

IMPLEMENTATION OF BOOLEAN LOGIC IN VAMAN ESP

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Abstract

This manual shows how to represent the K-MAP for POS expression for the function "G" shown in below truth table.

U	V	W	G
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

1 Components

Components	Values	Quantity
Vaman Board		1
JumperWires	M-F	5
Breadboard		1
USB-C Cable		1
USB-UART		1

2 Implementation

		VW			
		00	01	11	10
U	0	1	0	0	1
	1	1	0	1	0

Karnugh Map : The minimized expression using the K-map can be expressed as

$$G = (V + W')(U + W')(U' + V' + W) \quad (1)$$

The code below realizes the Boolean logic for G using 5V,GND of Vaman Board.

2,4,6 GPIO Pins of Vaman Board are configured as input pins and the required Logic for U,V,W are drawn from 5V (Digital '1'),GND (Digital '0'). Built in led will glow based on G satisfying the Table

2.1 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/KrishnaYadati/Assignments/blob/main/IOT/codes/setup/src/main.cpp
```

```
svn co https://github.com/KrishnaYadati/Assignments/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 connected 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 192.168.208.0/24
```

where your computer's ip address is the output of ifconfig and given by 192.168.208.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/KrishnaYadati/  
Assignments/trunk/IOT/codes/ota  
cd codes
```

5. Assuming that the username is krishna and password is 123, flash the following code wirelessly

```
https://github.com/KrishnaYadati/  
Assignments/blob/main/IOT/codes/ota/src/  
main.cpp
```

through

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

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