Karnaugh-map Using Arduino

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Abstract

The objective of this manual is to show how to verify following min-terms.F= (m7+m2+m6+m5) 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
Breadboard	-	1
Led	-	1
Resistor	220ohm	1
Jumperwires	M-M	10

Table-0

3 karnaugh-map

3.1 Implementation

AB \ CD	00	01	11	10
00	0	0	0	1
01	0	1	1	1
11	0	0	0	0
10	0	0	0	0

Figure 1:k-map

From the above karnaugh-map the expression is

A'BD+A'BC+CD'A'

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
0	0	1	0	1
0	0	1	1	0
0	1	0	0	0
0	1	0	1	1
0	1	1	0	1
0	1	1	1	1
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0

Table-1

5 Hardware Connections

1.connect the arduino to the computer.

arduino	8	9	10	11	2	gnd
input	A	B	C	D		
led					+	-

2.The led will on and off when changing the inputs.

Table-2

6 Software

Download the follwing code

https://github.com/maddudinesh/iithyderabad-fwc/blob/main/assign1-assembly/codes/hello.asm