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CS 305 (Autumn 2023-24)

Tutorial 2

1. Design Deterministic Finite Automata (DFA) with that accept the following set of strings over $\Sigma = \{a,b\}$

a) Containing at least one **a** or at least two **b**'s.
b) Containing at least one **a** and at most one **b**.
c) Containing even number of **a**'s and no adjacent **a**'s.
d) Containing alternating **a**'s and **b**'s.
e) Containing even length strings where second symbol is **b**.
f) Containing **aba** as a substring.
g) Set of all strings other than **a** and **bb**.
h) Containing at least two **a**'s.
i) Set of all strings such that no two **b**'s are adjacent.

2. Design a DFA for the language $L = \{a^n b | n \geq 0\}$ over $\Sigma = \{a,b\}$. Hence, design DFA for language

a) accepting $L^{2.}$
b) accepting $L^2 - L$.