

$$Z = \begin{cases} c'd + A'C & (\text{min sop}) \\ (C+D)(A'+C') & (\text{min pos}) \end{cases}$$

inputs : A, B, C, D
output : Z

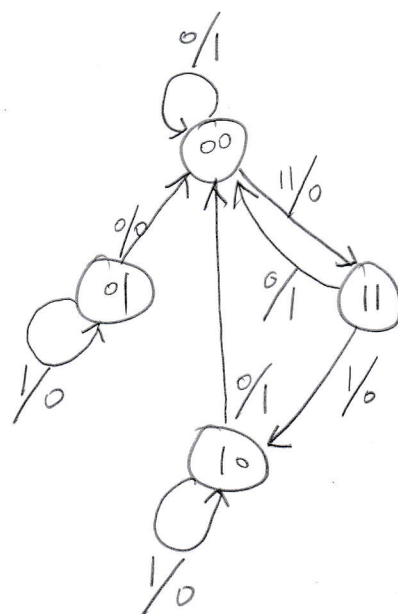
3. a) $y = (B' + A)x'$
→ dependent on input, x
Therefore, this is a Mealy machine

b) $A^+ = Ax + B'x$

$B^+ = A'x$

$y = (A + B')x'$

x	A	B	A^+	B^+	y
0	0	0	0	0	1
0	0	1	0	0	0
0	1	0	0	0	1
0	1	1	0	0	1
1	0	0	1	1	0
1	0	1	0	1	0
1	1	0	1	0	0
1	1	1	1	0	0



4.

a. $A = 12'b 1001-1100-1000$

$B = 9'b 011-001-111$

b. $C = \{B, A\} = 21'b 011001111-1001-1100-1000$

c. $A \& B = (12'b 9c8) \& (12'b 00317)$
 $= 1 \& 1 = 1$: logical AND

$A | B = (12'b 1001-1100-1000) | (12'b 0000-1100-1111)$
 $= 12'b 1001-1100-1111$; bitwise OR