Final Assignment

Theory of Computation (CSE273)

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Q1: Construct a DFA with 6 states, two of which are final states. Take a string of length 7. Now, use extended transition function to test whether the string is accepted by your constructed DFA.

Ans. Consider the DFA = (Q, Σ, δ, A, F), where

$$Q = \{A, B, C, D, E, F\}$$

$$\Sigma = \{0, 1\}$$

Transition table for a DFA that has 6 states, 2 of which are final states, is given below:

States	Input: 0	Input: 1
→A	B	C
B	C	D
C	E	F
*D	B	E
E	F	C
*F	F	D

Table 1: DFA - Transition Table

Let's take a string, $w = 0100101$

Q2: Construct a ε-NFA using 10 states, three of which are final states and at least two are -transitions. Now, use subset construction algorithm to convert this ε-NFA to its equivalent DFA.

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Q3: Consider the final DFA that you have created as an answer to Question 2. Use that DFA, and now, use table filling algorithm to minimize it.

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Q4: Construct a Mealy machine with 6 states with input alphabet 0, 1, 2 and output alphabet a,b,c. Now, transform this Mealy machine to its equivalent Moore machine.

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