Assignment 1 (15 marks)

Due Date: Friday Jan 28th, 2022 at 11:59

Focus:

This assignment requires you to use the following Java syntax:

- variable assignment statements (e.g., x=5;)
- arithmetic statements (e.g., x=x+5;)
- boolean expressions and relational operators (e.g., x < 5, x >= 10)
- conditions (e.g., if (...) statement)
- classes and objects

Q1. [6 marks] We want to the user to input a real number from the standard input, then the program will display the integer part and the fraction part separately.

Your job is to build a JAVA project with the proper packages and files to get this program to run as described above.

Q2. [9 marks] Download the code of this question from canvus and unzip it into your workspace.

As you have started to see in lecture, the class is a fundamental concept in Java code that defines the data and behaviour of objects that are created from the class definition when the program executes. In this question, you are to complete the definition of a Java class called Car (which exists in the model package). The Car class has two fields, posX and posY, that remember the position of a car object created from the Car class; actually, posX and posY reflects the top-left coordinates of the car object. We can move the car object by calling the moveCar method and providing increments (deltaX and deltaY), which are added to the posX and posY position, respectively.

For example, once you finish the definition of the class car and create an object from it, we can move `the car object p` 50 increments in the `x` position and 70 increments in `y` position using:

```
p.carMove(50,70);
```

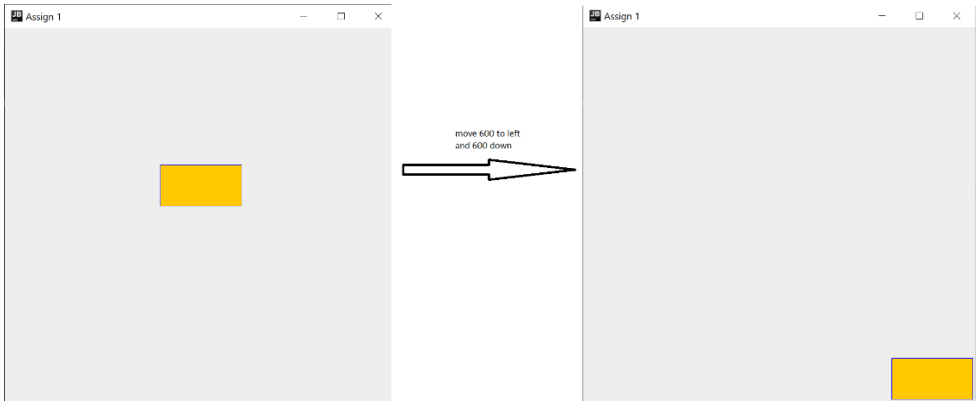
A `car` object has to exist in some coordinate system. In this question, a `car` can move in a window where the top left point of the window is given by coordinates (10,35) and the bottom right of the rectangle is given by coordinates (390,440). When a `car` object is first created, it is positioned at coordinates (200, 200) of the window.

When a `car` object is moved, it cannot move outside this given window defined by (10,35) and (390,440). Instead, you can imagine it bumping on the sides of the rectangle if it is asked to move increments that would take it out of the window's coordinate space. As a result, for instance, no matter how much you try to move the `car` to the right, its `posX` coordinate can never be more than 390 (we are taking into account the width of the car since posX is the top-right corner of the car).

Your job is to fill in this partial definition of the class and create a car object such that it behaves exactly as described above.

Donot worry too much about the complete code that is put there to make the graphics (e.g. the paint method). These are advanced concepts that are beyond your knowledge now.

Hint: look in the code for places where it says student insert code here to do XYZ…. Then you complete the necessary code there.



Submission Instructions

For this assignment, you need to do the following:

1- Create a Java project of which name consists of **your student number followed by the assignment number,** e.g., "1234567_A1".
2- Create one class for each question and write your answer inside that class. Your classes should have the same name as the question number (e.g., Q1)
3- After solving all questions, open Windows Explorer (or any other file explorer).
4- Navigate to your Java project folder (can be found inside your InteeliJ/Eclipse workspace folder).
5- Locate the "src" folder for this project (the folder that includes the source code for all questions).
6- Zip the "src" folder and rename the zipped file to match your project name (e.g., 1234567_A1.zip).
7- Submit the zipped file **to Canvas.**

Note that you can resubmit an assignment, but the new submission overwrites the old submission and receives a new timestamp.