Programming Lab Assignment 1

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

Part 1

1. Create a new class called GravityCalculator.
2. Copy and paste the following initial version:

```
class GravityCalculator {

        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 it on your IDE

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

Part 2

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

$$X(t) = \frac{at^2}{2} + v_i t + x_i$$

Variable	**Meaning**	**Value**
a	Acceleration (m/s^2)	-9.81
t	Time (s)	10
v_i	Initial velocity (m/s)	0
x_i	Initial position	0

Note: The correct value is -490.5 m. Java will output more digits after the decimal place, but that is unimportant.