Name Dawood Sarfraz

Roll no 20P-0153

Section BSCS -2B

Assignment #06

Submitted to Sir Shakir Ullah Sheh

First 4 odd number 1,3,5,7

Solution :

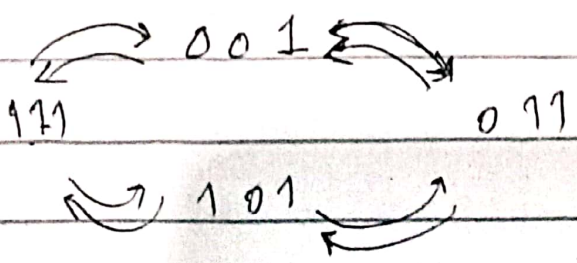
1,3,5,7

1 = 001

3 = 011

5 = 101

7 = 111



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So we use a 'M' input for M=0 for down and M=1 for up.

(ii)

Next state table

present state				Next state		
M	Q_2	Q_1	Q_0	Q_2	Q_1	Q_0
0	0	0	0	1	1	1
0	0	0	1			
0	0	1	0	0	0	1
0	0	1	1			
0	1	0	0	0	1	1
0	1	0	1			
0	1	1	0	1	0	1
0	1	1	1			
1	0	0	0	0	1	1
1	0	0	1			
1	0	1	0	1	0	1
1	0	1	1			
1	1	0	0	1	1	1
1	1	0	1			
1	1	1	0	0	0	1
1	1	1	1			

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Transition table

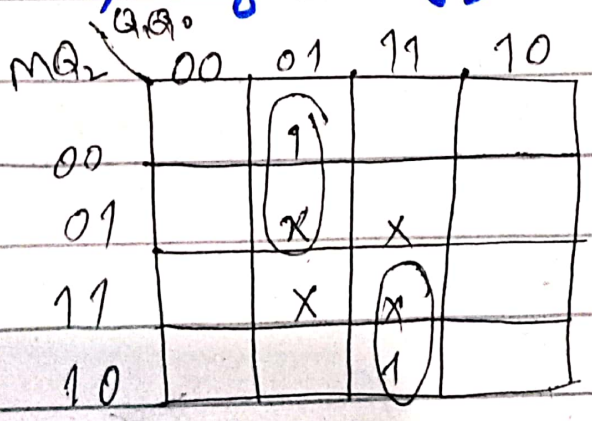
$y = 0$ (down)

J_2K_2	J_1K_1	J_0K_0
1 x	1 x	x 0
0 x	x 1	x 0
x 1	1 x	x 0
x 0	x 1	x 0

$y = 0$

J_2 K_2	J_1K_1	J_0K_0
0 x	1 x	x 0
1 x	x 1	x 0
x 0	1 x	x 0
x 1	x 1	x 0

K-Map for J_2:



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Transition table

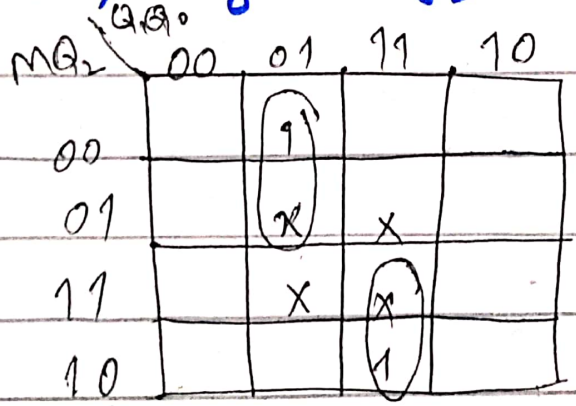
$y = 0$ (down)

J_2K_2	J_1K_1	J_0K_0
1 x	1 x	x 0
0 x	x 1	x 0
x 1	1 x	x 0
x 0	x 1	x 0

$y = 0$

J_2 K_2	J_1K_1	J_0K_0
0 x	1 x	x 0
1 x	x 1	x 0
x 0	1 x	x 0
x 1	x 1	x 0

K-Map for J_2:



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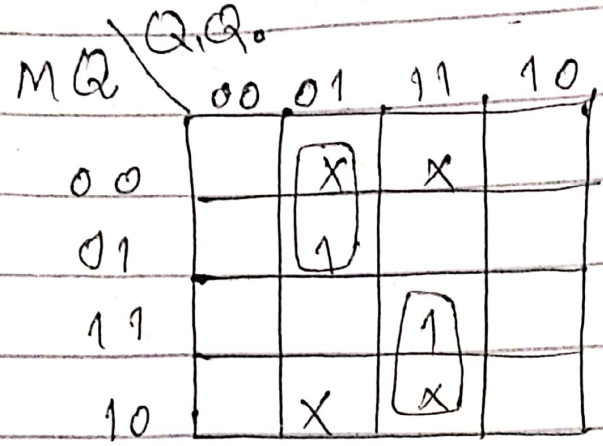
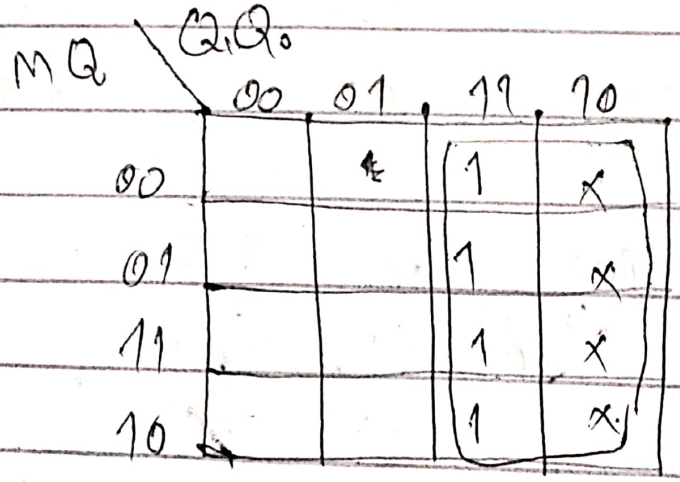
$J_2 = M'Q_1'Q_0 + MQ_1Q_0$

for K_2



$K_2 = M'Q_1'Q_0 + MQ_1Q_0$

K-Map for J_1 :



$J_1 = Q_0$

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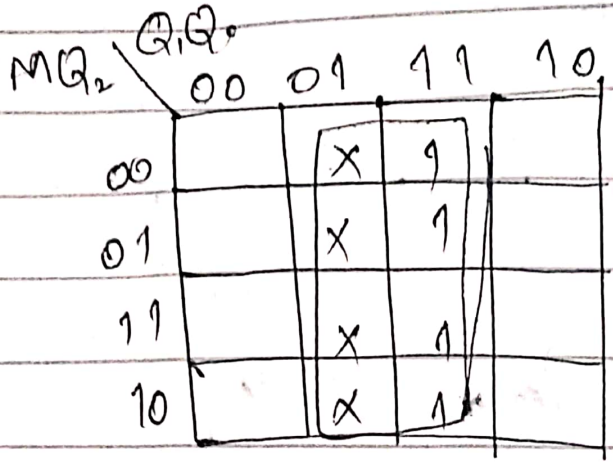
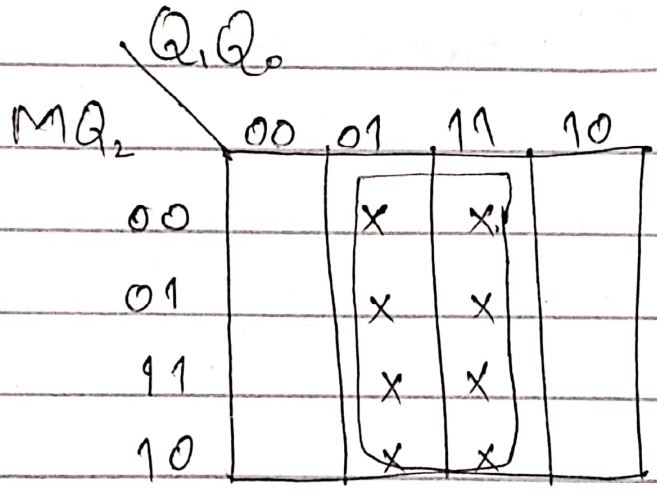


$K_1 = Q_0$

For J_0:



$J = 0$

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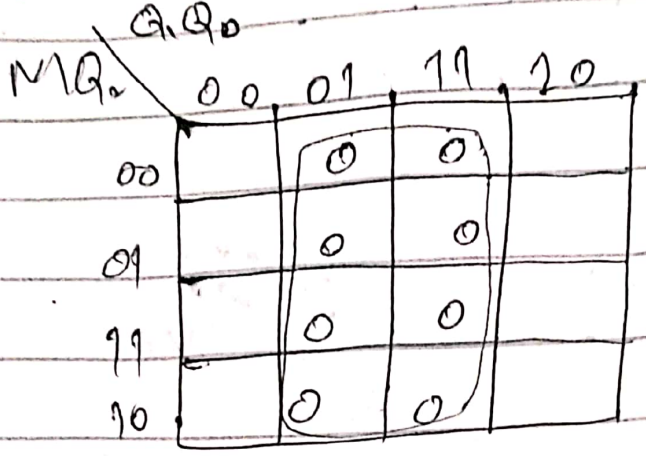
J_0 ka k-map:



$K_0 = 0$

Logical Expressions:

$$J_2 = M'Q_1'Q_0 + MQ_1Q_2$$

$$Q_0(\overline{M \oplus Q_1})$$

$$J_1 = Q_0$$

$$J_0 = 0$$

$$K_2 = Q_0(\overline{M \oplus Q_1})$$

$$K_1 = Q_0$$

$$K_0 = 0$$

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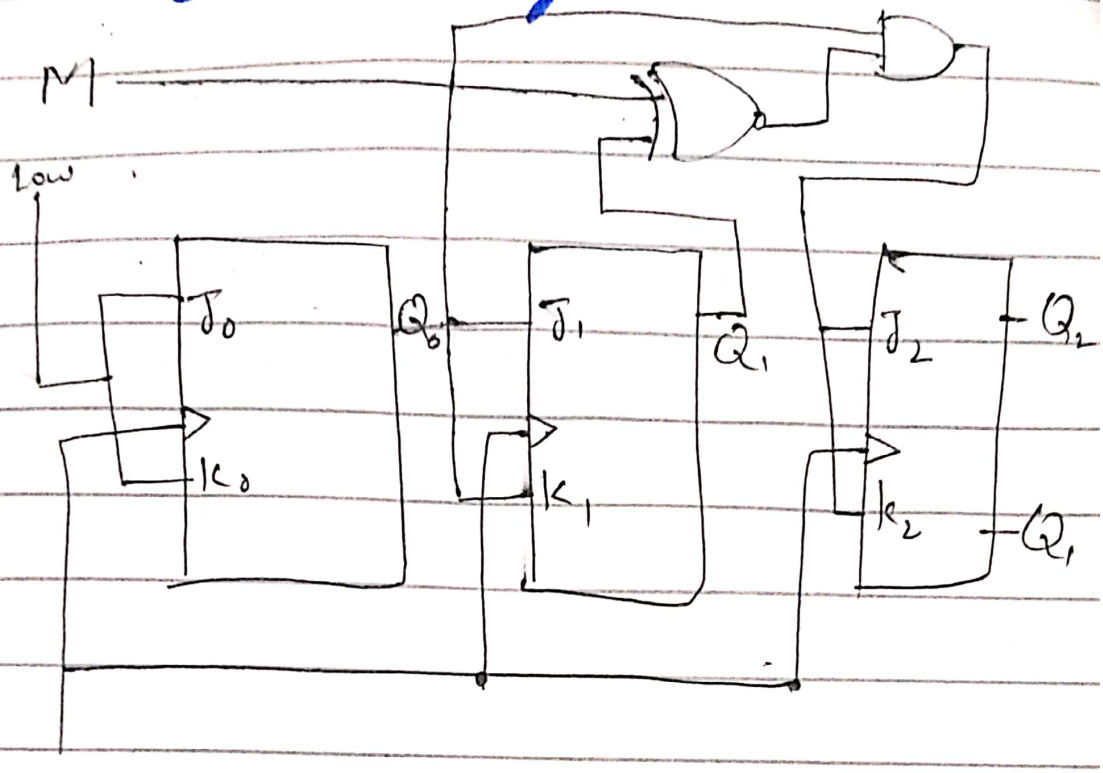
Circuit diagram



End.