Compiler Construction (CSCI 355) exercise list 1

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Due: 01.09.2020, at 8.00PM

1. Draw a complete NDFA for floating point numbers. Examples of floating point numbers that must be accepted are:
   `44,  44.0, -1.45,  4.4E01, 2.99792458e8,  6.67430e-11`

2. Give a regular expression for floating point numbers.

3. Assume that we have a cheap table calculator with usual operators, with usual numbers (signs, decimal fractions, but no 'e'/'E'), without operator priorities and without parentheses.

   Draw an NDFA for this calculator.

4. Give a regular expression for C-style comments, starting with `/*` and ending with `*/` .

   This is much more tricky than it seems. Check your expression very carefully!

5. Same for C-style comments that start with `//` and last until the end of the line.

6. Give regular expressions that accept all words over the the usual alphabet $\{a, \ldots, z\}$ that contain (exactly, less than, more than) four occurrences of the letter a.

7. Give a regular expressions that accepts all words over $\Sigma = \{a, b, c\}$ that contain each of the letters in Σ at least once. Could you describe a similar regular expression for the complete alphabet $\Sigma' = \{a, b, c, \ldots, z\}$?