CMSC 133 Quiz 1 Worksheet

The first quiz for the course will be on Fri, Feb 14. The following list provides additional information about the quiz:

- The quiz will be a written quiz (no computer).
- **The quiz will be in lab / discussion session.**
- Closed book, closed notes quiz.
- Answers must be neat and legible.
- The quiz has a maximum duration of 20 minutes.
- Quiz instructions can be found at http://www.cs.umd.edu/~nelson/classes/utilities/examRules.html
- You must take your quiz in your assigned lab / discussion session and not show up to a random one. We will not grade quizzes taken in the incorrect section.
- Please do not discuss a quiz after you have taken it.
- Piazza will be closed on days quizzes take place.
- **Regarding Piazza -** Feel free to post questions in Piazza regarding the worksheet and possible solutions to problems.
- We use the Gradescope system to grades your quizzes after they have been scanned. For the system to recognize your work, you **need to print your name (uppercase) and student id.** The following is an example of the information you need to provide in your quiz:

FIRSTNAME, LASTNAME (PRINT IN UPPERCASE): MARY, SMITH

STUDENT ID (e.g. 123456789): 123456789

The following exercises gives you practice with concepts that may show up on the quiz. Solutions to these exercises will not be provided, but you are welcome to discuss your solutions with the TAs during office hours. It is recommended that you try these exercises on paper first (without using a computer).

Exercises

1. Read the document available at:

   http://www.cs.umd.edu/~nelson/documents/SuggestionsForWritingComputerPrograms.htm

2. Define a class Telephone according to the following information:

   Instance Variables (all private)

   a. area code → integer value
   b. three digit value → integer value
   c. four digit value → integer value
   d. user's name → String reference

   Instance Methods

   a. **Constructor** - Allows you to initialize all the instance variables of the class. Name the parameters after the instance variables (i.e., you must use the **this** reference).
   b. **Default constructor** – Initializes the object to the number 555-555-5555 and the name to null. This constructor relies on the previous constructor for the object initialization (i.e., you must use the **this** reference).
   c. **Copy constructor**
   d. **Get/Set methods** – Define get/set methods for all instance variables of the class.
   e. **equals** – Two numbers are considered the same if they have the same area code, three and four digit values. Use instanceof to implement this method (the approach described in class). Define the equals methods as described in class examples.
   f. **toString –** Returns a string with the user name followed by the phone number of the person.

   Static Variable (private)

   a. **count** – keeps track of how many Telephone objects has been created.

Static Methods

a. **getCount** – Returns the count value.
b. **getDigits** – Takes a String reference as a parameter and returns the number associated with the string. For example, if the String has the value "CAR" the method will return the integer 227.

3. Do you know examples of academic integrity violations? The following is the list you need to know:

   a. Hardcoding of results in a project assignment.
   b. Using any code available on the internet/web.
   c. Hiring any online service to complete an assignment for you.
   d. Posting your implementation of any class project on the internet/web.
   e. Discussing projects with your classmates.
   f. Sharing your code or your student tests with any student.
   g. Looking at another student's code.

4. What is an exception?

5. Modify the Telephone constructor so the exception IllegalArgumentException is thrown if the user's name is null.

6. Define a try catch block that handles the IllegalArgumentException when creating a Telephone object. The catch clause should print the message "Invalid argument" when the exception takes place. You can assume the values used to create a Telephone are provided by the user (using the Scanner class).