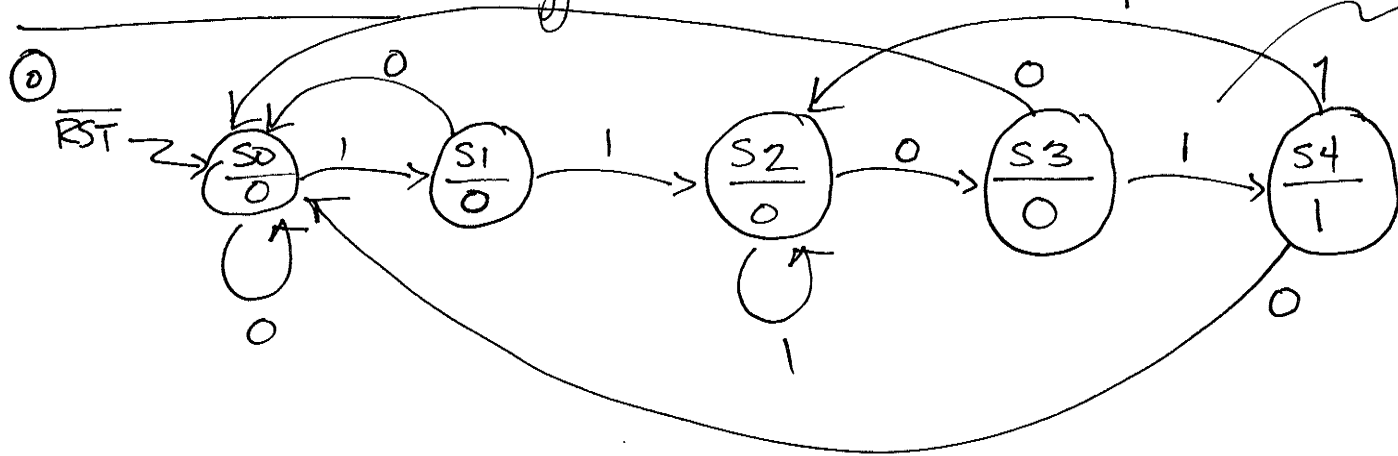


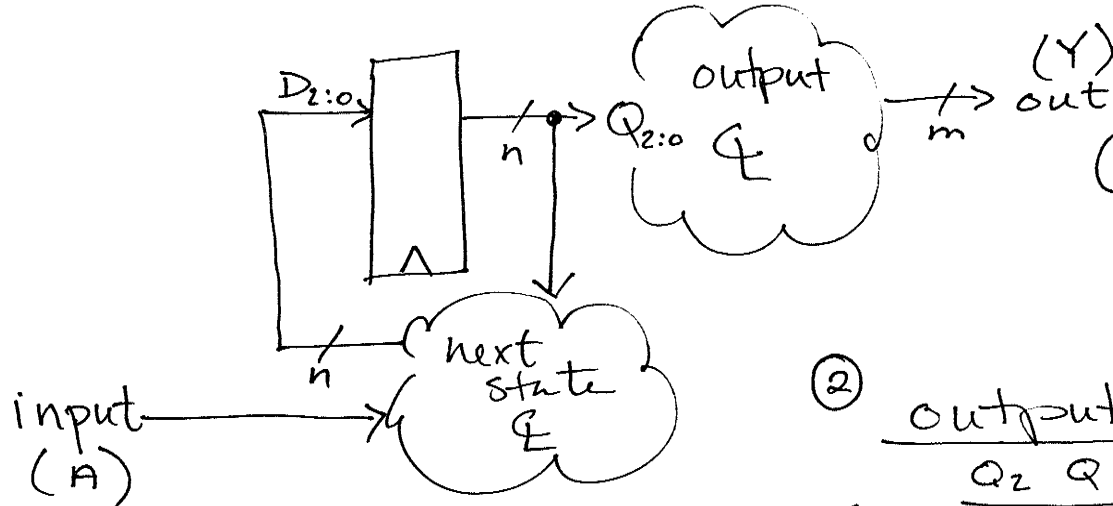
SNAIL BRAIN: recognize 1101 on inputs

A = 1  
A  
7/4



MOORE

1101101  
1



① state encoding = S0 = 000  
S1 = 001  
⋮  
S4 = 100

② output logic

	Q <sub>2</sub>	Q <sub>1</sub>	Q <sub>0</sub>	out (Y)
S0	0	0	0	0
S1	0	0	1	0
S2	0	1	0	0
S3	0	1	1	0
S4	1	0	0	1

$$Y = Q_2 \bar{Q}_1 \bar{Q}_0 = Q_2$$

	Q <sub>1</sub> Q <sub>0</sub>			
	00	01	11	10
Q <sub>2</sub> 0	0	0	0	0
1	1	X	X	X

③ next state ↙ on slides "S"

$Q_2$	$Q_1$	$Q_0$	A	$D_2$	$D_1$	$D_0$
0	0	0	0	0	0	0
			1	0	0	1
0	0	1	0	0	0	0
			1	0	1	0
0	1	0	0	0	1	1
			1	0	1	0
0	1	1	0	0	0	0
			1	1	0	0
1	0	0	0	0	0	0
			1	0	1	0

$D_2 = \overline{Q_2} Q_1 Q_0 A$

$D_1 = \overline{Q_2} \overline{Q_1} Q_0 A + \overline{Q_2} Q_1 \overline{Q_0} + Q_2 \overline{Q_1} \overline{Q_0} A$

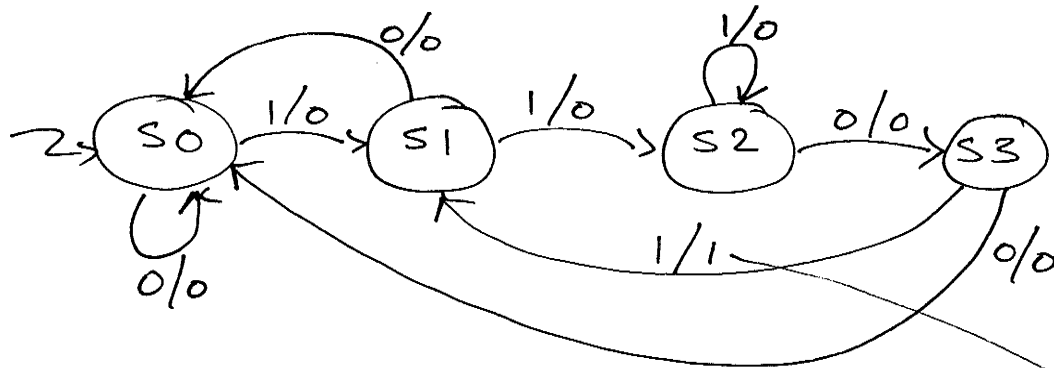
$D_0 = \overline{Q_2} \overline{Q_1} \overline{Q_0} A + \overline{Q_2} Q_1 \overline{Q_0} \overline{A}$

↘ on slides "S'"

# SNAIL - MEALY

1101

3/4



state encoding

$$S0 = 00$$

$$S1 = 01$$

⋮

$$S3 = 11$$

output logic & next state

$Q_1, Q_0$	$A^{in}$	$Y^{out}$	$D_1, D_0$
0 0	0	0	0 0
0 0	1	0	0 1
0 1	0	0	0 0
0 1	1	0	1 0
1 0	0	0	1 1
1 0	1	0	1 0
1 1	0	0	0 0
1 1	1	1	0 1

output

$$Y = Q_1 Q_0 A$$

next state

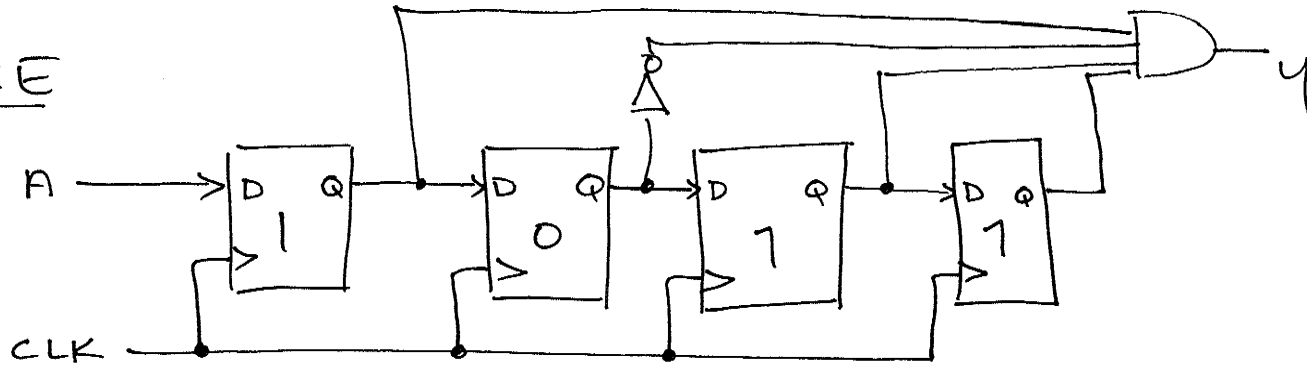
$$D_1 = Q_1 \bar{Q}_0 + \bar{Q}_1 Q_0 A$$

$$D_0 = \bar{Q}_1 \bar{Q}_0 A + Q_1 \bar{Q}_0 \bar{A} + Q_1 Q_0 A$$

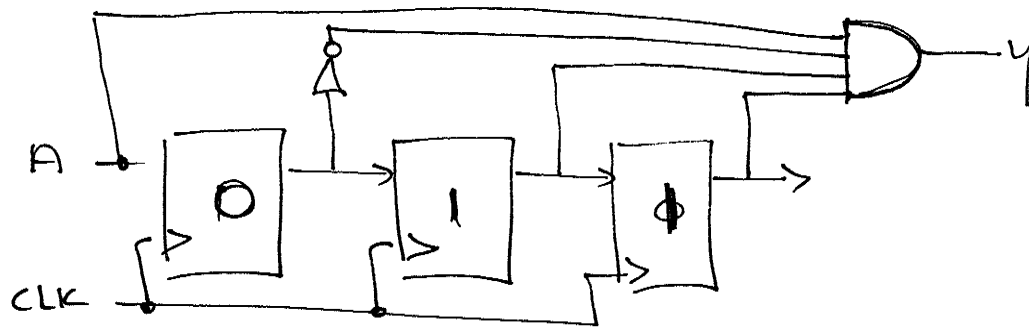
# SHIFT REG. APPROACH (SNAIL) 1101

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## MOORE



## MEALY



## COUNTER

