CSE331: Automata and Computability
Worksheet 1 (DFA)

Question 1: Design DFA's accepting the following languages over the alphabet {0, 1}:

    a. The set of all strings ending in 00.
    b. The set of all strings with three consecutive 0's
    c. The set of strings with 011 as a substring.
    d. The set of strings that either begin or end (or both) with 01.
    e. The set of strings such that the number of 1's is divisible by 3
    f. The set of all strings beginning with a 1 that when interpreted as a binary integer, is a multiple of 5. For example, strings 101, 1010, and 1111 are in the language; 0, 100, and 111 are not.

Question 2:
    a. Design a DFA to accept the language L={w| w starts with ab or ends with bc} from Σ = {a, b, c} . Verify that your DFA works by finding out extended transition function, $\hat{\delta}$ (q0 ,cacbc), where q0 is the start state.
    b. Design a DFA to accept the language L={w| w has odd length and ends with y} from $\Sigma = \{x, y\}$. Verify that your DFA works by finding out extended transition function, $\hat{\delta}$ (q_0 ,xyx), where q_0 is the start state.

Question 3: Design a DFA that has 010 as substrings over the alphabet {0,1} and also depict the transition table.