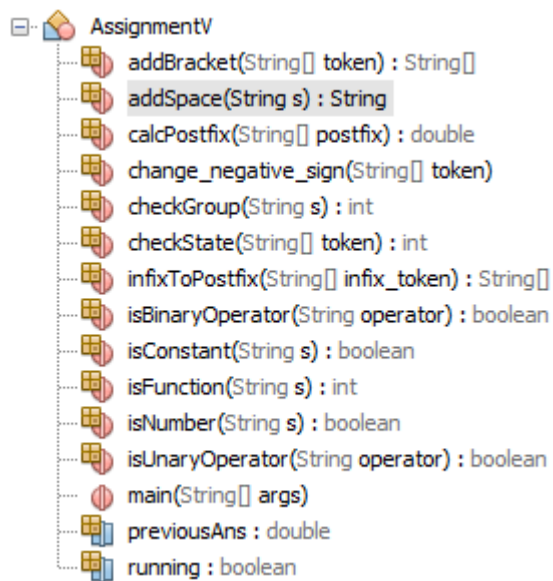Assignment V

Infix to Postfix

Self-Assessment: 100 ทำงานสำเร็จได้ด้วยตนเอง สามารถประยุกต์งานให้เข้ากับปัญหาอื่นที่มีลักษณะคล้ายๆกัน สามารถแนะนำ/แก้ปัญหาให้กับผู้อื่นได้

What I've learned:

1) How to evaluate math expression using Postfix
2) Stack: Push, pop
3) ArrayList: Basics

Program Components:

- AssignmentV
    - addBracket(String[] token) : String[]
    - addSpace(String s) : String
    - calcPostfix(String[] postfix) : double
    - change_negative_sign(String[] token)
    - checkGroup(String s) : int
    - checkState(String[] token) : int
    - infixToPostfix(String[] infix_token) : String[]
    - isBinaryOperator(String operator) : boolean
    - isConstant(String s) : boolean
    - isFunction(String s) : int
    - isNumber(String s) : boolean
    - isUnaryOperator(String operator) : boolean
    - main(String[] args)
    - previousAns : double
    - running : boolean

Test cases:

```
ant -f C:\\Users\\lenovo\\Documents\\NetBeansProjects\\AssignmentV -Dnb.internal.action.name=run run
init:
Deleting: C:\Users\lenovo\Documents\NetBeansProjects\AssignmentV\build\built-jar.properties
deps-jar:
Updating property file: C:\Users\lenovo\Documents\NetBeansProjects\AssignmentV\build\built-jar.properties
compile:
run:
Expression>>2.5+pi
Postfix:2.5pi+                          //Negative sign
Ans>>5.64
Expression>>2.5 pi +
Syntax error
Expression>>-2.54 + 1.68 ( 2+3)
Syntax error
Expression>>-2.5-sin(-30)
Postfix:2.5!30!sin-
Ans>>-2.0
Expression>>sin(cos(tan(asin(acos(atan(log(sqrt(exp(abs(ans)))))))))))
Syntax error
Expression>>sin(cos(tan(asin(acos(atan(log(sqrt(exp(abs(ans))))))))))
Postfix:ansabsexpsqrtlogatanacosasintancossin
Ans>>0.0
Expression>>2+3-((4))
Postfix:23+4-
Ans>>1.0
Expression>>2+3-(4/5*)
Syntax error
Expression>>2+3-(4/5*6+())
Syntax error
Expression>>2+3)+4/5*6+((7)
Syntax error
Expression>>-1+2-3*4/5^6
Postfix:1!2+34*56^/-
Ans>>1.0
```

```
ant -f C:\\Users\\lenovo\\Documents\\NetBeansProjects\\AssignmentV -Dnb.internal.action.n
init:
Deleting: C:\Users\lenovo\Documents\NetBeansProjects\AssignmentV\build\built-jar.properti
deps-jar:
Updating property file: C:\Users\lenovo\Documents\NetBeansProjects\AssignmentV\build\buil
Compiling 1 source file to C:\Users\lenovo\Documents\NetBeansProjects\AssignmentV\build\c
compile:
run:
Expression>>help
Available functions:
token = sin, cos, tan, asin, acos, atan, sqrt, log, exp, abs +, -, *, /, ^, (, ), pi, ans
Expression>>
```

```
Deleting: C:\Users\lenovo\Documents\NetBeansProjects\AssignmentV\build\built-
deps-jar:
Updating property file: C:\Users\lenovo\Documents\NetBeansProjects\Assignment
compile:
run:
Expression>>1.23 4.56 +
Syntax error
Expression>>sin 90
Syntax error
Expression>>0/1
Postfix:01/
Ans>>0.0
Expression>>1/sin(0)
Postfix:10sin/
Error! Divide by zero!
Expression>>-2^-2-2
Postfix:2!2!^2-
Ans>>-1.75
Expression>>-1+2^3/(4-5*6)+pi
Postfix:1!23^456*-/+pi+
Ans>>1.83
Expression>>sqrt(log(10^2)+exp(3))
Postfix:102^log3exp+sqrt
Ans>>4.97
Expression>>ans^-2
Postfix:ans2!^
Ans>>0.04
Expression>>asin(1-cos(0)+sin(90))
Postfix:10cos-90sin+asin
Ans>>90.0
Expression>>sin(30)^2+cos(30)^2
Postfix:30sin2^30cos2^+
Ans>>1.0
Expression>>end
Have a nice day!
BUILD SUCCESSFUL (total time: 1 minute 39 seconds)
```