1. Build Deterministic Finite Automata for the following languages over alphabet \( \{a, b\} \):

   (a) Strings of length at least 3
   (b) Strings that do not contain the substring \( ba \)
   (c) Strings that have either exactly one \( a \) or exactly two \( a \)'s.

2. Let an NFA be defined as \((Q, \Sigma, \delta, q_0, F)\) where

   \( Q = \{q_0, q_1, q_2\} \)
   \( \Sigma = \{a, b\} \)
   \( q_0 \) is the start state
   \( F = \{q_1\} \)

   \( \delta \) is given by

   \[
   \begin{array}{c|ccc}
   & a & b & \varepsilon \\
   \hline
   q_0 & \{q_2\} & \{q_0\} & \{q_1\} \\
   q_1 & \{q_2\} & \{q_0\} & \emptyset \\
   q_2 & \{q_0, q_2\} & \{q_1\} & \emptyset \\
   \end{array}
   \]

   Construct a DFA equivalent to this NFA following the algorithm we saw in class.