EGE UNIVERSITY
LOGIC DESIGN LABORATORY
EXPERIMENT-6

Sequential Circuit Analysis

EXPERIMENTAL WORK

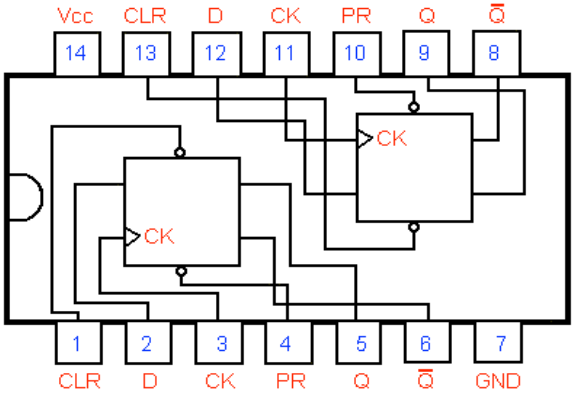
1- Draw the logic diagram for the following system:

$D_A = Q_A'Q_B + Q_B'X$
$D_B = Q_A X$
$Z = Q_A Q_B X$

2- Obtain the **state table** and **state diagram** for the system.

3- **Connect** the circuit and check its operation. Connect Q_A, Q_B and Z to leds. Use switch for the X input.

Required Equipment: 74LS74 Dual Positive-edge Triggered D Flip-flops, **7408** AND, **7432** OR and **7404** NOT gates.

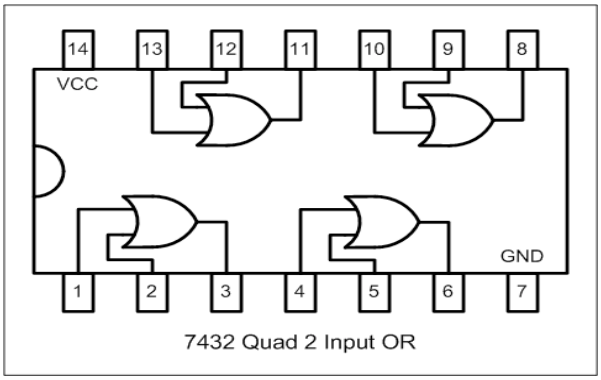


7474 Dual Positive Edge Triggered D Flip-Flop

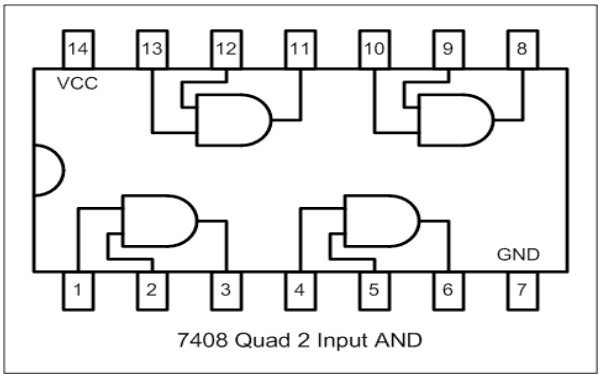
Function Table

Inputs				Outputs	
PR	CLR	CLK	D	Q	$\overline{Q}$
L	H	X	X	H	L
H	L	X	X	L	H
L	L	X	X	H (Note 1)	H (Note 1)
H	H	↑	H	H	L
H	H	↑	L	L	H
H	H	L	X	Q_0	$\overline{Q}_0$

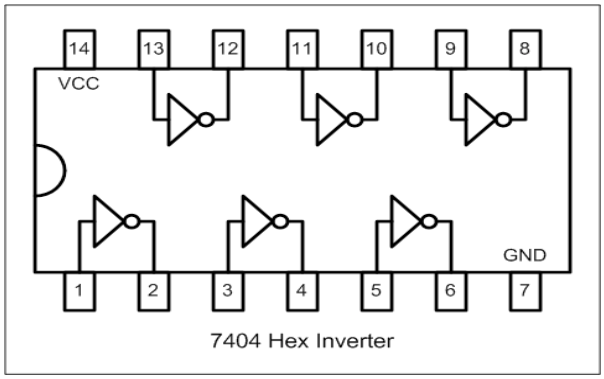
H = HIGH Logic Level
X = Either LOW or HIGH Logic Level
L = LOW Logic Level
↑ = Positive-going Transition
Q_0 = The output logic level of Q before the indicated input conditions were established.



7432 Quad 2 Input OR



7408 Quad 2 Input AND



7404 Hex Inverter