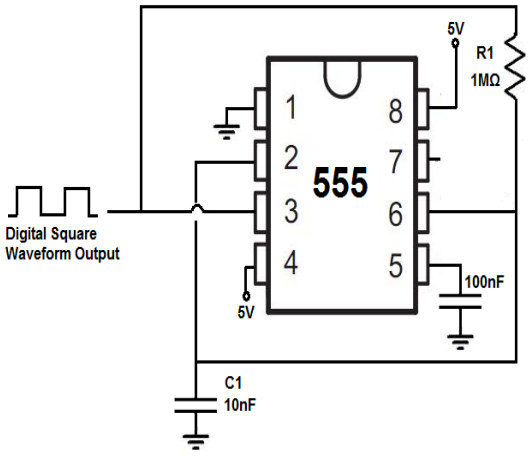
1 Random Number Genration using Shift Registers

1.1 Components

Component	Value	Quantity
Breadboard		1
Seven Segment Display	Common Anode	1
Decoder	7447	1
Flip Flop	7474	2
X-OR GATE	7486	1
555 IC		1
Resistor	$1K\Omega$	1
Resistor	$1M\Omega$	1
Capacitor	100nF	1
Capacitor	10nF	1
Jumper Wires		20

Table 1

1.1.1. Generate the CLOCK signal using the 555 timer circuit as shown in the figure **??**



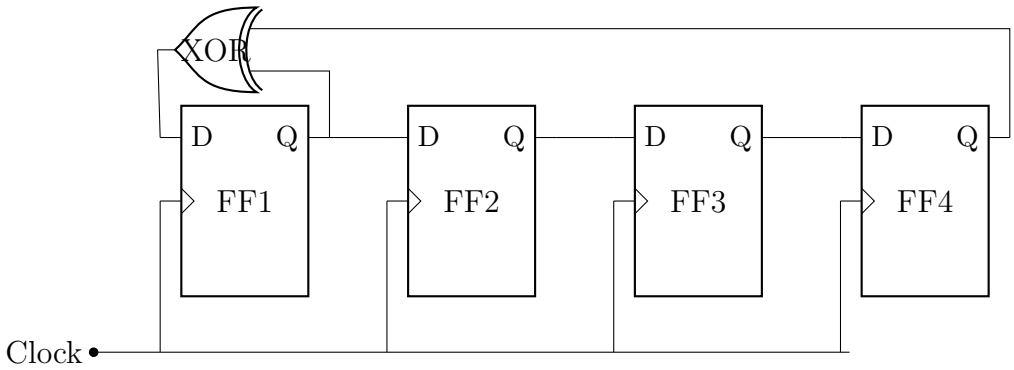
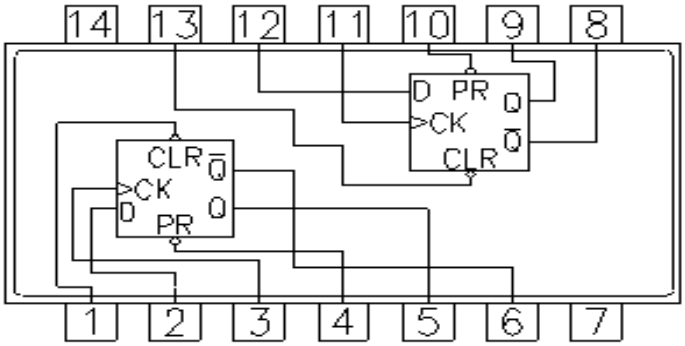


Figure 1.1.3.1: Circuit Connections

1.1.2. Connect the CLOCK output of 555 timer circuit to CLOCK signal of D-Flip flops, change the resistor value to 1MΩ

1.1.3. Now make the cicuit for shift registers uisng 4 D-Flip flops (by using two 7474 IC's) and one X-OR gate (7486 IC) as shown in figure 1.1.3.1. Pin out for 7474 IC is shown in figure 1.1.4.1



7474

1.1.4. Connect the output of each D-flip flop to Decoder IC (7447 IC), The pin out of 7447 IC is shown in figure 1.1.4.1

1.1.5. As per the pinout of IC 7474 [2,12] pins of both IC's need to connected to the [7,1,2,6] of decoder IC respectively

1.1.6. Make connections between the seven segment display in Fig1.1.6.1 and

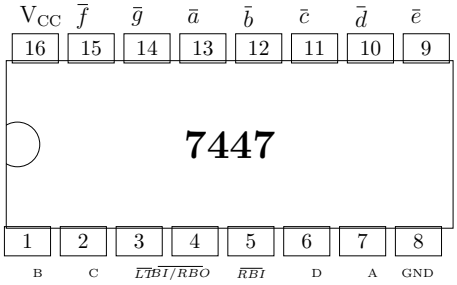


Figure 1.1.4.1

the 7447 IC in Fig.1.1.6.1 as shown in Table 2.1

7447	$\bar{a}$	$\bar{b}$	$\bar{c}$	$\bar{d}$	$\bar{e}$	$\bar{f}$	$\bar{g}$
Display	a	b	c	d	e	f	g

Table 1.1.6.1

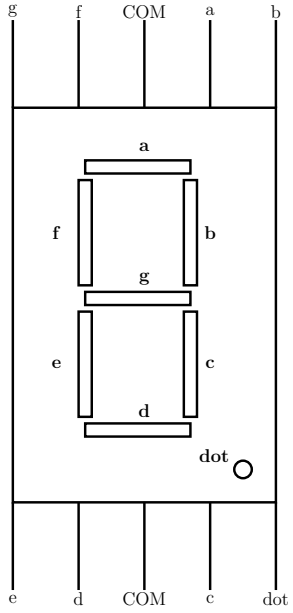


Figure 1.1.6.1

1.1.7. Additionally make conections like Vcc and GNG to every IC as per the respective IC pinout for IC's 7474,7447,7486.