1. (12 points) Use Thompson’s algorithm to construct NFAs for the following regular expressions:
   a. (alb)a
   b. a(alb)*a
   c. a*a
   d. (alb)(alb)

2. (20 points) Use the subset construction algorithm to convert the NFAs from problem 1 to equivalent DFAs.

3. (8 points) The lexical specification of a subset of a programming language for which your to write a compiler contains the following token specifications:
   % shorthand declarations
   LETTER = [a-zA-Z]
   DIGIT = [0-9]
   % token specification
   WHILE = while
   IDENTIFIER = LETTER (LETTER|DIGIT)*

Construct a combined DFA for the WHILE and IDENTIFIER tokens. Remember that the order of the token specification is important.