Instructions: Homework must be typeset in \LaTeX.

1. In the textbook: Problem 1.31 in the US edition (page 88), which is Problem 1.36 in the International edition.

2. In the textbook: Problem 1.32 in the US edition (page 88), which is Problem 1.37 in the International edition.

3. In the textbook: Problem 1.33 in the US edition (page 89), which is Problem 1.37 in the International edition.

4. Consider the following languages with alphabet \{0,1\}. \( L_1 = \{w | w \text{ is } 01^*1\} \). \( L_2 = \{w | w \text{ is } 0^*(01)^*\} \).

   a) Draw NFAs for \( L_1 \) and \( L_2 \).

   b) Construct a new language \( L = L_1 \cup L_2 \). Draw a NFA for \( L \)

   c) Convert the NFA of \( L \) to a DFA and draw the DFA.