ASSIGNMENT-3

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Contents

Abstract

A combinational circuit has three inputs A, B and C and an output F.F. is true only for the following input combinations?
A is false and B is true
A is false and C is true
A, B and C are all false
A, B and C are all true
(1) Write the truth table for F. use the convention, true = 1 and false = 0.
(2) Write the simplified expression for F as a Sum of Products.
(3) Write the simplified expression for F as a product of Sums.

1 COMPONENTS

Component	Value	Quantity
Arduino	UNO	1
Led	-	1
Breadboard	-	1
Jumper Wires	-	7

TABLE 1.0

1.1 Arduino

The Arduino UNO has some ground pins, analog input pins A0-A3 and digital pins D1-D13 that can be used for both input as well as output. It also has two power pins that can generate 3.3V and 5V.In the following exercises, only the GND, 5V and digital pins will be used.

2 IMPLEMENTATION

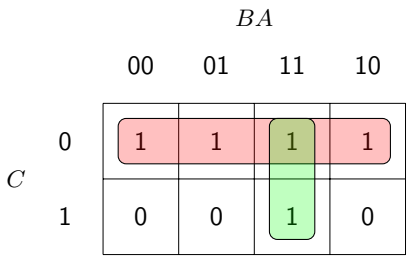
2.1 Truth table

C	B	A	F
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

TABLE 2.0

2.2 Karnaugh Map

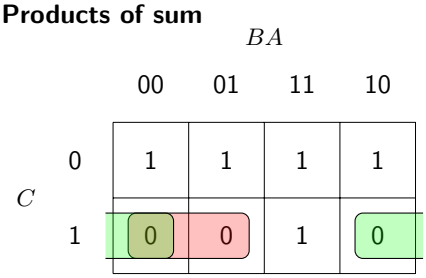
2.2.1 Sum of products



F = C'+AB

fig 2.1

2.2.2 Products of sum

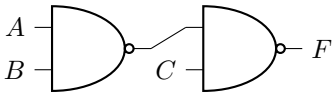


F = (B+C')(C'+A)

fig 2.2

Above K-maps are verified using TABLE 2.0

3 LOGICCIRCUIT



F =(A'B'C)'

fig 3.0

4 HARDWARE

1. Connect the Arduino to the computer.
2. Download the following directory.

https://github.com/Sairaghavendra36/Fwc−2022/blob/main/assgn3_avr/avr/method1/main.c