**Name:**

**Java Programming**

**Lab Exercise 11.8.2023**

When you have completed these exercises, submit your source code. When you are writing functions, be sure to write some code that tests the functions.

1. Write a function that returns a monogram of a persons name. The function should be sent 3 parameters (first, middle, and last names) and return a monogram with the first and middle names lower case and the last name uppercase. For example, John Jacob Smith should return the monogram of

jSj

Here is a framework for the function:

public static String monogram(String first, String middle, String last)

{

#add code here

return mg;

}

1. Write a function that is passed a string of any length and returns a two element integer array containing the number of vowels and consonants. Here is framework for the function:

public static int[] vowelsAndConsonants(String myString)

{

#add code here

return answer;

}

1. Write a function that will return the sum of the first n natural numbers (1, 2, 3, 4, ….). For example the sum of 1 + 2 + 3 + 4 + … + 100 = 5050. Here is a framework for the function:

public static int sumNumbers(int number)

{

#add code here

}

1. Write a program that prints its own source code. In this project you should just create a Java file in JCreator and run it. If you setup a JCreator application the source file and class file will be in different folders and you will get a file not found error.
2. Write a program functionGrowth.java that prints a table of the values of *N*, log *N*, *N log N*, *N2*, and *N3* for *N* = 16, 32, 64, ..., 2048. Use tabs ('\t' characters) to line up columns.
3. Write a Planet class. The Planet class should have instance variables of name, radius, mass, and distance. The Planet class should have four accessor methods; getName, getRadius, getMass, and getDistance. The class should have for calculation methods; calcVolume, calcSurfaceArea, calcDensity, and calcOrbit which will return the volume of the planet, the surface area of the planet, the density of the planet, and the orbit distance around the star. The following formulas may prove useful (r = radius):



In the project you will find two files:

Planet.java

planetTest.java

You are to finish the code in Planet.java and use planetTest.java to test your Planet class. **You should not make modifications to planetTest.java.**