Project #1

Due Dates: Saturday, September 3 at 11:59pm

Submit: eLearning

Late Policy: -10 points per minute late

Instructions: This is an individual assignment. Answers should be your own work.

Introduction:

This is an introductory project to familiarize you with Java and Java Generics. This project assumes you know C or C++.

I/O, selection

25 points

1. Write a class called "EvaluateTemperature". Its main method should use a Scanner to input an integer representing a temperature and a string of either C or F for Celsius or Fahrenheit. If Celsius, convert it to Fahrenheit. Then use the table below to evaluate and print the temperature description.

Fahrenheit ranges	
< 0	Extremely cold
0-32	Very cold
33-50	Cold
51-70	Mild
71-90	Warm
91-100	Hot
> 100	Very hot

Arrays, 1D and 2D

25 points

2. Write a class called "Scores". Its main method should use a Scanner to input the name and 5 quiz scores for each of 10 different people. Store the names in a 1D-array, and the scores in a 2D-array. Then print each name and the average score of the student.

Classes and Objects

25 points

3. Write a class called "Square". It should store the length of one side. It should have two constructors, one that has no parameters and sets the side length to one. The other constructor should take one parameter and set the side length to the parameter value. The class should also have a method call "getArea" that returns the area of the square.

   Write a separate class called "TestSquare" that creates two squares, one with each constructor, and prints the area of each.

Generic classes

25 points

4. Write a generic class called "MyFour". It should use a type parameter of "T". It should have four fields, item1, item2, item3, item4, all of type T. Its constructor receives values for setting all four items. It should have a method "allEqual" that returns true if all four items are equal according to their "equals" method. It should have a method called "shiftLeft" that shifts all items up one position, and puts the first item's value into the last item.

   For example, if list has 1, 2, 3, 4, then after shiftLeft, it is 2, 3, 4, 1.

   It should have a "toString" method that returns a String of the items in this format: (item1, item2, item3, item4).

   Finally, add a "main" method. First it should create a MyFour object of type String, passing it four identical strings. Print the object, then call and print the results of "allEqual". Next, create an object of four different Integers. Again print the object and print the results of "allEqual". After that, shift the items left using your method, and print them again.

Submit to eLearning:

Put all .java files in project1.zip and submit only the .zip file.