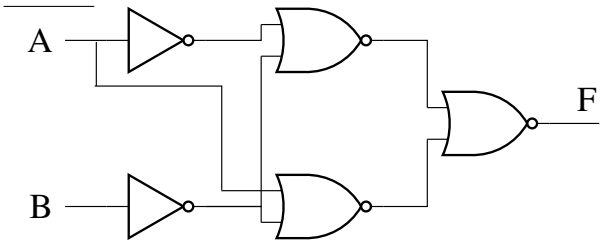
ARM ASSIGNMENT

Koushik Kalyani
koushikkalyani369@gmail.com
IITH - Future Wireless Communication

CONTENTS

I. QUESTION

The logic block shown has an output F given by

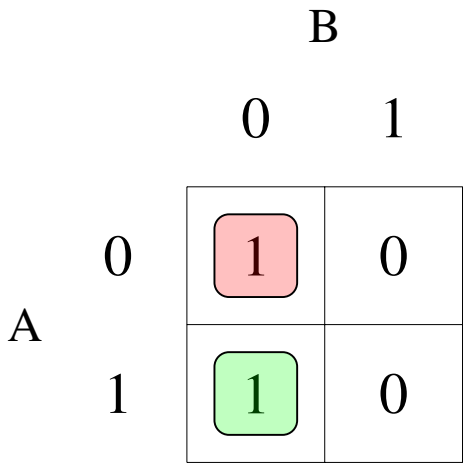


(A) $A + B$
(B) $A \cdot \bar{B}$
(C) $A + \bar{B}$
(D) $\bar{B}$

II. ANSWER

The above question can be solved as
$\rightarrow \overline{\overline{\bar{A} + \bar{B}} + \overline{A + \bar{B}}}$
$\rightarrow \overline{A \cdot B + \bar{A} \cdot B}$
$\rightarrow \overline{(A + \bar{A})B} \rightarrow \overline{B}$
Therefore, the output $F = \bar{B}$.

III. K-MAP IMPLEMENTATION



Therefore $F = \bar{B}$

IV. TRUTH TABLE

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

Truth table for Boolean funtion F

V. LOGIC DIAGRAM

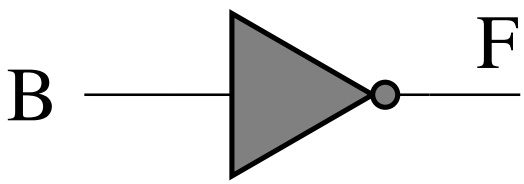


Fig. 2

VI. COMPONENTS

Components	Values	Quantity
VAMAN	ARM	1
Jumper Wires	F-M	5
Breadboard		1
LED		1
Resistor	$\leq 220 Ohms$	1

VII. IMPLEMENTATION

VAMAN PIN	INPUT	OUTPUT
22	B	
21		F

Connections

Procedure

1. Connect the circuit as per the above table.
2. Connect inputs to Vcc for Logic 1, ground for Logic 0.
3. Execute the circuit using the below codes.

Approach 1

https://github.com/koushikkalyani/FWC/blob /main/ARM/main.c

4. Change the values of B in the Hardware and verify the Truth Table.

How to execute

1. Just write your algorithm code in existing code in ”main.c”.
2. Go to gcc-project directory and type command ”make clean” then to compile type ”make”.
3. This will generate .bin file which needs to be sent to your laptop .Connect your mobile Hotspot to your laptop and type command. ”scp output/bin/blink.bin pi@192.168.0.114:”change your ip address and in place of pi write your laptop system name.
4. To see your ip address in your laptop unbuntu terminal connect your hotspot and type ”ipconfig”.
5. In your laptop if TinyFPGA is not install then do the following
   git clone –recursive https://github.com/QuickLogic-Corp/TinyFPGA-Programmer-Application.git
   sudo apt install python3-pip
   sudo pip3 install tinyfpgab pyserial
   sudo reboot
6. Now download flash.sh and top.bin from the given link
   https://github.com/koushikkalyani/FWC/tree /main/ARM
7. In flash.sh change directory of tinyfpga according to your system.
8. flas.sh top.bin blink.bin should be in one directory.
9. Open terminal and type command ”bash flash.sh blink.bin.”.