Multi Attribute Schematic Relational Mapping Based Integrity Management for Security Enhancement of Data Warehouse

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ABSTRACT:-

As the growing relational database becomes more sophisticated and grouped under a data warehouse, maintaining integrity of relational database has become a challenging task. To solve the problem of integrity management, a novel multi attribute schematic relational mapping (MASRM) algorithm is discussed in this paper. The method preprocesses the query to identify the relational mapping required to perform query processing and identifies a set of relational database to be accessed. Based on the rule mapping and the list of objects needs to be accessed, the user profile is verified for the access before performing the query processing. The user will be returned with the result, only if he has access to all the relational mappings required to produce the result. The method maintains a set of relational mappings for different possible queries to be produced as a rule set. From the rule set, for the input query?, required relational mappings are produced and mapped. For each of the rule matched and with the meta information of the rule, the method verifies the required access fields before producing result to the user. The proposed method improves the performance of the security management in data warehouse in an extended manner.

Index Terms: Data warehouse, Schematic Relations, Integrity Management, Relational mapping.

I. INTRODUCTION

The increasing volume of relational data needs to be stored in data warehouse where large relational data can be stored. The data present in warehouse can be used in various ways, particularly in generating business intelligence' which supports business peoples in many ways. For example, a business man may think of getting knowledge about the market sale of his product in various regions in different time window. By producing a query in the warehouse about generating intelligence and using the intelligence produced, he can change the market strategy of the product. The product manager or the business man can focus on weak zone to improve the market sale of a particular product. Sometimes the business intelligence can be used to identify a group of people who purchase his product in more number,

basing on their knowledge. He can thus produce a different range of products towards different group of people where they are grouped according to economic status.

Such business information can be accessed by other people also. But the user from different perspective has to be restricted to maintain the data integrity. The warehouse information has a variety of personal information of their clients or users who purchase the product. The personal information has to be secured from the external user and has to be restricted at different levels. Such a security management is necessary in large scale data warehouse. But the data warehouse has access to different peoples who can execute a variety of queries to get a set of knowledge. The problem is how the external users at different levels are restricted from accessing different attributes or relational objects of the data warehouse.

The data warehouse has a number of relational databases where each has a specific schematic relation, and the whole warehouse can be presented in the form of a set of relations. Each database can be lined to different data base and they can have relation between them. The user query can have any number of levels in nested forms. By separating them, one can identify the number of relations it has and number of database the query needs to access. In any data relation, there will be a number of attributes and each has different access permission. Not all the attributes have same levels of access but have different access restrictions. Similarly not all the users of the system have the same level of access permission and everybody has a different access permission which will vary according to the user profiles. Relational mapping is the process of identifying the relational database the query needs to access and identifying the number of unidentified attributes being accessed by the query. By performing relational mapping, the process can identify the relational schema the user has access and the relational scheme the query needs to access and so on. By performing this process, the user query can be categorized as authorized or overriding.

II. RELATED WORKS

There are a number of security protocols which have been discussed for the enhancement of security in data warehouse and are discussed few of them a here in this section.

A Schematic Technique Using Data type Preserving Encryption to Boost Data Warehouse Security [1], presents a method of in progression fortification based on an encryption scheme which preserves the data type of the plaintext resource. We suppose