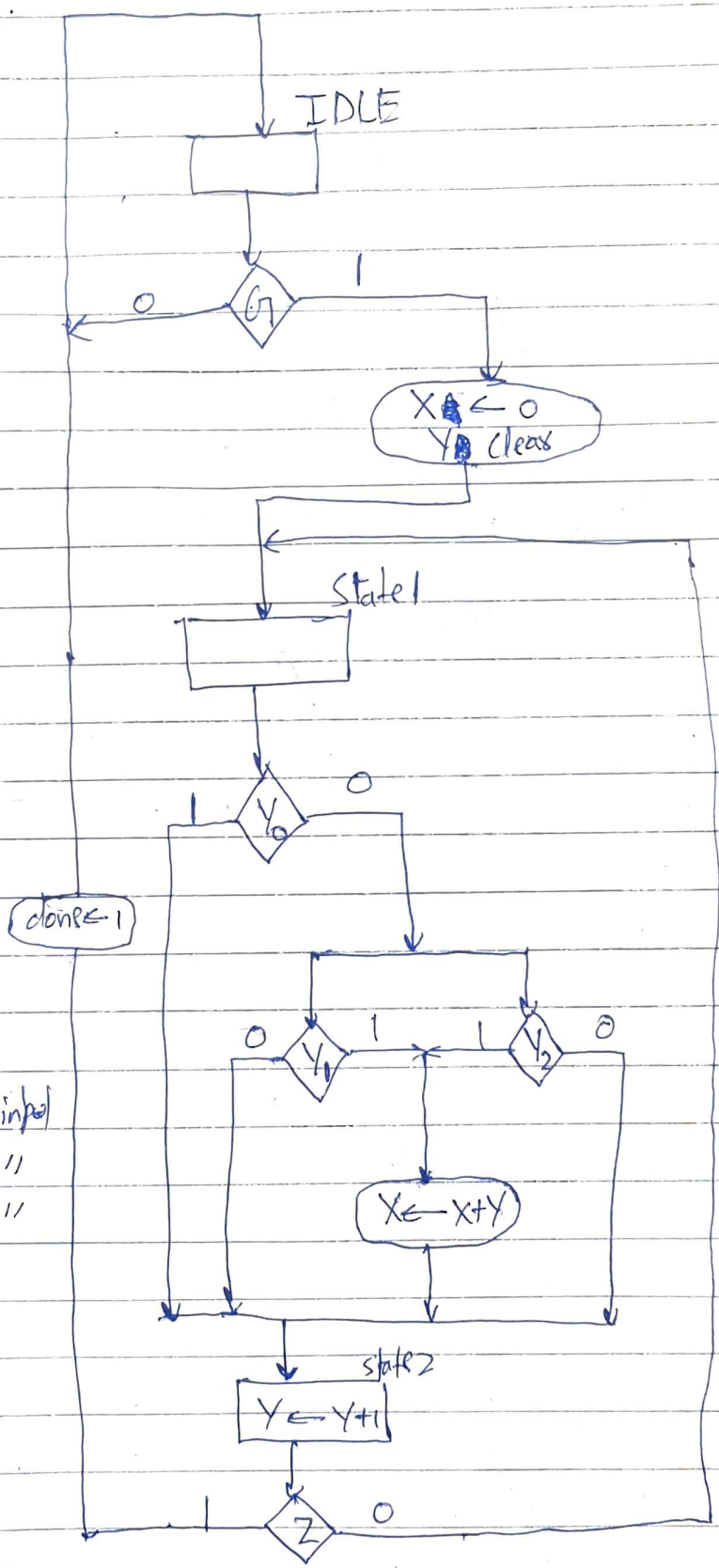
NAME - MESHARYA M CHOUDHARY
ROLL NO. - 190101053

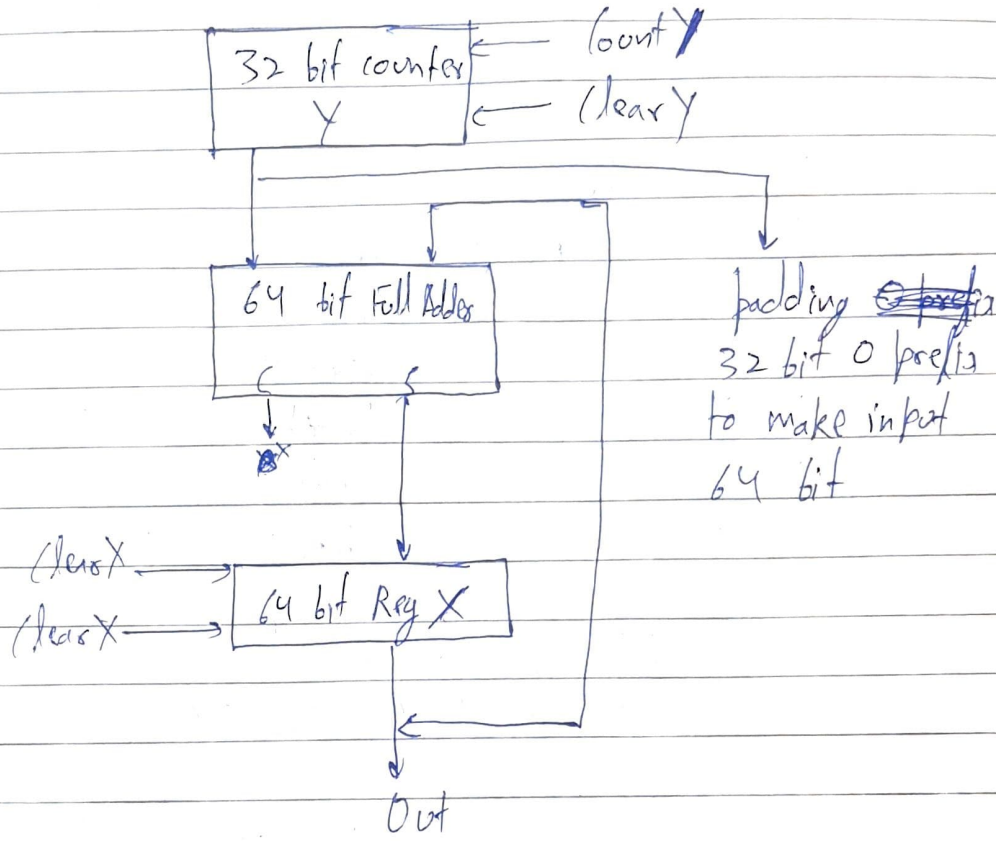
(1) (i) ASM Chart:



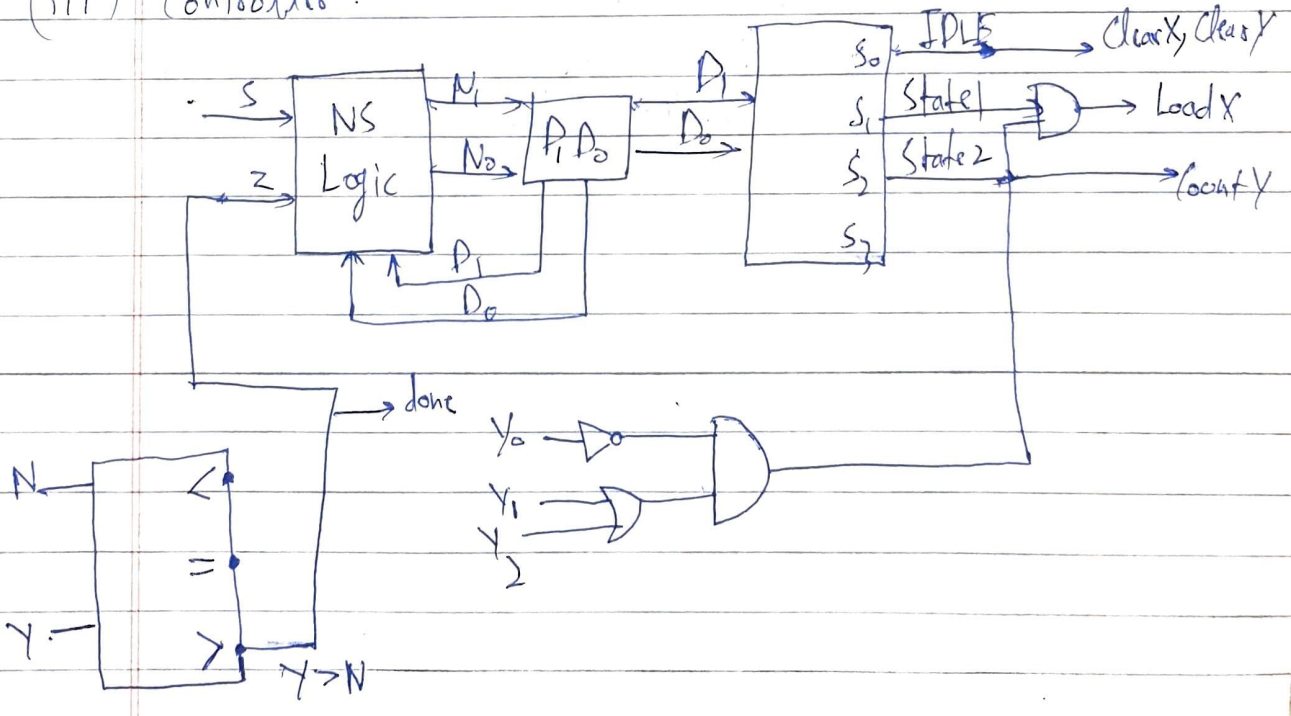
- G = G to signal
- Z = (Y > N)
- Y_0 = LSB of Y counter input
- Y_1 = 2nd LSB " " " "
- Y_2 = 3rd LSB " " " "

NAME - MESHARYA M CHOUDHARY
ROLL NO.- 190101053

(ii) Datapath:



(iii) Controller:



NAME - MESHARYA M CHOUDHARY
ROLL NO. - 19010103

Since the valid numbers are even and must not be divisible by 8. They must end with 110, 010 or 100. ∴ Load $X = (State1)(\sim Y_0)(Y_1 + Y_2)$

Inputs G	Z	Present state PS Q_1	Q_0		Next state $Q_1^+ Q_0^+$		NS
0	X	0	0	IDLE	0	0	IDLE
1	X	0	0	IDLE	0	1	State1
X	X	0	1	State1	1	0	State2
X	0	1	0	State2	0	1	State1
X	1	1	0	State2	0	0	IDLE

$$\therefore Q_1^+ = P_1 = Q_1' Q_0$$
$$Q_0^+ = G Q_1' Q_0' + Z' Q_1 Q_0'$$

We give G0 signal at IDLE state and clear X and Y
∴ Clear X = IDLE Clear Y = IDLE
We increment Y whenever we are in state 2
∴ Count Y = State2