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IDE ASSIGNMENT

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IITH - Future Wireless Communications (FWC)

Contents

1 Question

1) A 2-bit synchronous counter using two J-K flip flops is shown. The expressions for the inputs to the J-K flip flops are also shown in the figure. The output sequence of the counter starting from $Q_1Q_2 = 00$ is

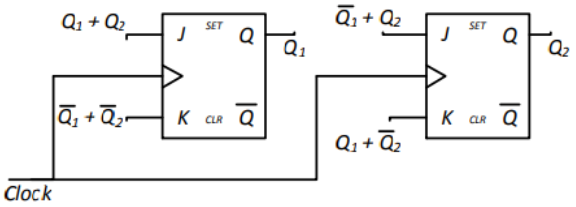

Fig. 1: 2-bit synchronous counter

a) $00 \rightarrow 11 \rightarrow 10 \rightarrow 01 \rightarrow 00...$
b) $00 \rightarrow 01 \rightarrow 10 \rightarrow 11 \rightarrow 00...$
c) $00 \rightarrow 01 \rightarrow 11 \rightarrow 10 \rightarrow 00...$
d) $00 \rightarrow 10 \rightarrow 11 \rightarrow 01 \rightarrow 00...$

2 Components

Component	Values	Quantity
Arduino	UNO	1
JumperWires	M-F	25
JK-Flip flop	7476	1
OR Gate	7432	1
Bread board		1

3 Connections

Arduino	7476(JK Flipflop)	7432(OR Gate)
D13	CLK1	
	PRESET	
	CLEAR	
	J1	3
5V	VCC	VCC
D13	CLK2	
	PRESET	
	CLEAR	
	J2	6
	!Q2	5,9
	Q2	2,12
	K2	8
GND	GND	GND
	!Q1	4,13
	Q1	1,10
	K1	11

Fig. 2: Connections

4 Procedure

1) Connect the circuit as per the above table.
2) Connect the LED's to see the binary output sequence $0, 1, 3, 2$

https://github.com/Tangallamudi-RamaSai/Platformio/blob/main/platformio.ino.ino

5 Output

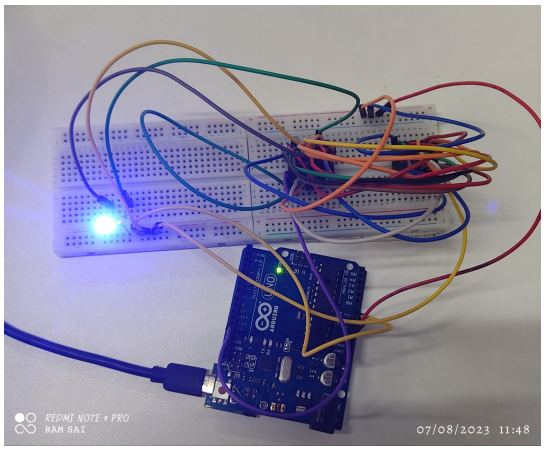

Fig. 3: Output