**Purpose:**

In this assignment, you will be playing with variables to create a program that computes the distance an object will fall in Earth's gravity.

**What to hand in:**

Submit your source (Calculator.java) code no later than Sunday, January 17, 2016 @11:59pm to the drop box.

**Marking Scheme:**

Your solution be assessed based on the following:

- Code formatting
  - correct indentation
  - appropriately named variables
- Code commenting
  - author and date created
  - brief description of all methods
- Correct calculation of answer

**Part One:**

1. Follow the instructions on how to use Netbeans. You can find a quick tutorial in the file: I. Netbeans_window.pdf

2. Read through the document on Netbeans and a Simple Java Program in the file: II.FirstProject.pdf

**Part Two:**

**NOTE**: Remember, in Netbeans you need to create a project.

1. Create a class called Calculator.

2. Type the following initial version:

```
class Calculator{

public static void main(String[] arguments) {

      double gravity = -9.81; // Earth's gravity in m/s^2
      double initialVelocity = 0.0; double fallingTime =
      10.0; double initialPosition = 0.0;
```

```
        double finalPosition = 0.0;

        System.out.println("The object's position after " +
        fallingTime + " seconds is " + finalPosition + " m.");

    }

    }
```

3. Run your code.

4. What is the output of the unmodified program? Include this as a comment in the source code for your submission.

**Part Three:**

Modify the example program to compute the finalPosition of an object after falling for 10 seconds, outputting the position in meters. The formula in Math notation is:

$$x(t) = 0.5 \times a t^2 + v_i t + x_i$$

| Variable | Meaning | Value |
|---|---|---|
| a | acceleration ($m/s^2$) | -9.81 |
| t | time(s) | 10 |
| v | initial velocity (m/s) | 0 |
| $x_i$ | initial position | 0 |

What is the output of the program? Include this as a comment in the source code for your submission.

**NOTE**: The correct value is -490.5 m. Java will output more digits after the decimal place for precision.

**NOTE:** There are a couple of things to think about here. How to use the variables already defined and how to do the math function. Since this is a simple power you could just do multiplication; however, you could go check out the Math library and look up Math.pow()