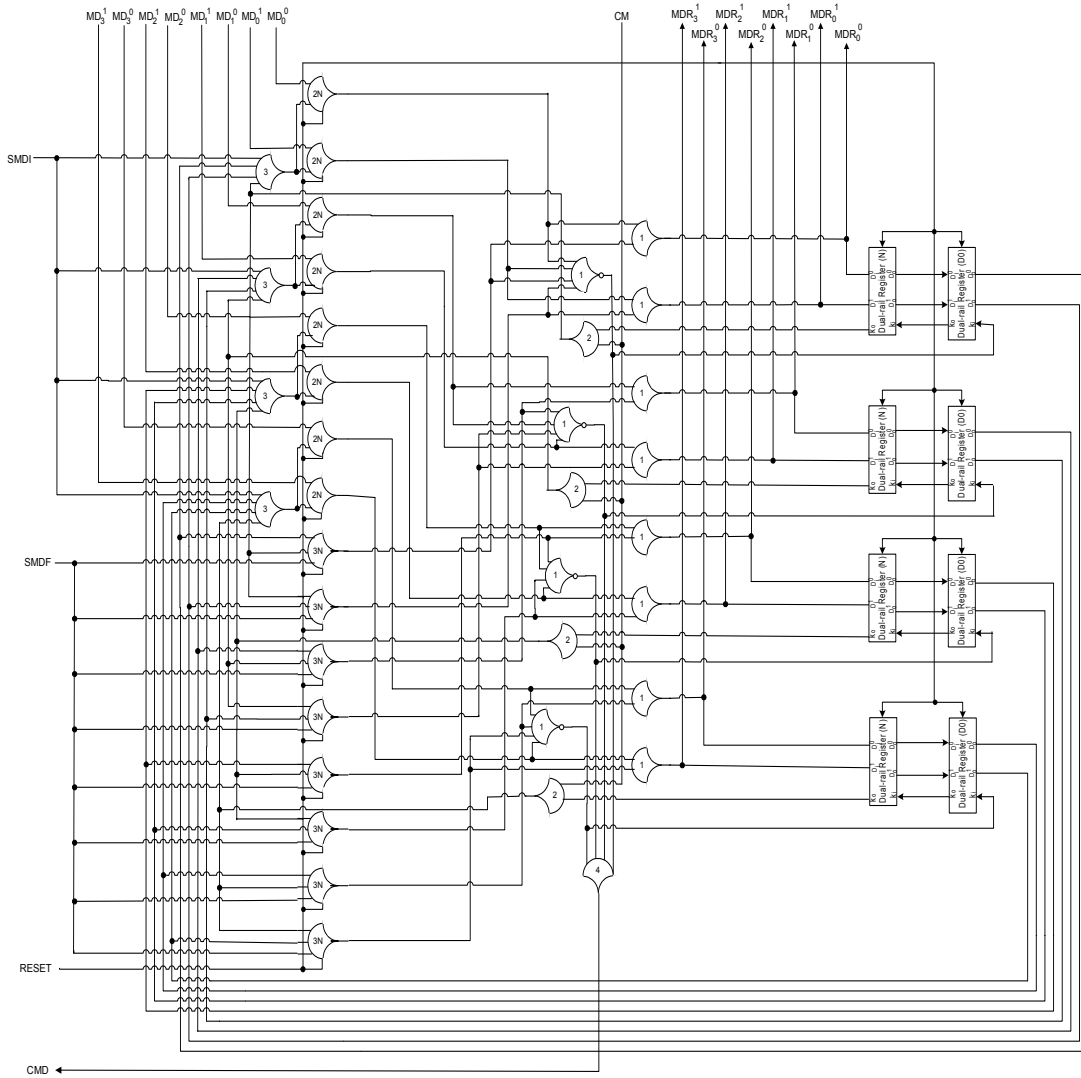
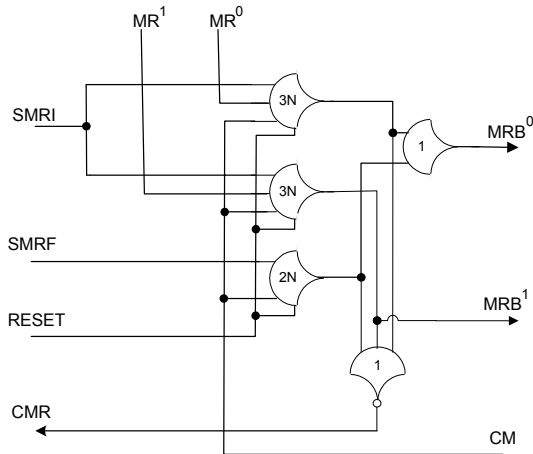


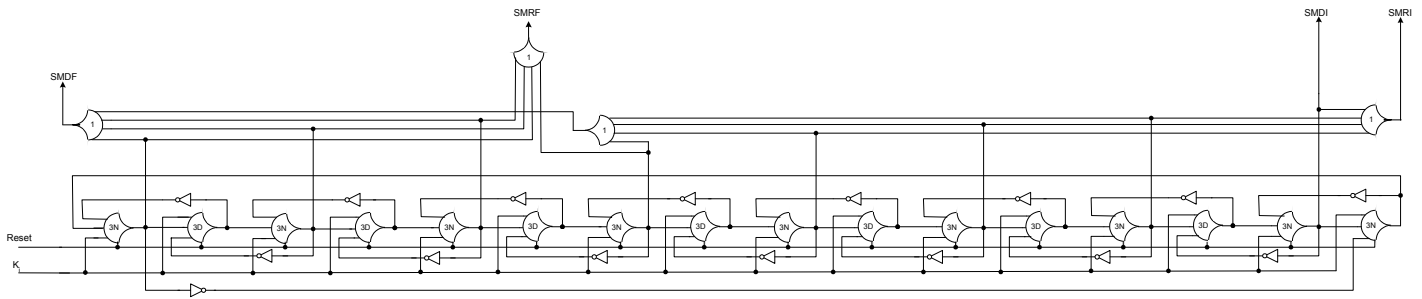
# Bit-Serial Multiplier



**Multiplicand interface circuit**



**Multiplier interface circuit**

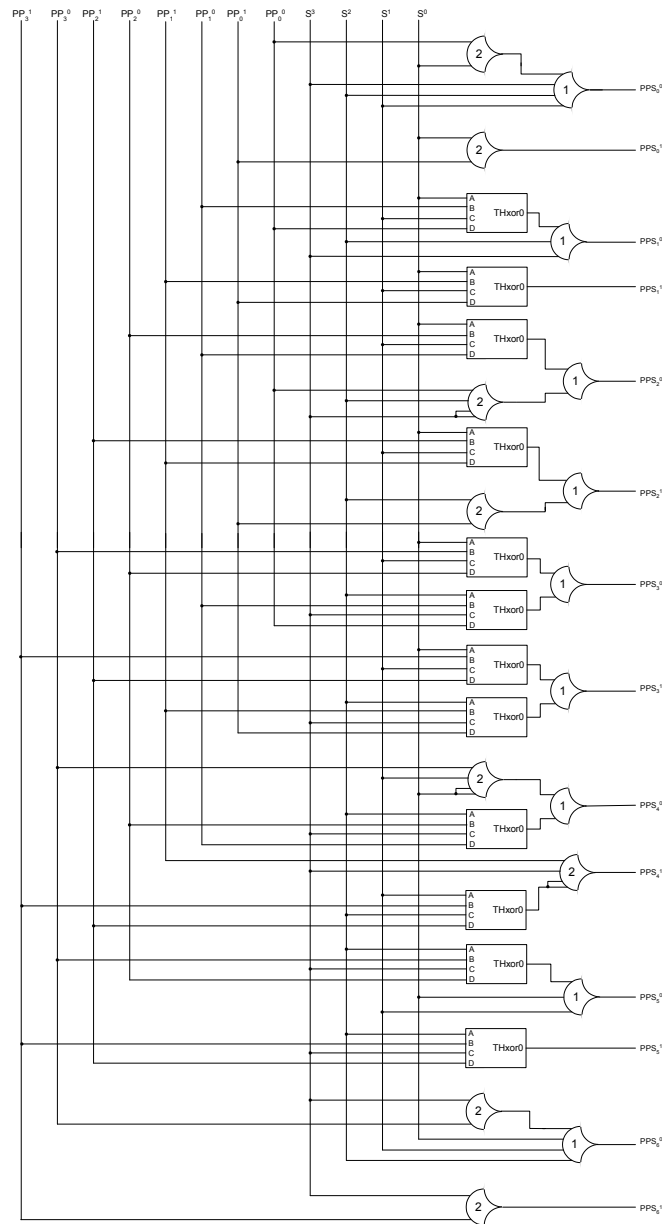


**Sequencer circuit**

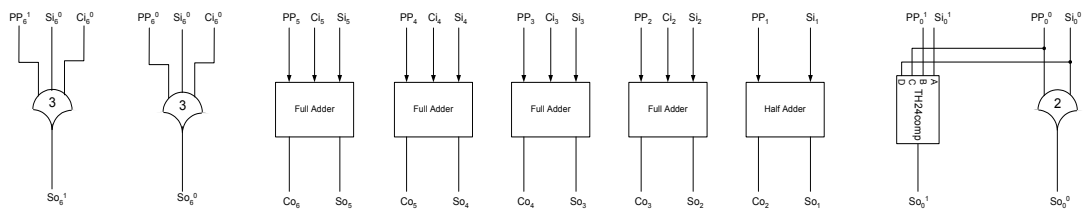
**Sequencer output**

Cycle #	Initial State	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<b>Reset</b>	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>K<sub>i</sub></b>	X	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
<b>SMDI</b>	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>SMDF</b>	0	0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
<b>SMRI</b>	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0
<b>SMRF</b>	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0

## Iterative Multiplier

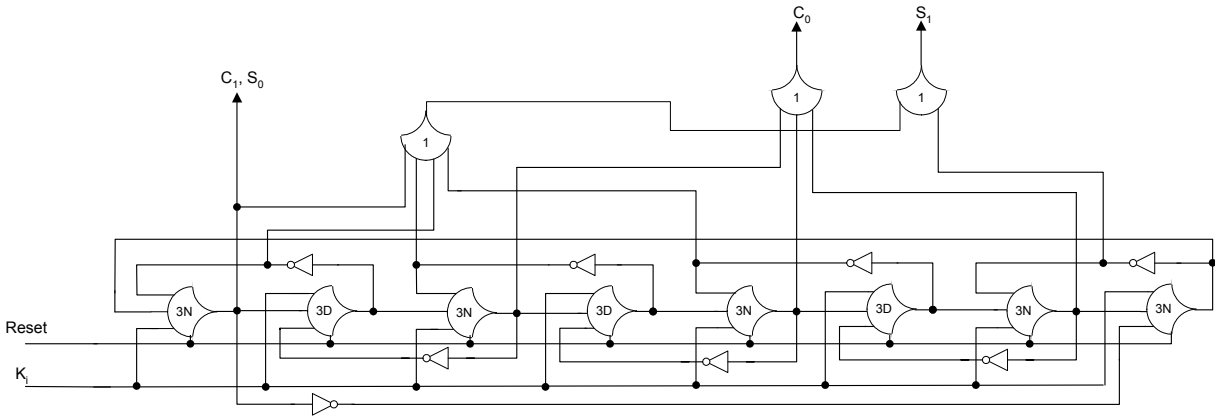


**Shift circuitry**



**Carry-save adder**



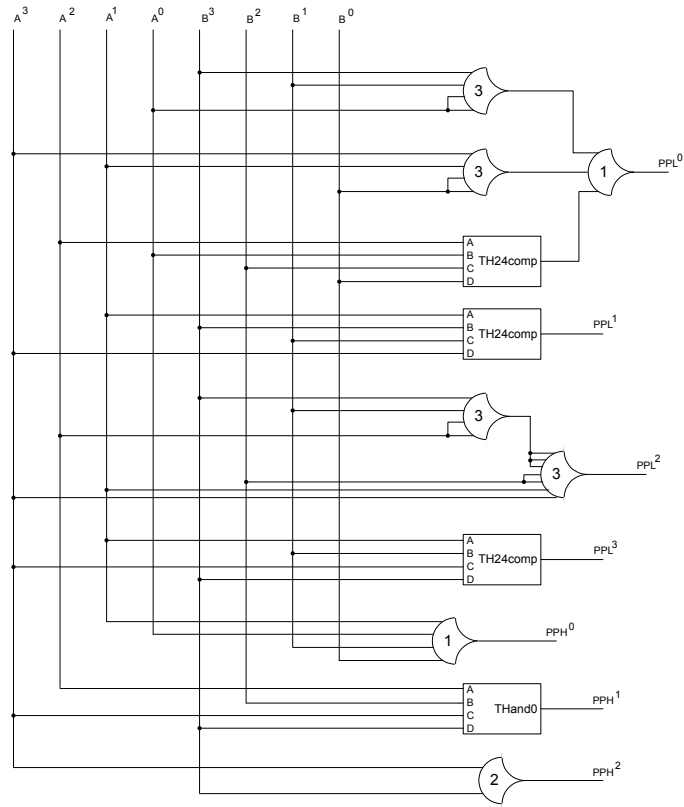


**Output sequencer**

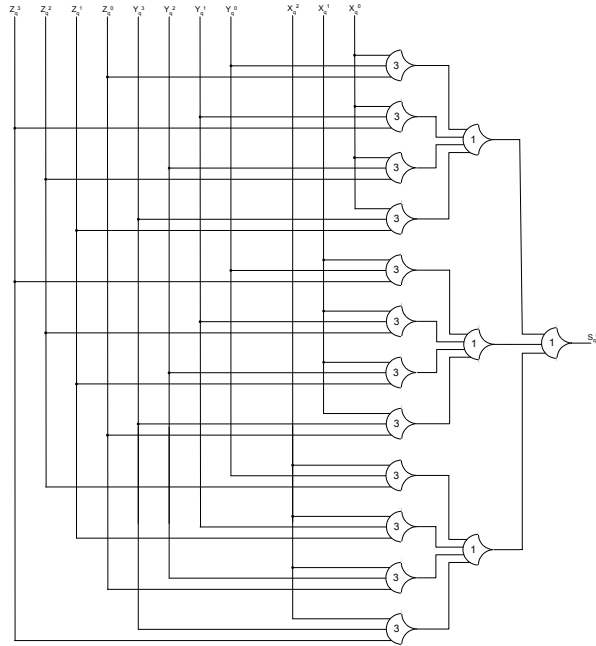
**Output sequencer output**

Cycle #	Initial State	1	2	3	4	5	6	7	8
Reset	1	0	0	0	0	0	0	0	0
$K_i$	X	1	0	1	0	1	0	1	0
$C_0$	0	1	0	1	0	1	0	0	0
$C_1$	0	0	0	0	0	0	0	1	0
$S_0$	0	0	0	0	0	0	0	1	0
$S_1$	1	0	1	0	1	0	1	1	1

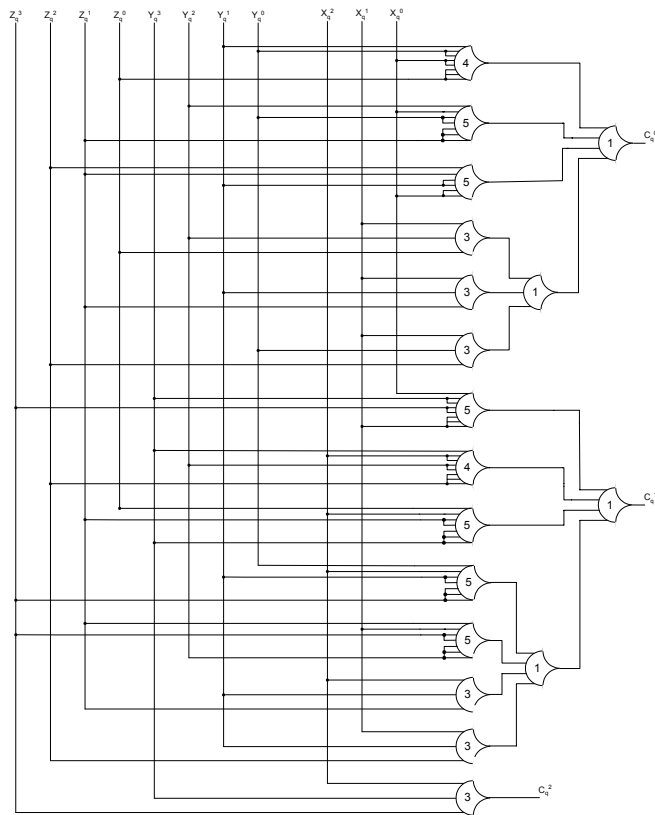
# Parallel Quad-Rail Multiplier



**Q33mul circuitry**

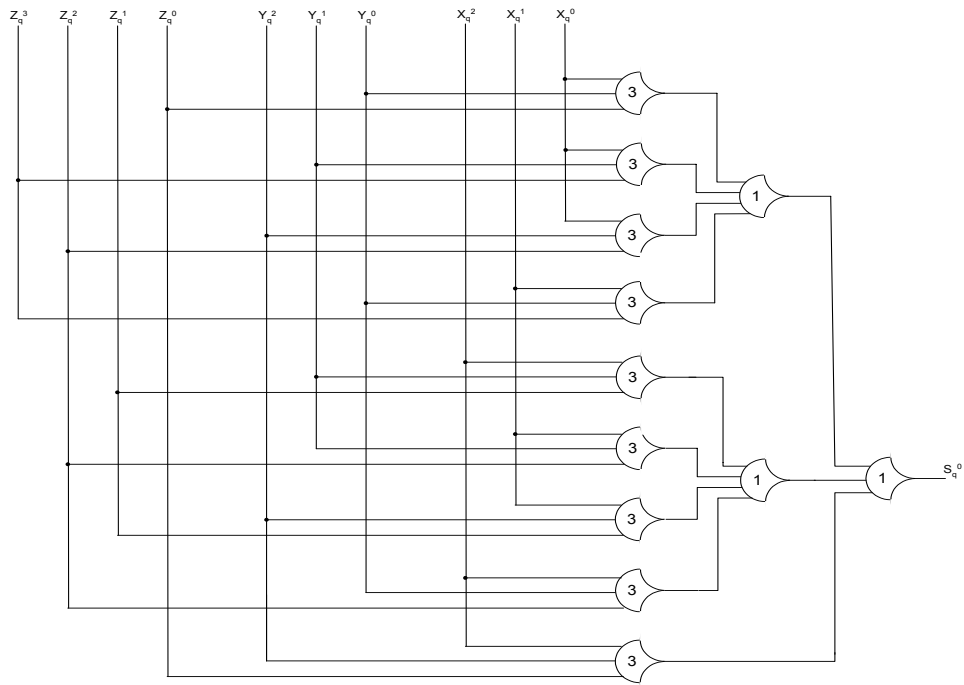


**a) Rail0 of the Sum output**

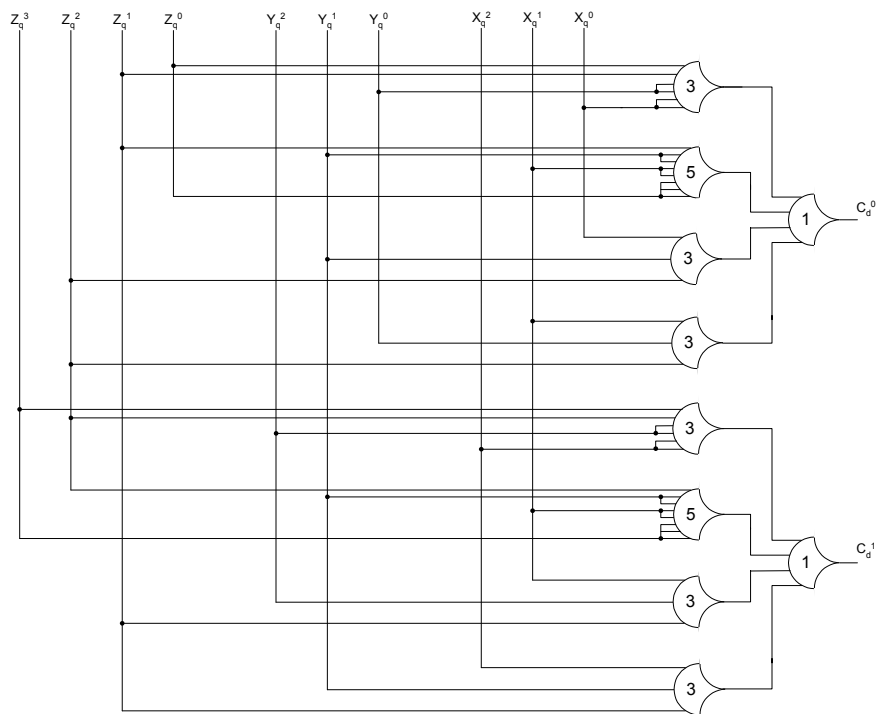


**b) Carry output**

**Q332add circuitry**

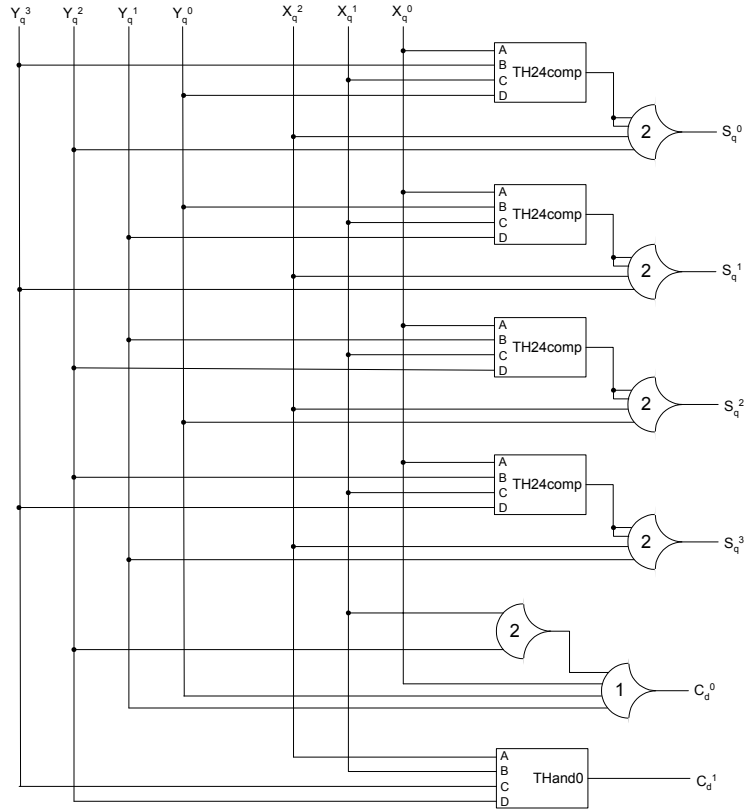


**a) Rail0 of the Sum output**

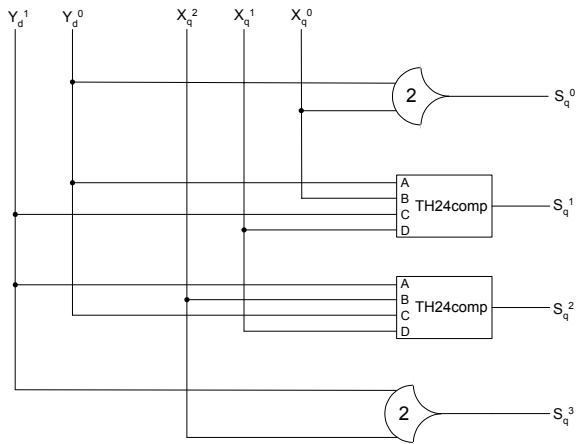


**b) Carry output**

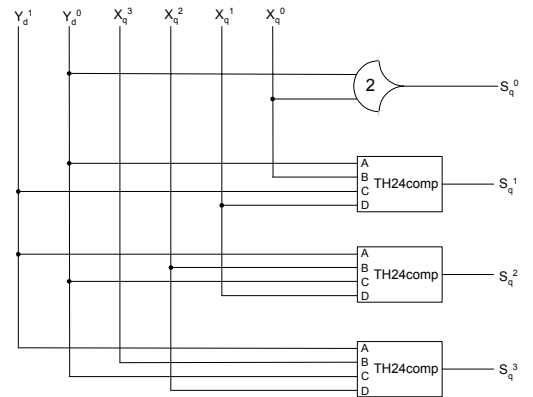
**Q322add circuitry**



**Q32add circuitry**



**Q2Dadd circuitry**



**Q3Dadd circuitry**