

PROJECT SYNOPSIS

ON

SIMPLIFYING BOOLEAN EXPRESSIONS USING QUINE MCCLUSKEY METHOD

**Submitted To: Submitted By:**

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**TITLE:**

Simplifying boolean expressions using Quine McCluskey method.

**OBJECTIVES:**

The objective of this project is to simplify Boolean expressions using Quine McCluskey algorithm by reducing their complexity and number of terms. This is done by identifying and eliminating redundant or unnecessary terms, resulting in a minimized and more efficient Boolean expression.

**Steps for Quine McCluskey Method:**

1. Arrange the given minterms according to the number of ones present in their binary representation in ascending order.
2. Take the minterms from the continuous group if there is only a one-bit change to make their pair.
3. Place the ‘-‘ symbol where there is a bit change accordingly and keep the remaining bits the same.
4. Repeat steps 2 to 3 until we get all prime implicants (when all the bits present in the table are different).
5. Make a prime implicant table that consists of the prime implicants (obtained minterms) as rows and the given minterms (given in problem) as columns.
6. Place ‘1’ in the minterms (cell) which are covered by each prime implicant.
7. Observe the table, if the minterm is covered by only one prime implicant then it is an essential to prime implicant.
8. Add the essential prime implicants to the simplified boolean function.

**LANGUAGES USED:**

Python

**HARDWARE USED:**

AMD Ryzen 5 5600H, 16GB Ram, 512GB SSD.

**SOFTWARES USED:**

(Windows 10 version 21H2) / (Arch Linux), VS Code, Python

Signature of Mentor Signature of Student