Assignment

//Basic Programs

1. Write a program to convert the character into the ASCII value.

a. Without user interaction b. With user interaction

2. Write a program to calculate the area and circumference of a circle.

a. Without user interaction b. With user interaction

3. Write a program to calculate the area and circumference of a square.

a. Without user interaction b. With user interaction

4. Write a program to calculate the area and circumference of a rectangle.

a. Without user interaction b. With user interaction

5. Write a program to calculate the area and circumference of a triangle.

a. Without user interaction b. With user interaction

6. Write a program to ask a person his/her name, address, age, weight etc. and display the information based on the answer.

//Program

```
import java.util.Scanner;
 class BasicProgram {
        static Scanner input = new Scanner(System.in);

        public static void main(String[] args)
 {
         System.out.println("1. Write a program to convert the character into the ASCII value.\r\n" +
                        "a. Without user interaction\r\n" +
                        "b. With user interaction\r\n" +
                        "2. Write a program to calculate the area and circumference of a circle.\r\n" +
                        "a. Without user interaction\r\n" +
                        "b. With user interaction\r\n" +
                        "3. Write a program to calculate the area and circumference of a square.\r\n" +
```

```
                    "a. Without user interaction\r\n" +
                    "b. With user interaction\r\n" +
                    "4. Write a program to calculate the area and
circumference of a rectangle.\r\n" +
                    "a. Without user interaction\r\n" +
                    "b. With user interaction\r\n" +
                    "5. Write a program to calculate the area and
circumference of a triangle.\r\n" +
                    "a. Without user interaction\r\n" +
                    "b. With user interaction\r\n" +
                    "6. Write a program to ask a person his/her name,
address, age, weight etc. and display the\r\n" +
                    "information based on the answer.\r\n" +
                    "");
        int ch;
        do
        {

            System.out.println("Enter your choice:");
            ch=input.nextInt();
         switch(ch)
        {
        case 1:
            printAscii();
            break;

        case 2:
            circle();
            break;
        case 3:
            square();
            break;

        case 4:
```

```
                rectangle();
                break;

            case 5:
                triangle();
               break;

            case 6:
                info_person();
                break;

            case 7:
                System.exit(0);

             default:
                System.out.println("Input is wrong. ");


            }
            }while(ch<7);

        }
     public static void printAscii()
     {
            System.out.println("1.User interaction 2. Without user
interaction");
            int num=input.nextInt();
        if(num==1)
        {
             System.out.println("Enter a character: ");
                char  ch = input.next().charAt(0);
                int number=ch;
                System.out.println("Ascii of "+ ch +" is : " + number);
```

```
    }
    else
    {
        char ch;
            for(ch='A';ch<='Z';ch++)
            {
            System.out.println("Ascii value of "+ch +" is: "+(byte)ch);
    }
 }
 }
 public static void circle()
 {
        System.out.println(" Input 1. User interaction   2.Without user
interaction");
        int num=input.nextInt();
    if(num==1)
    {
        System.out.print("Enter an radius: ");
      double radius = input.nextDouble();
      System.out.println("Radius= " + radius);
      System.out.println("Area of circle="+3.14*radius*radius);
      System.out.println("Circumference of circle is :" +
2*3.14*radius);
    }
    else
    {
        double radius,area_circle,Circumference;
            radius=7.0;
            area_circle=3.14*radius*radius;
            Circumference=2*3.14*radius;
            System.out.println("Radius="+radius);
            System.out.println("Area of circle is "+area_circle);
```

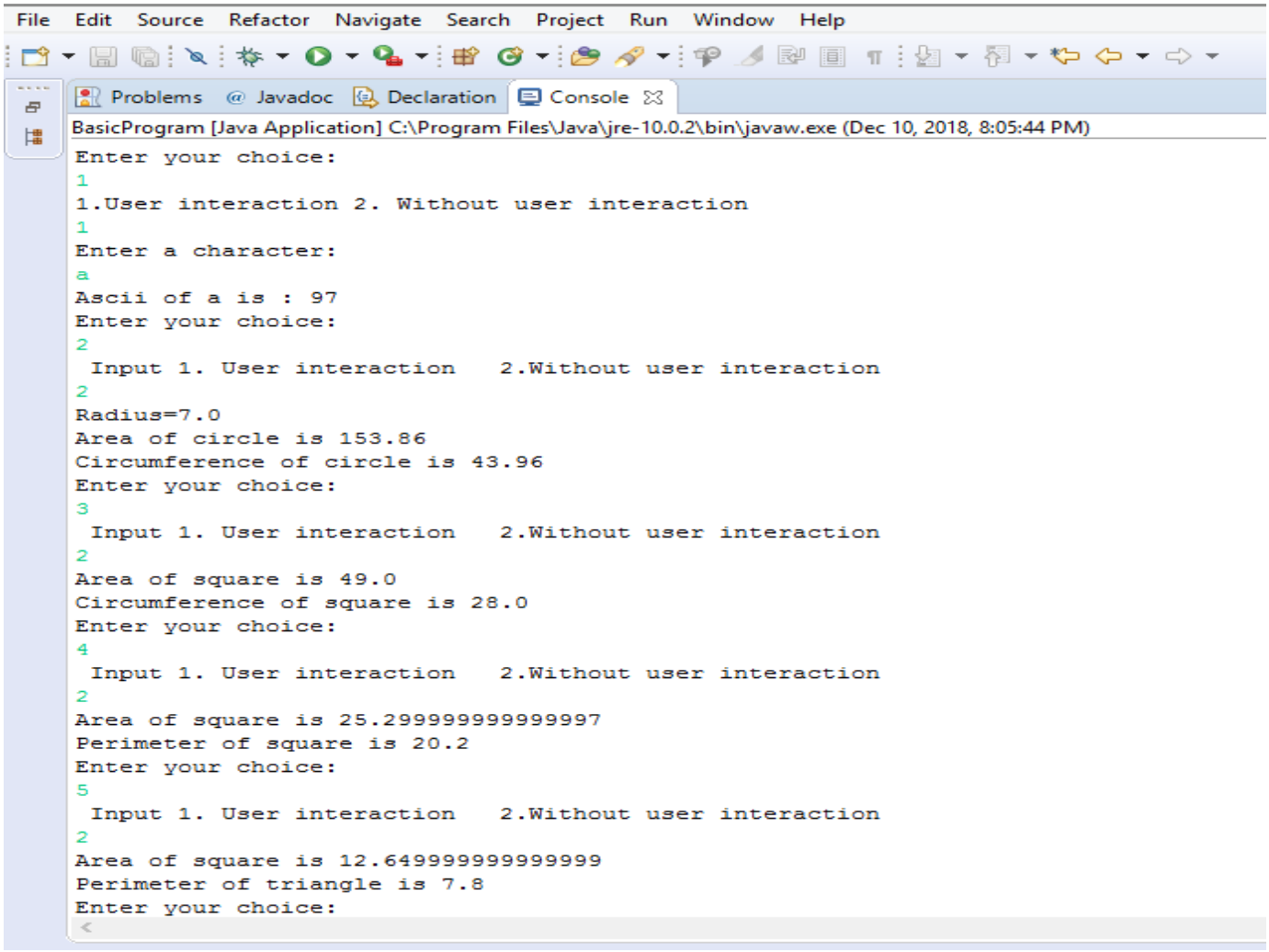
```
            System.out.println("Circumference of circle is
"+Circumference);
    }
 }
 public static void square()
 {
        System.out.println(" Input 1. User interaction   2.Without user
interaction");
        int num=input.nextInt();
    if(num==1)
    {
        System.out.print("Enter a side: ");
            double side = input.nextDouble();
            System.out.println("Area of square is "+ side*side);
            System.out.println("Perimeter of square is "+ 4*side  );
    }
    else
    {

        double side=7.0;
        System.out.println("Area of square is "+ side*side);
        System.out.println("Circumference of square is "+ 4*side  );


  }

 }
 public static    void rectangle()
            {
        System.out.println(" Input 1. User interaction   2.Without user
interaction");
        int num=input.nextInt();
    if(num==1)
    {
```

```
        System.out.print("Enter a length and width: ");
            double length = input.nextDouble();
            double width = input.nextDouble();
            System.out.println("Area of square is "+ length*width);
            System.out.println("Perimeter of square is "+
2*(length+width)  );
            }
    else
    {
        double length,width;
        length=5.5;
        width=4.6;
        System.out.println("Area of square is "+ length*width);
      System.out.println("Perimeter of square is "+ 2*(length+width)
);
    }
            }
 public static     void triangle() {

        System.out.println(" Input 1. User interaction   2.Without user
interaction");
        int num=input.nextInt();
    if(num==1)
    {
        System.out.print("Enter a base and height: ");
            double base = input.nextDouble();
            double height = input.nextDouble();
            System.out.println("Area of square is "+ 0.5*base*height);
            System.out.print("Enter three sides of triangle: ");
            double side1 = input.nextDouble();
            double side2 = input.nextDouble();
            double side3 = input.nextDouble();
```

```
            System.out.println("Perimeter of square is "+
side1+side2+side3  );
            }
    else
    {
        double base,height,side1,side2,side3;
        base=5.5;
        height=4.6;
        side1=1.5;
        side2=2.8;
        side3=3.5;
        double per= side1+side2+side3;
        System.out.println("Area of square is "+ 0.5*base*height);
      System.out.println("Perimeter of triangle is "+  per );
    }
            }
 public static    void info_person() {
                  String name;
                  String address;
                  int age;
                  double weight;
                  System.out.println("Enter  your name address age
weight sequentially.");
                  name=input.next();
                  address=input.next();
                  age=input.nextInt();
                  weight=input.nextDouble();
                  System.out.println("Name:"+name);
                  System.out.println("Address:"+address);
                  System.out.println("Age:"+age);
                  System.out.println("Weight:"+weight);
```

```
}
}
```

//OUTPUT


File Edit Source Refactor Navigate Search Project Run Window Help
Problems Javadoc Declaration Console
BasicProgram [Java Application] C:\Program Files\Java\jre-10.0.2\bin\javaw.exe (Dec 10, 2018, 8:05:44 PM)
Enter your choice:
1
1.User interaction 2. Without user interaction
1
Enter a character:
a
Ascii of a is : 97
Enter your choice:
2
Input 1. User interaction 2.Without user interaction
2
Radius=7.0
Area of circle is 153.86
Circumference of circle is 43.96
Enter your choice:
3
Input 1. User interaction 2.Without user interaction
2
Area of square is 49.0
Circumference of square is 28.0
Enter your choice:
4
Input 1. User interaction 2.Without user interaction
2
Area of square is 25.299999999999997
Perimeter of square is 20.2
Enter your choice:
5
Input 1. User interaction 2.Without user interaction
2
Area of square is 12.649999999999999
Perimeter of triangle is 7.8
Enter your choice:

//Data Types
1. Write a program to convert temperature from Fahrenheit to Celsius degree and vice versa.
a. Without user interaction b. With user interaction
2. Write a program that reads a number in inches, converts it to meters.
a. Without user interaction b. With user interaction
3. Write a program that reads an integer between 0 and 1000 and adds all the digits in the integer. Example: Input = 1234 Output =10
a. Without user interaction b. With user interaction
4. Write a program that prints the current time in GMT.
5. Write a Java program to compute body mass index (BMI) and displays the information based on the calculation.
BMI Values:
Underweight : less than 18.5
Normal : between 18.5 and 24.9
Overweight : between 25 and 29.9
Obese : 30 or greater
a. Without user interaction b. With user interaction
6. Write a program to break an integer into a sequence of individual digits.

```
import java.util.Scanner;
public class dataTypes {
	static Scanner input = new Scanner(System.in);
	public static void main(String[] args) {
		System.out.println("1. Write a program to convert temperature from Fahrenheit to Celsius degree and vice versa.\r\n" +
				"a. Without user interaction\r\n" +
				"b. With user interaction\r\n" +
				"2. Write a program that reads a number in inches, converts it to meters.\r\n" +
				"a. Without user interaction\r\n" +
```

```
                    "b. With user interaction\r\n" +
                    "3. Write a program that reads an integer
between 0 and 1000 and adds all the digits in the\r\n" +
                    "integer.\r\n" +
                    "Example:\r\n" +
                    "Input = 1234\r\n" +
                    "Output =10\r\n" +
                    "a. Without user interaction\r\n" +
                    "b. With user interaction\r\n" +
                    "4. Write a program that prints the current time
in GMT.\r\n" +
                    "5. Write a Java program to compute body mass
index (BMI) and displays the information\r\n" +
                    "based on the calculation.BMI Values:\r\n" +
                    "Underweight : less than 18.5\r\n" +
                    "Normal : between 18.5 and 24.9\r\n" +
                    "Overweight : between 25 and 29.9\r\n" +
                    "Obese : 30 or greater\r\n" +
                    "]\r\n" +
                    "a. Without user interaction\r\n" +
                    "b. With user interaction\r\n" +
                    "6. Write a program to break an integer into a
sequence of individual digits. ");

            int ch;
             do
             {
                    System.out.println("Enter your choice:");
                    ch=input.nextInt();
              switch(ch)
             {
             case 1:
            changeTemp();
                    break;
```

```
                case 2:
                        inch_to_meter();
                        break;
        case 3:
                        addDigits();
                        break;

                case 4:
                        current_time();
                        break;

                case 5:
                        bmi();
                   break;

                case 6:
                        break_into_digits();
                        break;

                case 7:
                        System.exit(0);

                 default:
                      System.out.println("Input is wrong. ");


                }
                }while(ch<7);

              }
public static void changeTemp()
{
```

```
        System.out.println(" Input 1. User interaction   2.Without user
interaction");
          int num=input.nextInt();
     if(num==1)
     {

    System.out.print("Enter the temperature in Fahrenheit: ");
   double f=input.nextDouble();
    double celseus=(f-32)*5/9;
    System.out.println("Temperature in Celsius: "+celseus);

    System.out.print("Enter the temperature in Celsius: ");

    double celsius=input.nextDouble();
    double fahrenheit=(celsius*9/5)+32;
    System.out.println("Temperature in Fahrenheit: "+fahrenheit);
  }
     else
     {
         System.out.print("Enter the temperature in Fahrenheit: ");
          double f=200;
           double celseus=(f-32)*5/9;
           System.out.println("Temperature in Celsius: "+celseus);

           System.out.print("Enter the temperature in Celsius: ");

           double celsius=200;
           double fahrenheit=(celsius*9/5)+32;
           System.out.println("Temperature in Fahrenheit:
"+fahrenheit);

     }
}
public static void inch_to_meter()
```

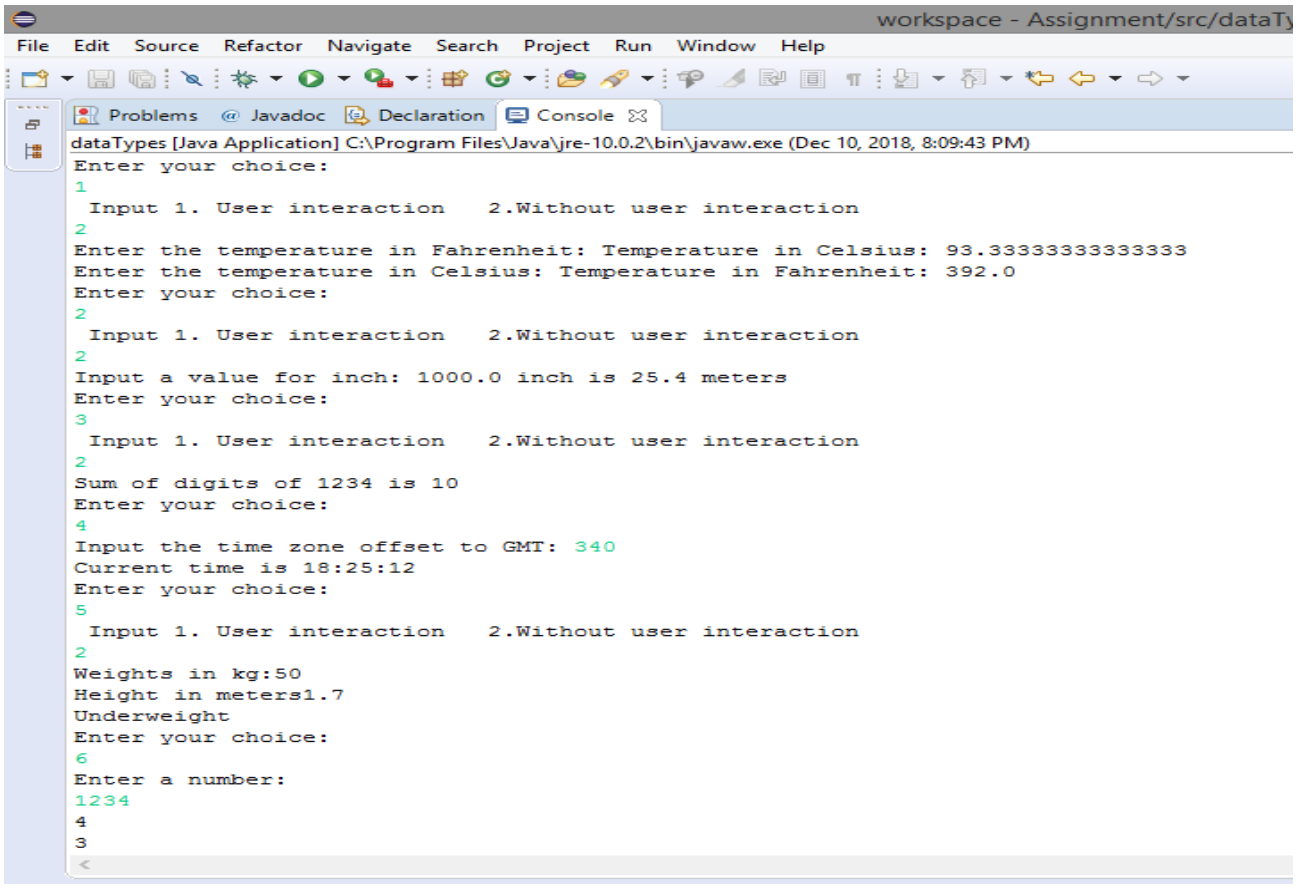
```
{
        System.out.println(" Input 1. User interaction   2.Without user
interaction");
         int num=input.nextInt();
      if(num==1)
    {

              System.out.print("Input a value for inch: ");
               double inch = input.nextDouble();
               double meters = inch * 0.0254;
               System.out.println(inch + " inch is " + meters + " meters");


         }
    else
    {
        System.out.print("Input a value for inch: ");
       double inch = 1000;
       double meters = inch * 0.0254;
       System.out.println(inch + " inch is " + meters + " meters");
    }
    }

public static void addDigits()
{
        System.out.println(" Input 1. User interaction   2.Without user
interaction");
         int num=input.nextInt();
  if(num==1)
  {   System.out.println("Enter number:");
          int sum=0;
          int n=input.nextInt();
          int val=n;
          while ( n!=0 )
```

```
    {

        sum+=n%10;

        n/=10;
        }
        System.out.println("Sum of digits of "+val+" is "+ sum);
  }
  else
  {
        int sum=0;
        int n=1234;
        int val=n;
        while ( n!=0 )
    {

        sum+=n%10;

        n/=10;
        }
        System.out.println("Sum of digits of "+val+" is "+ sum);
  }
}
public static void current_time()
{
      System.out.print("Input the time zone offset to GMT: ");
   long timeZoneChange = input.nextInt();

   long totalMilliseconds = System.currentTimeMillis();

   long totalSeconds = totalMilliseconds / 1000;

   long currentSecond = totalSeconds % 60;
```

```
    long totalMinutes = totalSeconds / 60;

    long currentMinute = totalMinutes % 60;

    long totalHours = totalMinutes / 60;

    long currentHour = ((totalHours + timeZoneChange) % 24);

    System.out.println("Current time is " + currentHour + ":" +
currentMinute + ":" + currentSecond);
}
public static void bmi()
{
        System.out.println(" Input 1. User interaction   2.Without user
interaction");
          int num=input.nextInt();
 if(num==1) {
        double bmi;
        System.out.println("Enter weight in kg:");
        int kg=input.nextInt();
        System.out.println("Height in meters");
        double height=input.nextDouble();
        bmi=kg/(height*height);
        if(bmi<18.5)
        {
                System.out.println("Underweight");
        }
        else if( bmi <25)
        {
                System.out.println("Normal");

        }
        else if(bmi<30)
        {
```

```
            System.out.println("OverWeight");
        }
        else
        {
            System.out.println("Obese");
        }
}
else
{
        double bmi;
        int kg=50;
            System.out.println("Weights in kg:"+kg);
            double height=1.7;
            System.out.println("Height in meters"+height);

            bmi=kg/(height*height);
            if(bmi<18.5)
            {
                System.out.println("Underweight");
            }
            else if( bmi <25)
            {
                System.out.println("Normal");

            }
            else if(bmi<30)
            {
                System.out.println("OverWeight");
            }
            else
            {
                System.out.println("Obese");
            }
}
```

```
}

public static void  break_into_digits()
{
  int reminder=0;
  System.out.println("Enter a number:");
        int number=input.nextInt();
  while(number!=0) {
                reminder=number%10;
                System.out.println(reminder);
        number/=10;
    }
}
}

//OUTPUT
```



//Variables in Java

1. Write a program in Java to simulate the football match. The program should calculate the total goals of the team, measure the overall team's performance as well as the performance of individual performance using the methods.

   //Program

```
public class variables {
```

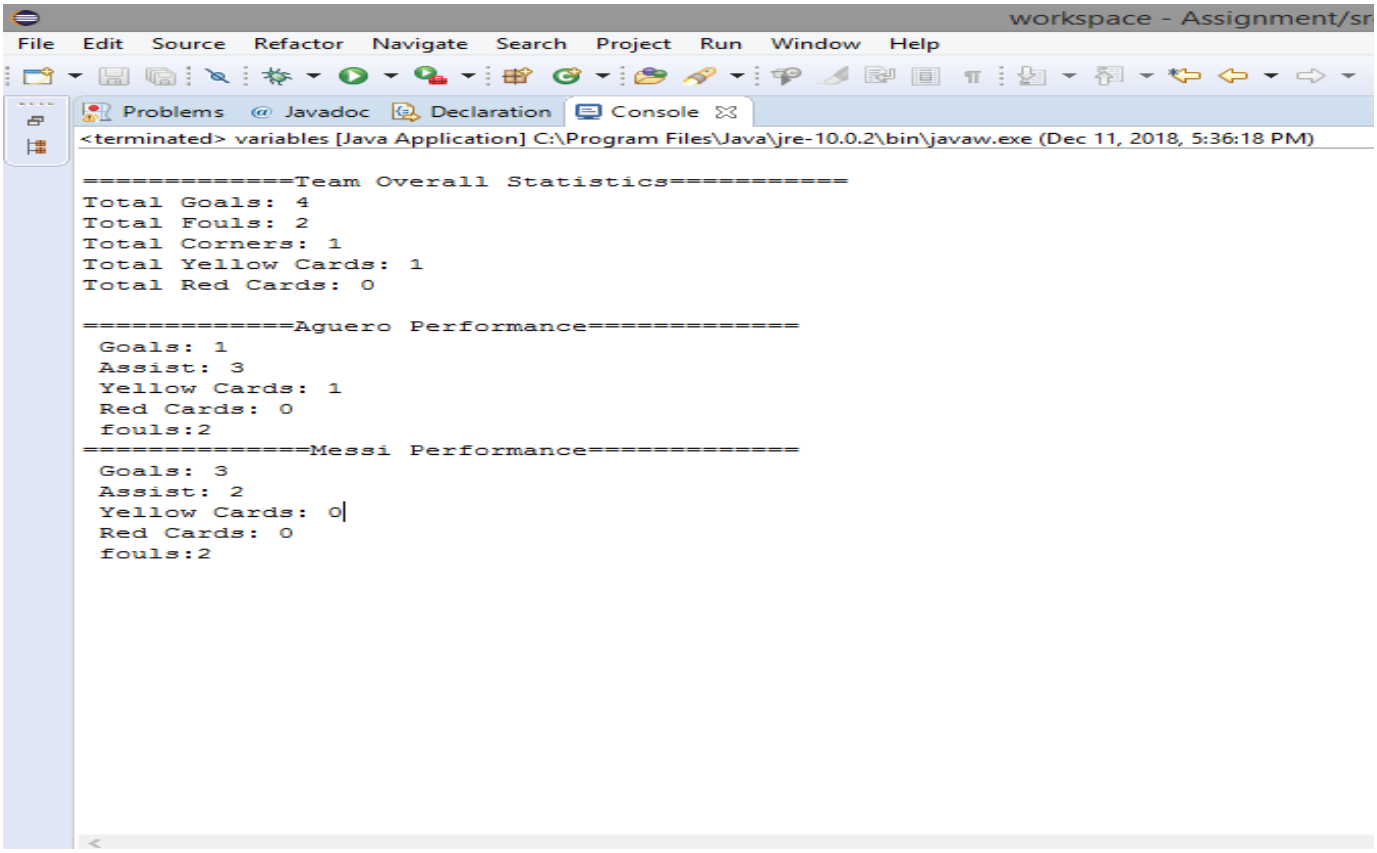
```
    //These are the static variables that are shared by the Class instance. (Class)

    static int fouls =0;

    static int corners =0;



    //These are the instance variable shared by every object (players) of the class (Variables)

    int goal=0;

    int assists =0;

    int yellowCard =0;

    int redCard =0;



    public void stats(){

        //These are the local variables that are inside method, the same name has been given as to show the scope.

        int goal     = this.goal;

        int assists  = this.assists;

        int yellowCard = this.yellowCard;

        int redCard    = this.redCard;
```

```
    int fouls= this.fouls;


    System.out.println(" Goals: "+ goal);

    System.out.println(" Assist: "+assists);

    System.out.println(" Yellow Cards: "+yellowCard);

    System.out.println(" Red Cards: "+redCard);
    System.out.println(" fouls:"+fouls);

}


public static void main (String args[]){


    variables messi = new variables();


    variables aguero = new variables();


    //now messi scores goal;

    messi.goal = messi.goal+1;

    aguero.fouls++;
    aguero.goal++;
```

```
//team gets corners

corners=corners+1;


//again messi scores goal;

messi.goal = messi.goal+1;

aguero.fouls=fouls+1;

messi.goal = messi.goal+1;

aguero.yellowCard=messi.yellowCard+1;

messi.assists = messi.assists+1;
messi.assists = messi.assists+1;
aguero.assists = messi.assists+1;


int totalGoals = aguero.goal+messi.goal;

int totalYellowCards = messi.yellowCard+aguero.yellowCard;

int totalRedCards   = messi.redCard+aguero.redCard;
```

```
        System.out.println("\n============Team Overall Statistics==========");

        System.out.println("Total Goals: "+totalGoals);

        System.out.println("Total Fouls: "+fouls);

        System.out.println("Total Corners: "+corners);

        System.out.println("Total Yellow Cards: "+totalYellowCards);

        System.out.println("Total Red Cards: "+totalRedCards);



        System.out.println("\n============Aguero Performance============");

        aguero.stats();



        System.out.println("=============Messi Performance============");

        messi.stats();


    }


        }
```

//OUTPUT


workspace - Assignment/sr
File Edit Source Refactor Navigate Search Project Run Window Help
Problems Javadoc Declaration Console
<terminated> variables [Java Application] C:\Program Files\Java\jre-10.0.2\bin\javaw.exe (Dec 11, 2018, 5:36:18 PM)
==========Team Overall Statistics==========
Total Goals: 4
Total Fouls: 2
Total Corners: 1
Total Yellow Cards: 1
Total Red Cards: 0
==========Aguero Performance==========
Goals: 1
Assist: 3
Yellow Cards: 1
Red Cards: 0
fouls:2
==========Messi Performance==========
Goals: 3
Assist: 2
Yellow Cards: 0
Red Cards: 0
fouls:2

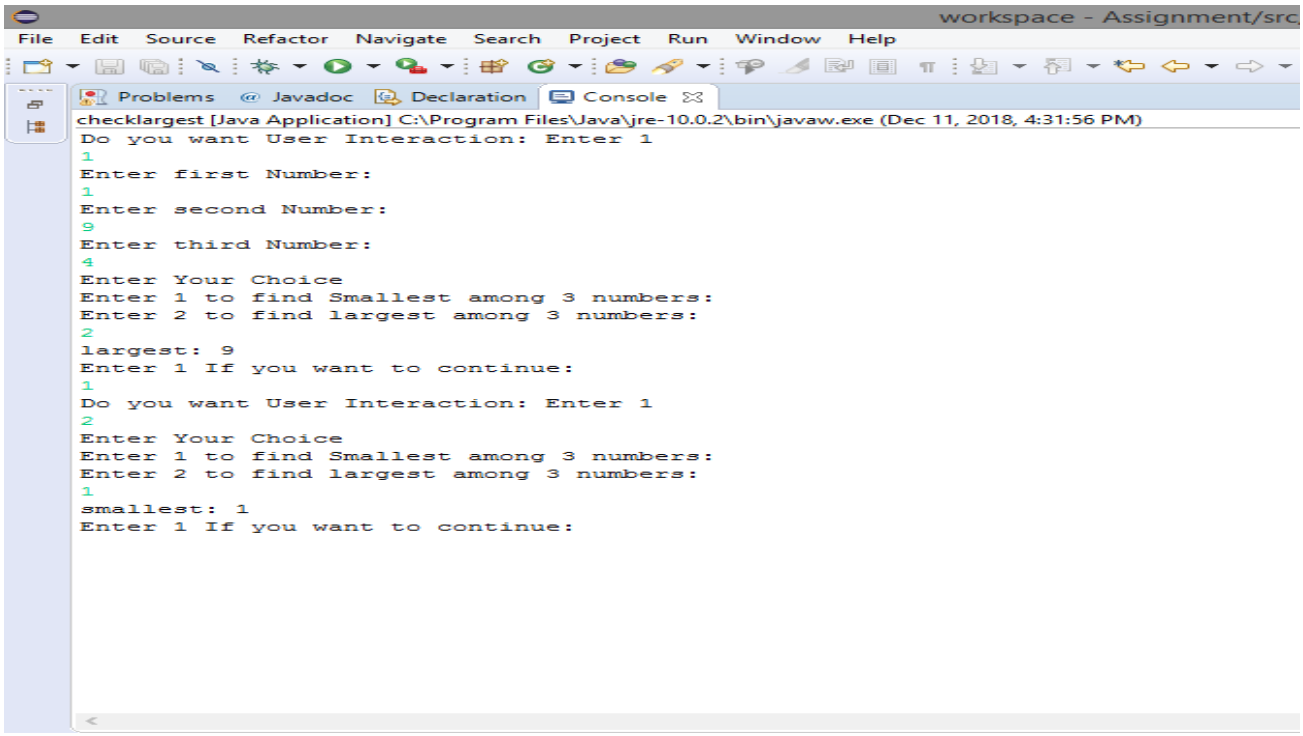
//Operators in Java
1. Write a program to find the smallest among three digits using ternary operator.
a. Without user interaction b. With user interaction
2. Write a program to find the largest among three digits using ternary operator.
a. Without user interaction b. With user interaction

//Program

```
import java.util.Scanner;

public class CheckLargestSmallest {
	int a,b,c,result;
	public static Scanner input = new Scanner(System.in);
	public static void main(String[] args) {
		int choice;
		CheckLargestSmallest C = new CheckLargestSmallest();
		do
		{
			C.inputThreeNumbers(C.UI());
			System.out.println("Enter Your Choice");
			System.out.println("Enter 1 to find Smallest among 3 numbers: ");
			System.out.println("Enter 2 to find largest among 3 numbers: ");
			choice = input.nextInt();
			switch(choice)
			{
			case 1:
				C.checkSmallest();
				break;
			case 2:
				C.checkLargest();
```

```
                    break;
                default:
                    System.out.println("Invalid Choice");
                }
                System.out.println("Enter 1 If you want to continue:
");
                choice = input.nextInt();
            } while(choice == 1);
            System.exit(1);
        }


        public int UI()
        {
            System.out.println("Do you want User Interaction: Enter
1");
            int user = input.nextInt();
            return user;
        }

        public void inputThreeNumbers(int u) {
            if(u == 1)
            {
                System.out.println("Enter first Number:");
                a = input.nextInt();
                System.out.println("Enter second Number:");
                b = input.nextInt();
                System.out.println("Enter third Number:");
                c = input.nextInt();
            }
            else
            {
                a = 1;
                b = 2;
```

```
                c = 3;

            }

        }

        public void checkSmallest()
        {
            result = c < (a < b ? a : b) ? c :(a < b ? a : b) ;
            System.out.println("smallest: " + result);
        }

        public void checkLargest()
        {
            result = c > (a > b ? a : b) ? c:( a > b ? a : b);
            System.out.println("largest: " + result);

        }

}

//OUTPUT
```



//Control Statements

1. Write a program that takes the user to provide a single character from the alphabet. Print Vowel or Consonant, depending on the user input. If the user input is not a letter (between a and z or A and Z), or is a string of length > 1, print an error message.

2. Write a program in Java to display the multiplication table of a given integer.

a. Without user interaction b. With user interaction

3. Write a program to display the pattern like right angle triangle with a number. Ask user number of rows to print. Example. Rows = 5

1

12

123

1234

12345

4. Write a program to make such a pattern like a pyramid with a number which will repeat the number in the same row.

```
    1
   2 2
  3 3 3
 4 4 4 4
```

//Program

```
import java.util.Scanner;
public class ControlStatement {
  static Scanner input = new Scanner(System.in);
  public static void main(String[] args) {
        int ch;
         do
         {
               System.out.println("Enter your choice:");
               ch=input.nextInt();
          switch(ch)
         {
         case 1:
```

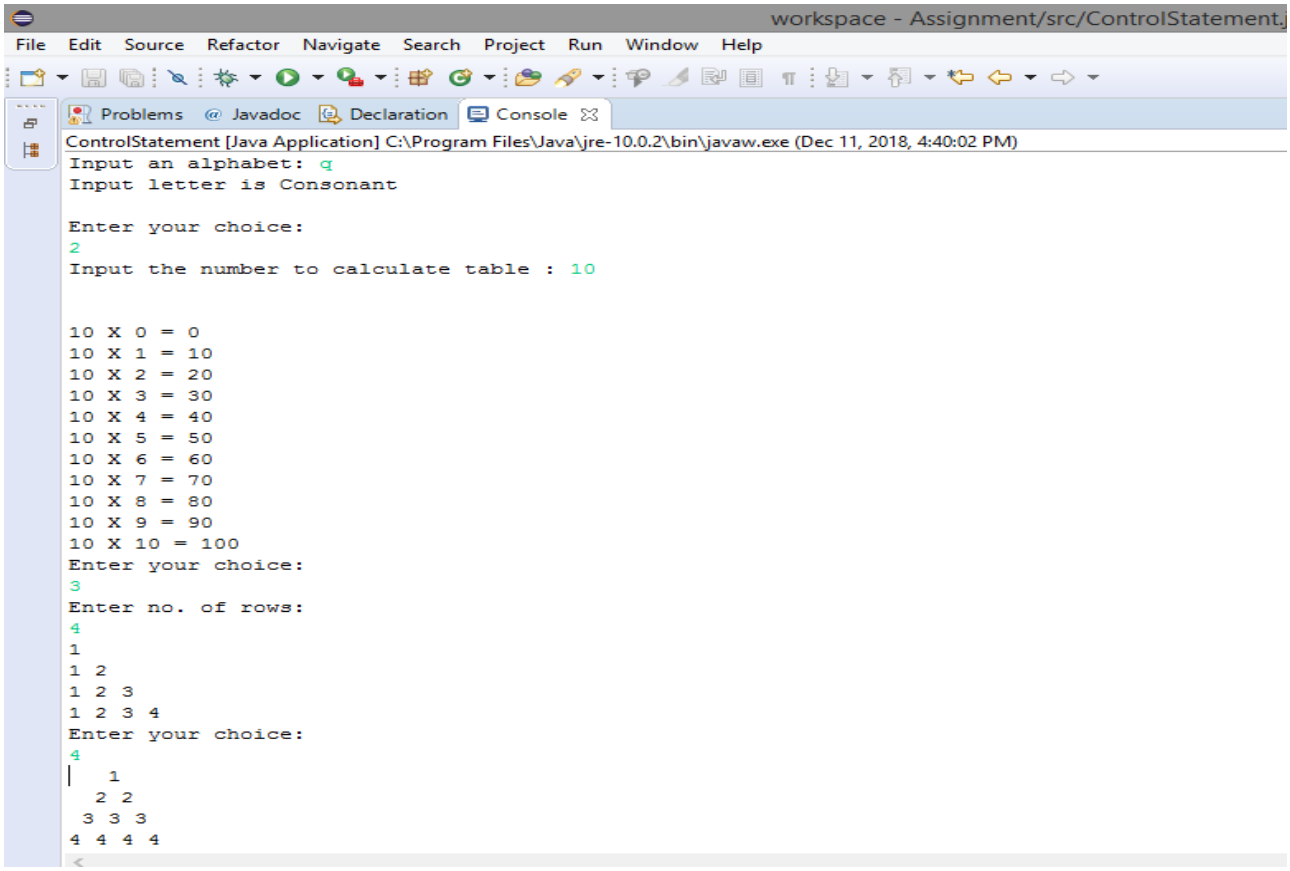
```
            alphabet();
                    break;

                case 2:
                    mul_table();
                    break;
case 3:
                    pattern1();
                    break;

                case 4:
                    pattern2();
                    break;

                case 5:
                    System.exit(0);

                 default:
                     System.out.println("Input is wrong. ");


                }
                }while(ch<5);

            }
 public static void alphabet()
 {
        System.out.print("Input an alphabet: ");
String in = input.next().toLowerCase();
boolean uppercase = in.charAt(0) >= 65 && in.charAt(0) <= 90;
boolean lowercase = in.charAt(0) >= 97 && in.charAt(0) <= 122;
boolean vowels =in.equals("a") ||in.equals("e") ||in.equals("i")
      || in.equals("o") ||in.equals("u");
```

```
        if (in.length() > 1)
        {
           System.out.println("Error. Not a single character.");
        }
        else if (!(uppercase || lowercase))
        {
           System.out.println("Error. Not a letter. Enter uppercase or
lowercase letter.");
        }
        else if (vowels)
        {
           System.out.println("Input letter is Vowel");
        }

        else
        {
           System.out.println("Input letter is Consonant");
          System.out.println();

        }

    }



        public static void mul_table()
        {
              int i,j;

                 System.out.print("Input the number to calculate table :
");
                  i = input.nextInt();

                  System.out.println ("\n");
```

```
            for(j=0;j<=i;j++)

             System.out.println(i+" X "+j+" = " +i*j);

    }
    public static void pattern1()
    {  int i,j;
            System.out.println("Enter no. of rows:");
            int rows=input.nextInt();
            for(i=1;i<=rows;i++)
            {
                    for(j=1;j<=i;j++)
                    {
                            System.out.print(j+" ");
                    }
                    System.out.println();
            }
    }
    public static void pattern2()
    {
            int i,j,k;
            for(i=1;i<=4;i++)
            {
                    for(k=3;k>=i;k--)
                    {
                            System.out.print(" ");
                    }
                    for(j=1;j<=i;j++)
                    {
                            System.out.print(i+" ");
                    }
                    System.out.println();
            }
    }
```

}

//OUTPUT


workspace - Assignment/src/ControlStatement.j
File Edit Source Refactor Navigate Search Project Run Window Help
Problems Javadoc Declaration Console
ControlStatement [Java Application] C:\Program Files\Java\jre-10.0.2\bin\javaw.exe (Dec 11, 2018, 4:40:02 PM)
Input an alphabet: q
Input letter is Consonant
Enter your choice:
2
Input the number to calculate table : 10
10 X 0 = 0
10 X 1 = 10
10 X 2 = 20
10 X 3 = 30
10 X 4 = 40
10 X 5 = 50
10 X 6 = 60
10 X 7 = 70
10 X 8 = 80
10 X 9 = 90
10 X 10 = 100
Enter your choice:
3
Enter no. of rows:
4
1
1 2
1 2 3
1 2 3 4
Enter your choice:
4
1
2 2
3 3 3
4 4 4 4