

Boolean Expression to its simplest form using K-map

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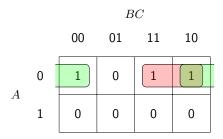
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1 Introduction

The external input signals A, B and C.(A B C , and are not available). The +5V power supply (logic 1) and the ground (logic 0) are also available. The output of the circuit is X = A'B'+A'B'C'.

2 karnaugh-map



X = A'C' + A'B

3 Components

| Component | value | quantity | |
|--------------|---------|----------|--|
| Resistor | 220 ohm | 1 | |
| Arduino | UNO | 1 | |
| LED | | 1 | |
| Bread board | | 1 | |
| Jumper wires | M-M | 10 | |

Table 1:

4 Truth table for given expression

| Α | В | С | Х |
|---|---|---|---|
| 0 | 0 | 0 | 1 |
| 0 | 0 | 1 | 0 |
| 0 | 1 | 0 | 1 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 |
| 1 | 0 | 1 | 0 |
| 1 | 1 | 0 | 0 |
| 1 | 1 | 1 | 0 |

Table 2:

5 Connections and results

Also make connections to arduino $\ensuremath{\mathsf{UNO}}$,led and inputs based on table3.

| Arduino UNO | 2 | 3 | 4 | 8 | gnd |
|-------------|---|---|---|---|-----|
| Input | Α | В | С | | |
| led | | | | + | - |

Table 3:

| Sample input | Α | В | С | LED |
|--------------|---|---|---|-----|
| 1 | 0 | 0 | 0 | ON |
| 2 | 0 | 0 | 1 | OFF |

Table 4:

5.1 Code Link

https://github.com/Harsha-Arza/assignIDE/blob/main/codes/src/main.cpp