

## Programming Project

Note: Submission of this project with a passing score is a requisite for continuing with the course.

**There is no grace period for this project. Please submit by the deadline.**

You learned that computers follow instructions faithfully and they never get tired of repeating the same thing over and over. You plan to write a simple program *Calculator.java* to see for yourself.

After bragging a bit, the program asks the user to enter 2 numbers. After receiving and storing those it asks the user to enter one of the operations +, -, \*, or /. The program then performs that operation on the two numbers and displays the output to the user (if the user enters an operation different from the four operations above, the program notifies the user that it does not know that operation). It then brags some more and asks the user if they want to play again. If the user enters Y or y, the game starts over. Otherwise the program prints Bye bye and terminates.

A few sample runs of the program are shown below:

```
----- Run 1 -----
Hi, I am really good at math! Put me to the test.
Please enter two numbers and then press Enter: 3 6
Please enter one of the operations +, -, * or / and press Enter: +
3 + 6 = 9
I'm great at addition!
Play again [Y/N]?: N
Bye bye!
```

```
----- Run 2 -----
Hi, I am really good at math! Put me to the test.
Please enter two numbers and then press Enter: 2.7 0.82
Please enter one of the operations +, -, * or / and press Enter: -
2.7 - 0.82 = 1.88
I'm great at subtraction!
Play again [Y/N]?: N Bye
bye!
```

```
----- Run 3 -----
Hi, I am really good at math! Put me to the test.
Please enter two numbers and then press Enter: 1 3
Please enter one of the operations +, -, * or / and press Enter: /
1 / 3 = 0.333333
I'm great at division!
Play again [Y/N]?: Y
Hi, I am really good at math! Put me to the test.
Please enter two numbers and then press Enter: 3.14 2
Please enter one of the operations +, -, * or / and press Enter: *
3.14 * 2 = 6.28
I'm great at multiplication!
Play again [Y/N]?: Y
Hi, I am really good at math! Put me to the test.
Please enter two numbers and then press Enter: 2 3
Please enter one of the operations +, -, * or / and press Enter: $
```

I can compute really well, but what you entered is not one of the operations I know ...

Play again [Y/N]?: N

Bye bye!

#### Hints:

- This program is really simple and many of you will find it trivial. The goal of the assignment is for students to get familiar with their development tool, basic program design and the basic structure of a Java program. You should know almost all of what you need from your CS 50 course.
- The program uses 4 variables, two for the numeric values, one for the operation, and one for playing again or terminating. What type should these variables be?
- To be able to perform a different computation based on the operation entered the program will need to make a choice.
- Write the program initially without the “Play again?” functionality. Once you have that, wrap a loop around it to allow for repeated games.
- Ask for help if you get stuck

#### Deliverables:

You should submit a zip file named **project1\_first\_last.zip** if you have more than one File otherwise just **Calculator.java** (where first and last are your first and last name) containing **ONLY** the files below.

**Calculator.java**

#### How you get points:

Functionally correct solution	70 points
Good program structure	20 points
Good variable names, style and comments	10 points

#### How you lose points:

- You do not submit a report file.
- Your code does not follow the posted style guidelines.
- Your code does not contain some appropriate comments.
- You submit your whole project folder or executable files. **Copy and submit only the .java file the project asks for.**