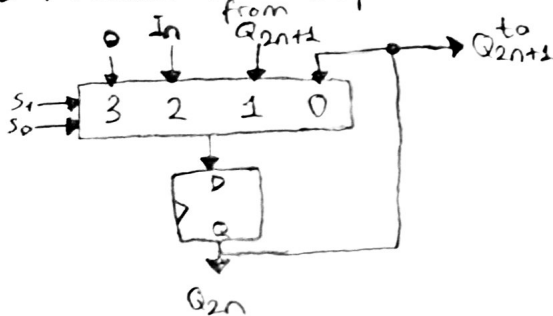1-) Define MUX size

There are 4 operations: Load, swap, clear, and maintain current state. So, we should use 4x1 MUX.

2-) Create MUX table

S_1	S_0	Operation
0	0	Maintain current state
0	1	Swap
1	0	Load
1	1	Clear

3-) Connect MUX Input

4-) Map control Lines

cl > ld > sw (priorities)

Inputs			Outputs		
cl	ld	sw	S_1	S_0	Operation
0	0	0	0	0	Maintain current state
0	0	1	0	1	Swap
0	1	X	1	0	Load
1	X	X	1	1	Clear

$S_1 = cl'\,ld + cl$

$S_0 = cl'\,ld'\,sw + cl$

cl

ld

sw

S_1

S_0

I_5 I_4 I_3 I_2 I_1 I_0

0

3 2 1 0   3 2 1 0   3 2 1 0   3 2 1 0   3 2 1 0   3 2 1 0

S_1
S_0

D
Q

D
Q

D
Q

D
Q

D
Q

D
Q

Q_5 Q_4 Q_3 Q_2 Q_1 Q_0
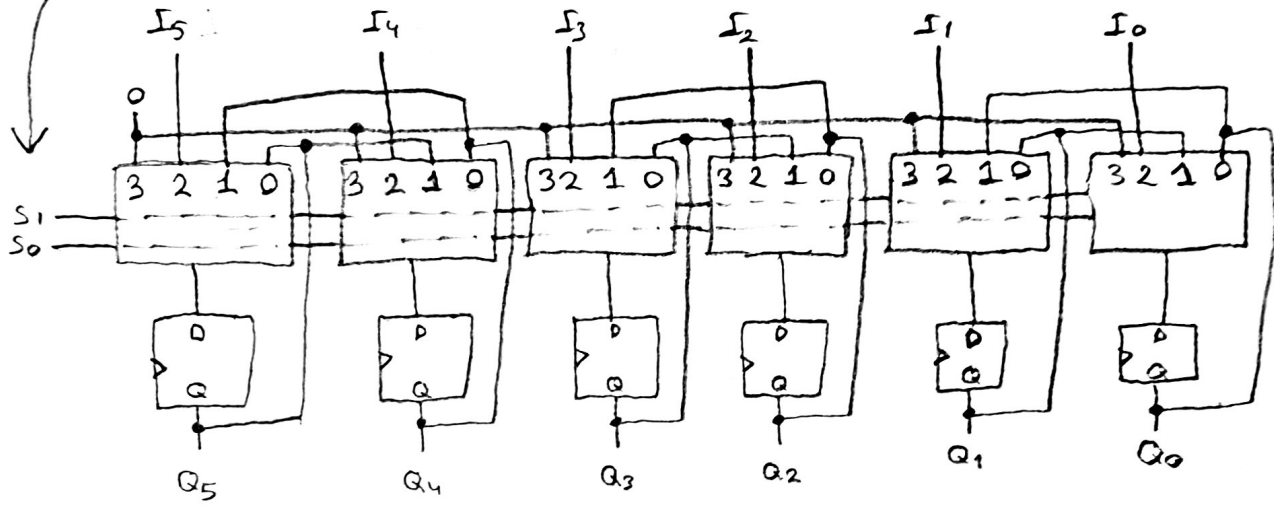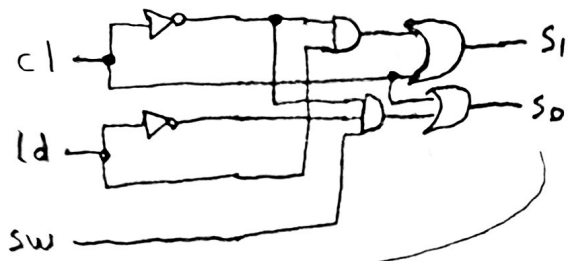
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