Abstract

It is well known that the Karnaugh-map technique is an elegant teaching resource for academics and a systematic and powerful tool for a digital designer in minimizing low order Boolean functions. Why is the minimization of the Boolean expression needed? By simplifying the logic function, we can reduce the original number of digital components (gates) required to
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implement digital circuits. Therefore, by reducing the number of gates, the chip size and the cost will be reduced and the computing speed will be increased. The K-map technique was proposed by M. Karnaugh. Later Quine and McCluskey reported tabular algorithmic techniques for the optimal Boolean function minimization. Almost all techniques have been embedded into many computer aided design packages and in all the logic design university textbooks. In the present work, a well known modeling language, the object oriented technique is used for designing an Object-oriented model for Karnaugh map with the help of digital gates. An Object-oriented algorithm is also proposed for simplification of boolean functions through K-map. The Unified Modeling Language stereotypes and class diagrams are presented and performance of Unified Modeling Language model is analyzed.

Reference

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