Assignment2

Task-1: Expression Analyzer

In this task, I use a tree structure to store an in-order expression (for Task1. (a).1). Every node has 3 connections and a value, and if the input correctly, it will show pre-order, post-order and order traverse of the tree (for Task1. (b)), also get the result of the expression. If the expression contains variable, it will ask user to input the variable and get the result (for Task1. (a).3 and Task1. (a).4 and Task1. (a).5). If user input has error, program will show the error (for Task1. (a).2).

**How to use:**

1. Input it to the IDE(I use Eclipse to make it)
2. Run Main.java
3. Input an expression
   1. If input not correct program stops
4. Display post-order, pre-order, in-order traverse
   1. If input has variable
   2. Ask for variable

4.2.1 if input variable error (e.g. input a letter), program stop

1. Display result

**Example output 1 (no error):**

Please input an expression:

a+b\*c/(d-e)

you inputed a+b\*c/(d-e)

In-Order format:

a+b\*c/d-e

Post-Order format:

abc\*de-/+

Pre-Order format:

+a/\*bc-de

Variable [a] found. What is it?[input 0 - 9]

1

Variable [b] found. What is it?[input 0 - 9]

2

Variable [c] found. What is it?[input 0 - 9]

3

Variable [d] found. What is it?[input 0 - 9]

4

Variable [e] found. What is it?[input 0 - 9]

5

Result is : -5.0

**Example output2 (input correctly)**

Please input an expression:

f+o-y\*(h+9/(y/9))-6

you inputed f+o-y\*(h+9/(y/9))-6

In-Order format:

f+o-y\*h+9/y/9-6

Post-Order format:

fo+yh9y9//+\*-6-

Pre-Order format:

--+fo\*y+h/9/y96

Variable [f] found. What is it?[input 0 - 9]

8

Variable [o] found. What is it?[input 0 - 9]

6

Variable [y] found. What is it?[input 0 - 9]

3

Variable [h] found. What is it?[input 0 - 9]

9

Variable [y] found. What is it?[input 0 - 9]

1

Result is : -262.0

**Example output 3 (Error found in expression)**

Please input an expression:

ab+-

Error catch! sub-String size is not smaller enough

inputed String is empty, Calculate error Found!

inputed String is empty, Calculate error Found!

you inputed ab+-

In-Order format:

Post-Order format:

Pre-Order format:

Error!

**Example output 4(Error found in define variables)**

Please input an expression:

a+b\*c

you inputed a+b\*c

In-Order format:

a+b\*c

Post-Order format:

abc\*+

Pre-Order format:

+a\*bc

Variable [a] found. What is it?[input 0 - 9]

a

Input variable Error! return from calulation

Result is : -0.0