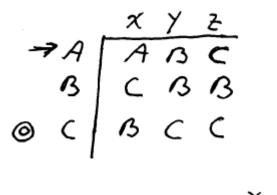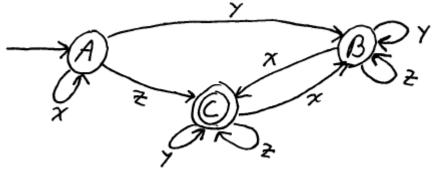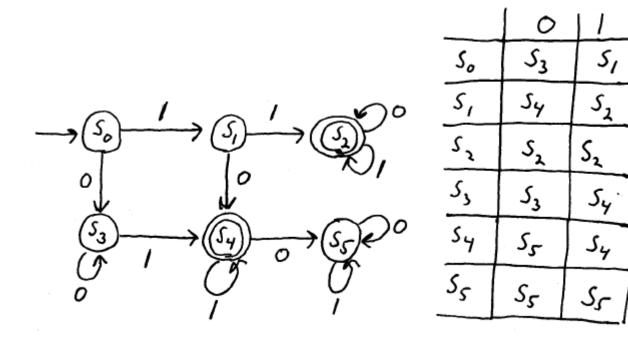1. Draw the transition diagram for the finite-state automaton described by the following annotated next-state table.
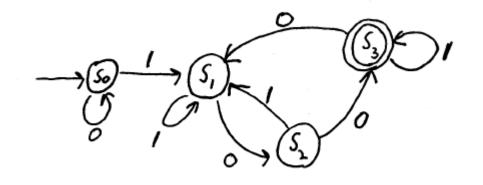
	x	y	z
→A	A	B	C
B	C	B	B
◎ C	B	C	C

2. Write the next-state table for the finite-state automaton described by the following transition diagram.

	0	1
S_0	S_3	S_1
S_1	S_4	S_2
S_2	S_2	S_2
S_3	S_3	S_4
S_4	S_5	S_4
S_5	S_5	S_5

3. Conside the following finite-state automaton.

(a) In which state does each of the following inputs leave the automaton? Specify if the word is accepted or rejected. (Assume that the automaton begins in its start state for each input.)

   (i) 010100

   > **Solution:** State s_3, accept.

   (ii) 1111101

   > **Solution:** Stae s_1, reject.

   (iii) 1000000

   > **Solution:** State s_1, reject.

(b) Find an input word that is accepted by this automaton and which ends with the four characters 0001.

   > **Solution:** The shortest possible answer is 1000001.