भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad

Karnaugh-map Using Arduino

SURAJIT SARKAR
sarkars531@gmail.com
IITH - FUTURE WIRELESS COMMUNICATIONS-(FWC22085)

Contents

Abstract

The objective of this manual is to show how to verify following min-terms.

f(A,B,C,D) $= \sum m(2,3,8,10,11,12,14,15)$

using karnaugh-map

1 Introduction

Karnaugh-map provides a systematic method for simplifying boolean expressions and may produce simplest SOP or POS expressions.

karnaugh-map used to minimize number of logic gates that are required in a digital circuit.

2 components

component	value	quantity
Arduino	UNO	1

Table-0

3 karnaugh-map

3.1 Implementation

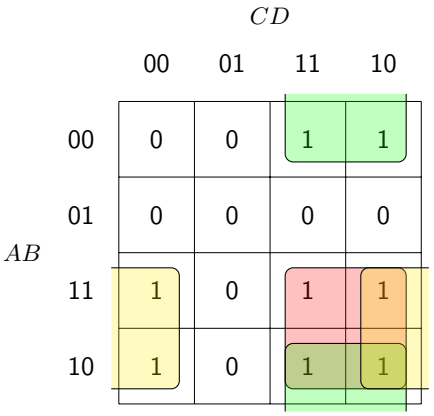

Figure 1:k-map

From the above karnaugh-map the expression is

f=$A\overline{D} + AC + \overline{B}C$

This karnaugh-map is verified by using

Truthtable Table-1

4 Truthtable

A	B	C	D	O/P
0	0	0	0	0
0	0	0	1	0
1	0	1	0	1
1	0	1	1	1
0	1	0	0	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	1

Table-1

5 Hardware Connections

1.connect the arduino to the computer

2.The led will ON and OFF when changing the inputs .

.

6 Software

Download the follwing code

https://github.com/sssurajit/fwc/blob/main/codes/src/main.cpp