

INPUT SIGNALS

Present	Input	Next
$P_2 P_1 P_0$	Start done	$N_2 N_1 N_0$
0 0 0	0	0 0 0
0 0 0	1	0 0 1
0 0 1	-	0 1 0
0 1 0	-	0 1 1
0 1 1	-	1 0 0
0 1 1	1	1 0 0

OUTPUT SIGNALS

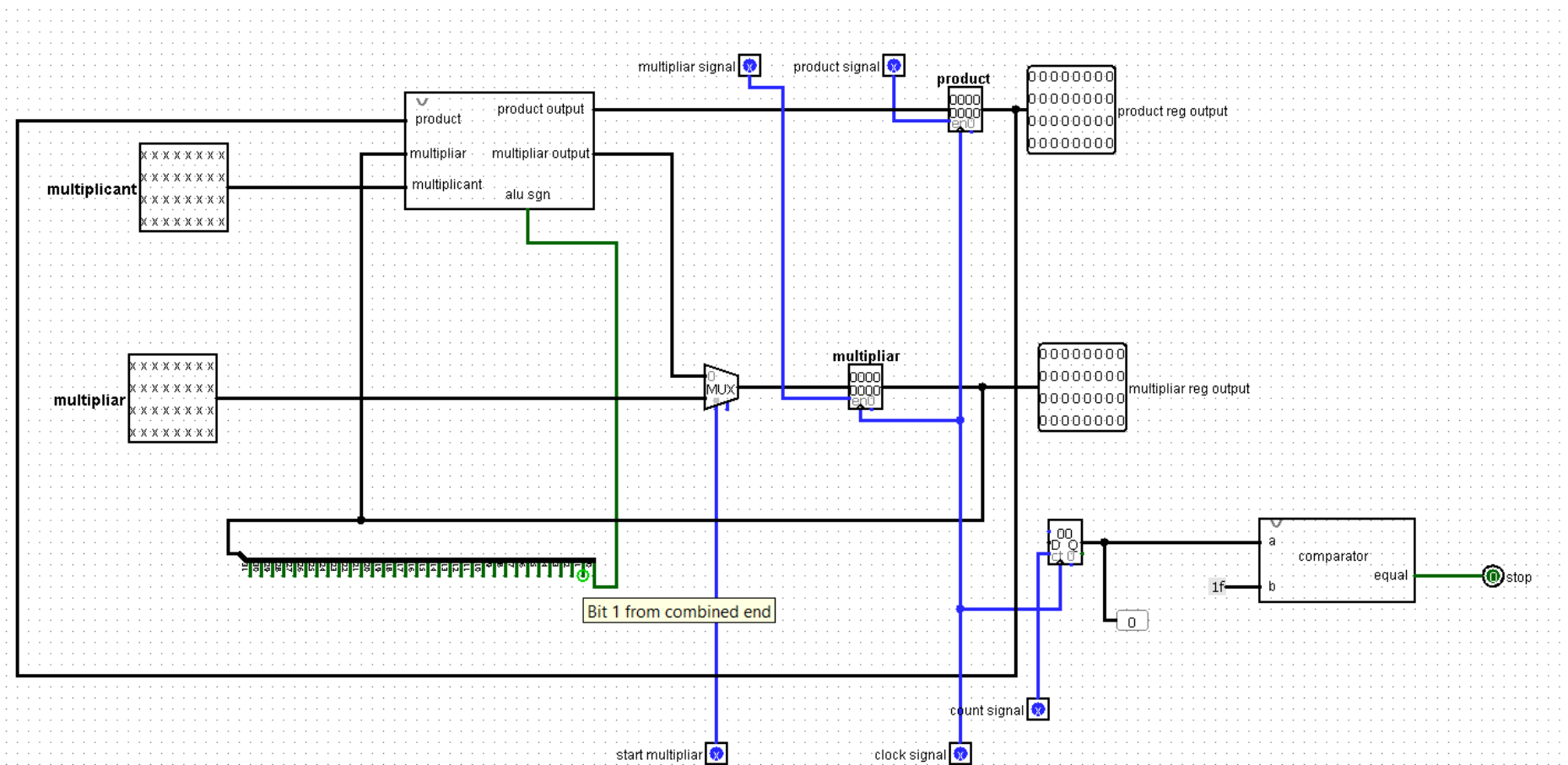
Stage	LM	LP	SM	count
0	0	0	0	0
1	0	0	1	0
2	1	1	0	1
3	0	0	0	1
4	0	0	0	0

- (N₀) $\bar{P}_2 \bar{P}_1 \bar{P}_0 \cdot \text{start} + \bar{P}_2 \bar{P}_1 \bar{P}_0$
- (N₁) $\bar{P}_2 \bar{P}_1 P_0 + \bar{P}_2 P_1 \bar{P}_0 + \bar{P}_2 P_1 P_0 \cdot \text{done}$
- (N₂) $\bar{P}_2 P_1 P_0 \cdot \text{done}$

- (LM) $\bar{P}_2 P_1 P_0 + \bar{P}_2 P_1 \bar{P}_0$
- (LP) $\bar{P}_2 P_1 \bar{P}_0$
- (SM) $\bar{P}_2 P_1 P_0$
- (count) $\bar{P}_2 P_1 P_0$

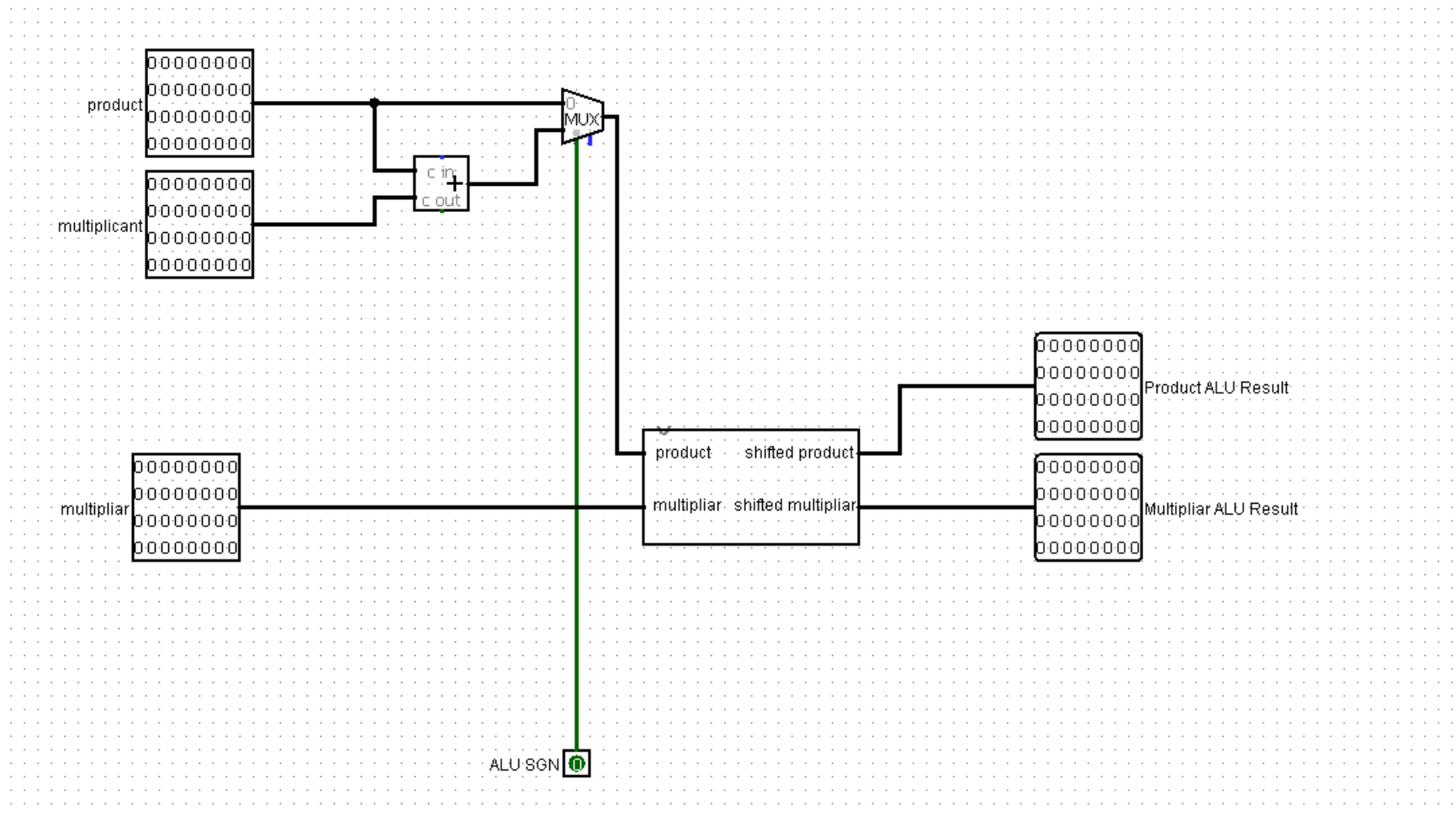
- State diagrams is based on above Circuit desing

Data Path



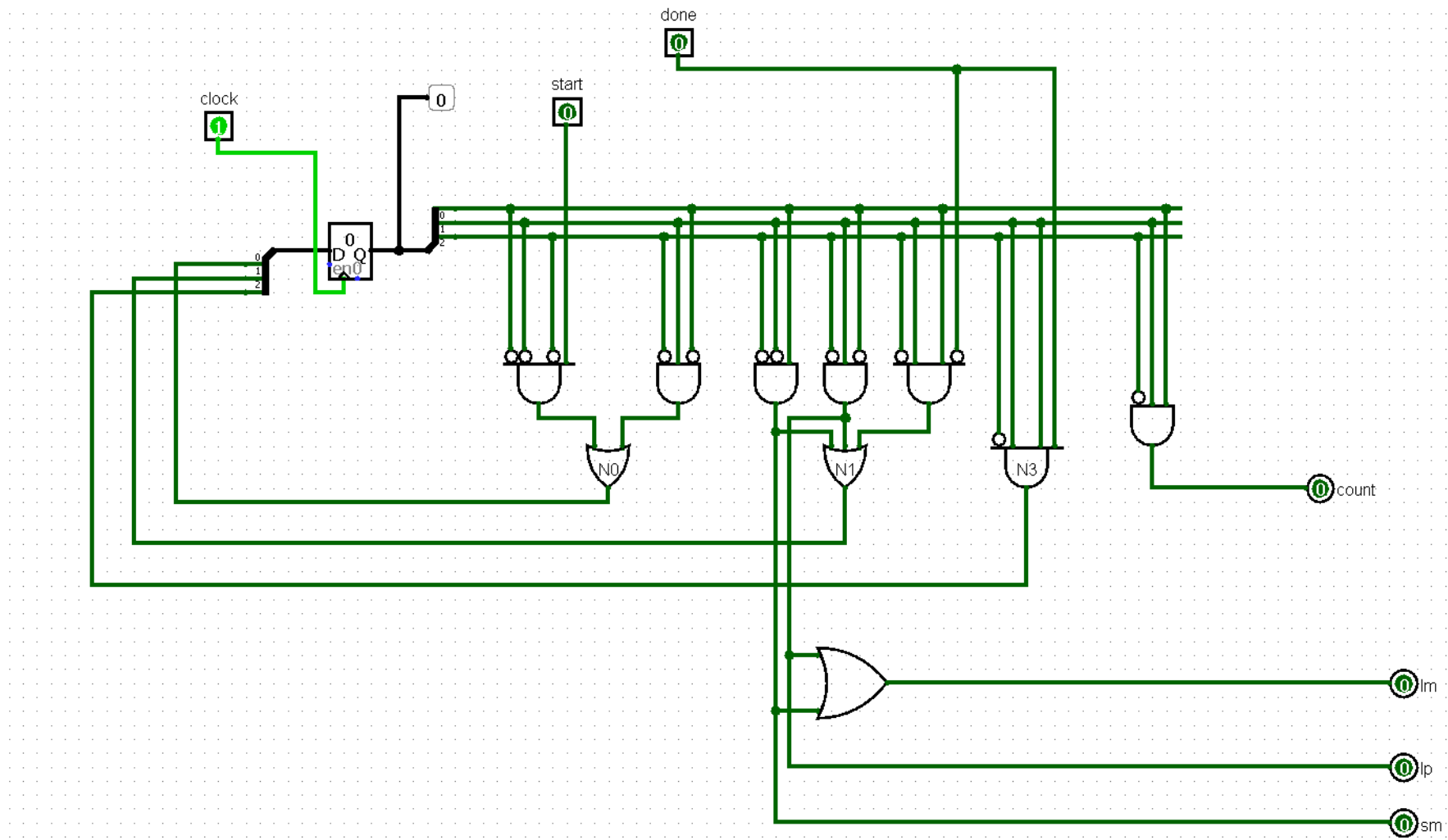
- Start multiplier signal choose between the initial value or alu output of multiplier.

ALU



- ALU SGN selects Product + Multiplier or just Product without addition. Then both product and multiplier are shifted one bit right.

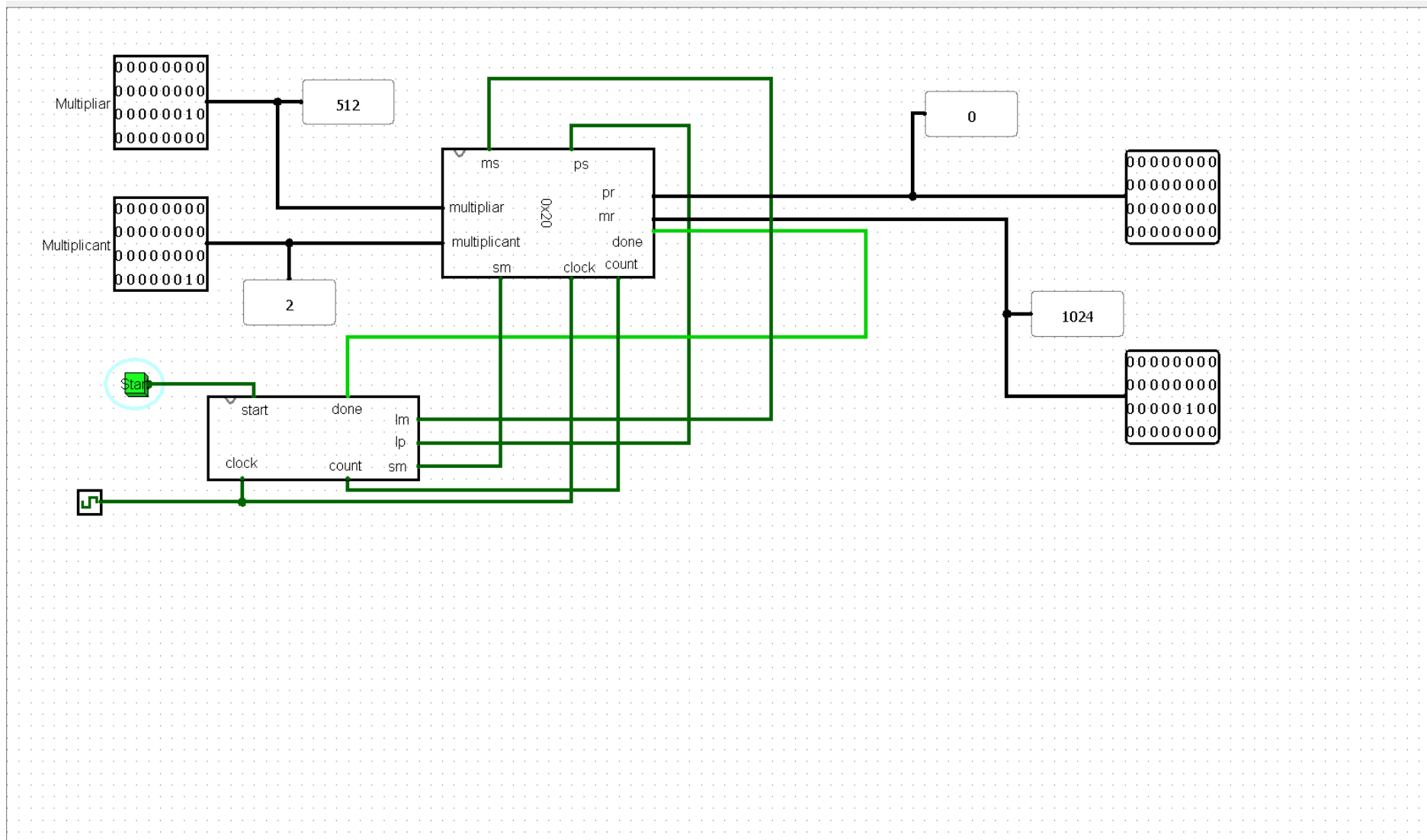
Control Unit

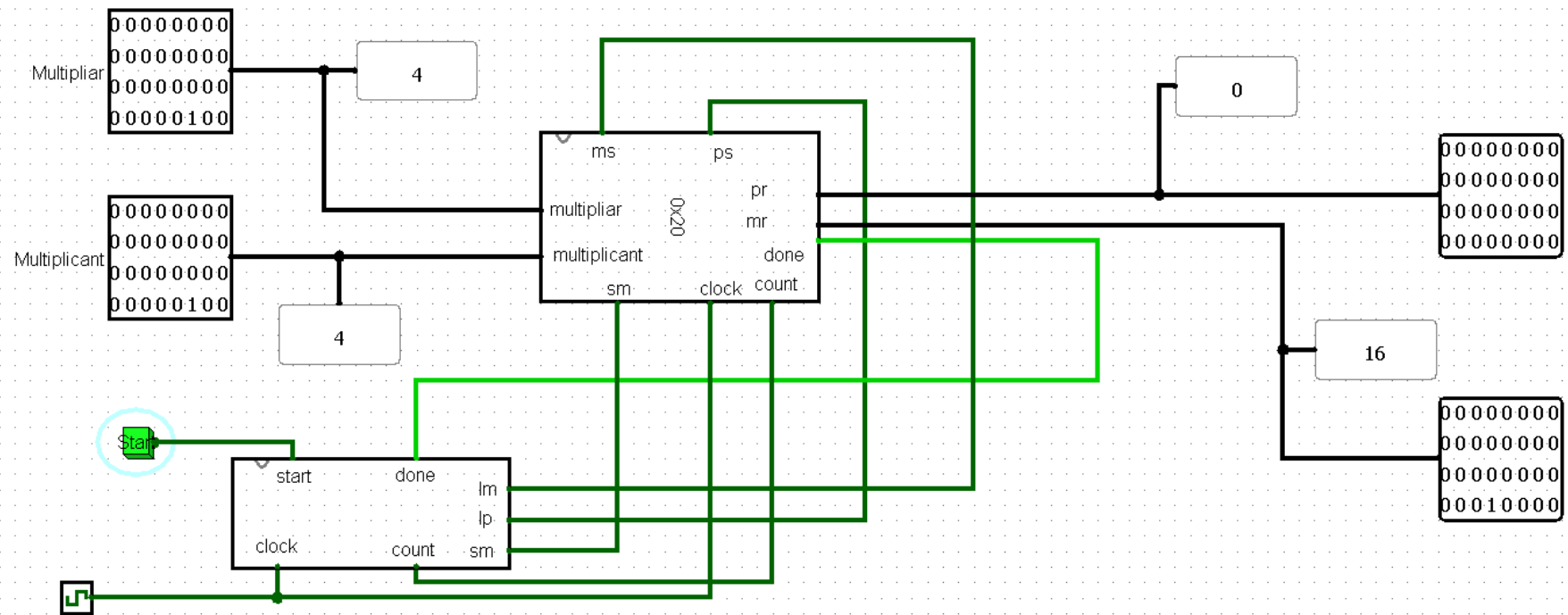


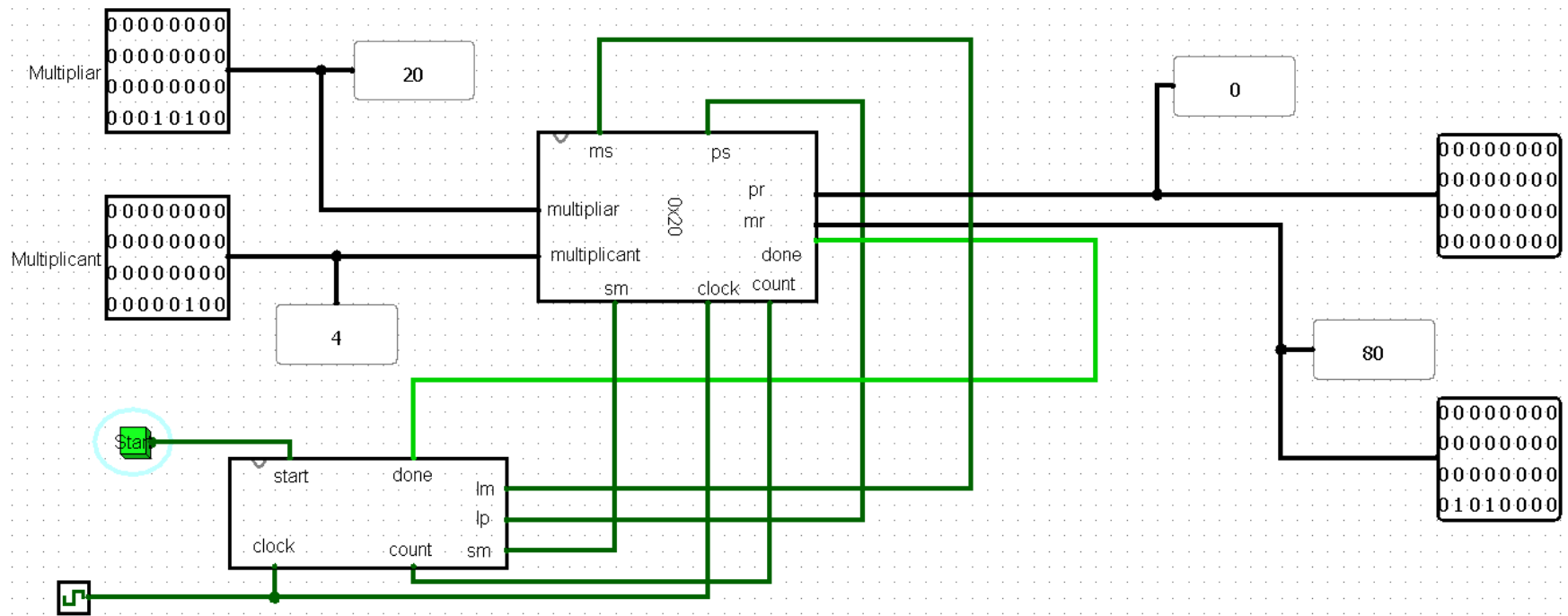
Output Signals of Control Unit

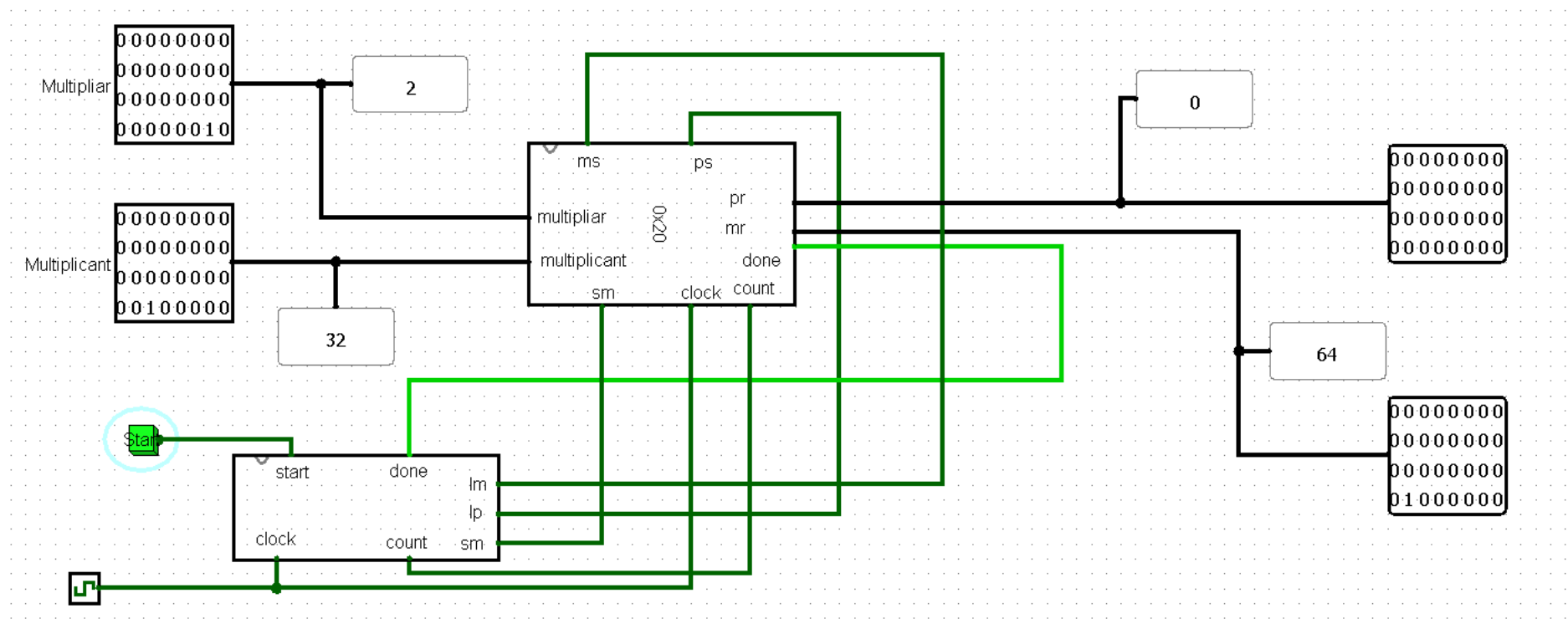
- LM : load multipliar
- LP: load product
- SM: start multipliar
- Count: Enable counter incrementation

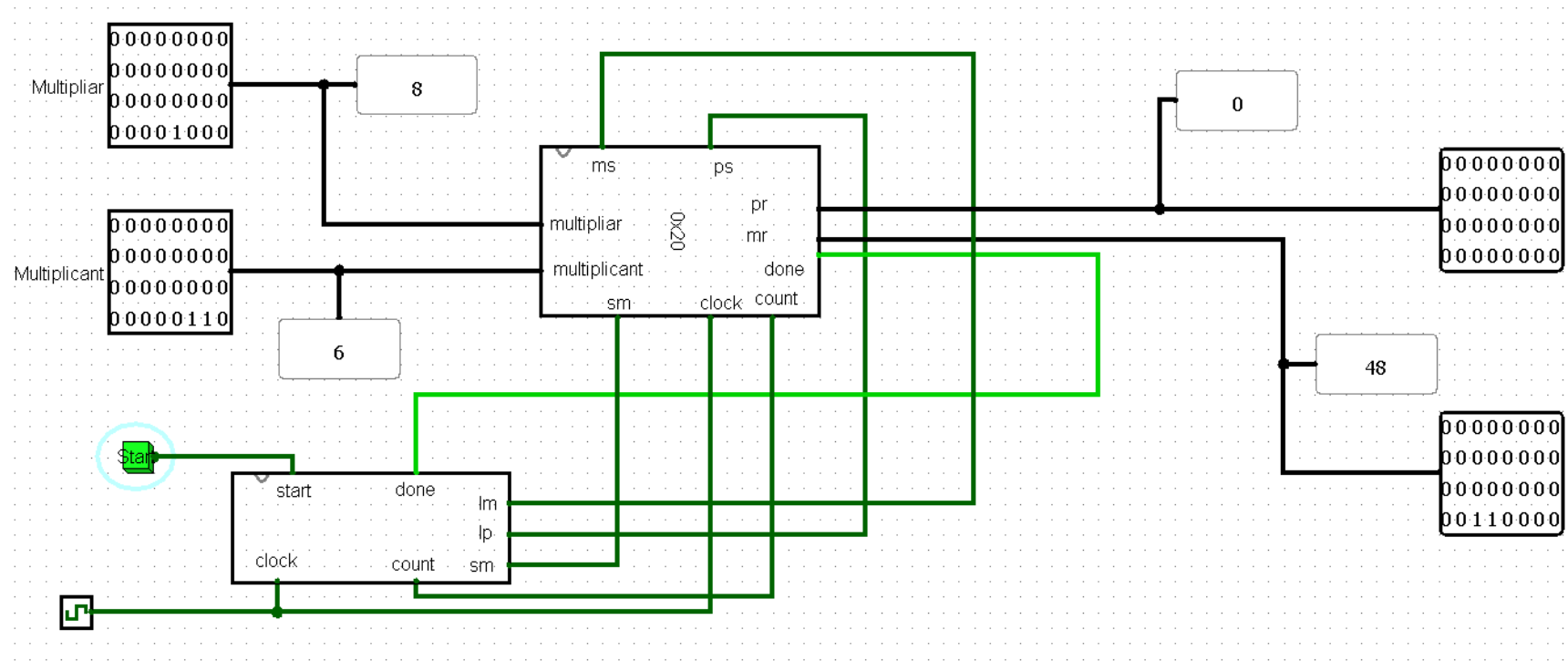
Test Screen Shots

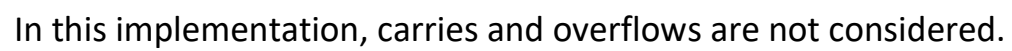












In this implementation, carries and overflows are not considered.