Notes on the Development Environment

- In order to compile and run your programs you will need a compiler (javac) and a runtime virtual machine (java). Both tools are part of the Java Development Environment (JDK).
- The JDK is installed on all lab machines in Bliss. Those of you who plan to write your programs on your own laptops and desktops should download the appropriate version of JDK 8 from Moodle.
- Detailed instructions for installation of the JDK may be found on the Moodle site as well. Please read and follow the detailed instructions for verifying the installation.

Exercise 1

Write a program **RocketShip.java** that draws the following output (see below). You should write the appropriate static methods to show structure and eliminate redundancy in your solution.

```
          /**\
         //**\\
        ///**\\\
      +=*=*=*=*+
      |o/\oo/\o|
      |/\/\/\/\|
      |\/\/\/\/|
      |o\/oo\/o|
      +=*=*=*=*+
      |\/\/\/\/|
      |o\/oo\/o|
      |o/\oo/\o|
      |/\/\/\/\|
      +=*=*=*=*+
          /**\
         //**\\
        ///**\\\
```

Exercise 2

Write a program **Weight.java** that creates and declares two double variables to represent the mass of an object and gravity. You should compute and display the weight of the object in both Newtons and pounds (1N = 0.23 pounds). A sample run of your program with a mass of 2.0 kg and a gravity value of 9.81 ms^{-2} should generate the following output: (Note do not replicate the example. Use your own value for the mass.)

```
The weight of the object is calculated using "W = m*g";
For a mass of: 2.0 and a gravity of: 9.81, the weight is equal to: 19.62 N
--> 4.512600000000001 pounds
```

Exercise 3

Write a Java program, **NetSalary.java**, which computes your net salary by adding allowances to the basic salary. The basic salary should be a double variable named basicSalary. Initialize "`basicSalary`" to any number you like and then output the net salary to the screen. Assume that the transport allowance is 10% of the basic salary and that the housing allowance is another 50% of the basic salary. The net salary is the sum of basic salary, transport allowance and housing allowance. A sample run for a basic salary of 3000 is given below. The output of your program should exactly match this sample output when the basic salary is 3000.

Sample Run*:*

```
-> java NetSalary
Basic Salary:           3000.0
Transport Allowance:    300.0
Housing Allowance:      1500.0
Net Salary =            4800.0
```

Exercise 4

Write a program **Coordinates.java** that declares and initializes four-integer variables x0, y0, x1, y1 (denoting the coordinates of two points A and B). You are to print (see below) the coordinates of the midpoint of A and B as follows:

```
The coordinates of the midpoint: (x,y).
```

Exercise 5

Write a program **Temp.java** that declares and initializes a double variable that represents a temperature of a certain day in degrees Celsius. You should covert the given temperature to Fahrenheit and print it out. To convert to Fahrenheit, multiply by 1.8 and add 32

Submission Instructions

- Your submission must consist of a single zip folder that contains .java files only (**RocketShip.java**, **Weight.java**, **NetSalary.java**, **Coordinates.java,** and **Temp.java**). No additional files should exist in the .zip folder.
- Give meaningful names to your methods and variables in your code.
- Include a comment at the beginning of your program with basic information about yourself and a description of the program. Include also a comment at the start of each method.
- The name of the zip file must adhere to the following naming convention s#_A$_*netid*, where # stands for your section number (between 1 and 12), $ stands for the assignment number, and *netid* stands for your AUBnet user name. For example, if your AUBnetid is abc65 and you are in section 4, you should submit Assignment 2 using following file: s4_A2_abc65.zip. The zip files will be processed automatically so please make sure you use this naming convention.
- **Failing to follow these guidelines will result in deducting marks form your grade.**