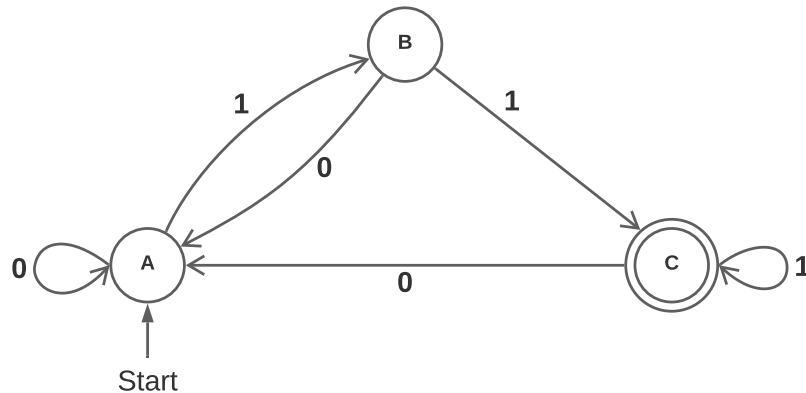


## Module 21: Deterministic Finite State Machine

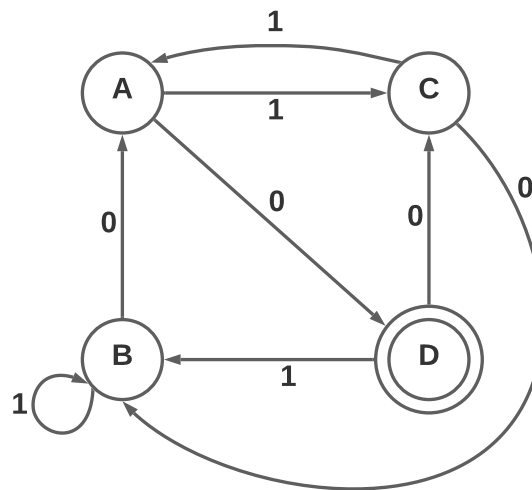
- 1 Describe a feature of an input string that will allow it to be accepted by the finite state machine described in the diagram below.



- 2 Below is a transition table for a FSM with states  $\{A, B, C, D\}$ , alphabet  $\{0, 1\}$ , and starting state A. What is the current state after the input string "0011 0011" has processed?

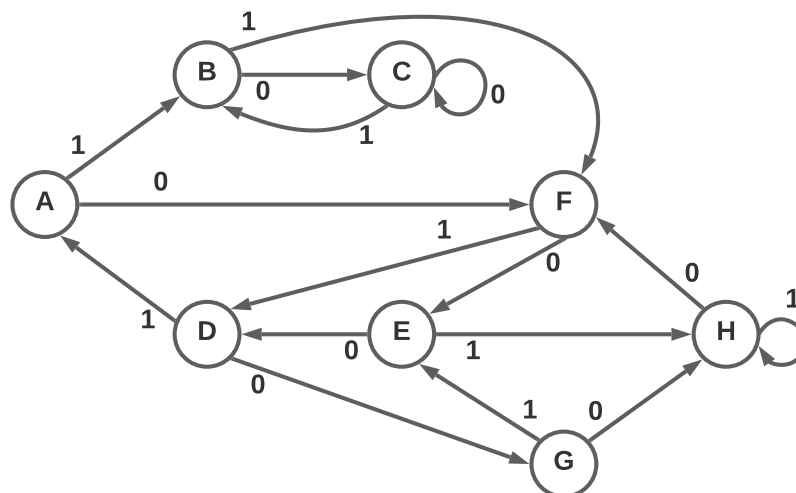
	0	1
A	D	B
B	B	C
C	B	A
D	C	A

- 3 Which of the following inputs will be accepted by the FSM starting in state A?



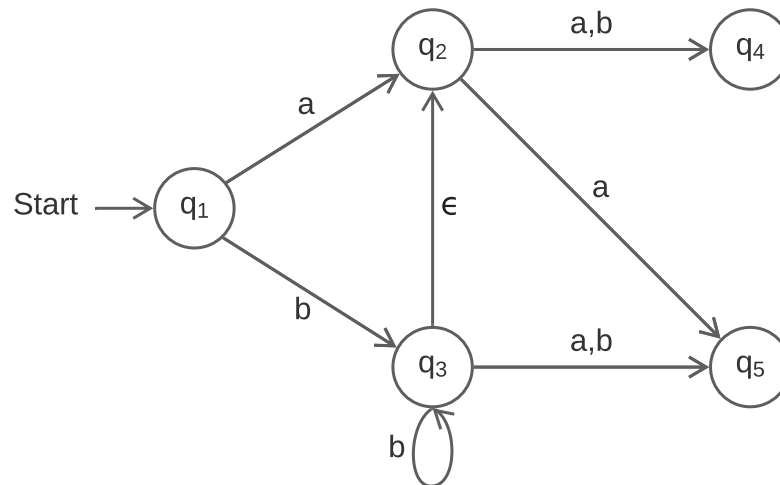
- a. 101010
- b. 010101
- c. 011010
- d. 110101
- e. 010110

- 4 What state is the automaton in after processing the string 1101 0110 1001 0011 starting from state A?



## Module 22: Nondeterministic Finite State Machine

- 5 For each input string below, determine the set of final states when processed by the following NFA.



- a) aa
  - b) aaa
  - c) bb
  - d) bba
- 6 Below is the transition table for a NFA with states  $\{s_1, s_2, s_3\}$ , alphabet  $\{0, 1\}$ , and starting state  $s_1$ . Determine the set of final states given each input string.

	0	1
$s_1$	$s_2$	$s_1, s_2$
$s_2$	$s_2$	$s_3$
$s_3$	$s_3$	$s_3$

- a. 1
- b. 11
- c. 111
- d. 01
- e. 1011