IMPLEMENTATION OF BOOLEAN LOGIC IN IDE

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Contents

Abstract

To Obtain the Boolean Expression for the Logic circuit shown below

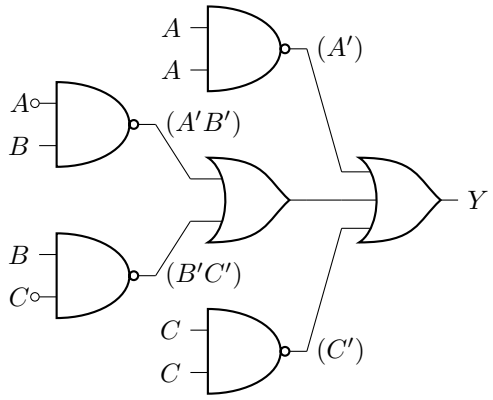

Fig. 1(Y = A'B'+B'C'+A'+C')

1 Components

Components	Values	Quantity
Arduino	UNO	1
JumperWires	M-M	5
Breadboard		1

2 Implementation

2.1 METHOD-1

The truth table for Fig. 1 is available in Table-1 Using Boolean logic, output Y in Table 1 can be expressed in terms of the inputs A, B, C as Y= A'.B'+B'.C'+A'+C' .....(2.1) D3,D4,D5 Pins of Arduino are configured as input pins instead of initializing A,B,C inside software,inputs are given manually as A,B,C.led will glow based on Y satisfying the Table-1 The code below realizes the Boolean logic for Y in Table-1

https://github.com/SkocKwOR/FWC_/blob/main/assignment/cd1/src/main.cpp

ubuntu command line commands

pio run.....for running
pio run −t nobuild −t upload.....for flashing

A	B	C	Y
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	0

Table-1

2.2 METHOD-2

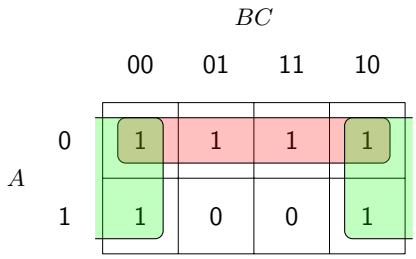

Fig. 2

Karnugh Map : The expression in (2.1) can be minimized using the K-map in Fig 2. In Fig.2 ,the implicants in boxes 0,1,2,3 result iS A' The implicants in boxes 0,4,2,6 result in C' Thus, after minimization using Fig. 2, (2.1) can be expressed as Y=A'+ C'.....(2.2). Verify the truth table for Y in TABLE 1. The code below realizes the Boolean logic for F in 2.2

https://github.com/SkocKwOR/FWC_/blob/main/assignment/cd2/src/main.cpp