CECS 524
Assignment 3
Total: 36 Points

General Instruction

- I absolutely recommend that you type your answers to exercise questions by using LaTeX.

- If your programs could not be executed on a command line environment, **zero** grade will be given for the programs.

- Submit PDF, java, cpp, py files via BeachBoard (Not email or in class).

1. (15 points) Write regular expression to capture the hexadecimal floating-point values. A hexadecimal floating-point value has an optional fractional portion (beginning with a dot) and a mandatory exponent (beginning with P or p). There may be digits to the left of the dot, the right of the dot, or both, and the exponent itself is given in decimal (contains only the digits 0-9), with an optional leading + or - sign. A hexadecimal floating-point value may end with an optional F or f (indicating "float"-single precision) or L or l (indicating "long"-double precision).

    i. A character
    ii. The empty string
    iii. Parenthesis
    iv. Concatenation
    v. 'or'
    vi. Kleene star. (Please use superscript star symbols, *)

2. (21 points) Write a Java, C++, and Python programs (without external library) that determines whether a given stream of characters is a hexadecimal floating-point value or not.

    i. The file names of the source codes should be `Assn3.java, Assn3.cpp, Assn3.py`.
    ii. The programs should read the input file name from the command-line arguments passed to the program. (`args[], argv[], sys.argv[]`).
    iii. The program should read each line from an input file and print out its evaluation.
    iv. You can use **any regular expression** which is allowed in the programming languages.
    v. Execution commands should be:

    ```
    javac Assn3.java; java Assn3 a3_input.txt
    g++ Assn3.cpp -o Assn3; ./Assn3 a3_input.txt
    python Assn3.py a3_input.txt
    ```

vi. Expected output for the provided `a3_input.txt`.

```
Matched: 0x1p+1
Not Matched: 0x1p+8.8
Not Matched: 1a.0p-6
Matched: 0x1.b7p-1
```

Note. Your programs will be tested with a different test file.