

KIET GROUP OF INSTITUTIONS, GHAZIABAD
COMPUTER SCIENCE AND INFORMATION
TECHNOLOGY



PROJECT BASED LEARNING
On
K-MAP SIMPLIFIER

SUBJECT: DISCRETE STRUCTURE & LOGIC LAB
(KCS-303)

Submitted By:

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ACKNOWLEDGEMENT

I've got this golden opportunity to express my kind gratitude and sincere thanks to my subject faculty "**Ms. Jaya Sharma**", Computer Science and Information Technology Department, **KIET GROUP OF INSTITUTIONS** for their kind support and necessary counselling in the preparation of this project report. I'm also indebted to each and every person responsible for the making up of this project directly or indirectly.

I must also acknowledge or deep debt of gratitude each one of my colleague who led this project come out in the way it is. It's my hard work and untiring sincere efforts and mutual cooperation to bring out the project work. Last but not the least, I would like to thank my parents for their sound counselling and cheerful support. They have always inspired us and kept our spirit up.

Aim: To prepare a k-map simplifier for solving Boolean expressions.

Objective: To simplify the algebraic expressions in Boolean functions without having to resort to complex theorems or equation manipulations that makes it easier to map out parameter values and arrive at a simplified Boolean expressions.

Abstract:

- The project would begin with the development of a comprehensive list of all the important details that need to be captured during a solving simple k-map such as Boolean expressions , POS or SOP .
- We would then create the user interface for select min. terms for finding simplified expressions.
- Once the user interface is completed, we would use quine- mcCluskey algo which is used for minimization of Boolean function.
- In quine algo we use min terms and prime implicant functions for finding essential prime implicant function.

Finally, the project would be deployed, either in the form of a website, for use in solvinf Boolean expressions.

Basic principle: It uses quine mcCluskey algorithm for simplify k-map . In this algo we use min. terms and prime implicant to find essential prime implicant function.

Methodology:

- **Programming languages:-** Depending on the platform and the level of complexity of the project programming language java script , css is used. Which is to be implemented on visual studio code platform.
- **Fronted web development frameworks:-** HTML is used to create the user interface and user experience for the k-map simplifier.

Project Output

Karnaugh Map Simplifier

← ↻ ⓘ 127.0.0.1:5500/index.html

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Karnaugh Map Simplifier

• Click the truth value on the right side of the truth table below, or the cell on the Karnaugh map to change the minimum term state

- False / 0 /
- True / 1 /
- Don't Care / φ /

A	B	C	D	true value		$\bar{C}\bar{D}$	$\bar{C}D$	CD	$C\bar{D}$
m ₀	0	0	0	0	$\bar{A}\bar{B}$	m ₀	m ₁	m ₃	m ₂
m ₁	0	0	0	1	$\bar{A}\bar{B}$	m ₄	m ₅	m ₇	m ₆
m ₂	0	0	1	0	$\bar{A}B$	m ₁₂	m ₁₃	m ₁₅	m ₁₄
m ₃	0	0	1	1	$\bar{A}B$	m ₈	m ₉	m ₁₁	m ₁₀
m ₄	0	1	0	0					
m ₅	0	1	0	1					
m ₆	0	1	1	0					
m ₇	0	1	1	1					
m ₈	1	0	0	0					
m ₉	1	0	0	1					
m ₁₀	1	0	1	0					
m ₁₁	1	0	1	1					
m ₁₂	1	1	0	0					
m ₁₃	1	1	0	1					
m ₁₄	1	1	1	0					
m ₁₅	1	1	1	1					

set to 1

set to 0

set to φ

• Simplified Way

- ☒ Sum of Product (SOP)
- ☐ Product of Sum (POS)

Simplified Expression:

Activate Windows
Go to Settings to activate Windows.

15°C Smoke ENG IN 11:29 AM 1/27/2023