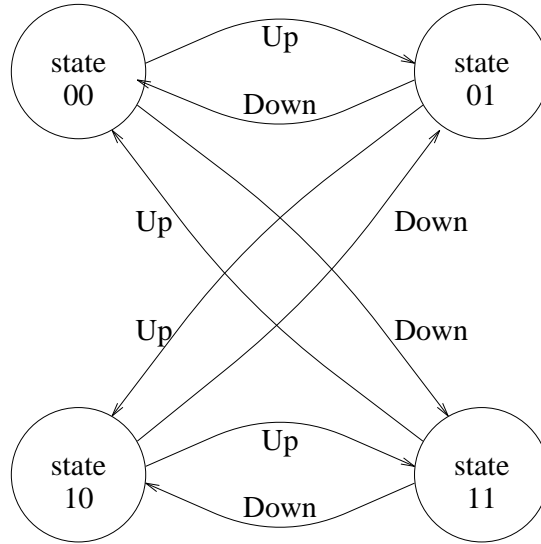


Up/Down State Machine

Part A



Part B

S_1	S_0	up/\overline{down}	O_1	O_0
0	0	0	1	1
0	0	1	0	1
0	1	0	0	0
0	1	1	1	0

S_1	S_0	up/\overline{down}	O_1	O_0
1	0	0	0	1
1	0	1	1	1
1	1	0	1	0
1	1	1	0	0

Part C

$$O_0 = \overline{S_0}$$

$$O_1 = \overline{S_0 \oplus S_1 \oplus up/\overline{down}}$$

Part D

