Homework #2 Solution
(Java Programming for Beginners - OnLine)

2.1 Here is a listing of a program, which demonstrates calculating area of a circle whose radius is 2.

```
public class FirstJavaHello {
      public static void main(String[] args) {
            int               radius = 2;
            double            area;
            final double      pi = 3.142;

            area= pi * radius * radius;

            System.out.print("The area is: ");
            System.out.println(area);
      }
}
```

Modify the above program and use only one print statement instead of one print and one println statements to show the same output ("*The area is: xxxx.xx*").

Solution:

```
public class HW_2_Solution {

      /**
       * @param args not used
       */
      public static void main(String[] args) {
            //Homework#2.1
            /*
            *
            * Modified which uses only one print statement
            * instead of one print and one println statement to show
            * the same output ("The area is: xxxx.xx") as demo program.
            *
            */

            int radius = 2;
            double area;
            final double PI = 3.142; //PI is constant,
                                     //can't change once
                                     //initialize

            area = PI * radius * radius;

            System.out.println("The area is: " + area);

            System.out.println("The area is: " + area);
      } //end of main
```

```
} //end of class HW_2_Solution
```

2.2 Following code uses scanner to get the radius from user during run time, calculates area and displays it. You have to import Scanner class from java.util (import java.utl.Scanner;) package

```
//assume area, PI and radius are already defined
Scanner readInput = new Scanner(System.in);

//extra line feed
System.out.println();
System.out.print("Enter the radius: ");
radius = readInput.nextInt();

area= pi * radius * radius;

System.out.print("The area is: ");
System.out.println(area);
```

Modify the above program instead of hard-coding the value of PI in the program; get the value of PI from the user as well.

Solution:

```
double newPI; //newPI is not final, hence not constant
              //can change later
//extra line feed
System.out.println();
System.out.print("Enter the radius: ");
radius = readInput.nextInt();

System.out.print("Enter the value of pi: ");
//this code does not check error if user enters a garbage
//value for newPI.  You will later how to trap error
newPI = readInput.nextDouble();

area= newPI * radius * radius;

System.out.print("The area is: ");
System.out.println(area);
```

2.3 Following code demonstrate that radius could be a byte type. It also displays how to get a character input from user, and clean the input buffer with any remaining characters or end of line marker.

```
byte newRadius; //a new type for radius
                //byte can store a value from -128 to +127

//extra line feed
System.out.println();
```

```
System.out.print("Enter the radius: ");
newRadius = readInput.nextByte();

area= pi * newRadius * newRadius;

System.out.print("The area is: ");
System.out.println(area);

//extra line feed
System.out.println();
System.out.print("What is your first name?: ");
char yourInitial = readInput.next().charAt(0);

System.out.println("Hello Mr. " + yourInitial + ".");

//the input buffer will still have enter character '\n'
// so that needs to be cleaned.
//You can do that by using .nextLine() method.
readInput.nextLine();
```

Following code demonstrate use of printf(), and format specifiers

```
//extra line feed
System.out.println();
System.out.printf("5185 is fun course.\n\n");

System.out.printf("First Name \tLast Name\tCity\n");
System.out.printf("----------- \t---------\t---\n");
System.out.printf("Bill        \tClinton  \tHarlem\n");

System.out.printf("\n");

//extra line feed
System.out.println();
System.out.printf("How do you print double quotes?\n");
System.out.printf("Who said\"Test Scores Can Be Used ....\"\n");
```

Modify the above demo code so that you are not hard coding the name, and city (Bill Clinton, Harlem etc) but, get the values from user.

a) Add a column for zip code as well
b) Declare four variables (decide on data type):
First Name, Last Name, City, and Zip
c) Ask user for the values for these variables and display them instead of using the hardcoded name like Bill Clinton Harlem

A typical example output may look like this:

```
What is your first name?: Bineet
Hello Mr. B.

5185 is fun course.

First Name      Last Name       City
-----------     ---------       ---
Bill            Clinton         Harlem


How do you print double quotes?
Who said"Test Scores Can Be Used ...."

Please enter your first name: Bineet
Please enter your last name: Sharma
Please enter your city: Pleasanton
Please enter your zip code: 94566

First Name      Last Name       City            Zip Code
-----------     ---------       ---             ----
Bineet          Sharma          Pleasanton      94566
```

Solution:

```
String firstName;
String lastName;
String city;
int zipCode;

//extra line feed
System.out.println();
System.out.print("Please enter your first name: ");
firstName = readInput.nextLine();

System.out.print("Please enter your last name: ");
lastName = readInput.nextLine();

System.out.print("Please enter your city: ");
city = readInput.nextLine();

System.out.print("Please enter your zip code: ");
zipCode = readInput.nextInt();

//extra line feed
System.out.println();
System.out.printf("First Name \tLast Name\tCity\t\tZip Code\n");
System.out.printf("----------- \t---------\t---\t\t----\n");
//this will not properly align the text as it could
//be different length
/*System.out.printf(firstName + "\t"+ lastName + "\t" + city +
                    "\t" + zipCode);
  System.out.printf("\n\n");
*/
//the names may not line properly, you need to
//do extra work to do the formatting
System.out.printf("%-16s%-16s%-16s%5d", firstName ,
                  lastName, city, zipCode);
System.out.printf("\n\n");
```