

Example using complementation

Every block of four consecutive symbols has at least 2 0s.

0011001

OK

101011

Not OK

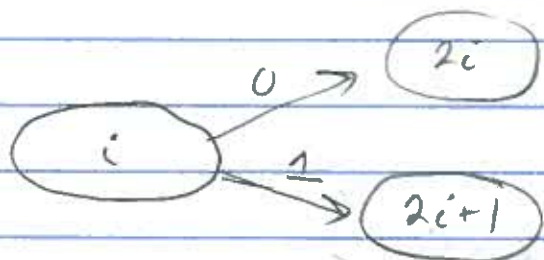
How to build FSA?

$$L' = \Sigma^* - \{ w \mid w \text{ has a 4-symbol block w/ at least 3 1s} \}$$

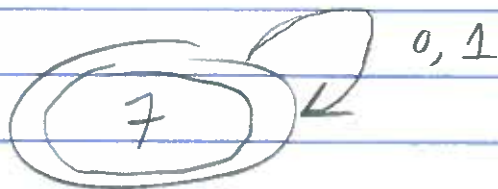
L' automaton

	0	1
0	0000	1
1	0001	3
2	0010	5
3	0011	7
4	0100	9
5	0101	11
6	0110	13
→ 7	0111	15
8	1000	1
9	1001	3
10	1010	5
→ 11	1011	7
12	1100	9
→ 13	1101	11
→ 14	1110	13
→ 15	1111	15

L' : most states:



but accepting states $7, 11, 13, 14, 15$



L' accepts if some $abcd$
contains at least 3 1s

$$L = \Sigma^* - L'$$

exchange accepting &
non accepting states
 \square