HOMEWORK I
CMPE 326 - Formal Languages & Automata
Due Date: April 8, 2021, 23:59

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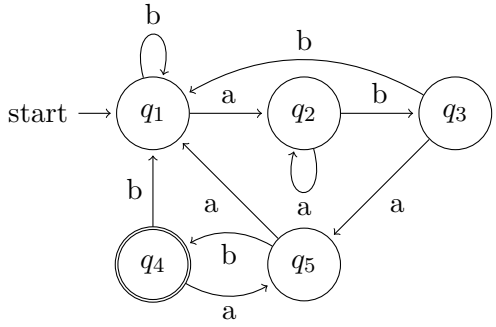
1. DFA (30p)

   a) Design a DFA which recognizes the language L, where L is the set of strings over {a, b, c} that begin with a, contain exactly two b's, and end with cc. (15p)

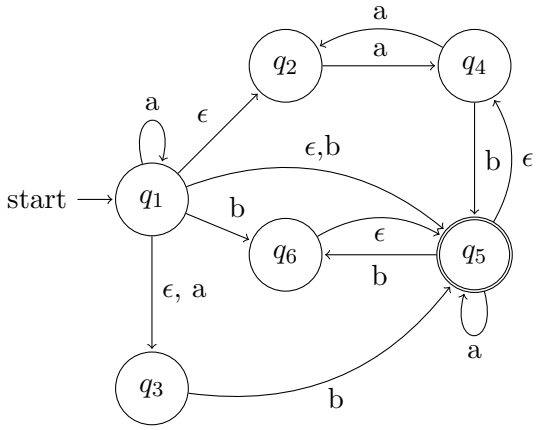
   b) Describe the language recognized by the following DFA. (Hint: Try to write down some of the strings that are accepted with this DFA, then, try to catch a pattern and express this pattern with a sentence.) (15p)



2. NFA (40p)

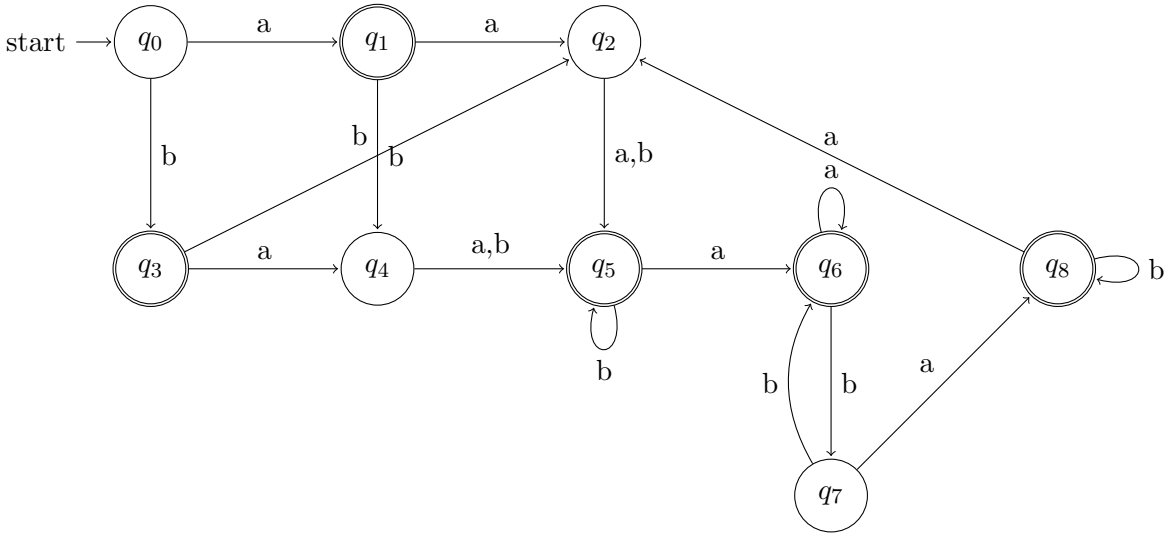
   a) Construct an NFA of the language L, where L is the set of strings over {a, b, c} that have a substring of length three containing each of the symbols exactly once. (15p)

   b) Convert the following NFA into the corresponding DFA. (25p)



3. DFA Minimization (20p)

   Minimize the following DFA:



4. Regular Expression (10p)

   Write a regular expression for the set of strings over 0,1 with exactly one occurrence of the string 000. (Hint: the rule does NOT say possible 0's in a string are limited to that one occurrence of 000.)