GRAY CODE BASED K-MAP TECHNIQUE (G-K MAP) FOR BOOLEAN FUNCTIONS WITH MANY VARIABLES *M. Valli, Dr. R. Periyasamy, Dr. J. Amudhavel

Abstract:

Karnaugh map method is the simpler and most commonly used minimization technique to simplify Boolean Functions (BFs). It uses two dimension tables to minimize BFs and is very effective for BFs up to three or four variables. But, it fails to work and complexity is increased when the number of variables increases. It is tedious to minimize BFs with five variables and very difficult to solve six variables and it is not possible for variables greater than six. In such cases, Quine-McCluskey method can be used to minimize BF with large number of variables. However, Quine-McCluskey method also has some drawbacks with the increased complexity. To overcome the complexity of existing K-amp technique, a new simplification technique is proposed. This paper proposes a novel gray code based K-map technique to solve Boolean expression with more number of variables. The proposed method is the modified version of classical k-map technique and it utilizes gray code for simplification. The proposed method performs well, minimizes BF with more than six variables with less complexity. An illustration is also given to prove the simplicity of the proposed technique.

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