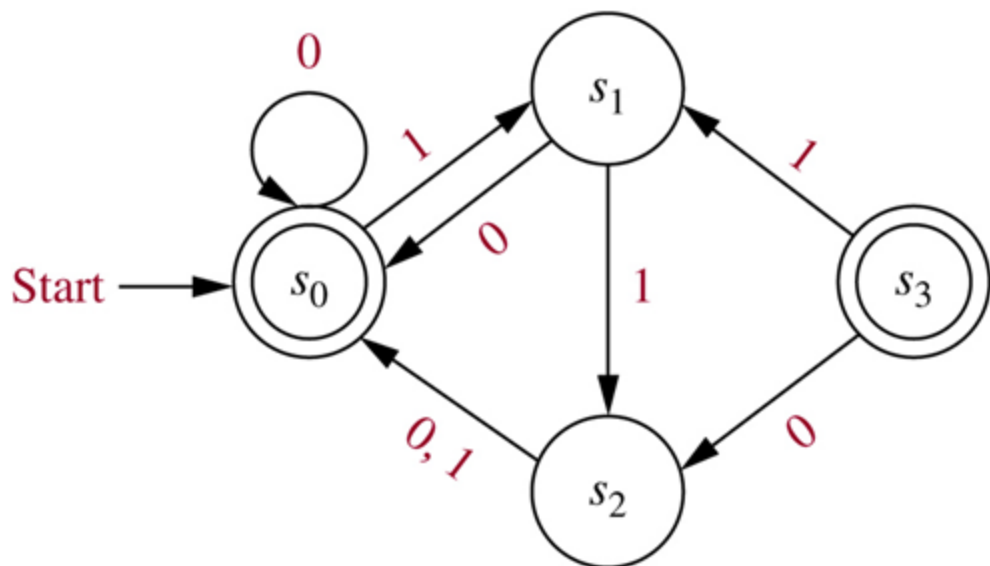
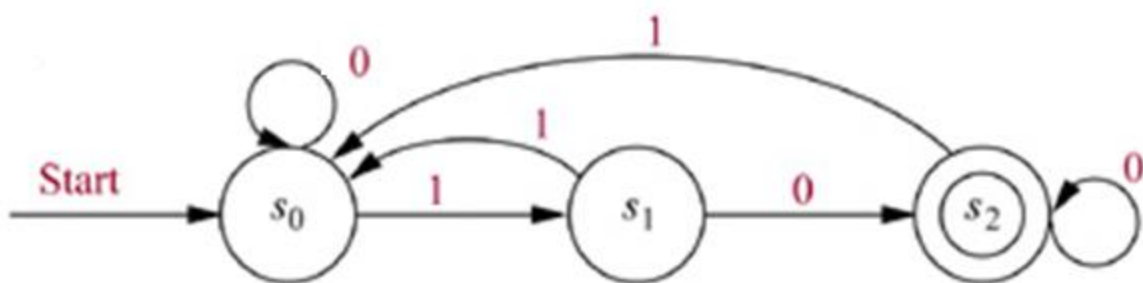


Does the finite-state automata end in a final state for the inputs?

1. 11
2. 0000
3. 00110
4. 00111



5. 10
6. 111
7. 0100



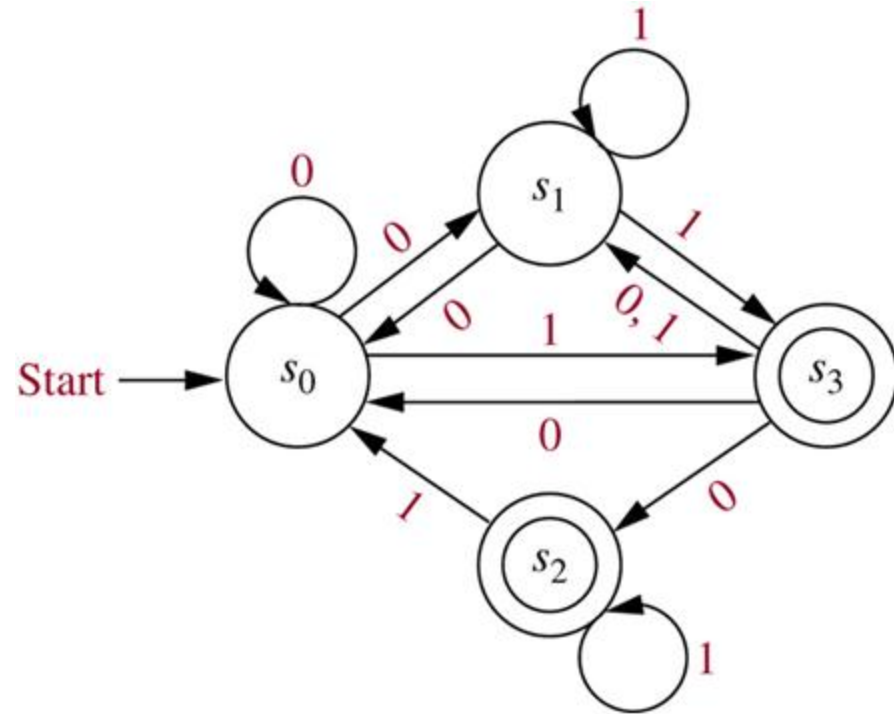
8. Give the finite-state automata for the table.

| <i>State</i> | <i>f</i>     |          |
|--------------|--------------|----------|
|              | <i>Input</i> |          |
|              | <b>0</b>     | <b>1</b> |
| $s_0$        | $s_3$        | $s_1$    |
| $s_1$        | $s_3$        | $s_0$    |
| $s_2$        | $s_1$        | $s_4$    |
| $s_3$        | $s_3$        | $s_2$    |
| $s_4$        | $s_1$        | $s_4$    |

9. Give the finite-state automata to recognize 10.

Does the nondeterministic finite-state automata recognize:

- 9. 111
- 10. 11111
- 11. 10101
- 12. 1000



13. 1000 is a member of  $10^*$
14. 000010 is a member of  $\{0 \cup 10\}^*\{0 \cup 10\}$
15. 10101 is a member of  $\{0 \cup 10\}^*\{0 \cup 10\}$
16. 110001 is a member of  $(00 \cup 01 \cup 10 \cup 11)^*$
17. Construct a nondeterministic finite-state automaton that recognizes the language generated by the regular grammar:

$$G = (V, T, S, P)$$

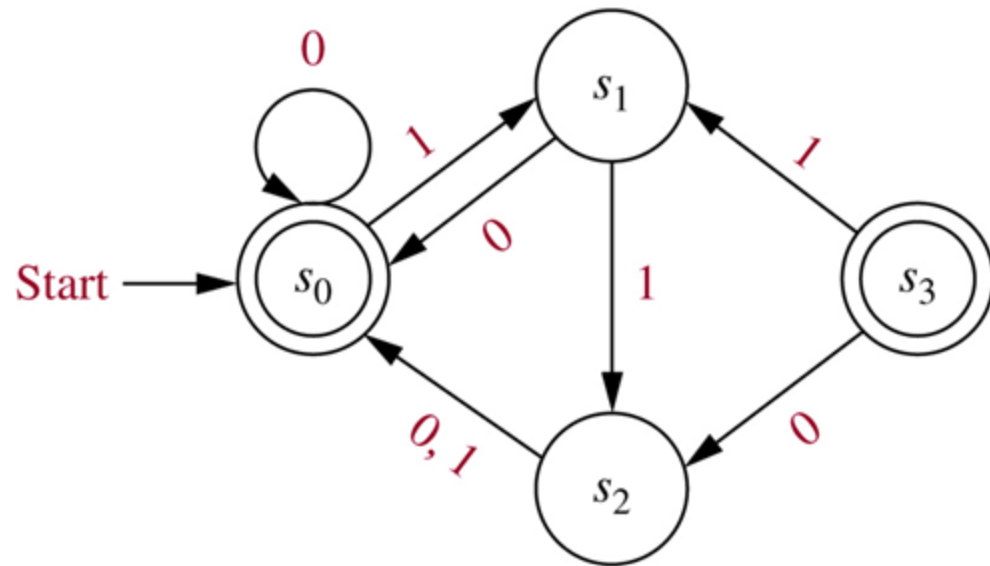
$$V = \{0, 1, A, S, B\}$$

$$T = \{0, 1\}$$

$$P = \{S \rightarrow 0A, S \rightarrow 1B, A \rightarrow 0, B \rightarrow 0\}$$

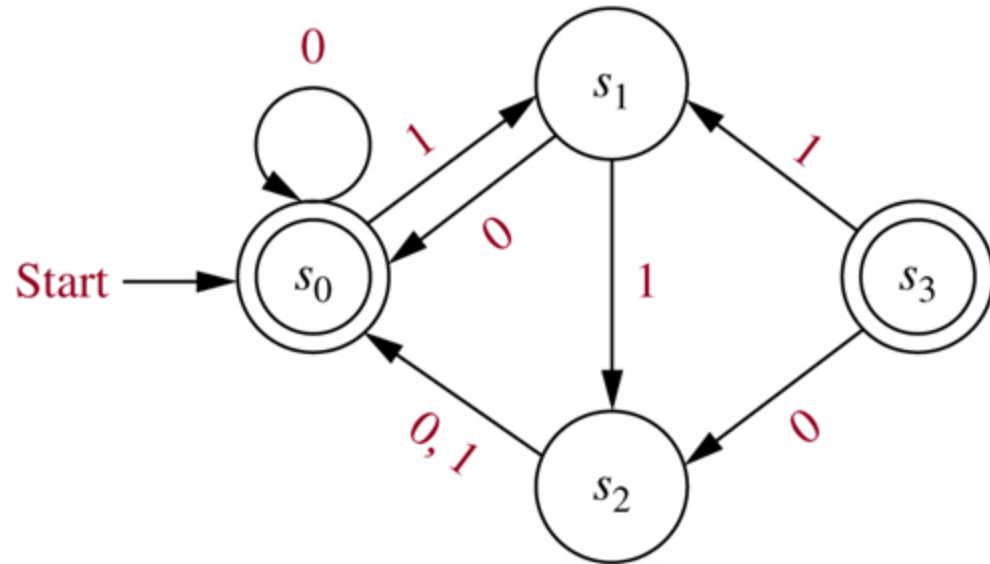
Does the finite-state automata end in a final state for the inputs?

- 1. 11      No
- 2. 0000    Yes
- 3. 00110   Yes
- 4. 00111   Yes

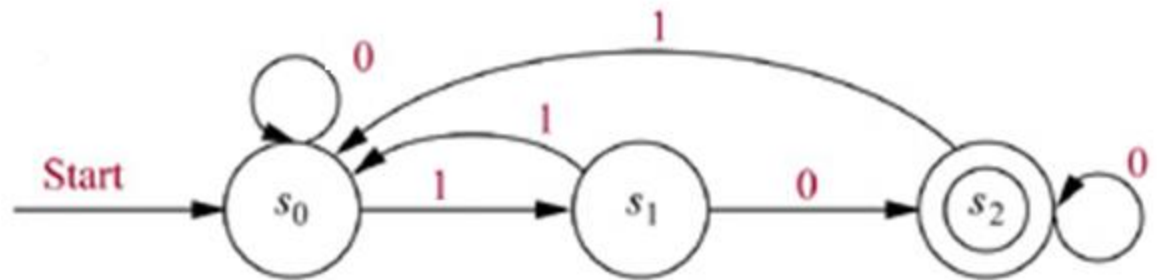


Does the finite-state automata end in a final state for the inputs?

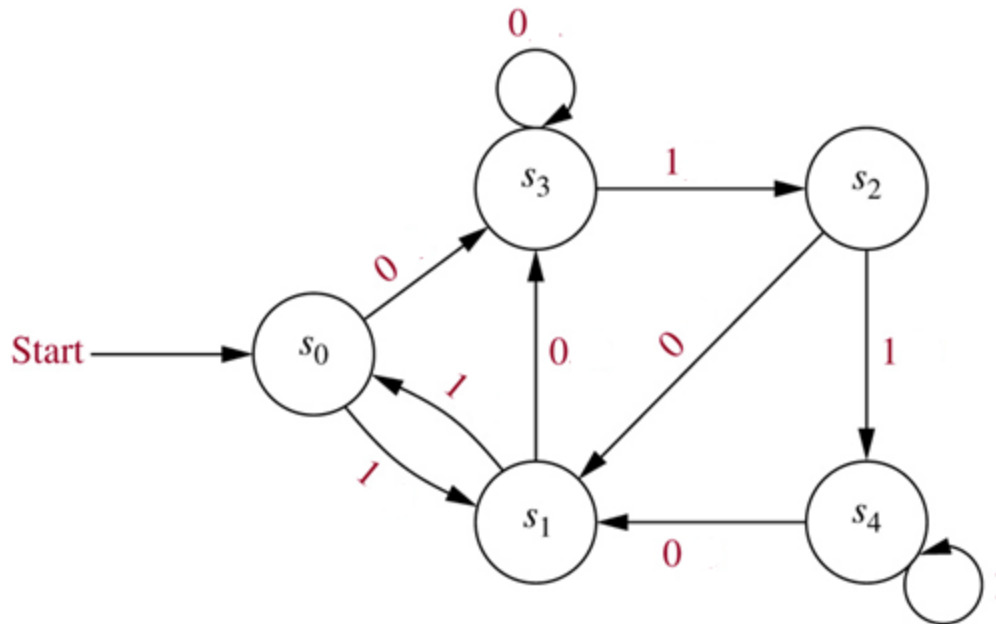
- 1. 11      No
- 2. 0000    Yes
- 3. 00110   Yes
- 4. 00111   Yes



- 5. 10      Yes
- 6. 111     No
- 7. 0100    Yes

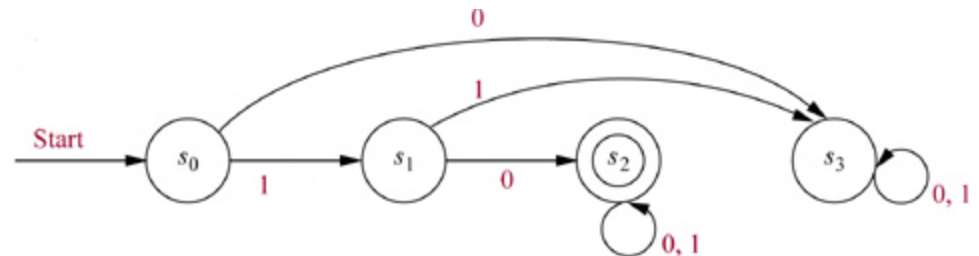


8. Give the finite-state automata for the table.



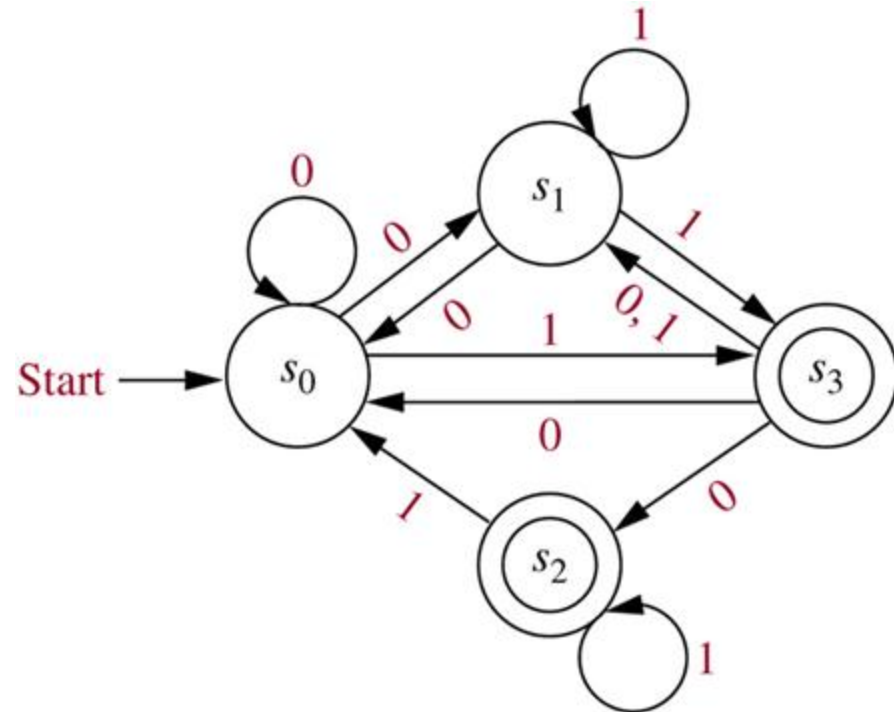
| State | <i>f</i>     |       |
|-------|--------------|-------|
|       | <i>Input</i> |       |
|       | 0            | 1     |
| $s_0$ | $s_3$        | $s_1$ |
| $s_1$ | $s_3$        | $s_0$ |
| $s_2$ | $s_1$        | $s_4$ |
| $s_3$ | $s_3$        | $s_2$ |
| $s_4$ | $s_1$        | $s_4$ |

9. Give the finite-state automata to recognize 10.



Does the nondeterministic finite-state automata recognize:

- 9. 111 Yes
- 10. 11111 Yes
- 11. 10101 Yes
- 12. 1000 No



13. 1000 is a member of  $10^*$  Yes
14. 000010 is a member of  $\{0 \cup 10\}^*\{0 \cup 10\}$  Yes
15. 10101 is a member of  $\{0 \cup 10\}^*\{0 \cup 10\}$  No
16. 110001 is a member of  $(00 \cup 01 \cup 10 \cup 11)^*$  Yes
17. Construct a nondeterministic finite-state automaton that recognizes the language generated by the regular grammar:

$$G = (V, T, S, P)$$

$$V = \{0, 1, S, A, B\}$$

$$T = \{0, 1\}$$

$$P = \{S \rightarrow 0A, S \rightarrow 1B, A \rightarrow 0, B \rightarrow 0\}$$

$$S = s_0$$

$$A = s_1$$

$$B = s_2$$

$$\text{Final} = s_3$$

