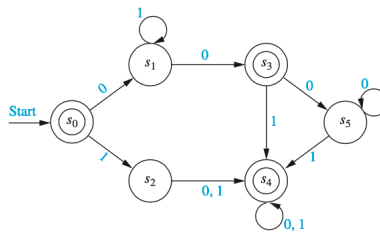


CSC 404 - ACTIVITY/PROJECT 2 - NAME:

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!)

Yes! s_4

Yes! s_4

No! s_6

Yes! s_4

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.

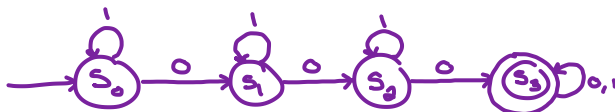
~~0000~~ 0001 0010 0011 ~~0100~~ 0101 0110 ~~0111~~
1000 1001 1010 1011 1100 1101 1110 1111

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

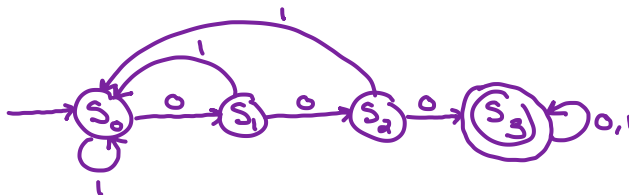
~~00000~~ 00001 00010 00011 00100 00101 00110 00111
~~01000~~ 01001 01010 01011 ~~01100~~ 01101 01110 ~~01111~~
10000 10001 10010 10011 10100 10101 10110 10111
11000 11001 11010 11011 11100 11101 11110 11111

Problem 2.

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

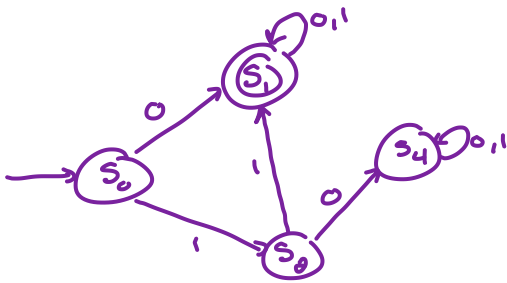


b. Construct a deterministic finite-state automaton (DFA) that recognizes the set of all bit strings that contain three consecutive 0s (i.e., 000).

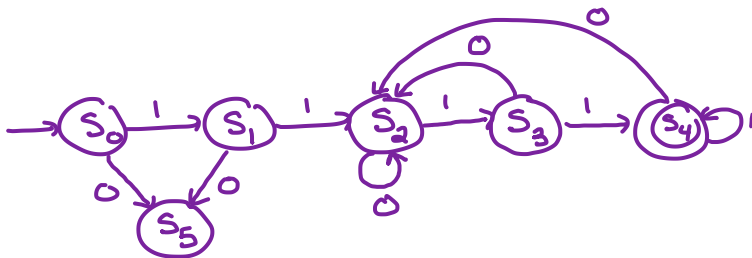


Problem 3.

- a. Construct a deterministic finite-state automaton (DFA) that recognizes the set of all bit strings that begin with 0 or with 11.



- b. Construct a deterministic finite-state automaton (DFA) that recognizes the set of all bit strings of at least 4 characters that begin and end with 11.



- 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.

