ASSIGNMENT-1

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IIITH - Future Wireless Communications (FWC)

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Contents

Abstract

This manual explains about 4-bit shift register through 7474 IC in Arduino :

1 Introduction

1.1 7474 IC:

This IC contains 2 D-flip flops.
For this section total of 4 flip-flops(2 ICs) are required since we need to design a 4-bit shift register.

1.2 Arduino:

In Arduino Uno we generate the clock pulse which is given to the each and every flip-flop by default.
We take 5 volts and Ground as the supply to the bread board from the Arduino board.

2 Components

Component	Values	Quantity
Arduino	UNO	1
JumperWires	M-M	20
Breadboard		1
IC	7447	2

3 PIN Diagram

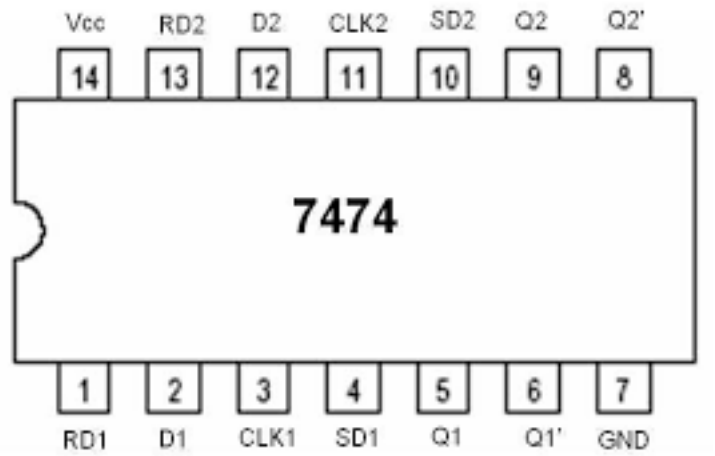


Figure.a

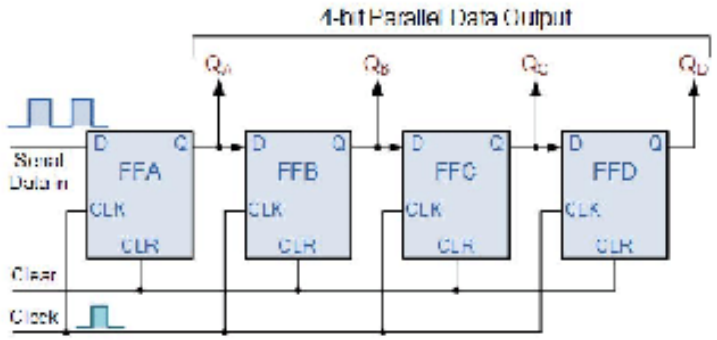
4 Truth Table

D1	Q1=D2	Q2=D3	Q3=D4	Q4
0	0	0	0	0
1	1	0	0	0
1	1	1	0	0
0	0	1	1	0
1	1	0	1	1
0	0	1	0	1
0	0	0	1	0
0	0	0	0	1
0	0	0	0	0

Truth table for 1011

5 Circuit Diagram

shift-register It has 4 D-flip flops.
It takes 1 input that is D1.
It has 4 outputs i.e Q1, Q2, Q3 and Q4.
By default it takes the input from LSB to MSB.



6 Implementation

Ard	D13	D13				Vcc	Vcc	Vcc	Vcc	Vcc	Gnd				
7474	3	11	5-12	9		1	4	10	13	14	7	5	9		
7474	3	11		2	5-12	1	4	10	13	14	7			5	9
LED												led1	led2	led3	led4

Connections

Problem-1 1. Connect the circuit as per the above table.
2. Execute the circuit using the below code.

https://github.com/siva-krishna-IITH-2022/fwc-assign/Assignment-1/AVR GCC/codes

Problem-2 1. Same circuit can be implemented by connecting a,b,c and d terminals of seven segment display to the Q1, Q2, Q3 AND Q4 respectively instead of using 4 LEDs.
2. Execute the circuit using the above code.