**CSE 220 Homework Assignment 1 (Due 2/6/23)**

**1) (20 pts)** Suppose someone wants to produce a menu prompt on-screen for a cartography (map-making) application that prints the five lines below:  
*The main menu has three available options:  
 Press the "N" key to create a new map.  
 Press the "L" key to load an existing map.  
 Press the "Q" key to quit the application.  
The default map storage directory is "C:\MyMaps"***Create the above menu prompt using a single System.out.println statement.**

**2) (40 pts)** The following changes deal with the *Rectangle* class from Session 3, available via BlackBoard under “Sample Java Code” in “Supplementary/Misc.” Each part is worth 10 points.  
i. Modify the dimension attributes of the Rectangle class to handle *real numbers* (not just integers).  
ii. Modify the Rectangle class to permit construction of rectangles using zero input arguments (in which case both height and width are set to 1) or one input argument (in which case both height and width are to the input value). Hint: you will need to employ **overloading**.  
iii. Modify the Rectangle class to have a method **PrintLargerSide**, which prints one of three strings, depending upon which of the rectangle’s sides is larger:  
1. If the height is larger than the width, the method should print “The rectangle’s height is larger than its width.”  
2. If the width is larger than the width, the method should print “The rectangle’s width is larger than its height.”  
3. If the height and width of the rectangle are equal, the method should print “Both sides are the same.”   
iv. Modify the PrintDim and PrintArea methods of the Rectangle class to begin printing text with *“This square has …”* if the edges of the rectangle have equal dimension.

Note: parts iii and iv will require *if* statements.

**3) (40 pts)** This problem deals with reading input from the keyboard and applying basic operations to an input Java String object.  
Create class *StringManipulator* which does the following when its main method is executed:   
i. Prints a single line as follows:  
**Please input a string:**ii. Reads an input string from the keyboard *into a variable*.  
iii. Performs the following tasks and prints the results to the screen, one-by-one.

**1: Prints the number of characters in the input string.  
 2: Print the input string in UPPERCASE format.  
 3: Print the first five characters in the input string (you can assume the   
 input string has at least five characters).**

Part 1 can be accomplished using the String method **length()**. Methods to accomplish the other two are documented in the Week 3 session dealing with the String class.

**Responses to problem 1 should be in .doc(x) or .pdf format, while your responses to problems 2 and 3 should be in .java format. You should bundle these files in a .zip file with the filename “<LN>\_<FN>\_1.zip” where <LN> is your last name and <FN> is your first name, and submit the zip file to Blackboard.**