IOT Assignment

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FWC22098 IITH Future Wireless Communication (FWC) ASSIGNMENT

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1 Problem

Reduce the following Boolean Expression to its simplest form using K-Map : E(U,V,Z,W)= (2 , 3 , 6 , 8 , 9 , 10 , 11 , 12 , 13)

2 Components

Components	Quantity
Vaman Board	1
JumperWires	20
Breadboard	1
Seven segment display	1
IC 7447	1
USB-C Cable	1
USB-UART	1

3 The steps for implementation:

1. Connect the USB-UART pins to the Vaman ESP32 pins according to Table

VAMAN LC PINS	UART PINS
GND	GND
ENB	ENB
TXD0	RXD
RXD0	TXD
0	IO0
5V	5V

2. Flash the following setup code through USB-UART using laptop

https://github.com/dudekulauseni123/Module1/blob/main/iot/codes/setup/src/main.cpp

```
svn co https://github.com/dudekulauseni123/
    Module1/trunk/Iot/codes/setup
cd setup
pio run
pio run -t upload
```

after entering your wifi username and password (in quotes below)

```
#define STASSID "..." // Add your network
    credentials
#define STAPSK "..."
```

in src/main.cpp file

3. You can notice that vaman will be connnected to the network credentials provided above.Connect your laptop to the same network ,You should be able to find the ip address of your vaman-esp on laptop using

```
ifconfig
nmap -sn 192.168.93.1/24
```

where your computer's ip address is the output of ifconfig and given by 192.168.6.x

4. Login to termux-ubuntu on the android device and execute the following commands:

```
proot-distro login debian
cd /data/data/com.termux/files/home/
mkdir iot
svn co https://github.com/dudekulauseni123/
    Module1/trunk/Iot/codes/ota
cd codes
```

5. Assuming that the username is <<hussain>> and password is <<hussain@123>>, Make connections to the seven-segment display and IC 7447 and flash the following code wirelessly

https://github.com/dudekulauseni123/Module1/blob/main/Iot/codes/ota/src/main.cpp

through

```
pio run
pio run -t nobuild -t upload --upload-port
    ip_addres_of_esp
```

where you may replace the above ip address with the ip address of your vaman-esp.

4 K-Map

The minimized expression is E=(UZ'+V'Z+U'ZW')

[4][4][1][][] 0,1,4,5,7,14,15 2,3,6,8,9,10,11,12,13 321110 891213 26 [color=black, ultra thin] (0, 4) – node [pos=0.7,

above right, anchor=south west] XW node [pos=0.7, below left, anchor=north east] ZY $++$(135:1);

5 Truth Table

U	V	Z	W	E
0	0	0	0	0
0	0	0	1	0
0	0	1	0	1
0	0	1	1	1
0	1	0	0	0
0	1	0	1	0
0	1	1	0	1
0	1	1	1	0
1	0	0	0	1
1	0	0	1	1
1	0	1	0	1
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	0
1	1	1	1	0

Truth Table

Verify the above truth table by changing inputs and observing the output.

6 Conclusion

Hence the given boolean expression is minimized and verified it's functionality by using IOT.