INSY 4306 ADVANCED SYSTEMS DEVELOPMENT

ASSINGMENT -1

20 points

1. INSTRUCTIONS

- **For the late submissions, 5% of the total points will be deducted per hour automatically on Canvas.**

- **You can only use the techniques that you have learned so far. Other techniques will not be accepted. If you use other techniques, 4 pts will be deducted.**

- In this assignment, upload the following file:
    - **YourFirstNameLastName.zip/.rar [including ConvertFrame.java, ConvertTest.java, Vehicle.java, Car.java, Bicycle.java, VehicleTest.java]**

- Each question is **independent** of each other.

- **Do not forget to add comments to explain how your codes are working! Short comments are acceptable.**

- **Write your codes individually! Do not copy of any of them from someone else!**

- **NOTE: If you are using any IDE (Netbeans, Eclipse, etc.), please delete the statement package xxxxx; (and save it again), from your application. Otherwise, I will get a compilation error, and you will lose 1 pt for each file giving a compilation error. It is your responsibility.**

2. GRADING POLICY

- **Case 1:**
  - For each question:
  - I will compile your .java files. **If any compilation error occurs, 1 pt will be deducted from each file including compilation errors.**
  - After that, I will check your algorithms whether they are correct or not. For example; if it says find odd and even numbers. I will check whether it really finds both even and odd numbers. **This part will be evaluated based on your work.**
  - Additionally, comments will be checked whether they clearly and briefly explain what you have done. **If comments are missing or not clear, enough, or brief 1 pt will be deducted.**
- **Case 2:**
  - For each question:
  - If there is not any compilation error:
    - I will try each case scenario as stated in each question. For example; if it says find odd and even numbers. I will try both even and odd numbers. **This part will be evaluated based on your work.**
  - Additionally, comments will be checked whether they clearly and briefly explain what you have done. **If comments are missing or not clear, enough, or brief 1 pt will be deducted.**
- **Case 3:**
  - **If you do not upload a .java file, I will not evaluate your answer.**

- **Case 4:**
 - **If it is determined that you copy the codes from someone else, you will get 0 pt.**

QUESTIONS

Note: In each question, assume that the user enters correct inputs. You do not handle with exceptions. <u>Do not drag and drop components!</u>

1. Design a simple temperature and length converter application. **(15 pts - UPLOAD ConvertFrame.java & ConvertTest.java)**

   The requirements are that:
   a. Create a FlowLayout.
   b. Display a text ("Converter") on the title bar.
   c. Add two labels as shown in the figure below.
   d. Add two text fields with a size of 5 as shown in the figure below.
   e. Add two command buttons as shown in the figure below.
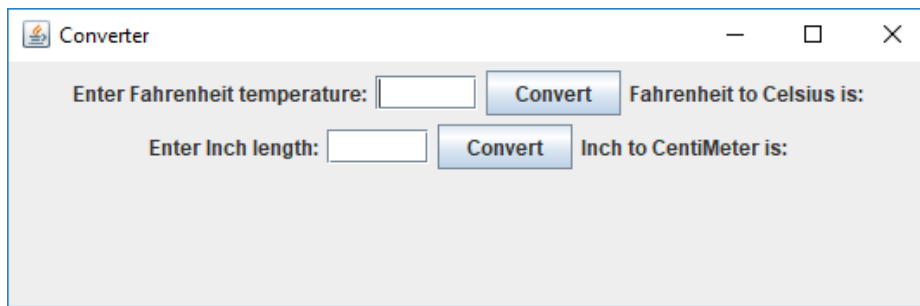
   f. A user can press enter in a text field or click on a button to convert temperature from Fahrenheit to Celsius or length from Inch to Centimeter.
      i. If a user presses enter in a text field, convert the input and display it.
      ii. If a user prefers to click on "convert" button, convert the input and display it.
   g. Display the conversion results as integers.
   h. Set the width of the frame as 550 and height as 180.
   i. *Hint: You can use getText() method to get the input from a text field, and you can use setText() method to display the output in a label.*

   Sample Output
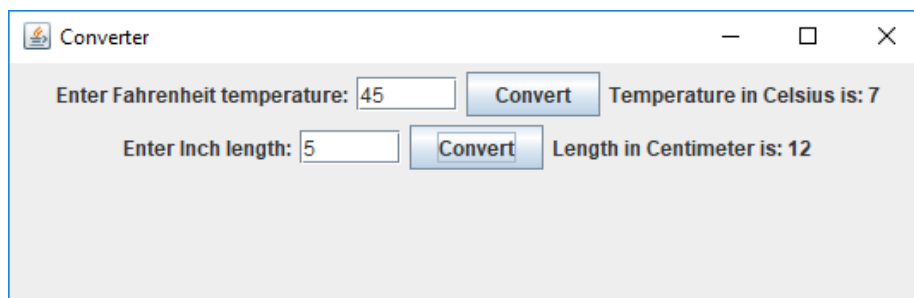
2. Please follow the following statements: **(5 pts - UPLOAD Vehicle.java & Car.java & Bicycle.java & VehicleTest.java)**

   a. Create an abstract class "Vehicle" including only one abstract method which is "GetCarbonFootprint."
   b. Create a subclass "Car." A car has an instance variable "gallon" and a constructor. A car's carbon footprint is calculated by gallons *20.
   c. Create another subclass "Bicycle." A bicycle's carbon footprint is 0.
   d. Create a test class. Include a Vehicle array with a length of 2. The first element of it will be a car and the second element of it will be a bicycle.
   e. Display carbon footprints of the car and bicycle by calling the method GetCarbonFootprint polyphormically and creating a for loop.
   f. Display two digits after the decimal point.