# ASSIGNMENT-1

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## Contents



## Abstract

This manual explains about a logic circiut which implements the boolean function F=X'Y+XY'Z', where the input combination X=Y=1 can never occur. Finding the simplified expression of F:

## 1 Components

| Component | Values | Quantity |
|---|---|---|
| Arduino | UNO | 1 |
| JumperWires | M-M | 10 |
| Breadboard | | 1 |
| LED | | 2 |
| Resistor | 220ohms | 1 |

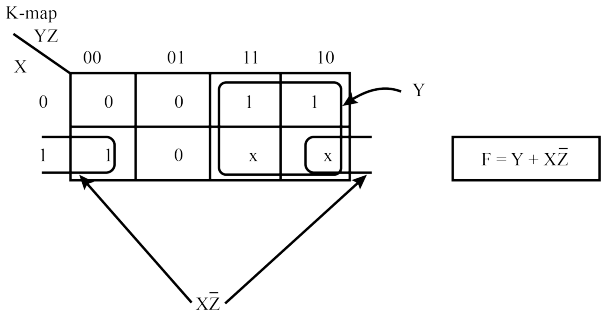
Figure.a

## 2 Truth Table

| X | Y | Z | F |
|---|---|---|---|
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 |
| 0 | 1 | 0 | 0 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 0 |
| 1 | 1 | 0 | - |
| 1 | 1 | 1 | - |

Truth table Boolean Function "F"

## 3 K-map Implementation




**Reducing the boolean Function** :
F=X'Y+XY'Z'
F=X'Y(Z+Z')+XY'Z'
X'YZ+X'YZ'+XY'Z'
Reduced expression using K-maps is
F=Y+XZ'

## 4 Implementation

| Arduino PIN | INPUT | OUTPUT |
|---|---|---|
| **2** | X | |
| **3** | Y | |
| **4** | Z | |
| **8** | | F |

Connections

**Problem-1** :

1. Connect the circuit as per the above table.
2. Connect the output pin to LED
3. Execute the circuit using the below code.

**Problem-2** :
1. Change the values of X,Y,Z in the code and verify the Truth Table