Homework Assignment #1

Due: Wednesday, October 13

Do the following exercises from the textbook: 2.1f, 2.4b, 2.5a, 2.5c, 2.6

In addition, do the following exercises:

1. a. Convert the following regular expression (where the alphabet is 0, 1, and E) into an NFA, following the mechanical rules developed in class.

    ```
    (0|1)(0|1)* | (0|1)(0|1)* E (0|1)(0|1)*
    ```

    b. Convert this NFA into a DFA, following the algorithm from class. Be sure to label the NFA states and to label each of the DFA states with a set of NFA states.

2. a. The regular grammar specifying lexically correct programs for MiniJava is given as follows:

    ```
    Program ::= (Token|Whitespace)*
    ```

    Modify this specification to require that all tokens be separated by whitespace, and optionally allow whitespace at the start and/or end of the program.

    b. Why does this language change remove the need for the longest-match meta-rule?

    c. Do you think this would be a good language design change?

Produce a hard-copy of your answers and turn them in to the TA by the start of class on the due date.

Do these exercises individually, not with your project partner.