drawn
40	A bit is referred to a	decimal	octal	hexa	binary	binary
41	A is a two dimensional matrix of the bits.	map	pixels	decimal	pels	map
42	A is a simple matrix of the tiny dots that form an image	vector drawn	bitmaps	linear	pixels	bitmaps
43	A dimensional matrix is used to display monochrome images	two	three	one	four	one
44	The pixels are also called as	pels	dels	cels	pix	pels
45	A contains a collection of images, graphics or photographs.	image map	bitmaps	clip art	image library	clip art
46	TIFF means	Tagged Interchanged files form	Tagged Interleaved file formats	Tagged Inter File format	Tagged Interchanged File Format	Tagged Interchanged File Format
47	is extensively used in desktop publishing packages	TIFF	PICT	РСХ	IMG	TIFF
48	JPEG and GIF images are the most common bitmap formats used on the	documents	slides	web	Excelsheets	web
49	Multimedia presentations are also called	Movies	Scenes	Frames	Animation	Movies

50	Which metaphor uses linear presentation?	Card	Cast	Script	Slideshow	Slideshow
51	metaphor is used in menu-driven applications.	Iconic	Hierarchical	Script	Card	Hierarchical
52	depicts the initial idea content of a multimedia concept in a series of sketches	Testing	Designing	Storyboarding	Flowcharting	Storyboarding
53	fonts work better for visual communication	Sans serif	Serif	Technic	тw	Sans serif
54	is the RGB code for black color	000	010	001	011	0 0 0
55	AVI stands for	Audio visual Interval	Audio visual Interleave	Audio video Interval	Audio video Interleave	Audio video Interleave
56	Adobe premiere files are saved with extension	.ppt	.ppx	.ppj	.pptx	.ppj
57	Each instance of a cast member is called	frame	Scenes	sprite	movie	sprite
58	is an effect produced by cycling images	Shape tweening	Palette animation	Cel animation	Motion tweening	Palette animation
59	The process of generating intermediate frames between two images to give the appearance that the first image evolves smoothly into the second image	Sprite	Score	Tweening	Script	Tweening
60	Movie speed can be modified with	frames	Scenes	sprite	movie	Frames

Layers:

Layering Images:

Layering is a technique that enables you to add additional elements to an image, and place them on separate layers, so that they can be edited and manipulated independently from other elements in the image. It is like creating an image using transparent sheets of film: each layer is independent of the others but, when they are combined, a composite image is created. This is an extremely versatile technique for working with digital images.

By using layers, several different elements can be combined to create a composite image:

Original Image:



Final Image:

With text and a shape added (two additional layers have been added).



Layers Panel:

The use of layers within Elements is governed by the Layers panel. When an image is first opened it is shown in the Layers panel as the Background layer. While this remains as the background layer it cannot be moved above any other layers. However, it can be converted into normal layer, in which case it operates in the same way as any other layer. To convert a background layer into a normal one:

- 1. The open image is shown in the layers panel as the Background.
- 2. Double-click here.

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Class: III BSc IT Course Code: 16CTU504B Course Name: Multimedia and its Applications Unit: III (Photoshop-Layers) Batch- 2016-2019



3. Enter a name for the layer and click on the OK button.



4. The background layer is converted into a normal layer in the Layers panel.



Adding Layers:

New blank layers can be added whenever you want to include new content within an image. Thus could be part of another image that has been copied and pasted, a whole new image, text or an object. To add a new layer:

Click here on the Layers panel.



1. Double-click on the layer name and overtype to give the layer a new name.

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2. With the new layer selected in the layers panels, add content to the layer. This will be visible over the layer, or layers, below it



Fill and Adjustment Layers:

Fill and adjustment layers can be added to images to give an effect behind or above the main subject. To do this:

1. Open the layers panel and select a layer. The fill or adjustment layer will be placed directly above the selected layer.



2. Click here at the bottom of the layers panel.



- 3. Select one of the fill or adjustments options. The fill options are Solid Color, Gradient or Pattern Fill.
- 4. For a solid color, Gradient or pattern Fill, the required fill is selected from a dialog box and this is added to the selected layer.



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5. For an adjustment option, settings can be applied within the adjustments panels.



6. Once fill and adjustment settings have been applied, the effect can be edited by changing opacity. This is done by dragging this slider.



7. The opacity level determines how much of the image is visible through the fill or adjustment layer.

Working with Layers:

Moving layers:

The order in which layers are arranged in the layers panel is known as the stacking order. It is possible to change a layer's position in the stacking order, which affects how it is viewed in the composite image. To do this:

1. Click and drag a layer within the layers panel to change its stacking order



Hiding layers:

Layers can be hidden while you are working on other parts of an image. However, the layer is still part of the composite image-it has not been removed. To hide a layer:

1. Click here so that the eye icon disappears. Click again to reveal it.



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Locking layers:

Layers can be locked, so that they cannot accidentally be edited while you are working on other parts of an image. To do this:

1. Select a layer and click here so that a padlock appears next to it.



Layer Masks:

Because layers can be separated within an individual image there is a certain amount of versatility, in terms of how different layers can interact with each other. One of these ways is to create a layer mask. This is a top level layer, through which an area is removed so that the layer below is revealed. To do this:

1. Open an image. It will be displayed as the background in the layers panel. Double-click on this to select it.



2. Give the layer a new name and click the OK button.



3. Access the content panel (window>content from the Menu bar).



4. Select a background and double-click on to it add it to the current image. Initially, this is added below the open image.



5. Drag the added layer above the original image (this can also be done by selecting an area in another image, copying it and then pasting it above the existing image).



6. The Background image now covers the original one.



7. Click here to apply a layer mask to the top layer



8. Select the Brush tool from the Toolbox.



9. Select a brush size. This can be reasonably large as you will use it to remove part of the top layer.



10. Draw on the top layer to remove it and display the image below it.



11. In the layers panels, the area that has been removed is displayed here.



Opacity:

The opacity of a layer can be set to determine how much of the layer below is visible through the selected layer. To do this:

1. Select a layer either in the layers panel or by clicking on the relevant item within an image.



2. Click here and drag the slider to achieve the required level of opacity. The greater the amount of opacity, the less transparent the selected layer becomes.



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3. The opacity setting determines how much of the background, or the layer below, is visible through the selected one and this can be used to create some interesting artistic effects, including a watermark effect if the opacity is applied to a single layer with nothing behind it.



Saving layers:

Once an image has been created using two or more layers, there are two ways in which the composite image can be saved: in a proprietary photoshop format, in which case individual layers are maintained, or in a general file format, in which case all of the layers will be merged into a single one. The advantage of the former is that individual elements can still be edited within the image, independently of other items. In general, it is a good practice to save layered images in both a photoshop and a non-photoshop format. To save layered images in a photoshop format:

- 1. Select File> save as from the menu bar.
- 2. Make sure photoshop (*.PSD, *.PDD) is selected as the format.



- 3. Make sure the Layers box is checked on.
- 4. Click on the save button.



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To save in a non-photoshop format, select File>Save as from the Menu bar. Select the file format from the Format box and click on the save button. The layers box will not be available.

5.Text and Drawing Tools Adding

and Formatting Text:

Text can be added to images in elements and this is can be used to create a wide range of items, such as cards, brochures and posters. To add text to an image:

1. Select the Horizontal or vertical Type tool from the Toolbox.



2. Drag on the image with the type tool to create a textbox.



3. Make the required formatting selections from the Options bar.



4. Type the text onto the image. This is automatically placed on a new layer at the top of the stacking order in the layers panel.



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5. To move the text, select it with the Move tool, click and drag it to a new position.



To format text that has already been entered:

1. Select a Type tool and drag it over a piece of text to select it.



2. Make the changes in the options bar, as shown in step 3 on the facing page.



Distorting text:

In addition to producing standard text, it is also possible to create some dramatic effects By distorting text. To do this:

- 1. Enter plain text and select it by dragging a type tool over i
- 2. Click the Create Warped Text button on the Options bar.



3. Click here and select one of the options in the Warp text dialog box. Click OK.



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4. The selected effect is applied to the text.



Text and shape masks:

Text Masks can be used to reveal an area of an image showing through the text. This can be used to produce eye-catching headings and slogans. To do this:

1. Select the Horizontal or Vertical Type Mask tool from the Toolbox.



2. Click on an image, enter and format text as you would for normal text. A red mask is applied to the image when the mask text is entered.



3. Press Enter or click the move tool to border the mask text with dots.



- 4. Select Edit>Copy from the Menu bar.
- 5. Select File>New from the Menu bar and create a new file.
- 6. Select Edit>Paste from the Menu bar to paste the text mask into the new file.

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Cookie cutter masks:

A similar effect can be created with shape masks by using the Cookie cutter tool:

1. Select the Cookie cutter tool in the Toolbox and click here to select a particular style in the Options bar.





2. Drag on an image to create a cut-out effect.



Adding Images:

Another way to add extra style to your images is through the use of shapes. There are several types of symmetrical shapes that can be added to images, and also a range of custom ones. To add shapes to an image:

1. Click and hold the Rectangle tool in the Toolbox.



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- 2. Select the type of shape you want to create.
- 3. Click and drag on the image to create the selected shape.



4. If you want to change the color of a shape, click here in the Options bar and select a new color. This can either be done before the shape is created or it can be used to edit the color of an existing shape, when selected with the Move tool.



Custom shapes:

Custom shapes can be used to add pre-designed graphical objects, rather than just symmetrical shapes. To do this:

1. Select the Custom shape tool from the Toolbox.



- 2. Click here in the Options bar to view the different custom shapes.
- 3. Click once on a shape to select it.
- 4. Click here to view other categories of shapes.



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5. Click and drag on an image to add a custom shape.



Layer Styles:

When plain text and objects are added to images, they appear as two-dimensional items. If you want to give them a 3-D effect, this can be achieved through the use of the styles and Effects panel.

To do this:

- 1. Select Window>Effects from the Menu bar
- 2. Click here to access the Layer Styles.



- 3. Click here to access different styles
- 4. Select an object, or a piece of text, with the Move tool and click once on a layer style to apply that style to the selected item in the image.



Paint Bucket tool:

The Paint Bucket tool can be used to add a solid color to a selection or an object. To do this:

1. Select an area within an image or select an object.

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2. Select the Paint Bucket tool from the Toolbox.



3. Click here in the Toolbox to access the Color Picker for changing the currently Selected color.



4. Click once on the selected area or object to change its color to the one loaded in the Paint Bucket tool.



Gradient tool:

The Gradient tool can be used to add a gradient fill to a selection or an object. To do this:

1. Select an area in an image or select an object.

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2. Select the Gradient tool from the Toolbox.



3. Click here in the Options bar to select preset gradient fills.



4. Click on a gradient style to apply it as the default.



5. Click here in the Options bar to access the Gradient Editor dialog box.



6. Click and drag the sliders to change the amount of a particular color in gradient.



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- 7. Click along here to add a new color marker. Click on the OK button.
- 8. Click an icon in the Options bar to select a gradient style.



9. Click and drag within the original selection to specify the start and end points of the gradient effect.



Brush and Pencil tools:

The Brush and Pencil tools work in a similar way and can be used to create lines of varying thickness and style. To do this:

1. Select the Brush tool or the Pencil tool from the Toolbox.



2. Select the required options from the Options bar.



3. Click and drag to create lines on an image. (The lines are placed directly on the image. To add lines without altering the background image, add a new layer above the background and adding lines on this layer. They will then be visible over the background.)

Prepare



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Impressionist Brush tool:

The Impressionist brush tool can be used to create a dappled effect over an image, similar to that of an impressionist painting. To do this:

1. Select the Impressionist Brush tool from the Toolbox.



2. Select the required options from the Options bar.



3. Click and drag over an image to create an impressionist effect.



Working with Color:

All of the text and drawing tools make extensive use of color. Elements provides a number of methods for selecting colors, and also for working with them.

Foreground and Background colors:

At the bottom of the Toolbox there are two colored squares. These represent the currently selected foreground and background colors. The foreground color, which is the most frequently used, is the one that is applied to drawing objects, such as fills and lines, and also text. The background color is used for items, such as gradient fills, and for areas that have been removed with the Eraser tool.

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Color Picker:

The Color Picker can be used to select a new color for the foreground or background color. To do this:

1. Click once on the fore ground or the background color square, as required.



2. In the Color Picker, click to select a color.



3. Click on the OK button



Color Swatches Panel:

The Color swatches panel can be used to access different color panels that can then be used to select the foreground and background colors. To do this:

1. Select Window>Color Swatches from the Menu bar.

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2. Click here to access the available panels.



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Possible Questions

Part - B (8 Marks)

- Explain the following:

 (i) Crop tool
 (ii) Palettes
 (iii) Shape tool
 (iv) Slice tool
 2 Explain language in Photochan
- 2. Explain layers in Photoshop.
- 3. Explain Text and Drawing Tools in Photoshop.
- 4. Explain the various organizations of images in Photoshop.
- 5. Explain (i) Organizing images (ii) Obtaining images (iii) Tagging images
 - i. (iv) Searching for images
- 6. Explain the layers in Photoshop.
- 7. Explain in detail about the panels in flash
- a. Illustrate how animation can be performed in flash using shape tween with example.
- 8. Explain (i) Creating new document (ii) Saving file (iii) Opening document
 - i. (iv) Importing a scanned image
- 9. Explain the tools (i) Marquee (ii) Lasso (iii) Polygonal Lasso
 - (iv) Magnetic Lasso

KARPAGAM ACADEMY OF HIGHER EDUCATION COIMBATORE - 21 DEPARTMENT OF COMPUTER SCIENCE, CA & IT

CLASS : III B.Sc COMPUTER TECHNOLOGY

BATCH: 2016-2019

Part -A Online Examinations SUBJECT: MULTIMEDIA AND ITS APPLICATION UNIT-III

(1 mark questions) SUBJECT CODE: 16CTU504B

S.NO	Question	opt1	opt2	opt3	opt4	Answer
1	is used to convert analog signal into Digital Signal	Printer	Scanner	Modem	Monitors	Modem
2	MIDI stands for	Instrument Digital	Instrument	Instrument	Instrument	Instrument
3	the size of the compressed image is	Image Quality	Lossy schemes	Compression ratio	Lossless	Compression ratio
4	MPEG stands for	Moving picture Expert Group	Movie Picture Expert Group	Music Pic Expert Group	Picture	Moving picture Expert Group
5	schemes preserve the original data precisely.	Lossy	Lossless	decompressio n	Transferring	Lossless
6	In Windows, system sounds arefiles	DOC	WAV	DBS	РРТ	WAV
7	is created when you convert a sound wave into numbers	digital video	recording	digital audio	digital visual	digital audio
8	Sampling rate is measured in	kilohertz	hertz	watts	ohms	kilohertz
9	Sample sizes are either 8bits or bits	32	64	16	12	16
10	determines the accuracy with which a sound can be digitized	Audio files	Audio frequency	Audio resolution	Audio equalization	Audio resolution

11	frequency content so that it sounds brighter	digital waves	digital resolution	digital finalization	digital equalization	digital equalization
12	A keyboard is also useful to simplify the creation of musical scores	MACE	MIDI	MIDS	AIFF	MIDI
13	MIDI means	Insturment Digital	Digital	Instrument	Instrument	Instrument
14	is a device dependent	MACE	MIDS	MIDI	AIFF	MIDI
15	MIDI files will be times smaller than CD-quality digital audio files	1000-10000	1000-7000	200-1000	500-1000	200-1000
16	beginning or end of a recording is	quieting	quantizing	trimming	pre rolling	trimming
17	and save music generated from a MIDI	Sound	Sequence	synthesizer	Samples	Sequence
18	units to describe the dynamic range or	16	12	256	324	256
19	General MIDI numbering system ranges from	0 to 127	0 to 125	0 to 126	0 to 124	0 to 127
20	MIDI sounds are typically stored in files with the extension	.sou	.midi	.mid	.mdi	.mid
21	representation of a sound, stored in the form	orders	datas	codes	samples	samples
22	A music compression scheme to reduce file size was enveloped by the	MPEG	MPES	MPPS	MPDS	MPEG
23	The 3-D scenes consists of	objects	vectors	linear	Shapes	objects
24	from a library of geometric shapes called	primitives	data	tools	texts	primitives
25	shape extends some distance, either	lathe	extrude	intrude	textures	extrude

26	provides high resolution in a 16:9 aspect ratio	SECAM	PAL	ATSC DTV	HDTV	HDTV
27	Using MPEG-1 we can deliver of video	1.5Mbps	2 Kbps	1.2 Mbps	3 Mbps	1.2 Mbps
28	and chrome information from the video	decomposition	composite	component	compound	composite
29	video separates the luminance and chrome information	decomposition	composite	component	compound	component
30	In color and luminance information are kept on two separate tracks	decomposition	composite	S-Video	A-Video	S-Video
31	is a continuous time varying signal	Analog video	Digital video	Image	Audio	Analog video
32	is represented as a sequence of digital images	Analog video	Digital video	Image	Audio	Digital video
33	There is no "crosstalk" between different channels in video	composite	component	compound	Simple	component
34	improves the quality of the video and decrease generation loss	decomposition	composite	component	compound	composite
35	S-Video is	Super video	Simple video	Smart video	Sample video	Super video
36	traces through a complete picture row-wise	Interlaced	Non interlaced	Raster	Digitized	Non interlaced
37	uses 525 scan lines per frame	SECAM	PAL	NTSC	CCIR	NTSC
38	PAL uses channel to improve quality	8 MHz	16 MHz	32 MHz	64 MHz	8 MHz
39	PAL means	Phase Alternate Line	Phase Altering Line	Alternate	Phase Altering Link	Phase Altering Line
40	supports repeated recording without degradation of image quality	Analog video	Image	Digital video	Audio	Digital video

41	indicates that no chroma sub sampling is used	4:1:1	4:1:2	4:1:3	4:4:4	4:4:4
42	CIF stands for	Common Interleave Format	Intermediate	Internet	Internal	Intermediate
43	uses non-interlaced scan	CCIR 601	CCIR	CIF	PAL	CIF
44	Scheme is commonly used in JPEG and MPEG	4:2:0	4:2:1	4:2:2	4:2:3	4:2:0
45	uses 720 active lines or higher	TV	SDTV	EDTV	HDTV	HDTV
46	Which among the following is not a property of sound?	reflection	diffraction	refraction	Transformati on	Transformatio n
47	interested in, usually at evenly spaced	Digitization	Compression	Sampling	Quantization	Sampling
48	is sampling the analog signal in the amplitude dimension	Digitization	Compression	Sampling	Quantization	Quantization
49	SNR stands for	Signal to Neutral Ratio	Signal to Noise Ratio	Sample to Noise Ratio	Sample to Neutral Ratio	Signal to Noise Ratio
50	is the process of removing unwanted frequencies in audio	Digitization	Compression	Sampling	Filtering	Filtering
51	MIDI channels are numbered from	0 to 16	1 to 16	0 to 15	1 to 15	0 to 15
52	If the first four bits are all ones in MIDI, the message is interpreted as a	System message	Channel message	Voice message	Mode message	System message
53	is the connector through which the device echoes the data received	MIDI OUT	MIDI IN	MIDI THRU	MIDI OFF	MIDI THRU
54	messages are used to specify effects such as sustain, vibrato and pitch	System message	Channel message	Mode message	Voice message	Voice message
55	message is included for manufacturers who can extend the MIDI standard	Mode message	Voice message	Exclusive	Common	Exclusive

56	Extra character information such as karaoke lyrics is included in	MIDI	MIDI Leve 2	MPEG - 1	MPEG -2	MIDI Leve 2
57	verifying whether the bitstream or decoder	systems	Audio	Conformance	Software	Conformance
58	If prediction is from a previous frame it is	Forward	Backward	Previous	Next	Forward
	called	Prediction	Prediction	Prediction	Prediction	Prediction
59	There are hierarchical layers in MPEG	5	6	7	0	6
	video bitstream	5	0	/	0	0
60	Which of the following combination does	SNR and Spatial	Spatial and	SNR and	Doto	SNR and Data
	not form hybrid scalability		Temporal	Temporal	Dala	partitioning

KARPAGAM ACADEMY OF HIGHER EDUCATION

Class: III BSc IT Course Code: 16CTU504B

Course Name: Multimedia and its Applications Unit: IV (Flash) Batch- 2016-2019

UNIT IV

SYLLABUS

Understanding Flash: Understanding Flash basic elements – Creating a simple animation. Learning Flash Toolbox: Learning the toolbox – Using tools. Learning Flash Panels: Understanding the panels. Using timeline and layers: Understanding how timeline works – Understanding layers. Drawing objects: Drawing lines and fills – Using colors – Rotating, skewing and scaling – Grouping objects. Creating animation – How animation works – Creating motion tweens – Creating shape tweens. Understanding masks – Creating masks.

UNDERSTANDING FLASH

Macromedia Flash is a very popular tool for creating very interesting and dynamic Web sites. With Flash, you can add animation and interactivity to your Web site, and make people want to return. Of course, you need to learn how to use Flash to create all of that neat and interesting content so that you can put it on your Web site. In this module, you will learn what you can do with Macromedia Flash so that you will have a better understanding of how adding Flash movies can lives up your Web site. In addition, you will learn about all of the basic elements of the Flash interface so that you will be ready to begin creating Flash movies very quickly.

Flash, of course, is just one of the many tools that you may use in creating and maintaining your Web site. In addition to Flash, you will probably use a page layout program such as Macromedia Dreamweaver or Microsoft FrontPage. You may even use graphics-editing software or sound-editing software to create Web page content. Even so, you will find that Flash has some pretty amazing capabilities all on its own.

WHAT CAN YOU DO WITH FLASH?

Flash is everywhere. As you browse various Web sites, you probably aren't even aware just how often you are viewing a Flash movie. You may be surprised to learn that the vast majority of Web sites that contain animation generally use Flash. If you visit a Web site and you see objects slide into place, you're probably viewing a Flash movie. If you visit a Web site where menus appear when the mouse pointer rolls over a particular point on the screen, that's probably a Flash movie, too. Just why is Flash so popular? It's because Flash can enable you to do so much with so little work.

Let's take a look at some of the things you can do with Flash.

Create Web Images

The World Wide Web-or just Web- is a part of the Internet that truly cries out for visual creativity. When you surf the Web, you see literally thousands of different ideas about what makes an interesting Web sites. Even with all of these divergent opinions, there is

one almost universally accepted notion-images and color are pretty much a requirement when you are creating a Web site.

Flash has the tools you need to create colourful Web images with very little effort. For example, here is a company logo I created for a Web site using Flash in just a few minutes.

UNDERDAHL GROUP

Web Design with style!

Although this may come as a bit of a surprise, you cannot simply add Flash images to your Web site. Although many different programs can easily display various assorted types of bitmap images, vector graphics typically must be viewed using a special program. For Flash images, this special program is the Flash Player, which almost everyone already has installed in their Web browser. Flash images are saved as part of a Flash movie, and that Flash movie is what is placed on your web page. When your Web browser encounters a Flash movie on a Web page, the browser automatically loads the Flash Player so that the Flash movie (and the images it contains) can be viewed.

You do need to add a bit of HTML to the Web page, but Flash automatically creates the necessary HTML code when you publish a Flash movie. You'll learn more about publishing Flash movies in Module 11.

Animate Your Web Site

Let's face it, plain old Web sites that simply sit there are boring. A little bit of animation can make quite a difference. Some nicely done animation-even if it is simply moving menu elements into place-makes your Web site stand out from the rest.

Flash makes animation easy to create using a process known as *tweening*. Essentially, in this process you tell Flash where you want the animation to begin, and you tell it were you want the animation to end. Once you have done this, Flash automatically generates all the in-between frames. So, if it takes 24 frames to complete your animation, you may end up creating tow of the frames, while Flash creates the other 22 frames. Obviously, this greatly reduces you workload.

For example, take a look at this animated sequence. Here, I'm moving the truck across the stage. I needed to create only one instance of the truck. I told Flash where I wanted the truck to begin, and then I told it where the truck should end. Once I did this, Flash too care of all the rest and generated all of the frames necessary to make it appear as though the truck were smoothly driving across the screen from one side to the other.

Picture- pg.no:5

Flash actually offers several different ways to move and reshape objects. As you will learn in Module 7, you can create a motion guide when you want to move an object along a

path that isn't straight. In addition to motion tweens, which are used to moves objects, you can also create shape tweens. These enable you to change the shapes of objects. You will learn about both types of tweens in Module 6.

Build Interactive Movies

In addition to simple animation, you can use Flash to build interactive Web sites. You could, for example, create a Flash movie that enables the visitor to choose between several different movie clips or even between different soundtracks. Because Flash is object oriented, your movies already know how to interact with users. All you need to do is to tell your movies what you want them to do when the user does something, like click a button.

It does take a small amount of ActionScript programming in order to add most interactivity to Flash movies. Don't let this worry you. Flash makes adding some ActionScript commands very easy because you can essentially just click and then make selections from list boxes.

Here are some of the things you can do with interactivity in Flash movies:

- Enable Web site visitors to select the movie they want to view.
- Create games that allow users to drag and drop objects.
- Add rewind buttons and other controls to allow users to control the playback.
- Load different movies depending on when a visitor comes to your Web site.
- Allow visitors to mute the soundtrack of a movie.
- Send information requests from visitors to an e-mail address.

Of course, interactivity can take many other forms, too. If you can dream up an idea about how you would like your Flash movies to interact with a visitor, there is probably a fairly simple way to make it happen.

Display Buttons

Buttons, of course, are an interface element that virtually everyone understands. You probably don't have to explain to visitors that pressing (or clicking) a button will cause something to happen.

You can easily add buttons to your Flash movies either by creating your own buttons or by using some of the buttons that come along with Flash, as shown here. When you add buttons to a Flash movie, those buttons already know how to act as buttons. That is, they know that when a user clicks the button, something should happen.

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Diagram-7

Of course, when you add a button to a Flash movie, the button doesn't really know what you want to happen, only that it should respond to a mouse click. You have to tell the button what you want it to do. For example, if you want to create a button that rewinds the movie and starts it playing again at the beginning of the movie, you might add a line of ActionScript code that looks like this:

gotoAndPlay(1);

Believe it or not, that is all of the ActionScript programming you need to add to create your rewind button! Flash automatically handles all of the other details for you.

Transform shapes

One of the animation techniques in Flash allows you to change an object from one shape into a totally different shape. This process is known as a shape tween. Here I am transforming a rectangle into a circle.

Diagram-8

Display Rolling Banner Text

You have no doubt seen rolling text banners on a number of different Web sites. These are often used to create a tickertape-style effect in which text scrolls into a text box from one side and scrolls out of the box on the other. This effect is used to display stock market results and news headlines, among other things.

In Flash, creating a rolling text banner is quite easy. Basically, the effect requires you to combine a couple of Flash movie techniques to produce the desired result. You start with a motion tween that moves a text block across the stage. Then you add a mask that controls how much of the text is visible at any one time. When you do this, users cannot tell that the whole text block is moving-all they see is the portion of the text block that is currently visible through the mask.

It is quite easy to display predefined text in a rolling text block, but displaying something like a stock ticker or a scrolling headline ticker is quite a bit more involved. You will need to learn some advanced ActionScript techniques, as well as some server-side programming, to be able to supply the constantly updated text to your Flash movie. From a practical standpoint, you will probably find this project to be a lot harder than you might expect.

Okay, so now that you have an idea about some of the things that you can do with Flash, let's take a look at the various things you will see when you use Flash.

UNDERSTANDING FLASH'S BASIC ELEMENTS

As with any other program you might use on your computer, Flash has a number of basic elements that enable you to accomplish the tasks for which the program was designed. Here is an overview of some of the most important elements-we'll look at each of these in more detail shortly.

Diagram-10

The Flash Stage

The stage is the area where you create your Flash movies. This is the white area that takes up most of the middle of the Flash window. When your movie plays, anything that is on the stage will be visible in the movie.

The stage is surrounded by a gray area known as the workspace. It is perfectly acceptable for you to place objects in the workspace off the edge of the stage. Objects that are in the workspace but not on the stage won't appear in the movie unless they are moved onto the stage-just as actors in a play cannot be seen until they move out onto the stage.

You can use the zoom control in the status bar below the stage to zoom in or out. You can also use the View menu to zoom in or out, or to select a specific magnification level.

The Timeline

The timeline is the Flash element that controls when things happen during the movie playback. Here, I've labelled the important items you see on the timeline.

Diagram-13

Here is a brief description of these important timeline elements:

- **Playhead** You can drag the playhead to different frames to view the contents of those frames. You can also click a frame in the timeline to select that frame-this automatically moves the playhead to that frame.
- **Frame numbers** These are your guides to working with the timeline; they enable you to place objects in the correct frame.
- **Timeline menu** This provides access to a number of options where you can choose timeline view settings.

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- **Center frame** This moves the current view of the timeline so that the current frame is centered in the visible area of the timeline.
- **Onion skin view** This displays several frames before and after the current frame using lightly shaded versions of the objects on the stage so that you can get a feel for the animation sequence.
- **Onion skin outline view** This also displays an onion skin view of several frames, but it uses wire frame outlines rather than filled objects.
- Edit multiple frames This enables you to edit the animation in several frames.
- **Modify onion markers** This displays a menu that allows you to choose how many frames to display in onion skin view.
- Current frame This shows the frame number of the currently selected frames.
- **Frame rate** This shows the number of frames per second that are displayed in the current movie.
- **Playback time** This shows how many seconds will have elapsed when the current frame is played.
- **Scroll bars** These enable you to see frames or layers that are not currently displayed.

Layers

Layers are like transparent overlays on the stage. They enable objects to act independently of objects on other layers, and they also control whether objects are visibleobjects onlayers that are in front of other layers hide the objects on those other layers when they cross in front of them.

Here is a closer look at the layers area (this is actually an integral part of the timeline and cannot be separated from the timeline).

Diagram-16

Let's take a look at each of these items:

- Layer names These are the names of the layers. You can change the names by double-clicking the layer name. Most Flash developers name the layers to indicate their contents or purpose.
- Add a layer Click this button to add a new layer. Because all objects on a single layer must have the same animation effects, this enables you to create objects that function independently of each other.

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- Add a motion guide layer This enables you to create a guide layer so that you can move objects in a path that is not necessarily a straight line. Objects on guide layers do not appear in you movie once it has been published.
- Add a layer folder This enables you to add folders to help organize the layers.
- **Delete a layer** This removes the currently selected layer and any objects it contains. Use this with caution so that you don't accidentally delete objects you need.
- Show or hide layer Clicking in this column toggles the visibility of the layers. Hiding layers may make it easier to create objects by reducing the visual confusion. Clicking the icon toggles all layers. To toggle a single layer, click in this column within the later itself.
- Lock or unlock layer Click in this column to lock the layers to prevent anychanges. Locking a specificlayer is a good way to avoid accidentally making changes to that layer-especially if you inadvertently select the wrong layer to work in.
- Show layer as outlines Click this column to show the objects as wire frame outlines rather than as filled objects. This may be useful when you want to see how objects on different layers relate to each other.

Extra layers do not affect the size of the published movie because Flash flattens published movies into a single layer. That is one reason you need to save your Flash movie project in addition to publishing the movie-your movie project file (the .FLA file) contains all of the layers so that you can make whatever modifications you want. If you import a published movie file (the .SWF file), everything will be in one layer.

The Toolbox

The Flash toolbox contains all of the tools you need for drawing or selecting objects. Next is a closer look at the toolbox.

Diagram-18

The flash toolbox has a lot of tools. Let's take a look at the purpose of each of them:

- Arrow tool Use this tool to select objects. You can click an object to select it, double-click to select the object and all of its components, or drag the Arrow tool to create a selection box to select everything within the box.
- **Line tool** Use this tool to draw lines. Hold down SHIFT as you draw to create lines that are perfectly horizontal, vertical, or at 45 degrees.

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- **Pen tool** Use this tool to draw curved lines. The pen tool draws Bezier curveswhich are curved lines with selection handles that you can use to control the curve.
- **Oval tool** Use this tool to draw oval objects. Hold down SHIFT to draw perfect circles.
- **Pencil tool** Use this line to draw individual points or lines that follow an irregular path.
- Free Transform tool Use this tool to modify the color of a line.
- **Ink Bottle tool** Use this tool to add or modify the color of a line.
- **Eyedropper tool** Use this tool to select a color from an object so that you can match the same color in your drawings.
- **Hand tool** Use this tool to drag the stage (and all objects) around. This will be most useful if you have zoomed in so much that you cannot see the entire stage and you want to work in a different area of the stage.
- **Stroke Color** Click this icon to open the stroke color selector pane so that you can choose a color for drawing strokes (lines).
- **Fill Color** Click this icon to open the fill color selector pane. This enables you to select a fill color or gradient fill for the insides of drawn objects.
- **Default Colors** Click this icon to set the stroke color to black and the fill color to white.
- No Color Click here to change the current stroke or fill color-depending on which of he two is currently selected-to none. You may not be able to select this in some instances where it makes no sense-such as settings the stroke color to none when you are drawing a line rather than a filled object.
- **Option pane** Many of the tools have optional settings that appear in the Options pane of the toolbox. To see what a option does, hold your mouse pointer over the option icon briefly until a tool tip appears next to the mouse pointer.
- **Subselect tool** Use this too to modify lines that you drew with the Pen tool.
- **Lasso tool** Use this tool to drag an irregular selection area. This selects any object that are within the area.
- **Text tool** Use this tool to add a text box. Click once to create a text box that can expand horizontally, or drag to create a text box that has a fixed width.

- **Rectangle tool** Use this tool to draw rectangles. Hold down SHIFT to draw perfect squares. Depending on the options you choose, the rectangle may have either square or rounded corners.
- **Brush tool** Use this tool to draw freehand brush stokes. This tool has a number of options that control the effect that is created by using it.
- **Fill transform tool** Use this tool to add or modify the fill color or gradient fill inside an object.
- **Eraser tool** Use this tool to erase areas of a drawing.
- Zoom tool Use this tool to zoom in or out on a drawing.
- **Swap colors** Click this icon to swap the fill and stroke colors.

If you find that you have made a mistake, select Edit | Undo or press CTRL-Z immediately to undo the error. Some actions cannot be undone, but most things that you might do with the tools in the Flash toolbox can be undone.

In most cases, a tool remains selected after you have used it once so that you can reuse the same tool, but this is not always the case. Get in the habit of taking a quick glance at the toolbox to see what is selected, and you will find yourself needing to rely upon the Edit | Undo command a whole lot less often!

The Flash drawing tools create vector images rather than bitmap ones. This is important to you for a number of reasons. Vector drawings generally take far less file space, so your movies load faster and run a bit more smoothly. In addition, objects that are drawn as vector images can be scaled up or down freely without losing quality.

Because the Flash drawing tools create vector images, you may notice that Flash sometimes "cleans up" the lines that you draw. When it does this, it is attempting to simplify the lines so that they have fewer curves because this takes less memory.

The Panels

Flash makes extensive use of panels. These are very similar to the dialog boxes that you have no doubt used in many other programs, but there are some differences. For example, panels do not have OK or Close buttons. That's because a panel does not need to be closed in order to apply any selections that you may have made in it.

It's not really important that you study the purpose of each panel in detail at this point. As you progress through the modules, you will become familiar with the panels as you need to use them.

Project 1: Creating a simple Animation

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One of the best ways to get a feel for how Flash helps you create animations is to go ahead and give it a try yourself. It really isn't necessary to get real fancy with this first project, but at least you will get a chance to get your feet wet.

In this case, you will create a simple Flash movie that has a box that moves from one corner of the stage to another corner. Although this is a very simple animation, it does provide you with the basics that you will use later as you create more complex movies.

Step-by-Step

- 1. Make certain that you have Flash open and that there is nothing on the stage. If necessary, select File | New from the Flash menu to open a new, blank movie.
- 2. Click the Rectangle tool in the toolbox so that this tool is selected.
- 3. Near the lower-left corner of the stage, draw a small rectangle.
- 4. Click the Arrow tool to select it.
- **5.** Double-click the rectangle you just drew so that both the fill and the stroke are selected. You may find it easier to simply draw a selection box that surrounds the entire rectangle.
- **6.** Select the Modify | Group command (or press CTRL-G). The object needs to be grouped in order to have a motion tween applied.
- 7. Click frame 24 in the timeline to select the frame. You can tell when the frame is selected because the frame will then change to dark blue. The choice of frame 24 is arbitrary. In this case, we want the animation to last for 2 seconds, and at the default frame rate of 12 frames per second, frame 24 will produce the desired result.
- **8.** With frame 24 still selected, choose Insert | keyframe from the Flash menu to add a keyframe to frame 24.
- **9.** Drag the rectangle from the lower-left corner to the upper-right corner of the stage. This will be where the rectangle finishes its movement.
- **10.** Click the timeline between frames 1 and 24 to select all of the frames in that range. When the frames are selected, the frames will turn back.
- **11.** Select insert | Create Motion Tween from the menu. This will add a solid arrow that points from frame 1 to frame 24 in the timeline.
- **12.** Select Control | Test Movie to try out your animations. Your rectangle will move from the lower left to the upper right of the stage and then jump back and start again.

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13. Click the lower close button to close the Flash Player and return to the Flash development environment.

Project Summary

Believe it or not, you have just created your first Flash movie! For reference, your movie should look something like this. A file of the finished project can be downloaded from the McGraw-Hill/Osborne Web site at www.osborne.com (along with oter files throughout the rest of this book).

Diagram-23

LEARNING THE FLASH TOOLBOX

When you create a movie using Flash, most of the objects in your movie are likely to be ones that you have drawn using the various tools in the Flash toolbox. Most of these tools are relatively easy to understand and use; but, if you want to get the best results from your efforts, it is important to know exactly what to expect from each of the tools. In this module, you will learn how to get the results you want from those tools so that you can concentrate on producing the best possible movie.

Learning the Toolbox

The Flash toolbox holds all of the tools that you use to draw objects within Flash. As this shows, the toolbox is divided into four different areas.

Diagram-26

For most purposes, of course, you will make extensive use of the drawing tools area of the toolbox. This does not mean, however, that the rest of the toolbox is just taking up space. Each of the toolbox areas serves a very useful purpose.

Selecting the Tools

The Flash toolbox is really intended to be used with the mouse. That is, you simply click the tool that you want to use in the toolbox, and this selects the tool. The currently selected tool has a depressed appearance as though it were pushed in. When you move the mouse over a tool, the tool's button looks as though it were above the surface of the toolbox. In addition, a tool tip appears briefly as you move the mouse over a tool.

Diagram-27

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Even though the toolbox is primarily designed for use with the mouse, you can use keyboard commands to select the tools. Table 2-1 lists the keyboard shortcuts that you can use to select each of the tools.

Selecting Tool Options

When you select certain tools from the toolbox, various items may appear in the options pane. In fact, half of the tools have options that you can use to modify how the tool functions. For those tools that have options, you simply select the option that you want to use with the tool.

In some cases, the options are toggles. That is, you can click the option icon to turn the option on or off. If an option icon is depressed, that means that the option is selected. Some tools have multiple options that you can select in combination with each other.

Tool	Keyboard Shortcut	
Arrow tool	V	
Line tool	Ν	
Pen tool	Р	
Oval tool	0	
Pencil tool	Y	
Free Transform tool	Q	
Ink Bottle tool	S	
Eyedropper tool	Ι	
Hand tool	Н	
Subselect tool	А	
Lasso tool	L	
Text tool	Т	
Rectangle tool	R	
Brush tool	В	
Fill Transform tool	F	
Paint Bucket tool	К	
Eraser tool	E	

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Zoom tool

M or Z

You will see several different types of options in the options pane. For example, the options for the brush tools shown here are of three different types. Clicking the icon at the top displays a list of choices. Clicking the arrow to the right of one of the boxes in the middle displays different sizes and shapes that you can choose. The bottom icon is a simple toogle that can be either on or off.

Diagram-29

We will look at the individual tool options as we examine each tool in detail in the next section.

Using the Tools

To create a drawing, you begin by selecting the appropriate tool from the toolbox. Next, you choose the options from the options pane. Let's take a look at each of the drawing tools to see how each of them works.

Drawing with the Line Tool

The Line tool draws straight lines as you hold down the mouse buttons and drag the mouse from the starting point to the ending point of the line. When you draw with the Line tool, Flash draws the line using the currently selected stroke color.

If you want the line to be perfectly horizontal, vertical, or at a 45-degree angle, holds down the SHIFT key as you draw the line. As you hold down SHIFT, the line will snap to the 45-degree angle that is closest to the mouse pointer. That is, the lien can be ar 0 degrees, 45 degrees, 90 degrees, 135 degrees, and so on. If you do not hold down SHIFT, the line will simply extend from the starting point of the drag to the current mouse pointer position.

Drawing with the Rectangle Tool

You use the Rectangle tool to draw rectangular-objects that have two vertical and two horizontal sides. The rectangles can have square or rounded corners, depending on the settings you choose.

When you select the Rectangle tool, the options pane displays the Round Rectangle Radius icon. This option enables you to create rectangles with rounded corners rather than square ones. When you click this icon, Flash displays the Rectangle Settings dialog box shown next. You can enter a value in the text box, to specify the amount of rounding you want. Specify 0 for square corners, or a number up to 999 for round ones. You can also use the up and down arrows while you are drawing with the Rectangle too to change the roundness of the corners.

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Diagram-33

To draw a rectangle with equal-length horizontal and vertical slides, hold down SHIFT as you draw the rectangle. If you have set the corner rounding to 0, this will produce a perfect square.

When you draw a rectangle, the lines around the rectangle are separate from the fill. Depending on the corner rounding setting, there may be four, six, or eight separate line segments around a rectangle:

- There will be four line segments if the corners of the rectangle are square.
- There will be six line segments if the rounding value is very high and the opposite sides of the rectangle are too close to allow for a straight line between two corners.
- There will be eight line segments for most rectangles with rounded corners because each corner will have a curved line segment and each side will normally have a straight line segment.

The reason the number of line segments around a rectangle is significant relates directly to how those segments act when you select the rectangle objects. If you click once inside the rectangle, you will select the fill without selecting any of the lines. If you double-click inside the rectangle, you will select the entire rectangle, including any lines that surround it. But if you click one of the line segments, you will select only that one segment. For example, here I have selected three of the eight line segments around this rectangle and dragged them away from the edges of the rectangle.

Diagram-34

Drawing with the Oval Tool

The Oval tool draws objects that are either ellipses or circles, depending on how you use the tool. As with the other drawing tools, you draw with the Oval tool by dragging the mouse pointer from the starting point to the ending point. As you drag, Flash displays an outline view that shows where the object will appear.

Drawing an ellipse or a circle can be little confusing at first. The reason for this is that the points where you begin and end the drag are not actually on the resulting ellipse or circle. Rather, the starting and ending drag points are at the corners of the bounding box. This is a normally invisible box that extends to the bounds- the outer edges- of a drawn objects. All objects you draw in Flash have a bounding box, but you normally aren't aware of the bounding box because it doesn't appear on the screen unless you make a special effort to display it.

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To get a better feel for how the bounding box relates to an ellipse or a circle, try this exercise:

- 1. Select the Oval tool and draw a fairly large ellipse on the stage. You will want this ellipse to extend almost to the edges of the stage with just a small white space around each side.
- 2. Select the Arrow tool and draw a selection box around the entire ellipse so that both the fill and the stroke are selected.
- 3. Use the modify | Group command (or CTRL-G) to group the fill and the stroke. Doing so will display the bounding box as shown here (whenever a grouped objects is selected, the bounding box appears).

Diagram-35

- 4. Select the Oval tool again (you may also want to select a different fill color to make the end result stand out a bit more clearly).
- 5. Carefully place the mouse pointer over one of the corners of the bounding box, and then drag the mouse pointer to the bounding box corner that is diagonal from the corner where you started. Notice how the new ellipse outline exactly matches the existing ellipse. This clearly demonstrates how the bounding box is related to the ellipse.

Adding Text with the Text Tool

Text is often an important part of any Web site. Flash provides the Text tool that you can use to add text to your movies. Text can be stand-alone, or it may be soothing that you add to another object.

There are two different ways to use the Text tool:

- If you select the Text tool and then simply click where you want the text to begin, Flash creates a text box that initially is one character wide. As you type, the text box expands horizontally to fit whatever text you add. Unless you press ENTER, all of the text will appear on a single line that may extend well past the right edge of the stage. This type of text box is easy to identify by the small circle in the upper-right corner of the text box.
- If you drag out a text box rather than simply clicking, Flash creates a text box with a fixed width. When you add text to this type of text box, words wrap to the next line if they cannot fit on the current line. This type of e\text box expands downward

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to accommodate additional lines of text as necessary. You can indentify this type of text box by the small square in the upper-right corner of the text box.

When you are creating text for use in your Flash movies, it is important to remember that Flash does not check the spelling of your text. If you misspell a word, Flash won't provide you with any clues to let you know that something is incorrect. One effective way to avoid this type of often very visible error is to create your text in your word processor and check the spelling there. Once you are certain that you haven't made any errors, you can use the Edit| Copy command in your word processor and Edit | Paste in Flash to transfer the text into your movie.

Flash uses the current text option settings whenever you add a new text box to the current movie. That is, if you used the properties panel to select a different type size or font, Flash will use that same font and type size for subsequent text boxes until you make another change in these settings. You will learn more about the panels in Module 3.

Drawing with the Pencil Tool

The Pencil tool draws any shape of line that you want. Unlike the Line tool or the Pen tool, the Pencil tool follows whatever path you want- no matter how crooked it might be. This is the tool that you will want to use to add small details to objects when the other drawing tools seem just a little too confining.

When you select the Pencil tool, you will have three optional settings for how the tool functions, as shown here.

Diagram-38

These three options are

- **Straighten** When you select this mode, Flash converts the lines you draw into connected straight line segments.
- Smooth When you select this mode, Flash converts your lines into smooth curves.
- **Ink** In this mode, Flash applies the least amount of smoothing to the line so that it remains fairly close to what you actually drew.

The next illustration shows an example of each pencil tool mode option. In each case, I drew approximately the same line, and Flash applied the smoothing as soon as I finished drawing the line.

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Drawing-39

It is very important that you understand that Flash applies the current settings from the Stroke panel to all lines that you draw, no matter which tool you are using. If you have selected settings in the Stroke panel for use with the Line tool or the Pen tool, those same settings will also apply to the Pencil tool.

Drawing with the Brush Tool

The Brush tool acts like a paintbrush. With this tool, you can draw any type of objects that you want. The Brush tool uses the fill color selection, and this means that you can paint with gradient fills if you want.

You can choose any of five different paintings modes when you use the Brush tool. These include the following:

- **Paint Normal** Choose this mode to simply paint wherever you drag the Brush tool.
- **Paint Fills** In this mode, the Brush tool paints only when it is over the fill of an object. The lines are untouched.
- **Paint Behind** Use this mode when you want to paint the background while leaving any objects untouched.
- **Paint Selection** When you choose this mode, the Brush tool paints only objects that are selected.
- **Paint Inside** This mode paints inside the first object that you click with the Brush tool but leaves other areas untouched.

In addition to choosing the painting mode for the Brush tool, you can select the brush size and brush shape form the drop-down boxes. Both of these boxes offer a wide variety of choice that should suit all of your needs.

The fourth Brush tool option deserves some special attention. The Lock Fill option is a toggle, so the only choices are on or off. This option serves a useful purpose only if you are using a gradient fill.

When the Lock Fill option is on, the first place that you begin painting with the Brush tool becomes the anchor for all subsequent areas that you paint with the Brush tool. That is, as you paint additional areas, the fill continues as if the two areas were connected, rather than restarting the fill in the new area. You may, however, find the Lock Fill option a bit hard to use because it begins the fill at the last place you painted when you turned on the

option. This may not be what you want in all cases. I strongly recommend that you practice with this option until you become comfortable with the way it is working.

First, draw some rectangles or circles, and then select the Brush tool. Use the fill color selector to choose one of the gradient fills. Finally, try painting with the Lock Fill option on and with it off.

Drawing with the Pen Tool

The pen tool enables you to draw smooth curved lines. The name for this type of line is a Bezier curve. When you draw with the Pen tool, as shown here, each point on the curve has both an anchor position (the place where you click) and a handle that you drag to produce the curve.

Diagram-41

Creating a smooth curve in the exact shape you want can be a tricky proposition. Each time you click and drag, you are creating both a direction and a force vector for the curve. The further away from the initial click point that you drag the handle, the stronger the force vector that is produced at the initial click point. Stronger force vectors make the line (on the opposite side of the click point) stay closer to the departure angle for a longer distance. By moving the handle around and away from the click point, you can shape the curve just the way you want.

When you are drawing with the Pen tool, you can create a closed shape by clicking the initial point on the line. When you do, Flash creates a smooth curve to that point from the last point on the curve. If you have selected a fill color or gradient, Flash also fills the shape with that color or gradient.

It can be difficult to get exactly the effect you want with the Pen tool, but Flash offers another tool that is designed specifically for modifying curves. The Subselect tool works along with the Pen tool to enable you to modify curves that you have drawn with the Pen tool. When you click the Subselect tool, you can click any of the points on the curve (these are the places where you clicked the Pen tool and are identifiable by a small box that appears on the curve at each point) and then drag the point or handles to modify the curve.

Adding Fills

A fill is the color or gradient that fills the inside of closed objects. When you use the Pen, Oval, or Rectangle tool to create an object that is completely surrounded by lines, Flash automatically fills the objects with whatever fill is currently selected.

To choose a fill, you click the fill selector to display the selector pane shown next. When you do, the mouse pointer becomes an eyedropper that you can use to select a color or gradient from the selector pane or from almost anywhere on the screen.

Diagram-43

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You can also change the current fill in an object or add a fill to an unfilled object by clicking the paint Bucket tool. When you do, Flash fills any objects you click with the new fill. You can also use the Ink Bottle tool to change the color of any lines you click to the current stroke color.

Another way to change the fill or the stroke is to click the Dropper tool. This tool picks up the color of the next object that you click, and then opens the paint Bucket tool or the Ink Bottle tool-depending on whether you clicked a fill or a stroke with the Dropper tool.

In addition to using a solid color or gradient fill, you can also use a bitmap fill. This is a fill that you create by importing a bitmap image and then using the Modify| Break Apart command before you click the bitmap image with the Dropper tool. You will learn more about using imported bitmap images in Module 9.

When you click the Arrow tool, you will notice that this tool has several different mouse pointers associated with it. This shows you how those pointers change for different purposes.

Diagram-46

Drag to create selection box

Reshape a line or curve

Move selection

Move a corner

You can use any of three methods to select objects with the Arrow tool:

- Drag a selection box around the objects that you want to select. Everything within the selection box will be selected.
- Click an object to select the item you clicked. If you click a line, the current line segment will be selected. If you click a fill, the fill will be selected.
- Double-click an object to select both the fill and any lines that outline the object.

When the Arrow tool pointer shows a curved line, you can use the Arrow tool to reshape the line or curve. To do so, point to the line or curve, hold down the mouse button,

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and drag the line or curve. Flash will automatically adjust the fill if you are dragging one of the outlines of a filled object.

If the Arrow tool pointer displays a four-headed arrow, you can drag the currently selected objects. Simply hold down the mouse button and drag the objects to their new locations. Remember, though, that if multiple objects are selected, all of them will move-not just the object you are pointing to.

Finally, if the Arrow tool pointer shows a line with a 90-degree corner, you can use the tool to drag a corner point to a new location. This will also reshape the lines that are attached to the corner.

Selecting with the Lasso Tool

As useful as the Arrow tool may be, it is not always the most convenient tool if you want to make a selection of several objects out of a group, or if you wants to select an irregular area of an object. For example, if you have a bottle on the stage and want to create with the Arrow tool. For this more freeform approach to making selections, the Lasso tool may be a better option.

The Lasso tool functions by allowing you to draw an irregular selection area around or through objects. When you complete the selection drag, everything that is inside the area you dragged is selected. As the following illustration shows, the selection does not necessarily have to include the whole object (the selected area is the area with the crosshatch effect).

Diagram-48

Another use for the Lasso tool is to select a number of objects when you want only some of the objects in an area and it would be impossible to select them by dragging a selection box using the Arrow tool. Of course, you might be able to use the double-click method to select tightly spaced objects, but the Lasso tool offers another option.

Learning the Flash Panels

Virtually all of the objects you create for use in your Flash movies have a number of different optional settings. This wide variety of options wouldn't be very useful without a means of selecting and controlling the options. In this module, you will learn about the means that you use for this purpose in Flash-the panels.

Understanding the Panels

Virtually all computer programs have some means for the user to interact with the program. Typically, these include such things as menus, toolbars, and dialog boxes. Depending on the program and the function it serves, these options are often sufficient to

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fulfill the user's needs. Sometimes, however, these tools simply are inadequate for the task at hand and something else is needed. In Flash, that something else is the panel, the subject of this module.

What Are Panels?

You're probably wondering just what the panel is, anyway. In effect, a panel is effectively what is known as a nonmodal dialog box. That is, a panel can be thought of as a dialog box that does not need to be closed. When you make changes in one for the Flash panels, those changes are applied immediately without closing the panel.

Because the panel will often remain open while you were working, Flash makes it very easy for you to access the panels. You can open any of the panels by selecting the Window menu and then choosing the panel that you want from the menu as shown next.

Diagram-57

As the illustration shows, panels that are already open are shown with a check mark in the panel menu. In this case, Tool and Timeline are open.

Locating the Correct Panel

The Flash panels are extremely useful, but only if you know which panel you need to use to accomplish your goal. In order to help you know which panel to choose, I will present a brief introduction to each of the panels.

Properties Panel

The properties panel, shown next, enables you to select the properties for whatever happens to be selected. Here, the Text tool is selected, so the Properties panel enables you to select the properties for any text that you add to your movies. Many of the options that you see here are also available in the Text menu.

Diagram-58

You can make selections in the Properties panel before you add text, or you can use this panel to modify existing text. If you want to modify the properties of existing text, you must select the text before making changes in the properties panel.

When you first add a text box to your movie using the Text tool, Flash creates the text box as a static text box-one that holds unchanging text. If you want to be able to display the contents of a variable, such as a game score, you must change the text box to a dynamic text box. If on the other hand, you want to obtain user input, you must change the text box into an input text box.

The properties panel enables you to choose whether a text box displays static text, whether the text can change as your movie plays, and whether the box can be used to accept user input. In addition, this panel enables you to assign variables to text boxes, as well as control the visual settings for text boxes.

Let's take a quick look at some of the other ways you can use the properties panel by selecting different objects or tools.

Modifying instances You can also use the properties panel, shown here, to modify symbol instances. Symbols include objects such as buttons, movie clips, and imported graphics. Symbols are discussed in Module 8.

Diagram-59

Symbols are an important feature in Flash movies. Symbols can be reused many times in a movie without saving individual copies of the symbol. This results in tremendous savings in the size of your published movie files.

Modifying Strokes and Fills The properties panel, as shown here, can enable you to select the style, width, and color for lines (strokes), as well as the fill color for objects. Changes you make affect new lines that you draw or lines that are selected when you make changes in the panel.

Diagram-59

By default, the stroke settings in the properties panel are used for lines you draw with the Line tool and the pen tool, as well as for the outlines of objects you create using the Oval tool and the Rectangle tool. Keep in mind, however, that the outlines for ovals and rectangles can be turned off by clicking the No color buttons in the colors area of the Flash toolbox.

Modifying Frame Properties You can also use the properties panel, shown next, to apply and modify tweens-animations-to frames in the timeline. This panel also enables you to add frame labels, which can be used along with ActionScript programming to control the flow in your movies.

Diagram-60

The properties panel, although very important, is not the only Flash panel that you will use. Let's take a look at some other panels you will find useful.

Align Panel

The Align panel, shown here, is used to control the size, distribution, alignment, and spacing of objects on the stage. This panel, like most Flash panels, affects only those objects that are selected when you click one of the buttons in the panel.

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Diagram-61

Each of the buttons in the Align panel has an associated tool tip. This means that you can easily determine the purpose of each button by simply allowing the mouse pointer to hover briefly over the button.

Color Mixer Panel

You can use the Color Mixer panel, shown here, to create your own colors for use both in strokes and in dills. When you create a color in the Color Mixer panel, that color becomes the current selection in either the stroke color or fill color selector, so it will be used in new objects that you create.

Diagram-62

Color Swatches Panel

The Color Swatches panel, shown here, enables you to select colors, as well as choose the color palette that will be used in your Flash movies. This panel is a near duplicate of the color selectors, but it also offers a number of menu selections that you can access by opening its menu.

Diagram-63

Using color on Web sites can be somewhat problematic. Your carefully selected colors may not always render precisely on a visitor's monitor, so you may find that subtle color variations are not always very effective. There are many reasons for this, but ultimately they boil down to one thing- you should not depend on visitors being able to see colors accurately. For this reason, many Flash developers use fairly broad color changes between different objects in their movies. Highly contrasting colors offer a better chance of being easily seen on the broad range of devices that are used to browse the Internet.

Info Panel

The Info panel, shown next, provides you with information about a selected object. You can also use this panel to set an object's width, height, or position to precise values by entering those values directly into the text boxes in the info panel.

Diagram-64

The size and position measurements that are used in the Info panel are in pixels. Position measurements are relative to the upper-left corner of the stage.

Scene Panel

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The Scene panel, shown here, helps you work with multiple scenes in a movie. Using this panel, you can select the scene you want as active, add new scenes, or delete scenes you no longer need.

Diagram-64

There are many different ways to organize Flash movies. Some Flash developers prefer to work with a single timeline(or scene), whereas others prefer to break the action down into multiple scenes. The method you choose is primarily a matter of personal preference. Once you publish your movie, Flash flattens the movie into a one-layer, single-scene production.

Transform panel

The transform panel, shown here, enables you to precisely scale, rotate, or skew an object. The object must be selected before you can enter any settings in this panel.

Diagram-65

It is possible to both scale and rotate objects without using the Transform panel. You can right-click an object and select either Scale or Rotate and Skew from the pop-up menu or you can use the Modify| Transform menu options. In either case, Flash displays a series of handles around the object that you can drag with the mouse. There is, however, an advantage to using the Transform panel. When you use the Transform panel, you can specify precise values that you want to use. It is much harder to make these transformations with very good precision when you are dragging the handles with the mouse.

Actions Panel

The Actions panel, shown here, is used for adding Action Script code to frames in the timeline or to objects. ActionScript is the programming language that you use to automate actions within Flash. You will learn more about ActionScript programming beginning in Module 12.

Diagram-66

The Actions panel has two different modes. If a key frame in the timeline is selected, the Actions panel title is Actions- Frame. If an object that can have ActionScript code attached is selected, the Actions panel title is Actions- Object. When you are using the Actions panel, it is often important to make note of which Actions panel mode is active. This can prevent you from accidentally attempting to add your Action Script code to the wrong place.

Movie Explorer Panel

The Movie Explorer panel, shown here, enables you to view the properties and relationships between the different elements in your movie. Using this panel, you can see
which objects are contained within other objects, and you can see any ActionScript code that is attached to any of the objects or frames.

Diagram-67

You are most likely to use the Movie Explorer panel once you have created a large and complex movie. It can be difficult to remember how everything in a large project fits together, and the Movie Explorer panel provides you with a method for examining all of the relationships visually.

Reference Panel

The Reference panel, shown here, provides information about ActionScript language elements. When you begin adding ActionScript code to your Flash movies, you will likely find the reference panel to be an invaluable tool.

Diagram-68

Output Window

The output window is not a panel. Rather, it is a window you can choose to display when you are testing a Flash movie to determine how various elements of an ActionScript program are functioning.

Accessibility Panel

The Accessibility panel, shown next, enables you to make your Flash movies accessible to people who depend on screen reader software to navigate Web sites. The accessibility options make it possible for the screen reader software to read aloud a description of many of the elements of your movies.

Diagram-69

Components Panel

The Components panel, shown next, includes a number of user interface elements that you can add to your movies and control with a small amount of ActionScript programming. The components each have a number of very sophisticated capabilities built in so that it is far easier to create highly interactive Flash movies simply.

Diagram-69

Closely related to the components panel is the component parameters panel. This panel enables you to set various properties of components you have added to your movies. Note, however, that the properties panel actually provides more options for working with components.

Using the Panels

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Now that you have a good idea about which of the Flash panels you need to use in any situation, you need to understand a little more about how the panels actually work.

The Flash panels are typically quite easy to use. Actually, they do work much like the dialog boxes that you are used to using. That is, when you open a panel, you will see familiar objects such as text boxes, list boxes, and option buttons. All of these function nearly identically to the way they function in a standard dialog box.

One of the important differences between the Flash panels and the dialog boxes is that you can leave the panels open while you continue to work on your movie. This makes it easy for you to use the same panel again. You don't constantly have to return to the Flash menu in order to reopen a panel. Rather, you use the panel to make some changes, and then let it sit in an out-of-the-way place on the screen.

Selecting in Panels

Because the panels can remain open on your desktop, you need to be aware of what is selected before you make any changes in the panels. Remember, objects that are selected can be affected by those changes.

The Flash panels are intended for use with your mouse. Some of the standard keyboard actions that you use with dialog boxes simply won't work in the panels. For example, if you attempt to use the TAB key to move between options in a panel, you will find that pressing the TAB key hides the panels. Pressing the TAB key a second time redisplays the panel.

Therefore, to make a selection in a panel, you click that selection with your mouse. Some options have a down arrow at the right edge of the option. If the option is a list box, clicking this down arrow displays a list of items from which you can choose. If the option is a text box, clicking the down arrow displays a slider that you can drag up or down to enter values in the text box.

Of course, sometimes when you select one option, this affects which options are available in the panel. For example, in the Text Options panel, choosing the type of text box determines which other options appear in the panel. For this reason, the panels may not always appear identical to the illustrations that you have seen in this module.

Applying Panel Selections

When you want to use one of the Flash panels to make changes to an object, it is important that you understand how those selections are applied. Consider these rules:

• If no objects are selected, and you are able to make changes within a panel, you new selections will apply to future objects that you create. For example, if you change the

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stroke height in the properties panel and then draw a box using the Rectangle tool, the new line width will be used for the offline of that box.

- If an object is selected, any changes you make within the panel typically will be applied to that object. Sometimes, however, the changes are applied only after you press the ENTER key.
- If no objects are selected, and you are unable to make changes within the panel, this means that you must select an object before you will be allowed to make any changes.

Customizing the Panels

The Flash panels are intended to make your development work much easier, but not everyone works quite the same way. Therefore, Macromedia decided to accommodate different work styles by allowing you to customize the panels. Customizing the panels means creating sets of panels that are laid out the way you want.

Creating Panel Sets

As you develop Flash movies, you will no doubt find yourself using certain panels an awful lot. For example, you might use the properties panel, the Align panel, and the Actions panel all the time. You could keep all three panels open, but this might eat up too much valuable space on your desktop. As an alternative, you might memorize the keyboard shortcuts to display certain panels.

A better choice may be to create your own panel set that includes the panels you use most often. Once you have done this, you will have just the panels you want.

Saving Panel Sets

You probably don't want to go to the work of re-creating your customized panel sets each time you use Flash. You can avoid this prospect by saving you panel sets for future use.

To save a custom panel set, you use the Window Save Panel Layout command to display the Save Panel Layout dialog box shown here. After you enter a name for your panel set and click OK, Flash saves your custom panels for later use.

Diagram-73

Displaying the Standard Panels

If you discover that you want to return to the standard Flash panel sets, you will find that it is very easy to do so. This can be especially handy if you share a PC with another Flash user,

because your custom panel set may be a little confusing for someone who was not involved in creating it.

To return to the standard Flash panel layout, select the Window Panel Sets command to display the menu shown here, where you can choose from several different options. When you do, you will also see that the Window Panel sets menu enables you to open any of the custom panel sets you have saved.

Diagram-73

Module 4

Using the Timeline and Layers

One of the primary purposes of Flash is to create animated movies. Any animation- no matter how it is produced- results from displaying a series of images that change with time. In Flash, you use the timeline to control when the images are displayed so that you can achieve the animation effects you want. In this module, you will learn how to make use of the timeline and the closely related timeline layers, which you use to help control the layout of objects and to allow different objects to act independently of each other.

Understanding How the Timeline Works

As humans, we are used to thinking about where objects are in three dimensions. These geometric measurements are very useful for most purposes, but they fall short when you need an additional dimension-time. The time dimension becomes very important when you are creating animated movies in Flash because you need the ability to place objects in different locations over time.

The Flash timeline gives you the ability to control objects in time. By using the timeline, you have the ability to use time the same way you use height, width, or depth. That is, you have an additional dimension that enables you to exercise precise control over the positioning of objects according to how much time has passed.

Although you were introduced to the timeline in Module 1, I'd like to take a moment to refresh your memory about the various parts of the timeline before we continue with the rest of this module.

Diagram-79 Understanding Frames

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Each frame in a Flash movie represents a view of the movie at a particular instant in time during the movie's playback. If you are using the default setting of 12 frames per second, then each frame would normally appear for one twelfth of a second before the movie moves on to the next frame.

Even though each frame represents the view of your movie at one particular instant, this does not mean that you must create the content for each frame individually. Although it would be possible for you to do this, Flash offers some far more efficient alternatives:

- For static content- objects that remain in one position without any changes- Flash can simply display the object in a series of frames without any additional increase in the file size. You only need to add the object to the first frame where you want it to appear and then tell Flash how long you want it to appear, and the rest is automatic. You do so simply by adding the correct number of frames for the length of time the object should appear.
- For objects that move from one place to another, you draw the object in the first frame where it appears in the movie. Then you specify the final frame for the objects movement and the object's position in that frame. Once you have done this, Flash takes over and displays the objects in the intermediate frames without requiring you to draw the object in those frames. This is called a motion tweens.
- For objects that change shape, you again draw the first shape in the first frame where the object appears. Then, in the final frame of the shape change, you draw the new shape. When this is complete, you instruct Flash to create a shape tween to automatically generate all of the intermediate shapes without any additional work on your part.

In reality, allowing Flash to do as much of the work in creating your movies as possible not only makes life easier for you, it also greatly increases efficiency and allows for smaller file sizes.

Learning the Frame Types

Because frames are so important in Flash movies, you might expect that Flash would have many different types of frames for different uses. Fortunately, this is simply not true. Indeed, Flash has only two types of frames- ordinary frames and key frames. The differences and similarities between the two types of frames are pretty easy to understand:

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- During playback, all frames play for the same length of time (unless you have used some Action Scripts code to modify the playback flow).
- You can add items to key frames only. It doesn't matter what you want to add, you can do so only in a key frame.
- Only Flash can add items to ordinary frames. You cannot do anything directly to a frame if it is not a keyframe.

So, what this all boils down to is that you do all of your work in keyframes, and Flash handles all of the other frames. As long as you remember this, working with the frames will be pretty straightforward.

This does not mean, however, that you have no control over frames that are not keyframe. Indeed, as you will learn in the next few section, you can exercise considerable control over those frames- you just cannot work directly in them.

Selecting Frames

There are many different reasons why you select frames. Here are some of them:

- You select frames when you want to add a key frame to the timeline.
- You select a keyframe to add or modify the content of the keyframe.
- You select the frames between keyframes when you want to add or modify a tween.
- You select frames when you want to add, delete, or move frames.

It is important to make certain that you are selecting the correct frame. This is especially true when you start adding layers to the timeline because frames are specific to their layer. For example, the next illustration shows a timeline that contains two layers. As the illustration shows, you can have keyframes in different places on different layers, and selecting frames on one layer has no effect on the other layers.

Diagram-82

In this case, frames 11-17 are selected in the topmost layer. The keyframes that contain content all have a dot, while the black keyframes do not.

The frame selector in the illustration appears with an outline of a box because it is over a series of frames that are selected. Otherwise, the frame selector appears as just an arrow.

When the frame selector has a box, it can move the selected frames by dragging. When the frame selector is an arrow, it selects individual frames.

When you select a frame in the timeline, you are actually selecting both the frame and the layer that contains the frame. For example, here I have selected frame 4 in layer 2. When you select a frame, any changes you make are made only in the selected layer. So, if I have selected frame 4 in layer 2, any object 1 draw will reside on layer 2 (and nowhere else).

If you select a frame that is not a keyframe, it may seem as thought you are being allowed to add content to an ordinary frame that is not a keyframe. In reality, though, when you do this Flash will automatically place the objects in the previous keyframe. So in the case of the illustration where I have selected frame 4 (which is not a keyframe), Flash adds any objects I draw to frame 1.

Adding, Deleting, and Moving Frames

As you work on your Flash movies, you will probably find a need to add, delete, and move frames in the timeline. You might, for example, decide that one animation should finish before another animation begins. To accomplish this, you must make sure that the two animation sequences do not share the same time space on the timeline. If the first animation runs for three seconds -36 frames at the standard frame rate- you would have to start the second animation at some point after frame 36 to prevent overlap.

The insert menu offers several commands that you can use to modify the frames in the timeline. Table 4-1 describes these commands.

When you use any of the Insert menu frame commands, be sure to select the appropriate frames before you issue the command. In particular, make certain that you have selected the

Command	Shortcut	Description			
Frame	F5	Adds one or more ordinary frames at the			
		Insertion point			
Remove Frames	SHIFT-F5	Removes the selected frames from the timeline			
Keyframe	F6	Adds a keyframes that duplicates the contents of			
the previous keyfrar	ne				
Blank Keyframe	k Keyframe F7 Adds a keyframe that does not inherit the				
contents of the previous keyframe					

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Clear Keyframe SHIFT Converts a keyframe into an ordinary frame

Correct layer. Remember, Flash will do what you tell it to do, even if that is not what you wanted it to do.

If you want to move frames in the timeline, you drag the frames with the mouse. You can drag the beginning or the ending key frames to change the length of an animation sequence. To move the entire sequence to a different point of the timeline, click the frames in between the key frames and then drag the sequence.

One very common reason for adding or deleting frames from the timeline is to adjust the length of an animation. You might discover that an animation needs to run for more frames because it appears jerky. This can easily happen if you try to move an object too far in a given number of frames. By lengthening the time that an animation runs, you allow for smaller changes between the individual frames. Smaller changes between frames result in a smoother animation.

Commenting Your Work

Even if you never add any ActionScript programming to your Flash movies, they are effectively still computer programs. As with all computer programs, it can be difficult to understand what is happening in a Flash movie unless you get a bit of extra help. That is where comments come into play. Comments are notes that explain what is going on.

In a Flash movie, you add comments to frames in the timeline. When you have done so, the comments appear in the timeline. Your comments can be fairly simple, but they are still an important way to help make your movies easier to understand.

To add comments to the timeline, follow these steps:

- 1. Select the keyframe where you want to add a comment.
- 2. Open the Properties panel using the Window | Properties command or by pressing CTRL-F3.
- 3. Type your comment in the Label text box (just below where you see "Frame" near the left side of the Properties panel), as shown here. Be sure to place two forward slashes (//) at the beginning of the line to indicate that this is a comment.

Diagram-86

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4. Press ENTER to apply the comment

Comments can, of course, be added only to keyframes. In the timeline, comments will display in full unless another keyframe is encountered before the end of the comment. This is one of the reasons why a separate comment layer can be so useful-keyframes do not have to appear in the same frames on different layers, so you can adjust the keyframe placements in comment layers as needed.

Flash ignores the contents of comments. This means that you can use any characters or punctuation you want in your comments.

Adding Labels for Better Control

In addition to adding comments, you can also add labels to keyframes. Like comments, labels help to make your timelines easier to understand. However, labels also serve another, more important purpose when you start adding ActionScripts programming to your movies. One of the most common ActionScript commands is the gotoAndPlay command. This command is used to control the flow of a movie by moving the playhead to a specific frame, and then playing the movie from that point onward. In its most simple form, the gotoAndPlay command accepts a frame number as an argument as shown here:

gotoAndPlay(20);

In this case, the command moves the playhead to frame 20 and begins playing the movie from that frame forward. Consider what might happen, however, if you were to decide to lengthen an animation that appeared earlier in the timeline. If you added 10 extra frames, the correct starting point for the gotoAndPlay command might be frame 30 rather than frame 20. Unfortunately, Flash would have no way to know this, so it might well try to move the playhead to the wrong frame.

The solution to this problem is to use frame labels rather than frame numbers. If you added the label "AnimationStart" to frame 20, your ActionScript command could look like this:

GotoAndPlay("AnimationStart");

The difference between these two options is an impotant one. If you add frames to the timeline, Flash will move the frame label along with the rest of the frames. Therefore, the AnimationStart label will continue to refer to the correct frame even after the timeline has

been adjusted. Note that when you use a label in an ActionScript statement, you must enclosed the label in quotation marks.

You add a frame label in much the same way as you do a comment. The only real difference is that you do not add the two slashes in the Label text box of the Properties panel when you are adding a frame label. You should avoid using spaces and punctuation in frame labels.

Viewing Your Work with Onion Skins

When you are creating an animation in Flash, it can be difficult to visualize how objects will move between frames. You normally see only a single frame at a time, so you may find it hard to get a good picture of just where an object may go.

The solution to this problem is to use the onion skin vies. This term comes from the traditional hand-drawn animation techniques where objects were drawn on transparent- or onion skin- paper and it was possible to see different frames through the paper. Flash enables you to view the frames of your movie in a similar fashion, as shown here.

Diagram-88

There actually are two onion skin modes. In addition to the standard onion skin view that shows progressively lighter images the further away you get from the current frame, you can also click the Onion Skin Outlines button to view objects as outlines only. You may find that you prefer one or the other of these two modes, but there is no real functional difference between them.

You will likely find it helpful to click the Modify Onion Markers button to display the menus shown here. You can use the options on this menu to control how the onion skin view functions. I suggest experimenting with these options to determine which settings work best for you.

Diagram-89

In addition to using the onion shin view, you may want to use the outline view for specific layers at times. The rightmost column in the layers area of the timeline has a box you can click to toggle between solid and outline view. Unlike when using the onion skin view, you can toggle outline view for specific layer. As this shows, you can then display one layer using the solid onion skin view and another layer using the onion skin outline view.

Diagram-89

Understanding Layers

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Depending on the other drawing programs that you may have used, you may or may not be familiar with the concept of layers. Layers are an important part of the Flash development environment. In the following sections, we will look at why layers are important and how you can make use of them as you create your Flash movies.

As you work with layers in Flash, is important to remember one very significant fact. When you publish a Flash movie, any layers that you have created are flattened into a single layer. As a result, adding extra layers does not increase the size of your published Flash movie file. Therefore, you should feel free to use as many layers as necessary when you are creating a Flash movie.

The Purpose of Layers

One way to think of layers would be to think of clear plastic sheets where you can draw the objects that you will use in your movies. Each plastic sheet-layer-can act independently of all of the others. If you have drawn objects on one layer and want to move them, you are free to do so without affecting the objects on other layers. Layers actually have a number of important uses:

- When you create a tween, all of the objects on the layer containing the tween must move together. If you want to have stationary objects in your movies, they must be placed on layers that do not contain tweens. In addition, if you have different tweens in the movie, these require separate layers.
- If you want to create a movie where objects are visible only on part of the stage, you need to use a special layer known as a mask layer. You might use this type of layer to create the effect of the character walking behind a window, for example.
- When you create a motion tween, the objects you were animating typically move in a straight line. If you want them to follow some other path, you use a special layer known as a guide layer.
- For organizational purposes, most Flash developers add separate layers for comments, for labels, and for any ActionScript code. Doing so makes it much easier to find specific items on the timeline.
- Sometimes, you may want it to appear as though one object were passing in front of another object. By using layers, you can easily achieve this effect.

Adding Layers

You can add layers to the timeline at any time. There's no need for you to add every possible layer when you first begin creating your movie because you can add them as the need arises.

You can use the Flash menu to add layers. The Insert | Layer command adds a new layer immediately above the currently selected layer. You will probably find, however, that it is far easier to simply click the Insert Layer button at the lower-left edge of the timeline.

Naming Layers

When you add layers to the timeline, Flash automatically names them using the not-verydescriptive names of Layer 1, Layer 2, so on. Although there's no requirement for you to rename the layers, the default names certainly give no indication of the purpose of each layer. When you rename the layers, you can use descriptive names that clearly state the purpose of each layer. For example, you might name one layer Background to indicate that it is the background layer. Where you will draw objects that just sit there as the movie plays back. Then, you might name another layer Ball to indicate that this is the layer where an animated ball will appear.

As I noted earlier, it is a good idea to also add layers for things like labels and ActionScript programming. When you do, you will probably want to name these layers with simple names like Labels and Actions. The names are there for your benefit, so you might as well make them something you will easily remember.

Layer Order Significance

As you start adding new layers to your movie, you need to understand how the layer order affects the visibility of objects. In this illustration, I have created a Flash movie that has two layers. The layer in the front is named Car, while the layer in the back is named Background.

Diagram-92

In the timeline, the layers look like this. The Car layer is higher in the list than the Background layer.

Diagram-92

If I move the Background layer higher in the timeline than the Car layer, the objects that are in the Background layer appear to be in front of the objects in the Car layer.

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Diagram-93

Objects that are in layers higher in the timeline always appear to be in front of objects that are in layers lower in the timeline. You may need to rearrange the layers in order to make the objects appear in the correct order. You can do this by simply dragging a layer up or down in the timeline list.

Adding Objects to Layers

Flash has three types of layers. Of these, the Mask and Guide layers have special purposes, but you can use normal layers for any other type of use. That is, you can draw objects on any normal layer, you can add ActionScript programming to any normal layer, and you can add labels or comments.

Earlier in this module, you learned some of the reasons that you would want to use separate layers for different types of objects. You saw, for example, that you can use layers to separate stationery objects from those that movie in an animation. You also learned that the order of the layer can be used to control the visibility of objects.

Using Drawing Layers

Drawings layers are simply normal layers. As you create your Flash movies, it makes sense to use separate layers for all objects that you might want to act independently of each other. That is, you may want to use even more separate drawing layers than you first imagine.

One reason for this is the way that Flash combines objects automatically. Consider this following illustration. In this case, I first drew a rectangle on the stage. Next, I have selected a different fill color and drawn the circle that overlaps the rectangle.

Diagram-94

At this point, I decided that I didn't want the circle. I selected the circle and deleted it. As the following illustration shows, this also removed part of my rectangle. Clearly, I didn't intend for the two objects to interact in that way.

Diagram-94

If I had placed the two objects on different layers, deleting or moving the circle would not have affected the rectangle.

Using Action Layers

I have briefly mentioned ActionScript programming several times. ActionScript is the programming language that you use when you need to add a little extra control to your Flash movies. For example, this shows a small ActionScript program that displays a message in a pop-up window when the movie is test-run.

Diagram-95

When you add ActionScript statements to the timeline, You can add them only to keyframes. By adding a separate layer for your ActionScript actions, you not only gain the flexibility of being able to place those keyframes anywhere in the timeline, but you also make it far easier to quickly locate the frames where you have added some code.

You can, of course, use whatever name you prefer for the layer that contains your ActionScript statements. A convention that many Flash developers follow is to call this layer Actions to make it clear that the layer holds the ActionScript actions.

Mask Layers

Mask layers are one of the two special types of layers you can create in Flash. A mask layer acts as a window onto another layer. When your movie plays, the mask layer controls how much of the masked layer is visible.

To understand how a mask layer works, take a look at this illustration. Here I've added a number of colored balls to the stage.

Diagram-96

Now I have added a mask layer, where I have drawn a rectangle over part of the stage. This rectangle will be the mask that controls what can be seen when the movie is played.

Diagrma-96

Finally, this shows how the stage will look during playback. The only portion of the masked layer that is visible is the area that was under the mask.

Diagrma-97

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When you create a mask layer, the mask layer is associated with the layer immediately below it in the timeline. This is the masked layer- the one that is affected by the mask. The mask layer itself never appears when the movie is played.

Guide Layers

Guide layers are the second of the two special layer types you will find in Flash. Guide layers are used to direct the path of a motion tween when you don't want the animation to follow a straight path. If you don't use a motion guide, the animation will always follow a direct, straight line from the objects position in the initial keyframe to the object's position in the final keyframe.

The next illustration shows an example of a guide layer. In this case, you can see that the ball starts moving at one of the upper corners of the stage and then follows a rather twisted path to the other upper corner of the stage. This sort of path is possible only when you use a motion guide.

Diagram-98

Like mask layers, guide layers do not appear in the published movie. You can use any sort of line as a motion guide.

To create a motion guide, you begin by creating a normal motion tween animation sequence. Then you add a motion guide layer and draw the motion guide path. Finally, you attach the tweened object to the motion guide, and the object will follow the path as it moves. Motion guides are covered in detail in Module 7.

Drawing Objects

Virtually all Flash movies include objects that are down. Learning how to use the drawing tools and create object for your Flash movies is a fundamental part of creating movies. In this module, you will learn to use those tools and create objects. As you will see, creating objects that you can animate is not an overly difficult task, but you do have to understand certain concepts in order to be successful. For example, you will see that grouping objects is an important step both in making objects act independently of each other, and in being able to animate them.

Drawing Lines and Fills

On the surface, drawing objects in Flash is not a whole lot different than drawing objects in many other graphics programs. That is, you select the appropriate drawing tool and then draw objects on the stage. Still, Flash does have some important differences from most other

drawing programs. For one thing, the objects that you draw in Flash are vector- based rather than being bitmap images (this is also true of certain other programs, of course).

Unlike bitmap images, vector graphics are really made up of mathematical description of an object. In contrast, bitmap images are made up of thousands of data points. As a result, vector graphics can be easily be scaled to different sizes without affecting the image quality. This is not true of bitmap images because changing the image size requires interpolating missing or overlapping data points.

One of the consequences of the fact that Flash uses vector graphics is that you end up dealing with lines and fills as complete entities. This is very different from the way that you work in a bitmap graphic editing programs. There, it is typically very difficult to modify an entire line or fill because these are not considered to be individual objects. Don't worry if thisseems a little confusing at this point; you will quickly become quite comfortable with the way you work with objects in Flash.

Selecting Different Strokes

Flash uses the term for what you almost certainly call a line. We will use the two terms interchangeably. Whenever you use the Line tool, the Pen tool, or the Pencil tool, you always create a line. In most cases, you also create a line to outline the object that you are drawing when you use the Oval tool or the Rectangle tool.

No matter which of the drawing tools that you use to draw a line, Flash uses the current selections in the properties panel to draw that line. Therefore, the Properties panel is the place to begin when you want to draw different types of lines. To make these selections, follow these steps:

1. Open the properties panel as shown here using the Window | Properties command or by pressing CTRL-F3.

Diagram-105

- 2. Select one of the tools (such as the Line tool) that draw lines so that the Properties panel will display the stroke options.
- 3. Click the down arrow at the right side of the Stroke Style list box to display all of the available stroke styles, as shown here.

Diagram-105

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- 4. Click the Style that you want to use. Any selections you make will appear in the Stroke preview window at the bottom of the Stroke panel. If you want to create a line that is as thin as possible and never scale up, choose hairline.
- 5. To change the line width, drag the Stroke Height Slider up or down, as shown here. You can also enter a value directly into the Stroke Height text box. The value for the line width must be between 0.1 and 10 points.

Diagram-105

6. If you want to change the color, you can click the stroke color selector.

Once you have made your selections, any new lines that you draw will reflect those changes. It is not necessary for you to close the properties panel unless you find that you need more room on your screen.

You can also modify the style, width, and color of an existing line by selecting the line and then making changes in the properties panel. The new settings that you choose will also apply to any new lines that you draw until you select a different set of options in the properties panel.

Choosing Different Fills

Ovals, rectangles, and other closed objects can be filled with a solid color, a gradient, or even a bitmap fill. Typically, you use the fill color selector to choose the fill for closed objects. However, you can also use the Color Mixer panel, as shown here. To open the Color Mixer panel, use the Window | Color Mixer command or press SHIFT-F9.

Diagram-106

Generally speaking, you should choose the fill that you want to use before you begin drawing an objects. If you want to change the fill in an existing objects, you have a couple of choices. You can select the object and then use the Color Mixer panel to select a new fill. You also can use the Paint Bucket tool to add a different fill to objects.

We will discuss gradient fills shortly. Bitmap fills are discussed in Module'9.

Adding Complex Curves

In Module 2, you learned how to use the Pen tool to draw Bezier curves. These are curved lines that are defined by a series of click points and handles. The Pen tool is supplemented by

the Subselect tool, which enables you to modify the curved lines after you have finished using the pen tool.

The Pen tool and the Subselect tool are certainly powerful, but they can be somewhat tricky to use, and it can take a fair amount of time to achieve the results you want with them. Fortunately, these two tools are not the only options that you can use to create complex curved lines in your Flash drawings.

You can also use the Arrow tool to modify objects. With the Arrow tool, you can move corners, as well as bend lines into quite complex curved shapes. As you will soon learn, the Arrow tool makes it very easy to make major modifications to the Shape of drawn objects.

In addition to using the Subselect and Arrow tools to modify the shape of objects, you also have the option of using the free Transform tool. Although quite similar to the Arrow tool, the Free Transform tool enables you to make a number of modifications with a single tool. You can, for example, scale, rotate, skew, and wrap and objects with the Free Transform tool. It is probably best, however, to learn the basics by using the Arrow tool first and then move on to the Free Transform tool once you are comfortable with those actions.

To use this Arrow tool to add complex curves to a drawn object, follow these steps:

- 1. Draw the objects that you want to use as the basis for your new object. You will be able to make extensive modification to the shape of the objects, so the initial shape is not very critical.
- 2. Click the Arrow tool to select it.
- 3. To modify a corner, move the mouse pointer close to a corner so that the Arrow tool pointer shows a right-angle corner, as shown here.

Diagram-108

4. Drag the corner to a new position, as shown next. If you drag an existing corner onto another corner, Flash will eliminate the corner you were dragging and connect the remaining corners.

Diagram-109

5. To change a line into a curved line, move the mouse pointer close to the line so that the Arrow tool as a curved line, as shown here.

Diagram-109

6. Drag the line into the curved shape you want, as shown next. Notice that you can modify the curve not only by dragging the line, but also by moving the mouse pointer toward or away from a corner.

Diagram-109

As you drag lines with the Arrow tool to reshape them, keep in mind that the corner pints always remain anchored when you are dragging the middle of the line. However, if you drag a corner point, you will reshape both of the lines that are attached to the corner.

Using Colors

One of the most noticeable things that people generally see first when they visit a Web site is the use of colors. Oh, they may not think too much about the colors they are seeing, but a colourful Web site certainly does make an impression.

Actually, the use of color in animations is a very old concept. The Saturday morning cartoons that many of us grew up on certainly used a lot of bright colors to help make things interesting. That makes a lot of sense, really. No one would look at an animated cartoon (any more than they would look at a Flash movie) and mistake it for real life. Because of this, color can be used in an animation in ways it might not be used otherwise. Bright, bold colors can provide a lot of excitement and add to the overall experience.

You can choose colors for each line and fill that you add to a drawing. Flash has two color selectors – one for the stroke color and one for the fill color. In certain circumstances, you can also choose to not use a color:

- When you use the Oval tool or the Rectangle tool, you can click the No Color button when either the stroke color or the fill color selector is active. Doing so places a red slash across the selected color selector to indicate that no color will be used.
- When you use the Pen tool, you can click the No color button only if the fill color selector is active. This prevents Flash from filling the objects when you close the shape.
- You cannot use the No Color button with the Line tool, the Pencil tool, or the Brush tool. These tools draw with only one color, and it cannot be turned off.

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Choosing Colors

To choose a stroke or fill color, you begin by clicking the color selector you want in the Colors area of the Flash toolbox. This displays the color selector pane, as shown here. In this case, I have opened the fill color selector, but the stroke color selector is nearly identical-except that you cannot choose a gradient fill for the stroke color.

Diagram-111

When you open a color selector, the mouse pointer changes into an eyedropper. As you move the mouse around, the color that is under the tip of the eyedropper appears in the current color selection box. In addition, the hexadecimal value of the current color selection appears in the box just to the right of the current color selection box. Although this value has little meaning to you right now, it will be important later when you want to control colors of objects using Action Scripts programming.

You are not limited to selecting colors from the color selector pane. If you move the mouse pointer out of the color selector pane, you can select almost any color from any objects on the screen. In fact, this is a good way to make sure that you match an existing color.

You also can use custom colors by clicking the custom color button in the upper-right corner of the color selector pane. This will display the color dialog box, as shown here.

Diagram-112

One advantage to using the Color dialog box is that you have the option of specifying an exact color using precise values. This might be very handy if you need to match a color such as the color of a corporate logo. After you select the custom color, click the Add to Custom Colors button to make that color the current color selections. When you close the color dialog box, you can then use the custom color in your drawings.

Adding Gradients

Gradients are a special type of color fill that you can use. A gradient is a fill that blends two or more colors. A gradient always starts at one color and makes a smooth transition to another color.

There are two types of gradients:

- A *linear* gradient changes colors in a straight line form one side of the fill to the other side.
- A *radial* gradient changes colors as the distance changes from the center point of the fill.

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You're free to use whichever type of gradient you prefer. That is, you do not have to use linear gradients in rectangular objects, nor do you have to use radial gradients in round objects.

Adding a gradient fill works just like adding a solid color fill. You simply choose the gradient fill you want to use, and Flash fills any new, closed objects with that gradient fill. This shows an example of using a gradient fill.

Diagram-113

Creating Your Own Gradients

Using gradient fills is even more fun when you create your own gradients. You can create both linear and radial gradients to suit your needs. To create a custom gradient, follow these steps:

1. Use the Window |Color Mixer command (SFIHT-F9) to open the color mixer panel, as shown here.

Diagram-114

- 2. Select either Linear Gradient or Radial Gradient from the Fill Style list box.
- 3. Click one of the pointers below the Edit Gradient Range box to select it. The selected pointer has a solid black triangle on top. While the other pointers show a gray triangle.
- 4. Click the Gradient color selector to choose the color for the selected pointer.
- 5. To add a new pointer, click below the Edit Gradient Range box.
- 6. To move a color selection, drag it right or left as necessary.
- 7. To remove a pointer, drag it off the Color Mixer panel.
- 8. Click the Save button in the lower-right corner of the Color Mixer panel to save the custom gradient. This will place the new gradient as one of the selections in the fill color selector pane.

Warping and Bending Gradients

By default, gradient fills are centered in the objects being filled, and the gradient is placed so that is sits at a normal horizontal orientation. There is no reason, however, why you cannot warp and bend the gradients to suite your needs. Often a gradient will produce a far better effect once it has been modified somewhat.

Both linear and radial gradients can be modifies. Radial gradients have one additional adjustment that is lacking with linear gradients, but otherwise the procedure is identical. To modify a gradient fill that you have applied to an object, follow these steps:

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- 1. Select the Fill Transform tool from the Flash toolbox.
- **2.** Click the filled objects that you want to modify to display the transform fill handles, as shown here.

Diagram-116

- 3. To move the center of the fill, drag the handle in the center of the circle.
- 4. To wrap the fill in a horizontal direction, drag the square handle.
- **5.** To change the overall diameter of the gradient fill, drag the middle handle (this handle is missing when you are modifying a linear gradient).
- 6. To rotate the fill, drag the rotation handle.

The next illustration shows an example of how the gradient fill might appear after you have made a number of modifications using the carious handles to warp and bend the fill.

Diagram-116

Controlling Alpha Settings

The alpha setting isn't strictly a color setting, but it is somewhat related. Alpha is the transparency property for an object. An object that has an alpha setting of 100 is completely opaque, whereas an alpha setting of 0 makes the object totally transparent (and therefore invisible). Settings between 0 and 100 results in partial transparency, as shown in this example, where the four boxes are set at 100%, 75%, 50% and 25% respectively. The text that shows the alpha setting is on a separate layer behind the boxes. Notice that you cannot even see the text behind the box with a 100% alpha setting.

Diagram-117

To set an object's alpha value, follow these steps:

- 1. Click the Arrow tool in the Flash toolbox to select it.
- 2. Click the object whose alpha setting you want to adjust so that the object is selected.
- 3. Open the Color Mixer panel, as shown here, using the Window | Color Mixer command.

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Diagram-118

- 4. Enter a value in the Alpha box or drag the slider to the correct value.
- 5. To adjust the alpha setting for additional objects, repeat steps 2-4 as necessary.

You can also adjust an object's alpha property using ActionScript statements or as a part of a tween. You could, for example, make an object fade into the background or make an object slowly come into view. This later option can be used to create a very interesting effect when you want a set of buttons to appear on the stage.

Rotating, Skewing, and Scaling

So far, you have learned several ways to modify objects. Now we will have a look at some ways to modify objects while retaining their basic shape. Objects that you rotate, skew, or scale may not look as though they still have the same basic shape, but to Flash they do. This is an important point because you can apply these effects as a part of a motion tween. If the basic shape were changed, you would not be able to use a motion tween to animate the objects.

You can rotate, skew, or scale pretty much any type of object that you create in Flash. Of course, some types of objects are better candidates for these actions. For example, it would be very easy to tell when a rectangle was rotated, and almost impossible to tell if a circle had been rotated. Therefore, I will use rectangles in these examples simply so that it will be easier for you to see the effects of each action.

Rotating Objects

Rotating an object is the act of turning the object around its center point- in much the same way that the hands on a clock rotate around the center of the clock. When you rotate an object, the object maintains the same dimensions and angles that it had before it was rotated.

You can rotate an object using your mouse. To do so, follow these steps:

- 1. Click the Arrow tool in the toolbox to select it.
- 2. Double-click the object that you want to rotate so that you select both the stroke and the fill. You can also draw a selection box using the Arrow tool if you prefer that method of selecting.
- **3.** Select the Modify | Transform | Rotate and Skew command to add the rotation handles to the object, as show here. Alternatively, you can right-click the selected object and choose Rotate and Skew from the pop-up menu.

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Diagram-120

4. Use one of the corner handles to rotate the object by dragging, as shown here.

Diagram-120

Skewing Objects

Skewing an object is a process that moves the sides of the objects so that the sides remain parallel, but the angles of the corners are modifies. You can skew an object by up to 45 in either direction.

To skew an object, follow these steps:

- 1. First, make certain that you have selected the entire object, including the stroke and the fill.
- 2. Select the Modify | Transform | Rotate and Skew command or right-click the selected object and choose Rotate and skew from the pop-up menu.
- **3.** Drag one of the side handles, as shown here. As you drag a side, that side will remain parallel to the opposite side of the object.

Diagram-121

Scaling Objects

Scaling an object modifies the height or width of the object. You use scaling to make an object shrink or grow.

To scale an object by dragging, follow these steps:

- 1. Begin by selecting the entire object that you want to scale.
- 2. Select the Modify | Transform | Scale command or right-click the selected object and choose scale form the pop-up menu.
- 3. Drag one of the handles, as shown here. If you drag one of the side handles, you will scale the object in just one direction. If you drag one of the corner handles, you will scale the object in two dimensions at the same time.

Diagram-122

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Rotating and Scaling Using the Scale and Rotate Dialog Box

One of the problems with rotating and scaling objects by dragging them is that this method is not very precise. It is difficult, for example, to rotate an object to a specific angle by dragging. Fortunately, Flash offers a couple of different methods that are more precise.

The first of these methods uses the Scale and Rotate dialog box. To use this method, follow these steps:

- 1. Select the object that you wish to modify.
- 2. Select Modify | Transform | Scale and Rotate from the Flash menu, or press CTRL-ALT-S to display the Scale and Rotate dialog box, shown here.

Diagram-122

- 3. Enter the scale percentage in the Scale text box. Note that the same scaling will apply in both the vertical and the horizontal dimensions.
- 4. Enter the number of degrees that you wish to rotate the objects in the Rotate text box. Enter the value as a positive number to rotate the object in a clockwise direction, or as a negative number to rotate the object in a counter-clockwise direction.
- 5. Click OK to apply the changes and close the dialog box.

Rotating, Skewing, and Scaling Using

The Transform Panel

For the most precise control over all aspects of rotating, skewing, and scaling objects, you should use the Transform panel. This panel enables you to enter exact values, so that you can get exactly the results you want.

To modify an object using the Transform panel, follow these steps:

- 1. Select the objects that you want to modify.
- 2. Open the Transform panel using the Window | Transform command (or CTRL-T), as shown here.

Diagram-123

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- 3. Enter the values that you wish to apply to the objects.
- 4. If you want the object to scale equally in the vertical and horizontal dimensions, make certain that you select the Constrain check box.
- 5. If you decide that you should not have modified the object, click the Reset button in the lower-right corner of the Transform panel.

Grouping Objects

If you have tried drawing and animating objects in Flash, you may have experienced a certain amount of frustration. Although the process is fairly simple, there are some basic requirements that can trip you up if you are unaware of them. In the following sections, we will discuss a very important topic that can have a profound effect on your ability to successfully draw and animate objects: grouping.

Understanding Ungrouped Objects

Objects that you draw in Flash typically consist of more than one part. Unless you draw a simple, straight line, almost all drawn objects have a number of different pieces that make up the object. At a minimum, filled objects consist of at least two pieces- the outline stroke and the internal fill.

Of course, many objects have more than two pieces. A square- cornered rectangle has five different elements when you count each of the lines and the fill. Rectangles with rounded corners have even more individual pieces. To see an example of this, draw a rectangle object with rounded corners. Then click different parts of the outline (hold down SHIFT if you want to add additional pieces to the selection). Once you have selected several elements, drag several of them away from the rectangle, as shown here.

Diagram-125

This example clearly demonstrates that Flash treats each elements of a drawn objects as a separate objects. This has several important implications:

- You cannot apply a motion tween to drawn objects without first grouping them.
- You can apply shape tweens only to ungrouped objects.
- Ungrouped objects that are on the same layer will automatically combine if they are overlaying each other. If you attempt to move an object that is on top of another objects, the part of the lower objects that was under the top objects will disappear.

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• It is very easy to accidentally modify part of an ungrouped object without modifying the entire objects. For example, if you click once inside a rectangle and then rotate the rectangle, you will leave the outline where it was and only move the fill.

Understanding Grouped Objects

Grouped objects are objects where all of the parts of the objects have been joined together so that they function as a single entity. If you move or modify a grouped object, you affect all parts of the object.

Here are some important facts you need to know about grouped objects:

- You can apply a motion tween to a grouped objects.
- You cannot apply a shape tween to a grouped objects.
- Grouped objects do not affect other objects, even if they are on the same layer. If you drop a grouped object onto another object, you can move the grouped objects without removing any of the lower object.
- Grouped objects always act as if they were a single objects, so modifications you make to a grouped object are applied to the complete object.

Simple Grouping Examples

By now, it should be fairly clear why you will often need to group the objects that you draw in Flash. Not only does this enable you to apply motion tweens to the objects, but grouping them also allows them to act independently so that you don't inadvertently wipe out part of an object by placing another object over it.

Okay, so now that you have a basic understanding of why you might need to group objects, it's time to see how you do so. Follow these steps:

- 1. Use the drawing tools to create an object on the stage.
- 2. Click the Arrow tool to select it.
- Draw a selection box around the object to select it completely. If no other objects exist on the current layer, you can also use the Edit | Select All command or CTRL-A to select everything on the layer.
- 4. Select the Modify | Group command (or CTRL-G) to group the selected objects. As this shows, Flash then places a bounding box around the grouped objects.

Diagram-127

- 5. Click outside the object to remove the bounding box selection.
- 6. With the objects unselected, drag it to a different location on the stage. Notice that even though it is not selected, the object moves together as a single unit.

Although this example showed a fairly complex object, you can also group very simple objects. Try the example again using a circle that you have drawn with the Oval tool (remember to hold down SHIFT to create a perfect circle). This time, use the double-click method to select the objects for grouping. That is, rather than drawing a selection box, simple double-click the drawn object.

Now that you have created a grouped objects, try modifying that objects to see how the various elements are affected. For example, here is our sports car after it has been scaled to make it longer and lower. Notice that every part of the grouped object was modified- even the wheels. Clearly this is not quite the effect we want in this case. Next we'll look at how you can avoid this type of problem.

Diagram-128

Ungrouping as Needed

As the last illustration showed, grouped objects act as a single entity, and this can cause problems in some cases. Indeed, you may find that you need to ungroup objects to make certain types of modifications.

To ungroup an objects, you use the Modify | Ungroup command (or CTRL-SHIFT-G). This separates the object back into its individual components so that you can modify them individually.

Ungrouping objects brings back all of the shortcomings of ungrouped objects that were mentioned earlier. For example, any individual elements that overlap will once again interact. If you were to try to scale the automobile without changing the wheels, you would likely find that the effect would not be very satisfactory.

The Modify menu contains another command- the Break Apart command. This command is intended primarily for use with bitmap images, but it also functions as a super ungroup command. That is, the Modify | Break Apart command destroys all grouping-even nested grouping- in the selected objects. This command can make some very profound changes and deserves to be treated with extreme caution!

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Possible Questions

- 1. What is Flash Panel? Explain it with example.
- 2. Write about Rotating, skewing and scaling in Flash
- 3. Explain Drawing lines and fills in flash with example
- 4. Illustrate how to create motion tweens in flash with example
- 5. Explain with example controlling frame movements using different timelines.
- 6. Explain how to create motion tweens.
- 7. Explain in detail about the panels in flash
- 8. Illustrate how animation can be performed in flash using shape tween with example.
- 9. Illustrate the Layers in flash
- 10. Elaborate on various selecting tool options in flash.

KARPAGAM ACADEMY OF HIGHER EDUCATION COIMBATORE - 21 DEPARTMENT OF COMPUTER SCIENCE,CA & IT CLASS : III B.Sc COMPUTER TECHNOLOGY BATCH : 2016-2019

Part -A Online Examinations SUBJECT: MULTIMEDIA AND ITS UNIT-V

(1 mark questions) SUBJECT CODE: 16CTU504B

S.NO	Question	opt1	opt2	opt3	opt4	Answer
1	Text options panel can be selected using shortcut in Mac systems	Ctrl+T	Cmd+T	Ctrl+O	Cmd+O	Cmd+T
2	to another section of the multimedia	Conditional branching	Simple branching	loop	decision making statements	Simple branching
3	based on the results of IF-THEN	Conditional branching	Simple branching	loop	decision making statements	Conditional branching
4	any other text then it is called	hypertext	hyper data	hyper tool	internet	hypertext
5	is a container for data that can hold more than one piece of data	Constant	Variable	Keyword	Array	Array
6	menu option that converts a	frontpage	HTML	flash	morph	flash
7	in between the key frames is called	ordering	linking	tweening	twisting	tweening
8	which one image transforms into	twisting	linking	morphing	linear	morphing
9	is the file format used in flash	.dir	.max	.flc	.fla	.fla
10	that can have a positive or negative	0 to 180	0 to 360	0 to 90	0 to 45	0 to 360

	The process of bundling a single					
11	frame from two fields is called	interleaving	interference	interlacing	interval	interlacing
12	playback efficiency to a movie via	Action script	Javascript	VBScript	XML	Action script
13	ActionScript is a	programming	Programming	Procedural Language	Low level language	programming
14	is a thing whose content may vary over time	Constant	Variable	Keyword	Token	Variable
15	Each element of an array is referred to by	Index	Script	Constant	Variable	Index
16	is a collection of frames	Variable	Action script	Movie	Constant	Movie
17	the user works with layers and frames	Tools window	Timeline window	Library window	Swatches window	Timeline window
18	is made up of any combination of alphanumeric characters	Array	Constant	Variable	String	String
19	is the raw data that goes into a variable	Array	Literal	Variable	String	Literal
20	together, the process is known as	Joining	Merging	Concatenation	Comparison	Concatenation
21	Frame rate is defined as	Frames/minute	Frames/second	Frames/hour	Frames/bit	Frames/second
22	In ActionScript operator joins strings	add	-	join		add
23	Boolean true can also be interpreted as	1	0	2	3	0
24	function converts Boolean literal to string "true" or "false"	Boolean()	valueOf()	toString()	toBoolean()	toString()
25	An integer is declared in actionscript by using function	int ()	integer()	number()	num()	int ()

	Anything that is a conection of					
26	properties in action script is	Array	Literal	Variable	Object	Object
27	Actions panel window can be opened by selecting	Ctrl+Alt+A	Ctrl+Alt+S	Ctrl+Alt+T	Ctrl+Alt+P	Ctrl+Alt+A
28	displaying the outcome of a	Output Window layer	Movie clip layer	Action layer	Action script layer	Output Window layer
29	is used to see the output of flash script	Ctrl+T	Ctrl+O	Ctrl+Enter	Cmd+O	Ctrl+Enter
30	whose contents are directly visible on	Current Frame	Previous Frame	Next Frame	Last Frame	Current Frame
31	between the first frame of the movie	Playhead	Frames per second	Length of Movie	Timelines	Length of Movie
32	allows the user to select the frame to be altered	Playhead	Frames per second	Length of Movie	Timelines	Playhead
33	Layers are organized in a column to the of the Timeline	Right	Left	Тор	Bottom	Left
34	frames per second is good rate for web-based animation	14	16	12	15	12
35	indicates the final positions or changes to the symbol or graphic	Blank frame	Object Frame	Final Frame	Key Frame	Key Frame
36	Which among the following is not a method of movie clip?	getBounds	duplicateMovieCl ip	getAscii	unloadMovie	getAscii
37	external file it has the extension	.as	.ac	.at	.ar	.as
38	is used to open an external script file into flash	#include	#define	#script	#open	#include
39	Loop within another loop is called	Simple loop	Structured loop	Frame loop	Nested Loop	Nested Loop
40	loops are contained in a single frame, button or movie clip.	Simple loop	Structured loop	Frame loop	Nested Loop	Structured loop

	100p runs the code to be					
41	repeated before checking for the	Simple loop	Structured loop	Frame loop	Do-while loop	Do-while loop
42	loop repeats a set of code after checking the condition	While loop	Structured loop	Frame loop	Do-while loop	While loop
43	segment of code repeatedly for a	Branching statements	Looping statements	Arrays	Objects	Branching statements
44	loops deals with more than a single dimension in a script	Simple loop	Structured loop	Frame loop	Nested Loop	Nested Loop
45	key is used to enter the symbol editor	Ctrl +T	Ctrl +A	Ctrl +E	Ctrl +S	Ctrl +E
46	key is used to insert a new key frame	F8	F5	F6	F2	F6
47	menu has the option to break apart an image	File	Insert	Edit	Modify	Modify
48	key is used to convert an object into symbol	F8	F5	F1	F2	F8
49	object that performs the action or is	Event	Target	action	handler	Target
50	event reacts when the mouse button is pressed	press	keypress	release	roll over	keypress
51	button is pressed on the button and	dragOver	rollOver	dragOut	rollOut	dragOut
52	is called as the association operator in Key methods	dot	comma	semicolon	colon	dot
53	method returns the virtual key code of the last key pressed	Key.getAscii	Key.isDown	Key.isToggled	Key.getCode	Key.getCode
54	return the position of the mouse on	_xmouse	_ymouse	_xmouse and _ymouse	x_mouse and y_mouse	_xmouse and _ymouse
55	triggered if the clip is removed from	load	unload	enterFrame	data	unload

56	shortcut is used to open the Library panel	Ctrl + P	Ctrl + L	Ctrl + I	Ctrl + N	Ctrl + L
57	the Num Lock or Caps Lock key is	Key.getAscii	Key.isDown	Key.isToggled	Key.getCode	Key.isToggled
58	the key code value for the Enter key	13	27	36	45	13
59	shortcut is used to open the Frame panel	Ctrl + F	Ctrl + T	Ctrl + I	Ctrl + N	Ctrl + F
60	shortcut is used to open the Instance panel	Ctrl + P	Ctrl + T	Ctrl + I	Ctrl + N	Ctrl + I

CIA I QUESTION PAPER 2016-2019 BATCH

KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed to be University) (Established Under Section 3 of UGC Act 1956) COIMBATORE-641021

DEPARTMENT OF CS, CA & IT Fifth Semester FIRST INTERNAL EXAMINATION – July 2018 Multimedia and Its Applications Question Paper

Subject Code: 16CTU504B Date/Session: 14.07.2018 Class: III B.Sc. CT

Duration : 2 hours Maximum : 50 Marks

PART-A(20 * 1 = 20 Marks) Answer all the Questions

1.	The people who weave multimedia into meaningful tapestries are					
	a)Multimedia producers		b)Multimedia developers			
	c)Multimedia Proje	ectors	d)Multimed	ia Creatures		
2.	Forerunner of WWW is					
	a)Memex	b)Internet Explorer	c)Web browser	d)Intranet		
3.	Multimedia elemen	ts are typically seen toge	ether into a project us	ing		
	a)Editing Tools	b)Unauthoring tools	c)Integrated Tools	d)Authoring tools		
4.	GML Stands for					
	a)Generalized Marl c)Generalized Mak	kup language eup language	b)Generalize d)Global Ma	ed Multimedia language arkup language		
5.	Adobe illustrator is	tool				
	a)Editing	b)Video	c)Publishing	d)Audio		
6.	is a	video production tool.				
	a)Sound forge	b)Premiere	c)Flash	d)Photoshop		
7.	is a	Animation tool.				
	a)Sound forge	b)Premiere	c)Flash	d)Photoshop		
8.	is a	Graphics tool.				
	a)Sound forge	b)Premiere	c)Flash	d)Photoshop		
9.	QoS means	-				
	a)Quality of server		b)Quantity of	of Service		
	c)Quality of Service		d)Quantity of	of Server		
10.	aims to dev	elop smart clothing				
	a)Augmented realit	y b)Telemedicine	c)Audio cues	d)Digital Fashion		
11.	invented the	motion picture camera				
	a)Thomas Alva Edi	son	b)Alexander			
	c)Babbage		d)James Wa	.tt		

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CIA I QUESTION PAPER 2016-2019 BATCH

12	Online System" was	demonstrated by			
	a)Thomas Alva Edison		b)Marconi		
	c)Douglas Engelbart		d)Van	nevar Bush	
13	VR stands for				
	a)Virtual reality	b)visual random	c)Video raste	r d)video response	
14	VRML stands for				
	a)virtual reality mode	eling language	b)visu	al response modeling language	
	c)video raster mode l	anguage	d)video raster modeling language		
15	Which of the followi	ng is not a stage of mu	ltimedia produc	ction?	
	a)Planning and costin	ng	b)desi	gning and producing	
	c)Marketing		d)deli	vering	
16	is res	ponsible for an entire t	eam of videogr	aphers, sound technicians,	
	lighting designers.				
	a)Sound editor	b)Video specialists	c)Technician	d)Supervisor	
17	Person who make mu	ıltimedia program com	e alive with so	und effects?	
	a)Video specialist	b)Audio Specialists	c)Technician	d)Supervisor	
18	Diverse range of skil	ls are called as			
	a) Skill	b) Knowledge	c) Strength	d) Multimedia skill set	
19	is a component	of multimedia			
	a) Video		b) Dis	tributed network	
	c) Teleconferencing		d) Tel	emedicine	
20	Sound Forge is a digit	ital audio editing suite	created by		
	a)Adobe	b)Macromedia	c)Microsoft	d)Sony	
		PART-R (3 * 2	= 6 Marks)		
		Answer all the	questions		
21	Define Graphics				
22	What is meant by Mu	iltimedia?			
23	List the Types and pr	operties of Sound.			
		PART-C (3 * 8 :	= 24 Marks)		
~ (Answer all the	equestions		
24	. a) Enlighten Multime	edia presentation and p	roduction. \mathbf{P}		
	b) Classify the Hardy	ware and software requ	irements for m	ultimedia.	
25	a) What do you mear	nt by Text? And make	clear the types	of test in multimedia.	
	-	(0	R)		
~ -	b) Elucidate advantag	ges and uses of graphic	cs.		
26	a) Give explanation of	of types and properties	or sound system	n.	
	b) Explicate Musical	instrument Digital Inte	erface (MIDI).		

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KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University) COIMBATORE-641021 B.Sc. DEGREE EXAMINATION DEPARTMENT OF CS, CA & IT Fifth Semester

First Internal Examination – July 2018 Answer Key Multimedia and Its Applications

Subject Code: 16CTU504B Date/Session:14.07.2018 Class: III B.Sc. CT

Duration: 2:00 HrsMaximum: 50 Marks

[20 * 1 = 20 Marks]

PART-A Answer all the Questions

1.	The people who weave multimedia into meaningful tapestries are					
	a)Multimedia producers			b)Multimedia developers		
	c)Multimedia Projectors			d)Multimedia Creatures		
2.	Forerunner of WWW	is				
	a)Memex	b)Internet Explorer	c)Web	browser	d)Intranet	
3.	Multimedia elements	are typically seen toge	ther into	o a project usin	g	
	a)Editing Tools	b)Unauthoring tools	c)Integ	rated Tools	d)Authoring tools	
4.	GML Stands for					
	a)Generalized Mark c)Generalized Makeu	t up language p language		b)Generalized d)Global Mar	Multimedia language kup language	
5.	Adobe illustrator is _	tool				
	a)Editing	b)Video	c)Publ	ishing	d)Audio	
6.	is a v	ideo production tool.				
	a)Sound forge	b)Premiere	c)Flash	l	d)Photoshop	
7.	is a A	nimation tool.				
	a)Sound forge	b)Premiere	c)Flasł	ı	d)Photoshop	
8.	is a C	Graphics tool.				
	a)Sound forge	b)Premiere	c)Flash	l	d)Photoshop	
9.	QoS means					
	a)Quality of server			b)Quantity of	Service	
	c)Quality of Service			d)Quantity of	Server	
10.	aims to devel	op smart clothing				
	a)Augmented reality	b)Telemedicine	c)Audi	o cues	d)Digital Fashion	
11.	invented the m	otion picture camera				

	a)Thomas Alva Edis	on	b)Alex	kander
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	a)Sound editor	b)Video specialists	c)Technician	d)Supervisor
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	a) Skill	b) Knowledge	c) Strength	d) Multimedia skill set
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	a) Video		b) Dis	tributed network
	c) Teleconferencing		d) Tel	emedicine
20.	Sound Forge is a digit	tal audio editing suite	created by	
	a)Adobe	b)Macromedia	c)Microsoft	d)Sony

PART-B [3 * 2 = 6 Marks] Answer all the questions

21. Define Graphics

While the term "image" refers to a real-world picture usually taken by a camera and later on digitized for computer usage, a "graphic" denotes something that is hand-drawn. A traditional graphic would be a drawing or sketch on paper by an individual, which can range from simple line drawings like charts and architectural drawings to complex color portraits that can almost resemble an image, e o., Mona Lisa. Hence, "graphics" implies a synthetic pictorial representation.

22. What is meant by Multimedia?

The word 'multimedia' comes from the Latin words multus which means 'numerous' and media which means 'middle' or center. Multimedia therefore means 'multiple intermediaries' Multimedia is a combination of following elements. They are

- Text (e.g. books, letters, newspapers)
- Images and graphics (e.g. photographs, charts, maps, logos, sketches)
- Sound (e.g. radio, gramophone records and audio cassettes)
- Video and animation (e.g. TV, video cassettes and motion pictures)

23. Describe Image Processing Software.

PART-C

[3 * 8 = 24 Marks]

Answer all the questions 24. a)Enlighten Multimedia presentation and production. MULTIMEDIA PRESENTATION AND PRODUCTION

The multimedia presentation is basically a digital show in which the contents are expressed through various media types like text, images, audio, video etc., The end users who execute and watch the presentation are called viewers or target audience.

The multimedia presentation is basically playback on a personal computer either from hard disk or the CD-ROM. Sometimes when the audience consists of the large number of people, the presentation may be projected on a big screen using a projection system. Before a presentation can be viewed, however it has to be created. This process is known as multimedia production.

The production work is carried out by a team of professionals equipped with the required skills and knowledge. These professionals are called the developers or the authors and the development work is called the authoring.

CHARACTERISTICS OF MULTIMEDIA PRESENTATION

Multimedia is any combination of text, graphics, art, sound and video elements. The following are the important characteristics of Multimedia presentation. They are

- Multiple media
- Non-linearity
- Interactivity
- Digital representation
- Integrity

Multiple Media

In addition to text, pictures are also started being used to communicate ideas. Pictures were sub-divided into two types.

- i. A real-world picture captured by a camera is called images.
- ii. A hand-drawn picture like sketches, diagrams and portraits called graphics.

Text, images and graphics are together referred to as static elements, because they do not change overtime. With further improve in technology, time varying elements like sound and movies were used. Movies are again divided into two classes. They are

- Motion pictures
- Animation

Legitimate multimedia presentation should contain at least one static media like text, images or graphics and at least one time varying media like audio, video or animation.

Non-Linearity

Non-Linearity is the capability of jumping or navigating from within a presentation with one point without appreciable delay.TV shows and motion pictures are considered linear presentation because the user or viewer has to watch the information being prescribed. The user cannot modify the content. In a multimedia presentation the user can instantly navigate to different parts of the presentation and display the frames in any way, without appreciable delay, due to which it is called a non-linear presentation.

Interactivity

In a non-linear presentation user will have to specify the desire to watch the presentation. The presentation should be capable of user inputs and capable of change the content of the presentation. Interactivity is considered to be one of salient features on which next generation e-learning tools are expected to reply for greater effectively.

Digital Representation

Magnetic tapes are called the sequential access storage devices (i.e.) data is recorded sequentially along the length of the tape. When a specific potion of the data is required to be played back, the portion before that needs to be skipped. Multimedia requires instant access to different portion of the presentation. This is done by random access storage devices like hardware, floppy disks, and compact disks. Digital representations has other advantages, software based programs can be used to edit the digitized media in various ways to appearances and compress the file sizes to increase the performance efficiency.

Integrity

An important characteristic of a multimedia presentation is integrity. This means that although there may be several media types present and playing simultaneously, they need to be integrated or be part of a single entity which is the presentation. It should not be able to separate out the various media and control them independently; rather they should be controlled from within the frame work of the presentation. Moreover, the presentation should decide how the individual elements can be controlled

(OR)

b)Classify the Hardware and software requirements for multimedia.

HARDWARE & SOFTWARE REQUIRMENTS:

Hardware and software requirements of a multimedia personal computer can be classified into tow classes. They are:

a. Multimedia playback

b. Multimedia production

Multimedia playback:

□ **Processor** – At least Pentium class and minimum of 8MB RAM-to-32MB RAM.

 \Box Hard disk drive(HDD) – Atleast 540MB having 15M/s. access time and should be able to provide 1.5MB per second sustained throughput.

 \Box The monitor and video display adapter should confirm through SVGA standards and support 800x600 display modes with true color.

□ **CD-ROM drives** having a speed of at least 4X but highest speed like 36X are recommended.

□ PC should have a **sound card** with attached speakers standard 101 keys keyboard and mouse.

 \Box Multimedia PC system software should be compatible with windows 95 or higher, with standard software with playback of media files in standard formats.(e.g.) Windows Media Player.

Multimedia production:

 \Box **Processor - Pentium** II or higher, memory should be at least 128MB with 256MB recommended.

 \Box Hard disk drive (HDD) – Typical requirements would be around 10GB with 40GB recommended.

□ **The monitor and video display adapter** should confirm through SVGA standards and should be able to support 800x600 display mode with true color, RAM should be 4MB to 8MB.

□ **CD-ROM drive** having a speed of at least 4X to 36X, PC should have a CD writer.

□ PC should have a **sound card** with attached speakers standard 101 keys keyboard and mouse.

□ Multimedia PC system software should be compatible with windows or higher, with standard software with playback of media files in standard formats. (e.g.)Windows Media Player.

□ **Editing software** is used to manipulate media components to suit the developers, requirements. (e.g.) Adobe Photoshop, Flash, Cool Edit, and sound Forge.

 \Box Authoring softwares are used to integrate all the edited media into single presentations and build navigational pathways for accessing the media.

 \Box To display the web content **web browsers** will be required. (e.g.) MS Internet Explorer, to create web content HTML, and java Script editors might be required (e.g.) Macromedia, dream viewer.

25. a)What do you meant by Text? And make clear the types of test in multimedia. **INTRODUCTION**

In multimedia presentations, text can be combined with other media in a powerful way to present information and express moods. Internally text is represented via binary codes as per the **ASCII table**. The ASCII table is however quite limited in its scope and a new standard has been developed to eventually replace the ASCII standard. This standard is called the **Unicode** standard and is capable of representing international characters from various languages throughout the world. We also generate text automatically from a scanned version of a paper document or image using Optical Character Recognition (**OCR**) software.

TYPES OF TEXT

There are three types of text that can be used to produce pages of a document:

- Unformatted text
- Formatted text
- Hypertext

Unformatted Text:

Also known as plaintext, this comprise of fixed sized characters from a limited character set. The character set is called **ASCII table** which is short for American Standard Code for Information Interchange and is one of the most widely used character sets. It basically consists of a table where each character is represented by a unique 7-bit binary code. The characters include a to z, A to Z, 0 to 9, and other punctuation characters like parenthesis, ampersand, single and double quotes, mathematical operators, etc. All the characters are of the same height. In addition, the ASCII character set also includes a number of control characters. These include BS (backspace), LF (linefeed), CR (carriage return), SP (space), DEL (delete), ESC (escape), FF (form feed) and others.

Formatted Text:

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Formatted text are those where apart from the actual alphanumeric characters, other control characters are used to change the appearance of the characters, e.g. bold, underline, italics, varying shapes, sizes, and colors etc., Most text processing software use such formatting options to change text appearance. It is also extensively used in the publishing sector for the preparation of papers, books, magazines, journals, and so on.

Hypertext:

The term Hypertext is used to mean certain extra capabilities imparted to normal or standard text. Like normal text, a hypertext document can be used to reconstruct knowledge through sequential reading but additionally it can be used to link multiple documents in such a way that the user can navigate non-sequentially from one document to the other for cross-references. These links are called **hyperlinks.** Microsoft Home Page The underlined text string on which the user clicks the mouse is called an **anchor** and the document which opens as a result of clicking is called the **target document.** On the web target documents are specified by a specific nomenclature called Web site address technically known as **Uniform Resource Locators** or URL. **Node or Anchor:** The anchor is the actual visual element (text) which provides an entry point to another document. In most cases the appearance of the text is changed from the surrounding text to designate a hypertext, e.g. by default it is colored blue with an underline. Moreover the mouse pointer changes to a finger icon when placed over a hypertext. The user usually clicks over the hypertext in order to activate it and open a new document in the document viewer. In some cases instead of text an anchor can be an image, a video or some other non-textual element (**hypermedia**).

Pointer or Link These provide connection to other information units known as **target** documents. A link has to be defined at the time of creating the hyperlink, so that when the user clicks on an anchor the appropriate target document can be fetched and displayed. Usually some information about the target document should be available to the user before clicking on the anchor. If the destination is a text document, a short description of the content can be represented.

TEXT FILE FORMATS

The following text formats are usually used for textual documents.

TXT (Text)

Unformatted text document created by an editor like Notepad on Windows platform. This documents can be used to transfer textual information between different platforms like Windows, DOS, and UNIX,

DOC (Document)

Developed by Microsoft as a native format for storing documents created by the MS Word package.Contains a rich set of formatting capabilities.

RTF (Rich Text Format)

Developed by Microsoft in 1987 for cross platform document exchanges. It is the default format for Mac OS X's default editor TextEdit. RTF control codes are human readable, similar to HTML code. ***table 2.3 pgno:50****

PDF (Portable Document Format)

Developed by Adobe Systems for cross platform exchange of documents. In addition to text the format also supports images and graphics. PDF is an open standard and anyone may write programs that can read and write PDFs without any associated royalty charges.

PostScript (PS)

Postscript is a **page description language** used mainly for desktop publishing. A page description language is a high-level language that can describe the contents of a page such that it can be accurately displayed on output devices usually a printer. A PostScript interpreter inside the printer converted the vercorsbacki into the raster dots to be printed. This allows arbitrary scaling, rotating and other transformations

(OR)

b)Elucidate advantages and uses of graphics.

Advantages of Graphics

A vector representation of graphics provides a number of advantages:

- Because of the fact that they are not represented as pixel data but simply as a set of equations and their related parameters, means that internally they could be represented as textual data, and hence are very**compact**. The small file sizes of graphics make them an ideal choice where quick processing or limited bandwidth and storage capabilities are of primary concern, e.g., Internet and Web-based applications. For example, a graphic of a cycle wheel could be represented as a concentric circle with a number of straight lines radiating outwards from the center for the spokes.
- A graphic has the ability to **adapt** to varying magnification scales or zoom factors. An image (or raster graphic) is composed of a fixed number of pixels and when

magnified, the distance between them increases. This leads to a degradation of the image quality referred to as **pixelation**. A graphic, however, does not undergo pixilation: no matter how much it is magnified it retains its crisp and smooth look throughout because when displayed on the screen, pixels are created dynamically from mathematical entities and number of pixels are adjusted to suit the magnification factor.

- Since the graphic is generated using software tools, an application has complete knowledge of equations used to create the graphic and value of the related parameters, e.g., the radius of a circle, the coordinates of the center, the points where a line intersects the circle, etc. Hence, appearance of the graphic may be changed very quickly by writing programs, e.g., multiply the radius by 3 and move the center by 5 units along the Y-axis. This makes graphics ideal for **animation**-based applications.
- A user can input mathematical relations and ask the system to create graphical objects to represent them pictorially. This is the basis for plotting charts and graphs based on user-specified data. The data may either be specified either by a relation, e.g., $y = e^x$ or by a table of values, which the system can be asked to plot and even find out a matching relation. An existing graphic can be changed by changing its related parameters. This makes graphics suitable for **interactive** applications.
- Extensions of simple two-dimensional graphics by including the third dimension have led to the generation of **3D graphics** and animation. These graphical objects are defined using 3D geometry, which enables them to be rotated and viewed from any angle in 3D space. These have been widely used in ComputerAided Design (CAD) applications as well as in the film and game industry. File formats like 3D Studio MAX have been developed to exploit the capability.

Uses of Graphics

Due to the advantages of graphics it has been applied to a large number of uses in various applications:

User Interfaces Allows creation of point-and-click items of a graphical user interface like menus, button, windows, selection lists, etc. Complex tasks can be achieved by clicking or dragging the cursor over items in the GUI.

Office Automation With the advent of desktop publishing, the pictorial representation of data like charts, graphs, logos, histograms, tables, etc., have found increasing use in office automation applications.

Design and Drafting Tools Application software now allow users to design and create their own graphical 2D and 3D models using CAD tools. This has found extensive use in fields of architectural, mechanical, electrical, electronic, and computer science.

Simulation and Animation Graphical animations are used increasingly nowadays to study related to atomic structure and nuclear reactions, fluid flow, chemical molecular transformations, physical phenomena pertaining to optics, acoustics, etc., astrophysics, physiological systems and organ function Simulation packages are used for training. e.g., flight simulations for pilots, as well as for studying phenomena which is difficult to replicate physically, e.g., radioactivity, nuclear fission, process control applications, simulation of power plants, steel fabrications, missile guidance, etc.

Art and Commerce Computer graphics are nowadays extensively used to design and create artwork for interior decorations of private homes, offices, hotels, super-markets, etc., as well as for fashion design, tailoring, printing applications like calendars, diaries, etc. Film and television commercials use graphics to design program banners, advertisements, and special effects.

26. a)Give explanation of types and properties of sound system.

TYPES AND PROPERTIES OF SOUNDS

In general, sounds that we hear can be broadly classified into three categories: speech, music, and environmental sounds. Speech is anything uttered by a human being and generating from the human voice box. Music originates from a musical instruments like guitar, flute, violin, etc., usually being generated from vibrating strings, plates or air columns. Environmental sounds are anything other than speech and music and include sounds we normally hear in our daily lives. Such sounds can again be divided into two broad sub-types: those originating from inorganic sources and those originating from organic sources. The former include sounds like a horn of a car, ring of a bell, a door slamming, sound of an explosion and so on, while the latter includes sounds made by birds, animals, insects, and human beings (like laughter and clapping). In recent times, we can also probably think of a fourth category of synthetic sounds generated from computers and digital audio instruments like various types of clicking, alert, and beeping sounds. By analyzing the audio signals in temporal and frequency domains, these characteristics can be utilized to identify a specific class of sounds. More details on this in section 12.15. **Music vs. Noise**

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(b)

Subjectively, sounds may be distinguished into music and noise. Sounds pleasant to hear are called music and those unpleasant to our ears are called **noise**. This differentiation is quite subjective, as the same sound may seem pleasant to one person and unpleasant to another. However, it has been largely seen that musical sounds normally originate from periodic or regular vibrations while noise generally originates from irregular or non-periodic vibrations. See Fig. 5.6.

Utilities d lamour 0.2 (a) 0. (MUSPC, 0.5 (NORSE) Toma (a)

Musical sounds most commonly originate from vibrating strings, like in guitars and violins; vibrating plates like in drums and tabla; and vibrating air columns, like in pipes and horns. In all these cases, periodic vibration is responsible for the musical sensation. The lack of periodicity in the waveform of a noise seem to account for its unpleasant sensation. The definition of music as sound having a specific set of characteristics is proposed in musicology. **Musicology** is the scientific study of music which attempts to apply methods of systematic investigation and research in understanding the principles of musical art. According to its view, there are certain observable patterns in sound due to which it can be classified as music. According to musicologist Jean —Jacques Nattjez, however, the concept of music is more culturally defined than physical. The traditional view of music often associates it with some related terms like pitch, timbre, intensity, duration, melody, harmony rhythm, note, and chord.

Musical Note

In music, a note is a unit of fixed pitch expressed in a notation system. In English, the notes are given letter names A, B, C, D, E, F, and G. Each note corresponds to a specific pitch, for example A is assigned 440 Hz. The 7 letter names can however be associated by a modifier which can change the pitch of a note by a specific amount called a **semitone**. There are two modifiers called **sharp** (indicated by #) which raise the pitch of a note, and the **flat** (indicated by b) that lowers the pitch of a note. The approximate frequencies for the notes are C (262 Hz), D (294 Hz), E (330 Hz), F (349 Hz), G (392 Hz), A (440 Hz), and B (495 Hz). When the pitch of one note is double that of another, it is said to differ by an octave. Thus, if A above middle C is 440 Hz, the A of the higher **octave** will be 880 Hz.

There are four ways to change the pitch of a vibrating string of a musical instrument:

- By changing the length of the string. A longer string will produce a lower pitch and vice versa. This is because frequency f produced is inversely proportional to the length L of the string, i.e., $f\alpha$ 1/L.
- By changing the diameter of the string. A thicker string will produce a lower pitch, as the frequency *f* is inversely proportional to the diameter D, i.e., $f\alpha 1/D$.
- By adjusting the tension of the string. A string will higher tension will result is a greater pitch. This is because the frequency *f* is proportional to the square root of the tension T, i.e., $f\alpha \sqrt{T}$.
- By changing the density of the string. A higher density results in a lower pitch, as the frequency f is inversely proportional to square root of the density ρ , i.e., $f \alpha 1/\sqrt{\rho}$
- Stringed instruments actually change pitch by varying the length, because the other methods are not considered feasible. The combined relation between all these parameters is given below in equation (5.1).

 $f=1/2L \sqrt{T/\rho}$

Rhythm

The duration is considered a fundamental aspect of music. As per DelLone, duration complement is the amount of different durations used, the duration scale depicts an ordering of the durations in ascending or descending order, the duration range is the difference between the shortest and longest duration, the duration hierarchy is an ordering of these durations based on the frequency of use. Durational patterns may be specified in terms of meter, tempo, and rhythm. **Rhythm** is the variation of duration over time. In Western music, rhythms are generally specified in terms of a time-signature and a meter. A **meter** is a measurement of stressed and unstressed beats in a musical line. The measurement is indicated by a symbol called the **time-signature**. A **beat** or pulse is an unbroken series of periodically occurring distinct short stimuli perceived as points in time. The **tempo** indicates how fast the beat is running.

Melody and Harmony

Melody is a series of events in time that contain some kind of change to be perceived as a single entity, i.e., the events are related. Melodies often consist of one or more musical phrases and are usually repeated throughout a song in various forms. While **melody** stresses the occurring of events one at a time, **harmony** implies events occurring simultaneously. **Harmony** is related to a chord, which means three or more notes playing together over a period of time, e.g., playing three keys of a piano together. Harmony is often attributed to the presence of specific physical characteristics of the sound, e.g., inclusion of harmonics.

Tone and Note

A **tone** is a sound having a single frequency. A tone can be represented pictorially by a wavy curve called a sinusoidal wave. An example of a tone is the sound produced when a tuning fork is struck with a padded hammer. The sinusoidal nature of the curve is derived from the fact that a tone is produced from a kind of vibratory motion called **SimpleHarmonicMotion** (SHM), which

can be described by a sine function. In daily life, we rarely hear single-frequency tones. The sounds we normally hear are a composite mixture of various tones of varying amplitudes and frequencies. Such a composite sound is called a b. The waveform of a note can be derived from the resultant or sum of all its tonal components. The lowest frequency of a note is called the fundamentalfrequency. All the other frequencies are called overtones. Frequencies of some overtones may be integral multiples of the fundamental frequency. These overtones are called harmonics. For example assuming alt overtones are harmonics if the fundamentaltone (also called the **firstharmonic**) has a frequency f then the **firstovertone** (also called the secondharmonic) has a frequency 2f, the secondovertone (also called the third harmonic) has a frequency 31, and so on. It has been observed that presence of more harmonic content adds to the richness of sound, which is referred to as harmony. Figure 5.7(a) shows two sinusoidal tones, one the fundamental and the other the 3rd harmonic with its frequency thrice that of the fundamental. Below the tonal waveforms, the resultant note formed by the combination of the tones, is shown. The same two tones can, however, give rise to a different resultant if they are shifted in phase with respect to each other. Figure 5.7(b) shows the two waveforms with 90«iegree phase difference and the corresponding resultant.



Dynamic Range

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Dynamic range is the ratio between the smallest and largest possible values of a variable quantity. In acoustics, the term dynamic range is used to mean the ratio of maximum amplitude of undistorted sound in an audio equipment like microphone or loudspeaker to the amplitude of the quietest sound possible which is often determined by inherent noise characteristics of the device. In general terms, the term is often used to indicate the ratio of the maximum level of power, current or voltage to the minimum detectable value. In music, dynamic range is used to mean the difference between the quietest and loudest volume of an instrument. For digital audio, the dynamic range is synonymous to the Signal-to-Noise Ratio (SNR) (see Chapter 1) and is expressed in decibels (dB). It can be shown that increasing the bit depth of the digital audio by 1 bit results in its increase in dynamic range by 6 dB approximately. The human ear has a large dynamic range, i.e., the difference between the quietest (loudness of a sound just audible by the human ear) and the loudest sound is very large, of the order of 1012 in terms of the energy content. Often expressed in decibels (dB), the dynamic range of human hearing is considered around 120 dB. In practice, it is difficult to achieve this full dynamic range using electronic equipments. For example the dynamic range of a magnetic tape is of the order of 55 dB (reflecting the difference between the smallest voltage and the largest voltage pulses that can be recorded onto the magnetic media). Electronic equipment use certain techniques to fit the original large dynamic range to a smaller value which can be more easily recorded and stored. Such techniques are called Dynamic Range Compression (DRC). Dynamicrangecompressors work like an automatic volume sounds over a certain threshold are reduced (while quiet sounds remain unchanged) and quiet sounds below a certain threshold are increased (while loud Sounds remain unchanged). The amount of reduction using DRC is called the gainreduction and expressed as a ratio, e.g., a ratio of 2:1 means that if the input sound level is 2 dB above the threshold then the output sound level is 1 dB above the threshold and the reduction is 1 dB. See Fig. 5.8. Dynamic range compressors are often supplied with attack and release controls to slow down the response of the circuit for a smoothing effect. The attackphase corresponds to the situation when the input has exceeded the threshold and its value needs to be reduced. The releasephase corresponds to the situation when the input has fallen below the threshold and its value needs be increased back. A parameter called hard/soft knee controls whether the change in the response curve is sharp or gradual.



White Noise and Other Colors of Noise

Whitenoise is a signal that has the same energy or power for any frequency value, i.e., constant power density. Since a signal physically cannot have power for all frequencies (which would mean it has infinite energy content), a signal can be a white noise over a defined frequency

range. In interiors of buildings like halls, white noise is often used to submerge undesirable sounds like conversations, by generating a constant low-level noise as background sound. There are also other colors of noise as explained below. A signal whose power density decreases at the rate of 3 dB per octave with increasing frequency over a finite frequency range is called **pinknoise**. Oceanic ambient noises from distant sources are called **rednoise** because of absorption of higher frequencies. The background noise of the world is sometimes referred to as **greennoise**. A signal whose power density increases at the rate of 3 dB per octave with increasing frequency range is called **bluenoise**. A signal whose power density increases at the rate of 3 dB per octave with increasing frequency over a finite frequency range is called **bluenoise**. A signal whose power density increases at the rate of 6 dB per octave with increasing frequency over a finite frequency is called **a purplenoise**. A sound that is equally loud at all frequencies is called **graynoise**. A signal whose power density decreases at the rate of 6 dB per octave with increasing frequency over a finite frequency are sound that is equally loud at all frequencies is called **graynoise**. A signal whose power density decreases at the rate of 6 dB per octave with increasing frequency over a finite frequency are sound that is equally loud at all frequencies is called **graynoise**. A signal whose power density decreases at the rate of 6 dB per octave with increasing frequency over a finite frequency range is called brown noise. A noise capable to canceling other noises and producing silence is called **blacknoise**.

(OR)

b)Explicate Musical instrument Digital Interface(MIDI). MUSICAL INSTRUMENT DIGITAL INTERFACE (MIDI)

One major factor in the increased popularity in synthesizers, and the increased push for research and design of these units, was the development of new sound generation methods. Musicians were creating new and different sounds worldwide. Eventually, the musical world

began to recognize the synthesizer as a legitimate musical instrument. A few synthesizer design technicians from different manufactures got together in 1963 and demonstrated that it was possible to generate sounds from two synthesizers connected via a cable, by physically playing only one of the synthesizers. This was first usage of MIDI. The Musical Instrument Digital Interface(MIDI) is a protocol or set of rules for connecting digital synthesizers to personal computers. Much in the same way that two computers communicate via modems, two synthesizers communicate via MIDI. Technical and administrative issues related to MIDI specifications nowadays handled by the MIDI Manufactures Association(MMA) and Japan MIDI Standards Committee(JMSC). Since 1985, the MMA has produced 11 major specification based on MIDI that have enabled new products and new markets, and adopted 38 sets of improvements to existing MIDI specifications. The following paragraph discussed the salient features of the MIDI standard.

MIDI Hardware

MIDI makes use of a special five-conductor table to connect to the synthesizer ports. Data is carried through the cable on pins 1 and 3, and pin 2 is sheilded and connected to common. pins 4 and 5 remain unused. MIDI cable is specially grounded and sheilded to ensure efficient data transmission. The length of the cable is critical as well, having a maximum cable length of 50 feet because of the method of data transmission through the cable. Since most PCs do not have such a connector built into their hardware, an interface adapter is generally used for this purpose. The adapter has on one side the familiar25-pin PC serial connector and on the other hand, two

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round 5-pin MIDI connectors. More recent computers are all equipped with USB and/or FireWire connectors, and these are now most often used for connecting MIDI devices to computers. The MMA has approved a standard for MIDI over USB, and so there are a number of different proprietary(manufacturer-specific) ways to send MIDI over USB, as well as a specification developed by the USB implementors Forum(USB-IF).



MIDI Connections:

The MIDI data stream is usually originated by a MIDI controller, or a MIDI sequencer. A MIDI controller is a device that is played as an instrument, like a keyboard. However,

unlike a piano keyboard, the keys when pressed do not directly generate sound based on physical processes like vibration, but generate a set of digital instructions which define how sound is to be created. In the simplest case, these digital instructions are transmitted from the controller to a MIDI sound module, via the MIDI cable. The sound module interprets these instructions and produce sound typically from a wavetable chip inside it. The MIDI streams flows out of the controller through a MIDI-OUT port and flows into the sound module through a MIDI-IN port.



In some cases, the instructions might be temporarily stored in another device called the MIDI sequencer which allows MIDI data sequences to be captured, stored, edited, combined, and replayed. Information received on the MIDI-IN connector of a MIDI device is transmitted back out (repeated) at the device's MIDI-THRU connector. Several MIDI sound modules can be daisy-chained by connecting the THRU output of one device to the IN connector of the next device downstream in the chain. Each sound module can be configured to play a specific part of the music. eg., a specific instument sound like drums or piano.

Figure depicts a PC-based MIDI system, where the music composition is done using software instead of keyboard. In this system, the PC is equipped with an internal MIDI interface card that sends MIDI



data to an external multi-timbral MIDI synthesizer module. Application software, such as multimedia presentation packages, educational software, or games, sends MIDI data to the MIDI interface card in parallel form over the PC bus. The MIDI interface converts this information into serial MIDI data which is sent to the sound module. Since this is a multi-timbral module, it can play many different musical parts, such as piano, bass, and drums, at the same time. Sophisticated MIDI sequencer softwares packages are also available for the PC. With this software running on the PC, a user could connect a MIDI keyboard controller to the MIDI IN port of the MIDI interface card, and have the ame music composition capabilities discussed in the last two paragraphs.

MIDI Messages:

MIDI-based instructions are called messages. The MIDI messages constitute an entire music description language in binary form. Each word describing an action of musical performance is assigned a specific binary code. The messages are transmitted as a unidirectional asynchronous bit stream at 31.25 kbits/second. The single physical MIDI channel is divided into 16 logical channels by the inclusion of a 4 bit channel number within many of the MIDI messages. A musical instrument keyboard can generally be set to transmit on any one of the sixteen MIDI channels. The messages carry the information on what instruments to play in which channel and how to play them. Each message consists of two or three bytes: the first is the status byte which contains the function or operation to be performed and the channel number which is to be

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affected. The other two bytes are called data bytes and they provide additional parameters on how to perform the indicated operation. At the highest level, MIDI messages are classified as being either channel messages or system messages. channel messages are those that apply to a specific channel, and the channel number is included in the status byte for these messages. System messages are not channel specific, and no channel number is indicated in their status byte.

Status Byte	Statu	s Bytes
	Data byte 1	Data byte 2
Channel number and	Additional parameters	Additional parameters (optional)

Channel messages:

channel messages may be further classified as being either channel voice messages, or mode messages.

Channel Voice Messages:

These carry musical performance data, and these messages comprise most of the traffic in a typical MIDI data stream. The messages in this category include the Note On ,

Note Off, polyphonic Key pressure, Channel Pressure, Pitch Bend Change, Program Change, and the Control Change messages.

Note On: In MIDI systems, the activation of a particular note and the release of the same note are considered two separate events. When a key is pressed on a MIDI keyboard instrument or MIDI keyboard controller, the keyboard sends a Note On message on any one of the 16 logical channels. The Note on status byte is followed by two databytes, which specify key number (indicating which key was pressed) and velocity (how hard the key was pressed) that is normally used to control the amplitude of the note

Note off: When the key is released, the keyboard instrument or controller will send a NoteOff message. The message also includes databytes for the key number and for the velocity with which the key was released. The NoteOff velocity information is normally ignored.

Aftertouch: Some MIDI keyboard instruments have the ability to sense the amount of pressure which is being applied to the keys while they are depressed. This Pressure information, commonly called polythonic Key Pressure(Aftertouch), may be used to control some aspects of the sound produced by the synthesizer (vibrato, for example).

Pitch Bend: The pitch Bend Change message is normally sent from a keyboard instrument in response to changes in position of the pitch-based wheel. The pitch-based information is used to modify the pitch of sounds being played on a given channel.

Program Change: The Program Change message tells the synthesizer which patch number should be used for a particular MIDI channel.

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Control Change: The Control Change messages are used to control a wide variety of functions in a synthesizer.eg., to expand the number of different instrument sounds and to edit sound in specific ways.

Channel Mode Messages:

These affect the way a synthesizer responds to MIDI data. Controller number 121 is used to reset all controllers. Controller number 122 is used to enable or disable local control(In a MIDI synthesizer which has its own keyboard, the functions of the keyboard controller and the synthesizer can be isolated by turning Local Control off), Controller numbers 124 through 127 are used to select between omni mode On or Off, and to select between the mono mode or poly mode of operation. When omni mode is On, the synthesizer will respond to incoming MIDI data on all channels. When omni mode is Off, the synthesizer will only respond to MIDI messages on one channel. When Polymode is selected, incoming Note On messages are played polyphonically. This means that when multiple Note On messages are received, each note is assigned its own voice(subject to the number of voices available in the synthesizer). The result is that multiple notes are played at the same time. when mono mode is selected, a single voice is assigned per MIDI channel. This means that only one note can be played on a given channel at a given time.see appendix B.

System messages

System messages are classified as being system common messages and system real-time messages.

System Common Messages

These include the song select message that can store and a recall a number of different songs, and the song position pointer is used to start playback of a song at some point other than at the beginning. System exclusive messages may be used to send data such as data patch parameters or sample data between MIDI devices for troubleshooting purposes. Manufacturers of MIDI equipment may define their own formats foe system exclusive data. Manufacturers are granted unique identification (ID) numbers by the MMA or the JMSC, and the manufacturer ID number is included as part of the system Exclusive message.

System Real-Time Messages

These are used to synchronize all of the MIDI clock-based the equipment within a system, such as sequencers and drum machines. Examples include Timing Clock message which sets the tempo for playback of a sequence, the start, continue, and stop messages are used to control playback of the sequence, the system Reset message, is used to reset and initialize any equipment which receives the message.

MIDI File Format

The MIDI specifications made provisions to save synthesizer audio in a separate file format called MIDI files having extension MID. MIDI files are extremely compact as compared to WAV files. for example, files containing high-quality stereo sampled audio require about 10 Mbytes of data per minute of sound, while a typical MIDI sequence might consume less than 19/21

10kbytes of data per minute of sound. This is because the MIDI file does not contain the sampled audio data; it contains only the instructions needed by a synthesizer to play the sounds.

STATUS BYTE			DATA BYTES		
1st Byte Value	Function		l 2nd Byte	3rd Byte	
Binary Hex Dec			·····································	1 to the second	
100000000000000000000000000000000000000			Note Number	I Note Vela	
1000000- 80- 128	31 Chan 1	Note off	(0-127)	1 (0-127) UCLEY	
10000001= 81= 129	ol Chan 2	San in Practice		a far a star a star a second and the	
10000010= 82= 130	ol Chan 3	en e	AND DESCRIPTION OF SERVICE	1	
10000011= 83- 131	I Chan 4			1	
10000100= 84- 132	Chan 5		and the second second the second second	Jure	
10000101= 85= 133	I Chan 6	the state of the state of the state		I States	
10000110- 86- 134	I Chan 7		Which is a start of the start of the start of the	1	
10000111= 87= 135	51 Chan 8	Yang and a she she she she		1	
10001000- 88- 130	SI Chan 9	Constants of the state state of the	and the state of the	TER STORE AND STORE STORE	
10001001- 89- 137	7 Chan 10	The second second second	in the second	In the second of the second second	
10001010- 8A- 138	31 Chan 11	With the standard straining and she			
10001011= 8B= 139	Chan 12	and the state of the state of the state of the	and the second	1 and the second s	
10001100= 8C= 140	of Chan 13	when the same we have		A STATE OF THE PARTY OF THE PAR	
10001101= 8D- 143	I Chan 14	and the fact of the substant	energy of the second state of the second	The star first a Depty Inches	
10001110= SE= 142	I Chan 15	and a second second second second	A SHARE PROPERTY AND A MARKE	I CONTRACTOR AND	
10001111= SF= 143	I Chan 16	All of the second second second	the second se		
10010000- 90- 144	I Chan 1	Note on		the second second second second second	
10010001- 91- 145	i Chan 2	a service of a constant is	1. 2011年1月2日日日本市区市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市	Cases and the second station	
10010010= 92= 146	I Chan 3	and a second second	and the strength of the based with the card	The state of the second second second	
10010011- 93- 147	Chan 4	A VERY AND A VERY AND A VERY AND A			
10010100= 94= 148	Chan 5	Cherry Processing and the Constant	a service of the serv	a statistical statistical statistics	
10010101= 95= 149	Chan' 6	Colors These Structure and Frank	species and the set of the second and the party	CAUSE DIALASS TO A PERSON WHEN	
10010110- 96- 150	Chan 7	and the second	and mindle west submission to a mini server	arrest descent and the second	
10010111= 97= 151	Chan 8	per street and the street of the street of	and a standard the standard standard standard	and the second second second second	
10011000- 98- 152	Chan 9	Managers and April 2012	the state of the state of the second	and the state of the states	
10011001- 99- 153	Chan 10	CONTRACTOR OF THE OWNER OF THE	Construction of the second second second second	and the first shirt we	
10011010- 9A- 154	Chan 11			a harden and the state of the second	
10011011= 9B= 155	Chan 12	and the second second second second	and the second second second second second	and the second state of the second	
10011100= 9C= 156	Chan 13		a set and the set of the set of the set	A STATE OF A	
10011101- 9D- 157	Chan 14		The second second second second	Service and the service of the servi	
10011110- 9E- 158	Chan 15				
10011111= 9F= 159	Chan 16	and the state of the	in the second second	and marked in an and the	
the second second second		Suprementation of the second	General President Contraction		
11110110- F6- 246	Tune request	E 19 Thereative whet were	I NONE	I NONE	
11110111- F7- 247	End of SysEs	K (EOX)	The barrene of the time to the to the	Lawrence Torner and	
11111000- F8- 248	Timing clock	 A set of the set of	and the second second second second second second	1	
11111001- F9- 2491	Undefined (I	Reserved)	REFERENCES OF THE SECTION OF THE SECTION.	1	
11111010- FA- 2501	Start.	and the second second second second	and and a second s	Description of the second second	
11111011- FB- 2511	Continue	and the second second second	1	1	
11111100- FC- 2521	Stop	and the second second second	the second se	A state of the second second second second	
11111101= FD= 2531	Undefined (F	Reserved	and the second		
11111110- FE- 2541	ACLIVE Senat	no in the second second	and the second second second second	A STREET STORY .	
11111111- FF- 2551	System Reset	and the state of the states	and the second	and the second second to be the	
NAME AND ADDRESS OF THE OWNER OF THE PARTY OF					

These instructions are in the form of MIDI messages, which instruct the synthesizer which sounds to use, which notes to play, and how loud to play each note. The actual sounds are then generated by the synthesizer . For computers, the smaller file size also means that less of the PCs bandwidth is utilized in spooling this data out to the peripheral that generates sound. Other advantages of utilizing MIDI to generate sounds include the ability to easily edit the music, and the ability to change the playback speed and the pitch or key of the sounds independently. This last point is particularly important in synthesis applications such as karaoke equipment, where the musical key and tempo of a song may be selected by the user. With the recent introduction of downloadable sounds(DLS) format, MIDI files can now be combined with standardized samples of musical instruments , sound effects, or even dialogue, which are used to recreate an exact copy of the sound intended by the composer,MIDI files with DLS are the ideal solution for composers of all kinds who want the predictable playback of digital audio, but also need the compactness and/or interactivity of standard MIDI Files for delivering their music.

General MIDI(GM) Specifications

prior to general MIDI, there was no standard for the relationship of patch numbers to specific sounds for synthesizers. Thus, a MIDI sequence might produce different sounds when played on different synthesizers, eventhough the synthesizers had comparable types of sounds. For example, if the composer had selected patch number 5 for channel 1, intending this to be an electric piano sound, but the synthesizer playing the MIDI data had a tuba sound mapped at patch number 5 then the notes intended for the piano would be played on the tuba when using the synthesizer (eventhough this synthesizer may have a fine electric piano sound available at some other patch number).

The general MIDI(GM) Specification defines a standard patch map that should be used by all conforming instruments. The GM1 specification established in 1993 lists a set of 128

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preset instruments in a standard GM1 patch map. The GM2 specifications estblished in 1999 is a group of extensions made to general MIDI 1, which increases both the number of available sounds and the amount of control available for sound editing and musical performance. All GM2 devices are also fully compatible with general MIDI 1.

The general MIDI Level 1 intsrument sounds are grouped by families. In each family, are 8 pecific instruments. The names of the instruments indicate what sort of sound will be heard when that instrument number(MIDI program change or"PC#") is selected on the GM1 synthesizer.

DC# E	several pict off OPTS	PC# Fam	illy
1_8	Piano	65–72	Reed
9-16	Chromatic Percussion	73-80	Pipe
17-24	Organ	81-88	Synth Lead
25-32	Guitar	89–96	Synth Pad
33-40	Bass	97-104	Synth Effects
41-48	Strings	105-112	Ethnic
49-56	Ensemble	113-120	Percussive
57-64	Brass	121-128	Sound Effects
	Sales and a second		

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KARPAGAM ACADEMY OF HIGHER EDUCATION

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SECOND INTERNAL EXAMINATION, AUGUEST 2018

Fifth Semester

INFORMATION TECHNOLOGY / COMPUTER TECHNOLOGY Multimedia and Its Applications

Class	: III B	.Sc. [IT/CT]			Maximum: 50	
Date &	x Session:16.08	3.2018 (AN)			Time: 2 Hrs.	
			PART-A		[20*1= 20 Marks]	
			Answer all the	questions		
1.	metaph	or is used in m	nenu-driven app	lications.		
	a) Iconic	b) Hierarchic	al	c) Script	d) Card	
2.	depicts	the initial idea	a content of a m	ultimedia con	cept in a series of sketches	
	a) Testing	b) Designing	c) Stor	ryboarding	d) Flowcharting	
3.	fonts w	ork better for	visual commun	ication		
	a) Sans serif	b) Serif	c) Tec	hnic d) TV	V	
4.	is the R0	GB code for bl	ack color			
	a) 0 0 0	b) 0 1	0	c) 0 0 1	d) 0 1 1	
5.	AVI stands fo	r				
	a) Audio visual Interval b) Audio visual Interleave					
	c) Audio video Interval d) Audio video Interleave					
6.	Adobe premie	ere files are sav	ved with	extension		
	a) .ppt	b) .ppx	c) .ppj	d) .pptx		
7.	Each instance	of a cast mem	ber is called			
	a) frame	b) Scenes	c) sprite	d) movie		
8.	Sample sizes a	are either 8bits	or bits			
	a) 32	b) 64	c) 16	d) 12		
9.	0	letermines the	accuracy with v	which a sound	can be digitized	
	a) Audio files	b) Audio freq	uency c) Au	lio resolution	d) Audio equalization	
10.	a	allows to modif	fy a recording's	frequency cor	itent so that it sounds brighter	
	or darker				-	
	a) digital wav	es b) dig	ital resolution	c) digital fina	alization d) digital equalization	
11.	A	_ keyboard is a	also useful to sin	mplify the crea	ation of musical scores	
	a) MACE	b) MIDI	c) MI	DS	d) AIFF	
12.	MIDI means	,	,		, ,	
	a) Multiple In	sturment Digit	al Interface	b) Musical In	nterface Digital Instrument	
	c) Musical Ins	strument Digita	al Interface	d) Multiple I	nstrument Digital Interface	
		U		· •	C	

13.	is	a device depen	dent			
	a) MACE	b) MIDS	c) MII	DI	d) AIF	F
14.	MIDI files wil	ll be t	imes smaller th	nan CD-	quality digital a	udio files
	a) 1000-10000) b) 1000-7000	c) 200-1000	d) 500	-1000	
15.	Removing bla	nk space or dea	ad air at the beg	ginning	or end of a reco	ording is sometimes
	called					
	a) quieting	b) quantizing	c) trimming	d) pre	rolling	
16.	softv	vare allows you	to record, edit	t and say	ve music genera	ated from a MIDI
	keyboard or ir	nstrument				
	a) Sound	b) Sequence	c) synthesizer	d) San	ples	
17.	An 8 bit samp	le size provides	sequal un	its to de	scribe the dyna	mic range or
	amplitude					
	a)16	b) 12	c) 256	d) 324		
18.	General MIDI	numbering sys	stem ranges fro	om		
	a) 0 to 127	b) 0 to 125	c) 0 to 126	d) 0 to	124	
19.	MIDI sounds	are typically sto	ored in files wi	th the _	exte	ension
	a) .sou	b) .midi	c) .mie	d	d) .mdi	
20.	Digital audio	data is the actua	al representatio	on of a s	ound, stored in	the form of thousands
	of individual n	numbers called				
	-)	1 \ 1 .				
	a) orders	b) datas	c) cod	es	d) samples	
	a) orders	b) datas	c) cod PART	es Γ – Β	d) samples	(3*2 = 6 Marks)
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21.	a) orders Name the any	b) datas four tools in fl	c) cod PART Answer all th ash	es F — B ne quest	d) samples ions	(3*2 = 6 Marks)
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(i) Marquee (ii) Lasso (iii) Magic Wand (iv) Brush

Reg. No ------[16ITU504B/16CTU504B]

KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University) (Established Under Section 3 of UGC Act 1956) COIMBATORE – 641 021 (For the candidates admitted in 2016 onwards)

SECOND INTERNAL EXAMINATION, AUGUEST 2018

Fifth Semester

INFORMATION TECHNOLOGY / COMPUTER TECHNOLOGY Multimedia and Its Applications

Maximum: 50 Class : III B.Sc. [IT/CT] Date & Session:16.08.2018 (AN) Time: 2 Hrs. PART-A [20*1= 20 Marks] Answer all the questions 1. _____ metaphor is used in menu-driven applications. b) Hierarchical a) Iconic c) Script d) Card 2. _____ depicts the initial idea content of a multimedia concept in a series of sketches d) Flowcharting a) Testing b) Designing c) Storyboarding 3. _____ fonts work better for visual communication a) Sans serif b) Serif c) Technic d) TW 4. _____ is the RGB code for black color a) 0 0 0 b) 0 1 0 c) 0 0 1 d) 0 1 1 5. AVI stands for a) Audio visual Interval b) Audio visual Interleave c) Audio video Interval d) Audio video Interleave 6. Adobe premiere files are saved with _____ extension d).pptx a).ppt b).ppx c) .ppj 7. Each instance of a cast member is called b) Scenes a) frame c) sprite d) movie 8. Sample sizes are either 8bits or _____ bits a) 32 b) 64 c) 16 d) 12 _____ determines the accuracy with which a sound can be digitized 9. a) Audio files b) Audio frequency c) Audio resolution d) Audio equalization 10. ______ allows to modify a recording's frequency content so that it sounds brighter or darker a) digital waves b) digital resolution c) digital finalization d) digital equalization keyboard is also useful to simplify the creation of musical scores 11. A a) MACE b) MIDI c) MIDS d) AIFF 12. MIDI means a) Multiple Instruments Digital Interface b) Musical Interface Digital Instrument c) Musical Instrument Digital Interface d) Multi Instrument Digital Interface

13.	i	s a device depen	dent				
	a) MACE	b) MIDS	c) MII	DI	(d) AIFF	
14.	MIDI files w	vill be t	imes smaller th	an CD-	quality d	igital audio f	iles
	a) 1000-1000	00b) 1000-7000	c) 200-1000	d) 500	-1000		
15.	Removing bl	lank space or dea	ad air at the beg	inning	or end of	a recording	is sometimes
	called						
	a) quieting	b) quantizing	c) trimming	d) pre	rolling		
16.	sof	tware allows you	ı to record, edit	and say	ve music	generated fro	om a MIDI
	keyboard or	instrument					
	a) Sound	b) Sequence	c) synthesizer	d) San	nples		
17.	An 8 bit sam amplitude	ple size provide	sequal uni	its to de	escribe the	e dynamic ra	nge or
	a)16	b) 12	c) 256	d) 324			
18.	General MIE	OI numbering sys	stem ranges from	m			
	a) 0 to 127	b) 0 to 125	c) 0 to 126	d) 0 to	124		
19.	MIDI sounds	s are typically sto	ored in files wit	the		extension	
	a) .sou	b) .midi	c) .mic	1	d) .mdi		
20.	Digital audio	data is the actua	al representatio	n of a s	ound, sto	red in the for	rm of thousands
	of individual	numbers called					
	a) orders	b) datas	c) code	es	d) samp	oles	
			PART	– B		(3*2 = 6 Marks)
			Answer all th	e quest	tions		
21.	Name the ar	ny four tools in	flash				
	Arrow tool						
	Oval tool						
	Line tool						

22. Define layer in flash

Layers are like transparent overlays on the stage. They enable objects to act independently of objects on other layers, and they also control whether objects are visible-objects onlayers that are in front of other layers hide the objects on those other layers when they cross in front of them.

23. What do you mean by shape tweening?

Shape tweening: Shape Tweening is used to gradually change size and shapes of graphic objects over a number of frames. It is implemented by selecting the initial and final shapes in two different key-frames and tweening in between frames.

(3*8 =24 Marks)

	PART – C
	Answer all the questions
24. a) Write about Animation	file formats with example.
All the file formats applicat	ole for graphics namely
FLIC,	

FLA, SWA, MAX

There also applicable for animation since the packages from which these are created are capable of both graphics and animation. An additional format namely Animated GIF is discussed below.

ANIMATED GIF:

Animated GIF is a variant of the GIF file format, an 8-bit image file format introduced by CompuServe in 1987, and later enhanced in 1989. GIF files are capable of storing multiple 8-bit images in a single file and then later playing them back at a specific speed, which leads to the generation of animation. The GIF format is a block oriented file format. It consists of a stream of functional blocks. The Header block contains the information necessary for a program to detect that the file is in GIF format. A Logical Screen Descriptor has information that describes the overall dimensions of the file, along with an optional Global Color Table. Optional Extension Blocks are for vendor specific information, like Browser extension for looping. The Graphic Rendering Block has all the necessary data for rendering each individual image in the stream, and the required Trailer Block is there for a program to easily identify the end of the stream. Software like GIF animators and Flash can be used to combine multiple individual static GIF files into a single animated GIF.

(Or)

b) Discuss on animation and the software used for animation

ANIMATION SOFTWARE:

An animation software is used to create and animate graphical objects and scenes usually in a vector format. Here, we deal with aspects of animating the objects both in 2D and 3D environments. Typical examples of 2D and 3D animation software are Adobe Flash and Autodesk 3D Studio Max.

2D Animation:

Shape tweening: Shape Tweening is used to gradually change size and shapes of graphic objects over a number of frames. It is implemented by selecting the initial and final shapes in two different key-frames and tweening in between frames.



Motion Tweening: Motion tweening is implemented to move objects over the stage by selecting the initial and final locations and tweening over the in-between frames. While the object moves, its dimension and orientation can also be changed.



Path Animation: In addition to tweening properties over key-frames, an object can be made to move over a specific path at a specific speed. A guide path is associated with the object that needs to be moved.

Masking: masking allows moving objects to be seen only in specific areas of the stage and invisible or hidden over other areas., eg, a scrolling text is visible only within the boundaries of the TV screen. Such arrangements often makes use of a mask layer which defines under what conditions the moving object is visible or hidden.



Changing color and Transparency:

Other than motion and shape, properties like color and transparency of objects can also be tweened. Colors are specified at certain Key-frames and tweeningis applied between them to smoothly transit from each color to the next. Transparency can be changed by a parameter called an Alpha setting.



Onion skinning:

Onion skinning is a drawing technique borrowed from traditional cell animation that helps the animator create the illusion of smooth motion. Rather than working on each frame in isolation, animators lay these transparent cells one on top of the other.



Buttons:

A button is an interactive object over which the user clicks the mouse in order to initiate some action. Eg., take the playback head to a specific frame, play a sound, etc. A button has separate timeline with 3 states. Up, Over, Down



Programming language:

In an interactive animation clip, an event will be triggered by the mouse clicking on or dragged over something on the screen typically a button. The event handler will be a set of instructions

Attached to the button specifying what needs to be dione when the user triggers the event. These instructions are written in an internal programming language associated with the animation software. Eg., ActionScript in Flash.

3D ANIMATION:

Key-frame Based Animation:

Just as in a 2D animation case, in 3D animation environment too, movement is produced by defining key-frames over a timeline and specifying movement and rotation values at each keypoint.



Path Animation:

Path animation is implemented by using a position controller to attach an object to a path. Optionally, the characteristics of the object can be changed as it moves along the path.

Particle systems and Space warps:

Particle systems like rain, snow, spray, wind etc., can be implemented by specifying parameters like type of system, direction, speed, size etc. Explosions like bombs can be simulated by binding space warps to 3D objects and specifying parameters related to the explosion like strength, particle size, spin factor, gravity, etc



Surface Texture and Rendering:

Appropriate surface texture can be applied to moving objects imparting a realistic appearance to them and rendering over a set of key-frames generates a movie clip by converting the vector information into pixel data.



25. a) Explain the basic elements in Photoshop

Photoshop Elements is the offspring of the professional-level image editing program, photoshop. Photoshop is somewhat unusual in the world of computer software, in that it is widely accepted as being the best program of its type on the market. If professional designers or photographers are using an image editing program, it will almost certainly be photoshop. However, two of the potential drawbacks to photoshop are the cost (approximately \$600) and its complexity. This is where Elements comes into its own. Adobe (the makers of photoshop and Elements) have recognized that the majority of digital imaging users(i.e. the consumer market) want something with the basic power of photoshop, but with enough user-friendly features to make it easy to use. With the explosion in the digital camera market, a product was needed to meet the needs of a new generation of image editors-and that product is Elements.

Elements contains the same powerful editing/color management tools as the full versionofphotoshopanditalsoincludesanumberofversatilefeaturesforsharingimagesand for sharing images and for creating artistic projects, such as slide shows, cards, calendars and online photo albums. It also has valuable help features, such as the Guided Edit mode, which explains what different items can be used for and gives a step-by-step guide to various digital editingtechniques:



Special effects:

One of the great things about using elements with digital images is that it provides numerousfunandcreativeoptionsforturningmediocreimagesintoeye-catchingworksofart. This is achieved through a wide variety of guided activities within GuidedEdit:



Advanced Features:

In addition to User-friendly features, Elements also has more advanced functions, such as the histogram:



Welcome Screen:

When you first open Elements, you will be presented with the Welcome Screen. This offers initial advice about Working with Elements and also provides options for creating new files, or opening existing ones. The welcome Screen appears by default but this can be altered once you become more familiar with Elements.

Welcome Screen functions:

1. Options for organizing photos, editing them and using them in a variety of

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2. Click on the Learn more buttons to find out about certain functions in Elements.



- 3. Click on the Organize button to go to thatarea
- 4. click on the Edit button to go to thatarea

Create Mode:

Create mode is where you can release your artistic flair and start designing items such as photo books and photo collages. It can also be used to create slide shows, create PhotoStamps and to put your images onto disc. To use Create Mode:

1. In either the Editor or the Organizer, Click on the createbutton.



2. Select one of the create projects. Each project has a wizard that takes you through the createprocess.



- 3. Create mode can be used to create a variety of artistic projects, containing your own image
- 4. Menu Bar:

In the Editor, the Menu bar contains menus that provide all of the functionality for the workings of Elements. Some of these functions can also be achieved through the use of the othercomponentsofElements, suchastheToolbox, the Shortcutsbar, the Optionsbarandthe Panels. However, the Menu bar is where all of the commands needed for the digital editing process can be accessed in oneplace.

Menu bar menus:

- File. This has standard commands for opening, saving and printing images, and also commands for creating Photomerge effects such as panoramas and combining exposures
- Edit. This contains commands for undoing previous operations, and standard copyand pastetechniques.
- Image.Thiscontainscommandsforalteringthesize,shapeandpositionofanimage.It also contains more advanced functions, such as changing the color mode of animage.
- Enhance. This contains commands for editing the color elements of an image. It also contains quick-fix options.
- Layer. This contains commands for working with different layers within animage.
- Select. This contains commands for working with areas that have been selected within an image, with one of the selection tools in thetoolbox.
- Filter. This contains numerous filters that can be used to apply special effects to an Image.
- View. This contains commands for changing the size at which an image is displayed,

and also options for showing or hiding rulers and gridlines.

- Window.Thiscontainscommandsforchangingthewaymultipleimagesaredisplayed, and also options for displaying all of the components of elements.
- Help. This contains the various Helpoptions.

Toolbox:

The Toolbox contains tools for adding items to an image (such as shapes and text), selecting areas of an image and also for applying editing techniques. Some of the tools have morethanoneoption,inwhichcase,theyhaveasmallblacktriangleatthebottomrightofthe default tool. To access additional tool intoToolbox:

Click and hold here to access additional tools for a particular item



Working with thetoolbox:

Bydefault,theToolboxisdockedattheleftofthemaineditorwindow.However,itcan removed and dragged anywhere within the main window. To dothis:

be

1. ClickonthetwoarrowstoviewtheToolboxinonecolumn.Clickonthecrosstoclose it.



2.Click and drag here original location to r



box around the Editor window.Drag it back to its of the window.

Options Bar:

The Options bar provides attributes that can be set for a selected tool from the tool box. For instances, if the Eraser tool is selected, the option bar offers choices for the type of eraser that can be used, its size, its mode and its opacity level. For each tool, a different set of options is available.

Using the options bar:

1. Click on a tool in the Toolbox (in this example it is the Magic Wandtool).



2. Select the options for the tool in the Optionsbar



3. Apply the tool to an image. The tool will maintain the settings in the Option bar until they arechanged.



Panels:

Elements uses panels to group together similar editing functions and provide quick access to certain techniques. The available panels are:

- Adjustments. This can be used to add or make editing changes to adjustment layers in the Layers panel.
- Color Swatches. This is a panel for selecting colors that can then be applied to parts of an image or elements that have been added to it.
- Content. This contains graphical elements that can be added to images. This includes backgrounds, frame shapes and artistic text.
- Effects. This contains special effects and styles that can be applied to an entire image oraselectedpartofanimage.Therearealsofilterswhichhavetheirowndialogboxes in which settings can be applied and adjusted. Layer styles can also be applied to elements within an image.
- Favorites. This is where favorite graphical elements from the Content panel can be store and retrieved quickly.
- Histogram.Thisdisplaysagraphofthetonalrangeofthecolorsinanimage.Itisuseful for accessing the overall exposure of an image and it changes as an image is edited.
- Info. This displays information about an image, or a selected element within it. This includes details about the color in an image or the position of a certain item.
- Layers. This enables several layers to be included within an image. This can be useful if you want to add elements to an existing image, such as shapes or text. Layers can also be used to merge two separate images together.
- Navigator. This can be used to move around an image and magnify certain areas of it.
- Undo History. This can be used to undo to all, or some, of the editing steps that have been performed. Every action is displayed in the Undo History panel and these actions can be reversed by dragging the slider at the side of the panel upwards.

(Or)

b) Create a simple animation using photoshop

Welcome Screen functions:

4. Options for organizing photos, editing them and using them in a variety of

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and and a second	Welcome to Photoshops Elements 9) Nextee
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7. Create mode can be used to create a variety of artistic projects, containing your own image
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Menu bar menus:

- File. This has standard commands for opening, saving and printing images, and also commands for creating Photo merge effects such as panoramas and combining exposures
- Edit. This contains commands for undoing previous operations, and standard copy and paste techniques.
- Image. This contains commands for altering the size, shape and position of an image. It also contains more advanced functions, such as changing the color mode of an image.
- Enhance. This contains commands for editing the color elements of an image. It also contains quick-fix options.
- Layer. This contains commands for working with different layers within an image.
- Select. This contains commands for working with areas that have been selected within an image, with one of the selection tools in the tool box.
- Filter. This contains numerous filters that can be used to apply special effects to an Image.
- View. This contains commands for changing the size at which an image is displayed, and also options for showing or hiding rulers and gridlines.
- Window.Thiscontainscommandsforchangingthewaymultipleimagesaredisplayed, and also options for displaying all of the components of elements.
- Help. This contains the various Help options.

26. a) Write note on the following

(i) Opening and saving images

Once you have captured images with a digital camera, or a scanner, and stored them on your computer, you can open them in Elements. There are a number of options for this:

Open Command:

- 1. Select File>Open from the Menu bar.
- 2. Select an image from your hard drive and click Open.

Open as command:

This can be used to open a file in a different file format from its original format. To do this:

1. Select File>Open As from the Menu bar

2. Select an image and select the file format. Click Open.

When saving digital images, it is always a good idea to save them in at least two different file formats, particularly if layered objects, such as text and shapes, have been added. One of these formats should be proprietary Photoshop format PSD or PDD. The reason for using this is that it will retain all of the layered information within an image. So, if a text layer has been added, this will still be available for editing at a future date, once it has been saved and closed.

The other format, that an image should be saved in, is the one most appropriate for the use to which it is going to be used on the web should be saved as JPEG, GIF or PNG files, while an image that is going to be used for printing should be saved in another format, such as TIFF. Once images have been saved in these formats, all of the layered information within them becomes flattened into a single layer and it will not be possible to edit this once the image has been saved. By default, images are saved in the same format as the one in which they were opened.

3. Selecting Areas: About Selections:

One of the most important aspects of image editing is the ability to select areas within an image. This can be used in a number of different ways:

- 1. Selecting an object to apply an editing technique to it (such as changing the brightness or contrast) without affecting the rest of the image.
- 2. Selecting a particular color in an image.
- 3. Selecting an area to apply a special effect to it.
- 4. Selecting an area to remove it.

Elements has several tools that can be used to select items, and there also a number of editing functions that can be applied to selections. Two examples of how selections can be used are:

1. Select an area within an image and delete it.



2. Select an area and add a color or special effect.



(ii) Searching images

Once images have been tagged they can be searched for using both of these options. To do this:

1. For tags and collections, click on this box so that the binoculars are showing.



- 2. Drag one of the icons below the timeline in the MediaBrowser.
- 3. All matching items for a search are shown together within the MediaBrowser.



4. Click on the show all button to return to the rest of theimages.

(iii) Organizing images

Obtaining Images:

One of the first tasks in Elements is to download images so that you can start editing and sharing them. This can be done from a variety of devices, but the process is similar for all of them. To download images into Elements:

1. Access the Organizer by clicking on this button in thisEditor.



2. Select File>Get Photos and Videos from the Menu bar and select the type of device from which you want to load images intoElements.



3.If you select From Camera and Card Reader, Click under Get Photos From to select a specific Device.



1. The images to be downloaded are displayed here, next to the device from which they will bedownloaded.



- 2. ClickheretoselectadestinationfortheselectedimagesandclicktheGetPhotosbutto n todownload.
- 3. As the images are being downloaded, the following window is displayed.



4. After the files have been copied they are then imported intoElements.



5. Click on the Yes button so that the images are imported. They can then be viewed in the Organizer and opened in theEditor.



(iv) Tagging Images

As your digital image collection begins to grow on your computer it is increasingly important to be able to keep track of your images and find the ones you want, when you want them. One way of doing this is by assigning specific tags to images. You can then search for images according to the tags that have been added to them. The tagging function is accessed from the task pane within the Organizer. To add tags to images:

1. If the Task Pane is not visible, select Window>Show Task Pane from the menu bar, or Click here on the right border of the Media Browser to expand the TaskPane.



2. Click here to access the currently availabletags



- 3. Click here to access sub-categories for a particularcategory
- 4. Click here to add categories, or sub- categories, of your ownchoice.



5. Enter a name for the new category, or sub-category, and click on the OKbutton



6. Select the required images in the MediaBrowser.

7. Drag a tag onto one of the selectedimages.



8. Theimagesaretaggedwiththeiconthatdenotesthemaincategory,ratherthanthesu b- category.



(Or)

b) Explain the following tools with examples(i) Marquee

There are two options for the Marquee tool: the Rectangular Marquee tool and the Elliptical Marquee tool. Both of these can be used to make symmetrical selections. To use the Marquee tools:

1. Select either the Rectangular or the Elliptical Marquee tool from the Toolbox. Select the required options from the Options bar.



2. Make a symmetrical selection with one of the tools by clicking and dragging on an image.





(ii) Lasso

There are three options for the Lasso Tools, which can be used to make freehand selections. To use these:

1. Select the Lasso tool from the Toolbox and select the required options from the Optionsbar.



2. Make a freehand selection by clicking and dragging around anobject.



(iii) Magic Wand

The Magic Wand tool can be used to select areas of the same, or similar, color. To do this

- 1. SelecttheMagicWandtoolfromtheToolboxandselecttherequiredoptionsfrom the Optionsbar
- 2. Click on a color to select all of the adjacent pixels that are the same, or similar, color, depending on the options selected from the Optionsbar.



(iv) Brush

The Selection Brush tool can be used to select areas by using a brush-like stroke. Unlike with the Marquee or Lasso tools, the area selected by the Selection Brush tool is the one

directly below where the tool moves. To make a selection with the Selection Brush tool:

- 1. Select the Selection Brush tool from the Toolbox and select the required options from the Options bar
- 2. Click and drag to make a selection
- 3. The Selection area is underneath the borders of the Selection Brush tool.





Quick Selection Tool:

The Quick Selection tool can be used to select areas of similar color by drawing over the general area, without having to make a specific selection. To do this:

1. Select the Quick Selection tool from the Tool box.



2. Select the required options from the Options bar.



3. Draw over an area, or part of an area, to select all of the similarly colored pixels.



The Smart Brush tool can be used to quickly select large areas in an image (in a similar way to the quick Selection tool) and then have effects applied automatically to the selected area. To do this:

1. Open the image to which you want to apply changes with the Smart Brush tool



2. Select the Smart Brush tool from the Toolbox.



3. Select the editing effect you want to apply to the area selected by the Smart Brush tool, from the optionsbar.



4. Select Brush size for the Smart Brush tool, from the Optionsbar.



5. DragthesmartBrushtooloveranareaoftheimage.Intheleft-handimage,below, the building has been selected and brightened, in the right-hand image the sky has been selected and enhanced.

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Department of CS, CA & IT

Fifth Semester

THIRD INTERNAL EXAMINATION - October 2018

MULTIMEDIA AND ITS APPLICATION

Class & Section: III B.Sc (IT) & (CT) Date & Session : 09.10.2018 AN Subj.Code: 16ITU504B& 16CTU504B

Duration: 2 hours Maximum: 50 marks

Answer ALL the questions 1. The people who weave multimedia into meaningful tapestries are a. Multimediaproducers c. MultimediaProjectors b. Multimediadevelopers d. MultimediaCreatures 2. Forerunner of WWW is a. Memex c. Webbrowser b. InternetExplorer d. Intranet 3. Multimedia elements are typically seen together into a projectusing a. EditingTools c. IntegratedTools b. Unauthoringtools d. Authoringtools 4. GML Standsfor a. Generalized Markuplanguage c. Generalized Makeuplanguage b. Generalized Multimedialanguage d. Global Markuplanguage 5. Person who make multimedia program come alive with soundeffects? a. Videospecialist c. Technician b. AudioSpecialists d. Supervisor 6. Diverse range of skills are calledas c. Strength a. Skill b. Knowledge d. Multimedia skillset 7. Person responsible for overall development and implementation of a projectis c. MarketingDirector a. Executive b. Musiccomposer d. ProjectManager 8. Interface designer createsa a. Softwaredevice c. Video b. Music d. Animation 9. MIDI channels are numbered from a 0to 16 b. 1 to 16 c. 0to 15 d 1 to 15 10. If the first four bits are all ones in MIDI, the message is interpreted asa c. Voicemessage a. Systemmessage b. Channelmessage d. Modemessage 11. is the connector through which the device echoes the datareceived a. MIDIOUT b. MIDIIN c. MIDITHRU d. MIDIOFF 12. messages are used to specify effects such as sustain, vibrato andpitch

- [20 * 1 = 20Marks]
- PART-A r ALL the question

	a.	Systemmessage		c.	Modemessage	
	b.	Channelmessage		d.	Voicemessage	
13.	too	l draws free-formsele	ections		C	
	a.	Lasso		c	Magnetic Lasso	
	b.	PolygonalLasso		d	. MagicWand	
14. is used to choose a foreground or background color for animage						
	a.	Colorpicker		c	. Coloring	
	b.	Colorpalette		d	. Brushes	
15.	15. is the shortcut to select the entire content of animage					
	a.	Ctrl+T		c	. Ctrl +S	
	b.	Ctrl +A		d	. Ctrl +V	
16.	is t	he shortcut to deselec	t the selected portion of	the	image	
	a.	Ctrl+T		c	. Ctrl +S	
	b.	Ctrl +A		d	. Ctrl +I	
17.	17. is the spacing between characterpoints					
	a.	kerning	b. inches	c	. points	d. line
18.	is a container for data that can hold more than one piece of data					
	a.	Constant	b. Variable	c	. Keyword	d. Array
19.	9. has a Trace Bitmap menu option that converts a bitmapped image into a vectorimage					ctorimage
	a.	frontpage	b. HTML	c	. flash	d. morph
20.). Process of drawing series of frames in between the key frames iscalled					
	0	ordering	h linking	C	twooning	d twisting

PART- B (3 * 2= 6 Marks) Answer ALL the Questions

21. Define Flash.

- 22. Explain about Drawing Objects?
- 23. How animation works?

PART C (3 * 8 = 24 Marks) Answer ALL the Questions

24. a. Explain in detail about the panels inflash

(OR)

- b. Illustrate how animation can be performed in flash using shape tween with example.
- 25. a. Explain various mouse events used inflash.

(**OR**)

- b. Explain how to use libraries in flash with example.
- 26. a. How to create mouse events and How it works?

(**OR**)

b. How to apply action script and How to use Actionscript to control actions ?

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Department of CS, CA & IT

Fifth Semester

THIRD INTERNAL EXAMINATION - October 2018

MULTIMEDIA AND ITS APPLICATION

PART-A

Class & Section: III B.Sc (IT) & (CT) Date & Session : 09.10.2018 AN Subj.Code: 16ITU504B& 16CTU504B

Duration: 2 hours Maximum: 50 marks

[20 * 1 = 20Marks]

	Answer ALL the questions					
1.	The people who weave multimedia into meaningful tapestriesare					
	a. Multimediaproducers	c. MultimediaProjectors				
	b. Multimediadevelopers	d. MultimediaCreatures				
2.	Forerunner of WWW is					
	a. Memex	c. Webbrowser				
	b. InternetExplorer	d. Intranet				
3.	Multimedia elements are typically seen	together into a projectusing				
	a. EditingTools	c. IntegratedTools				
	b. Unauthoringtools	d. Authoringtools				
4.	GML Standsfor					
	a. Generalized Markuplanguage	c. Generalized Makeuplanguage				
_	b. Generalized Multimedialanguage	d. Global Markuplanguage				
5.	Person who make multimedia program	come alive with soundeffects?				
	a. Videospecialist	c. Technician				
6	b. AudioSpecialists	d. Supervisor				
6.	Diverse range of skills are called as	 				
	a. SKIII	c. Strength				
7	b. Knowledge	d. Multimedia skillset				
1.	Executive	ent and implementation of a projectis				
	b Musicoomposor	d Project Manager				
8	U. Musiccomposer	u. Projectivianager				
0.	a Softwaredevice	c Video				
	h Music	d Animation				
9	MIDI channels are numbered from	d. Ammuton				
7.	a Oto 16 h 1 to 16	c. 0to 15 d 1 to 15				
10.	If the first four bits are all ones in MIDI	the message is interpreted asa				
	a. Systemmessage	c. Voicemessage				
	b. Channelmessage	d. Modemessage				
11. is the connector through which the device echoes the datareceived						
	a. MIDIOUT b. MIDIIN	c. MIDITHRU d. MIDIOFF				
12.	messages are used to specify effects suc	h as sustain, vibrato andpitch				

	a.	Systemmessage		c.	Modemessage	
	b.	Channelmessage		d.	Voicemessage	
13.	too	l draws free-formsele	ections		0	
	a.	Lasso		c.	Magnetic Lasso	
	b.	PolygonalLasso		d.	. MagicWand	
14. is used to choose a foreground or background color for animage				for animage		
	a.	Colorpicker		c.	Coloring	
	b.	Colorpalette		d.	Brushes	
15. is the shortcut to select the entire content of animage						
	a.	Ctrl+T		c.	Ctrl +S	
	b.	Ctrl +A		d.	. Ctrl +V	
16.	is t	he shortcut to deselec	t the selected portion of	thei	image	
	a.	Ctrl+T	_	c.	Ctrl +S	
	b.	Ctrl +A		d	. Ctrl +I	
17.	is t	he spacing between c	haracterpoints			
	a.	kerning	b. inches	c.	. points	d. line
18. is a container for data that can hold more than one piece of data						
	a.	Constant	b. Variable	c.	Keyword	d. Array
19.	has	a Trace Bitmap men	u option that converts a	bitn	napped image into a ve	ctorimage
	a.	frontpage	b. HTML	c.	flash	d. morph
20.	Pro	cess of drawing serie	s of frames in between t	he k	key frames iscalled	
	a.	ordering	b. linking	c.	tweening	d. twisting

PART- B (3 * 2= 6 Marks) Answer ALL the Questions

21. Define Flash.

ANS:Macromedia Flash is a very popular tool for creating very interesting and dynamic Web sites. In this module, you will learn what you can do with Macromedia Flash so that you will have a better understanding of how adding Flash movies can lives up your Web site..

22. Explain about Drawing Objects?

ANS:

The Pencil tool draws any shape of line that you want. Unlike the Line tool or the Pen tool, the Pencil tool follows whatever path you want- no matter how crooked it might be. This is the tool that you will want to use to add small details to objects when the other drawing tools seem just a little too confining.

23. How animation works?

ANS:

Flash makes animation easy to create using a process known as tweening. Once you have done this, Flash automatically generates all the in-between frames. So, if it takes 24 frames to complete your animation, you may end up creating tow of the frames, while Flash creates the other 22 frames.

PART C (3 * 8 = 24 Marks) Answer ALL the Questions

24. a. Explain in detail about the panels inflash

ANS:

The Panels

Flash makes extensive use of panels. These are very similar to the dialog boxes that you have no doubt used in many other programs, but there are some differences. For example, panels do not have OK or Close buttons. That's because a panel does not need to be closed in order to apply any selections that you may have made in it. It's not really important that you study the purpose of each panel in detail at this point.

Project 1: Creating a simple Animation

One of the best ways to get a feel for how Flash helps you create animations is to go ahead and give it a try yourself. It really isn't necessary to get real fancy with this first

project, but at least you will get a chance to get your feet wet.

Step-by-Step

1. Make certain that you have Flash open and that there is nothing on the stage. If necessary, select File | New from the Flash menu to open a new, blank movie.

2. Click the Rectangle tool in the toolbox so that this tool is selected.

3. Near the lower-left corner of the stage, draw a small rectangle.

4. Click the Arrow tool to select it. KARPAGAM ACADEMY OF HIGHER EDUCATION Class: III BSc IT Course Name: Multimedia and its Applications
Course Code: 15ITU602 Unit: IV (Flash) Batch- 2015-2018

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5. Double-click the rectangle you just drew so that both the fill and the stroke are selected. You may find it easier to simply draw a selection box that surrounds the entire rectangle.

6. Select the Modify | Group command (or press CTRL-G). The object needs to be grouped in order to have a motion tween applied.

7. Click frame 24 in the timeline to select the frame. You can tell when the frame is selected because the frame will then change to dark blue. The choice of frame 24 is arbitrary. In this case, we want the animation to last for 2 seconds, and at the default frame rate of 12 frames per second, frame 24 will produce the desired result.

8. With frame 24 still selected, choose Insert | keyframe from the Flash menu to add a keyframe to frame 24.

9. Drag the rectangle from the lower-left corner to the upper-right corner of the stage.

This will be where the rectangle finishes its movement.

10. Click the timeline between frames 1 and 24 to select all of the frames in that range. When the frames are selected, the frames will turn back.

11. Select insert | Create Motion Tween from the menu. This will add a solid arrow that points from frame 1 to frame 24 in the timeline.

12. Select Control | Test Movie to try out your animations. Your rectangle will move from the lower left to the upper right of the stage and then jump back and start again.

13. Click the lower close button to close the Flash Player and return to the Flash development environment.

Project Summary

Believe it or not, you have just created your first Flash movie! For reference, y

(OR)

b. Illustrate how animation can be performed in flash using shape tween with example.

ANS:

UNDERSTANDING FLASH

Macromedia Flash is a very popular tool for creating very interesting and dynamic

- Web sites. In this module, you will learn what you can do with Macromedia Flash so that
- you will have a better understanding of how adding Flash movies can lives up your Web

site ..

In addition to Flash, you will probably use a page layout program such as

Macromedia Dreamweaver or Microsoft FrontPage. You may even use graphicsediting

software or sound-editing software to create Web page content.

Flash is everywhere. You may be surprised to learn that the vast majority of Web sites that

contain animation generally use Flash.

Create Web Images

The World Wide Web-or just Web- is a part of the Internet that truly cries out for visual

creativity. When you surf the Web, you see literally thousands of different ideas about

what makes an interesting Web sites. Even with all of these divergent opinions, there is

one almost universally accepted notion-images and color are pretty much a requirement

when you are creating a Web site.

Eg:

Although many different programs can easily display various assorted types of bitmap

- images, vector graphics typically must be viewed using a special program. For Flash
- images, this special program is the Flash Player, which almost everyone already has
- installed in their Web browser. Flash images are saved as part of a Flash movie, and that

Flash movie is what is placed on your web page. KARPAGAM ACADEMY OF HIGHER EDUCATION

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You do need to add a bit of HTML to the Web page, but Flash automatically creates the

necessary HTML code when you publish a Flash movie.

Animate Your Web Site:

Flash makes animation easy to create using a process known as tweening. Once you

- have done this, Flash automatically generates all the in-between frames. So, if it takes 24
- frames to complete your animation, you may end up creating tow of the frames, while
- Flash creates the other 22 frames.

For example, take a look at this animated sequence. Here, I'm moving the truck across

- the stage. I needed to create only one instance of the truck. I told Flash where I wanted the
- truck to begin, and then I told it where the truck should end. Once I did this, Flash too care
- of all the rest and generated all of the frames necessary to make it appear as though the

truck were smoothly driving across the screen from one side to the other.

Flash actually offers several different ways to move and reshape objects. As you will

- learn in Module 7, you can create a motion guide when you want to move an object along a
- path that isn't straight. In addition to motion tweens, which are used to moves objects, you
- can also create shape tweens. These enable you to change the shapes of objects. You will
- learn about both types of tweens in Module 6.
- **Build Interactive Movies**
- In addition to simple animation, you can use Flash to build interactive Web sites. You
- could, for example, create a Flash movie that enables the visitor to choose between several
- different movie clips or even between different soundtracks. Because Flash is object
- oriented, your movies already know how to interact with users. All you need to do is to tell
- your movies what you want them to do when the user does something, like click a button.

It does take a small amount of ActionScript programming in order to add most

interactivity to Flash movies.

25. a. Explain various mouse events used inflash.

ANS:

UNDERSTANDING ACTIONS AND EVENT HANDLERS:

Actions and Event handlers are parts of ActionScripts that you will use in almost

every case in which you add ActionScript code to a flash movie, so it is vital that you have a clear understanding of how these language elements work.

ACTIONS:

Actionscriptactions are what might be called commands in some other programming

languages. Actions cause something to happen immediately when they are executed. Actions

can be attached to keyframes in a timeline, or they can be attached to an object.

□ If an action is attached to a keyframe, the action is executed when the playhead reaches thekeyframe- unless you are using a conditional test that may modify the program flow depending on the results of the test.

 \Box If an action Is attached to an object, the action is executed only when the proper

event occurs. This is determined by the event handler options you have selected.

EVENT HANDLERS:

Event handlers function something like traffic signals. An action that is controlled by an event handler can be executed only when the event handler gives the action a go signal. There are two types of event handlers in Actionscript:

□ Buttons use the on mouse event handler so that they can respond to mouse events.

□ Movie clips use the onClipEvent handler.

Both types of event handlers can respond to some of the same types of events, but the onClipEvent handler has some additional options.

(**OR**)

b. Explain how to use libraries in flash with example.

ANS:

UNDERSTANDING FLASH'S BASIC ELEMENTS

As with any other program you might use on your computer, Flash has a number of

basic elements that enable you to accomplish the tasks for which the program

Was designed.

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The Flash Stage:

The stage is the area where you create your Flash movies. This is the white area that takes up most of the middle of the Flash window.

The stage is surrounded by a gray area known as the workspace. It is perfectly acceptable for you to place objects in the workspace off the edge of the stage. Objects that are in the workspace but not on the stage won't appear in the movie.

The Timeline

The timeline is the Flash element that controls when things happen during the movie playback. Here, I've labelled the important items you see on the timeline.

Here is a brief description of these important timeline elements:

 \Box Playhead You can drag the playhead to different frames to view the contents of those frames.

 \Box Frame numbers These are your guides to working with the timeline; they enable you to place objects in the correct frame.

□ Timeline menu This provides access to a number of options where you can choose timeline view settings.

 \Box Center frame This moves the current view of the timeline so that the current frame

is centered in the visible area of the timeline.

 \Box Onion skin view This displays several frames before and after the current frame using lightly shaded versions of the objects on the stage so that you can get a feel for the animation sequence.

□ Onion skin outline view This also displays an onion skin view of several frames, but it uses wire frame outlines rather than filled objects.

□ Edit multiple frames This enables you to edit the animation in several frames. KARPAGAM ACADEMY OF HIGHER EDUCATION

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□ Modify onion markers This displays a menu that allows you to choose how many frames to display in onion skin view.

□ Current frame This shows the frame number of the currently selected frames.

 \Box Frame rate This shows the number of frames per second that are displayed in the current movie.

□ Playback time This shows how many seconds will have elapsed when the current frame is played.

 \Box Scroll bars These enable you to see frames or layers that are not currently displayed.

26. a. How to create mouse events and How it works?

ANS:

(**OR**)

b. How to apply action script and How to use Actionscript to control actions ?

ANS:

USING ACTIONSCRIPT TO CONTROL ACTIONS:

In this section, we will look at some of the more basic actions that you are likely to use. In this way, you can get a feel for actually using some Actionscript to program your

Flash movies.

Goto:

The goto action is used to move the playhead to a different frame in the timeline. KARPAGAM ACADEMY OF HIGHER EDUCATION

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 \Box GotoAndPlay: This form of the action moves the playhead to a specific frame number or frame label and begins playing the movie from that point.

 \Box gotoAndStop: This form of the action moves the playhead to a specific frame number or frame label and stops the playback.

PLAY:

The play action resumes playback of the movie at the current frame. In that way, you

could provide the user with buttons that they could use to control playback of the movie.

STOP:

The stop action stops the playback of the movie. This is the another of the actions that

you might typically attach to a button so that the user could control the playback.

STOPALLSOUNDS:

The stopallsoundsaction immediately stops any sounds that are currently playing. This provides the user with a way to mute the soundtrack if you attach this action to action to a

button that the user can click.

GETURL:

You use thegetURL action to load a new document from a specific web address. You

can use this action for a number of different purposes, including loading another Flash movie.

This argument can take any of the following values:

 $\hfill\square$ Windowname: The is the name of a specific window in which to display the document.

 $\hfill\square$ Self: This places the document in the current frames.

 \Box Blank: This places the document in the new window.

FSCOMMAND:

The fscommand action is used to send commands to the Flash player or the web browser that contains the Flash player. Most of the commands that you are likely to send would be javascripts commands.

LOADMOVIE:

The loadmovie action is used to load additional Flash movies. These can be replacements for an existing loaded movie, or they can be additional movies. The action can be very handy if you want to provide the user the option to select particular movies. The loadMovie action has two different formats:

 \Box Loadmovie: you use this format when you want to specify a target movie clip that will be replaced by the new movie clip.

 \Box loadMovieNum: you use this format when you want to specify a level on which to load the new movie clip.

This might be handy if you wanted to send certain information such as the name of the

user so that the new movie would also know who has viewing the movie.

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UNLOAD MOVIE:

The unload movie action unloads the movie that you specify from memory. You

can

specify the movie to unload by name or by level number. Once you unload the movie, it can no longer be played.

ON(MOUSE EVENT):

The final action we will look at is labelled "on". In reality, this is not an action; It is a convenient way for you to access the mouse event handler that you can wrap around a block of the ActionScript statements.

The reason for this Flash automatically adds this event handler whenever you add actions

to a button symbol instance. That is because the button symbol instance must always respond

to mouse events, so it needs this event handler in every case