1. (10 points) Consider the regular expression $(ab|ac)^*$.
   (a) Use Thompson’s construction to construct an NFA.
   (b) Convert the NFA to a DFA.
   (c) Minimize the DFA.

2. (10 points) Prove that the regular expressions $(0|1)^*$ and $(0^*10^*)^*$ are equivalent by showing that their minimized DFAs differ only by state names. You must show all steps of constructing the minimized DFAs.

3. (10 points) Construct a DFA for each of the following C language constructs, and then build the corresponding classifier, transition and token type tables for the table-driven implementation for each of them.
   (a) Integer constants
   (b) Identifiers
   (c) Comments

4. (10 points) For the integer constants DFA in the previous exercise, build a direct-coded scanner.