Queens College, CUNY
Department of Computer Science

CS 212 – Object-Oriented Programming in Java – Fall 2014 – Exam 1

SOLUTIONS

Last Name _____ First Name _____Seat_____

Directions: There are four questions. **Read the whole question before answering**. Proper use of Java concepts is expected; minor syntax errors will be overlooked.

Question 1. 25 points.

Write a Java main method that will
ask the user to type in a String through a JOptionPane input dialog
count the number of times an upper-case letter is followed by a digit in that string
display the count using a JOptionPane message dialog.
(The Character wrapper class methods *isUpperCase (char)* and *isDigit(char)* may be of use.)

```
public static void main (String[] args) {
  int count = 0;
  String input;
  input = JOptionPane.showInputDialog(null,"Enter a string");
  for (int i=0; i< input.length()-1; i++)
    if (Character.isUpperCase(input.charAt(i)) && Character.isDigit(input.charAt(i+1)))
      count++;
  JOptionPane.showMessageDialog("Pattern appears "+count+" times.");
}
```

Question 2. 25 points.

Write a method that will calculate the average of all the numbers in a two-dimension array. (Recall, the length of each row of the array may vary.)

```
public int average (int[][] myArray) {

  int count = 0;
  int sum = 0;
  for (int row = 0; row< myArray.length; row++)
    for (int col = 0; col < myArray[row].length) {
      sum+= myArray[row][col];
      count ++;
    }
  return sum/count;
```

Question 3. 25 points.

Write a main method that will take one integer from the **command line**, then open a file called input.txt and read integers from that file. It should print to the console each number read from the file with the command line integer added to it. For example, if the program is run as

c>java Question3 123

and the input file contains

3
12
19

then the output would be

126
135
142

If there is no command line argument an error message should be printed.

```
public static void main (String[] args) {
   TextFileInput in = new TextFileInput(input.txt);


 if (args.length=0) {
   System.out.println("No command line argument");
   System.exit(0);
 }
 int cmdLineNumber = Integer.parseInt(args[0]);
 String line = in.readline();
 while(line != null) {
   System.out.println(cmdLineNumber + Integer.ParseInt(line));
   line = in.readline();
 }
}
```

Question 4. 25 points

Write a Java class which can represent a Car. There should be three private instance variables: Make (String), Model (String), Year (int). Provide a three-argument constructor. The Make and Model should not be null, and the Year must be a positive integer (an IllegalArgumentException should be thrown in these cases). Provide get and set methods for each instance variable with the same error checking.

```
public Class Car {
  private String make;
  private String model;
  private int year;

  public Car (String mk, String md, int yr) {
    if (mk == null || md == null || yr <1)
      throw new IllegalArgumentException("Invalid input");
    make = mk;
    model = md;
    year = yr;
  }
  public void setMake(String mk) {
    if (mk == null)
      throw new IllegalArgumentException("Make is null");
    make = mk;
  }
public void setModel(String md) {
    if (md == null)
      throw new IllegalArgumentException("Model is null");
    model = md;
  }
  public void setYear(int yr) {
    if (yr <1)
      throw new IllegalArgumentException("Year must be positive");
    year = yr;
  }
  public String getMake(){
    return make;
  }
  public String getModel() {
    return model;
  }
  public int getYear() {
    return year;
  }
} //Car
```