

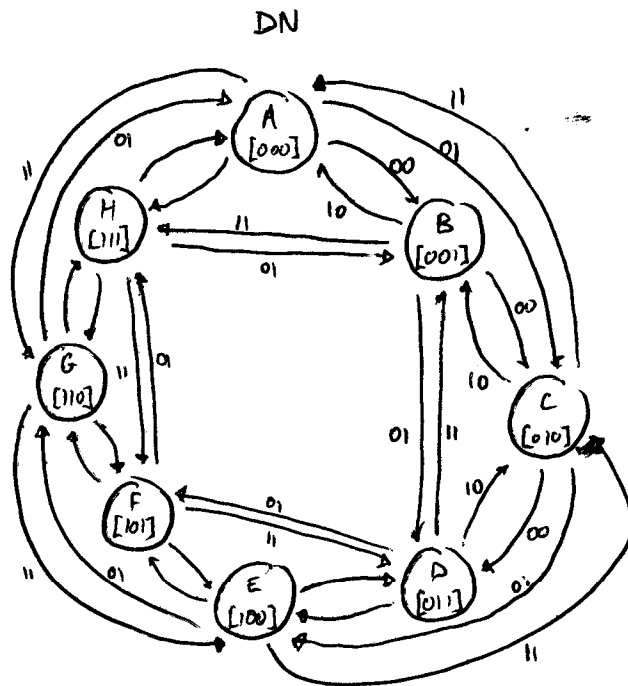
DESIGN A 3-BIT COUNTER THAT CAN COUNT BY ONES OR TWOS, AND CAN GO UP OR DOWN.

2 INPUTS:

$N \begin{cases} 0 & \text{WHEN COUNTING BY ONES} \\ 1 & \text{WHEN COUNTING BY TWOS} \end{cases}$

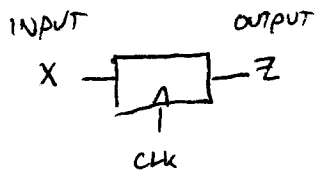
$D \begin{cases} 0 & \text{WHEN COUNTING UP} \\ 1 & \text{WHEN COUNTING DOWN} \end{cases}$

MOORE MACHINE:

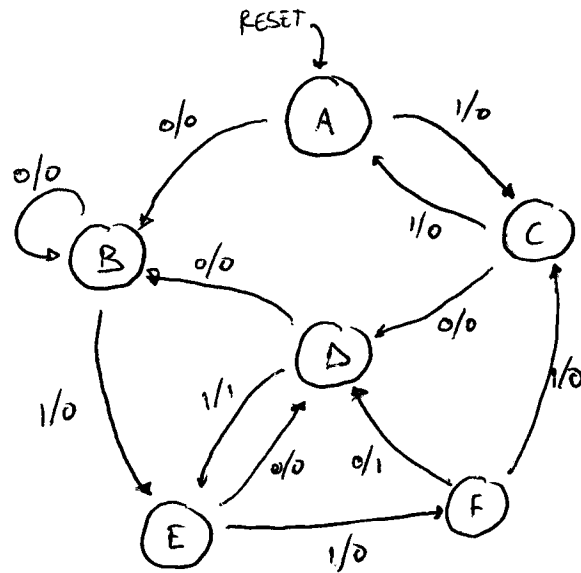


PRESENT STATE	NEXT STATE INPUT: DN				OUTPUT		
	00	01	10	11	z_2	z_1	z_0
A	B	H	C	G	0	0	0
B	C	A	D	H	0	0	1
C	D	B	E	A	0	1	0
D	E	C	F	B	0	1	1
E	F	D	G	C	1	0	0
F	G	E	H	D	1	0	1
G	H	F	A	E	1	1	0
H	A	G	B	F	1	1	1

DESIGN A MEALY MACHINE WHICH GIVES AN OUTPUT OF $Z=1$ FOR AN INPUT STRING OF 0110 OR 101.



INPUTS COME IN CONTINUOUSLY:
0, 1, 1, 0, 0, 1, 0, 1, 0, ... ETC



CURRENT STATE	NEXT STATE		OUTPUT	
	X=0	X=1	X=0	X=1
A	B	C	0	0
B	B	E	0	0
C	D	C	0	0
D	B	E	0	1
E	D	F	0	0
F	D	C	1	0

TEST SEQUENCE:

X = 001101110010100
Z = 0000110000000100