CS608 Programming Assignment 6

This assignment has two parts: Part 6A and Part 6B. If you successfully complete both, you will receive 15 points. If you successfully complete only one (either one), you will receive 10 points.

Programming Assignment 6A: Infix to postfix

The programming assignment is to add two more features to the **Program Implementing the algorithm to convert infix to postfix** (the program is in my notes, section 6):
(1) Permit input infix expression to have spaces and (2) Permit exponentiation operator ^ in the infix expression. a ^ b means a^b.

Write a Java program to convert a given infix expression to postfix. Your program must use the algorithm discussed in my notes. Your program reads data from a text file, **infixData6A.txt**. I will provide the data file when I run your program (it will be in the same directory as your program). Operands and operators appearing in infix expressions:
Operands: a, b, c, and d.
Operators: +, -, *, /, and ^.
Spaces are permitted.

The **infixData6A.txt** data file will contain five infix expressions on five lines.
Example of infixData.txt file (The actual data may be different).
a + b * c ^ d + b * a
a * b + c * d + a ^ b
a + b * c + d ^ a
a * b / c * d + a ^ b
a * b + c / d + a * b

Out:
The given infix expression
Converted postfix expression.

Programming Assignment 6B: Evaluation of infix expressions

The assignment 6B is to write a Java program to evaluate a given infix expression. An algorithm is discussed in my notes (section 7 of my notes). The assignment 6B is to implement the algorithm discussed.

Your program must use the algorithm discussed in my notes. Your program reads data from a text file, **infixData6B.txt**. I will provide the data file when I run your program (it will be in the same directory as your program). Operands and operators appearing in infix expressions:

Operands: a, b, c, and d.

Operators: +, -, *, and /

Values to the four operands will be given as **double**.

The **infixData6B.txt** data file will contain five infix expressions on five lines, each line followed by four values for the four operands, in the following format:

Example of **infixData6B.txt** file (The actual data may be different).

(a+b*c)+d
2.5 1.2 5 3.2
(a*(b+c)*(a+d)
1.5 3.2 4 2
a+b*(a+b*c)+d
2.5 4 6 2
a+b+c*(a+b/d)
1 2 3 2
(a+b/c*(a+d*c))
2.5 3.1 1 1.5

Out:

The given infix expression
Given values for operands
Value of the expression

Five sets of answers like this.

General instructions:

- If your program has several classes, include all of them in the same file and name your Java file CS6086Axxxxx.java (Assignment 6A) and CS6086Bxxxxx.java (assignment 6B), where xxxxx is your last name. **Example**: If your name is John Smith, name the file CS6086Asmith.java and CS6086Bsmith.java. **DO NOT SEND ZIP files.**

- Output must include: **Your name, course number and date (use Date class).** If any of the above items are missing, you will not receive full credit.

- Send your Java file as email attachment to CS608Assignment@gmail.com. Include your name and assignment number in the email subject.

Note: I will run your programs and grade them. If your programs do not compile (that is, show syntax errors, you will receive 0 for the programming assignment).