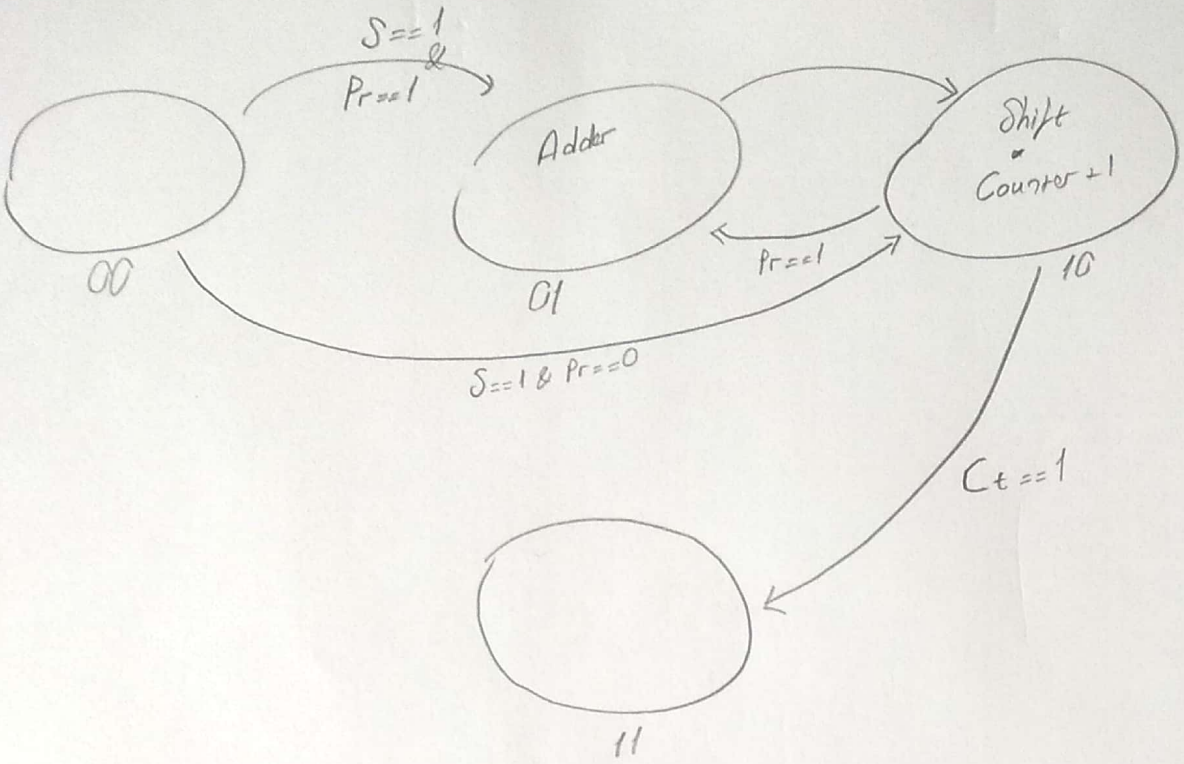
- I designed my adder and shifter for extra point.
- My design work correctly all situation.
- Program will start when you write 1 bit to start bit. Program doesn’t have restart buton. You have to reset program.

DataPath

- I used one adder and one shifter. Adder and shifter has enable bit. Example, When adder enable bit come, adder will work.
- Counter will work when CT signal is one. Counter will work until 32.
- I used two mux.
  - Upper mux that chose first multiplier when counter 0, after that mux choose shifter RESULT-R.
  - Down mux that choose the adder result or shifter result. Because sometimes adder doesn’t work so if this be,mux choose shifter result.



S_1	S_0	S	Pr	Ct
0	0	0	x	x
0	0	1	0	x
0	0	1	1	x
0	1	x	x	x
1	0	x	1	0
1	0	x	0	0
1	0	x	x	1
1	1	x	x	x

N_1	N_0	Adder	Sh	C
0	0	0	0	0
1	0	0	1	1
0	1	1	0	0
1	0	0	1	1
0	1	1	0	0
1	0	0	1	1
1	1	0	0	0
1	1	0	0	0

$$N_1 = S_1'S_0'Pr'S + S_1'S_0 + S_1S_0'Pr'Ct' + S_1S_0'Ct$$

$$N_0 = S_1'S_0'SPr + S_1S_0'PrCt' + S_1S_0'Ct + S_1S_0$$

$$A = S_1'S_0'SPr + S_1S_0'PrCt'$$

$$Sh = S_1'S_0'SPr' + S_1'S_0 + S_1S_0'Pr'Ct'$$

S = Start

Pr = Product control

Ct = Counter equal to 32 or not

C = Counter enable signal

Sh = Shifter enable signal