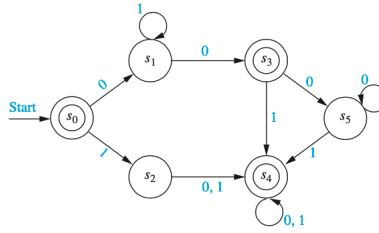


# CSC 404 - ACTIVITY/PROJECT 2 - NAME:

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**Problem 1.** Consider the following deterministic finite-state automaton (DFA).



a. Determine which of the following are accepted by the DFA. What state do they end at?

$w_1 = 101010$  (42!)

$w_2 = 000111$

$w_3 = 011100$

$w_4 = 10100111001$  (1337!)

b. Identify all bit-strings of length 3 that are accepted by the DFA.

000    001    010    011    100    101    110    111

c. Identify all bit-strings of length 4 that are accepted by the DFA.

0000    0001    0010    0011    0100    0101    0110    0111

1000    1001    1010    1011    1100    1101    1110    1111

d. Identify all bit-strings of length 5 that are accepted by the DFA.

00000    00001    00010    00011    00100    00101    00110    00111

01000    01001    01010    01011    01100    01101    01110    01111

10000    10001    10010    10011    10100    10101    10110    10111

11000    11001    11010    11011    11100    11101    11110    11111

**Problem 2.**

a. Construct a deterministic finite-state automaton (DFA) that recognizes the set of all bit strings that contain at least three 0s.

b. Construct a deterministic finite-state automaton (DFA) that recognizes the set of all bit strings that contain three consecutive 0s (i.e., 000).

- c. Construct a deterministic finite-state automaton (DFA) that recognizes the set of all bit strings that contain at least two 0s and at most one 1.