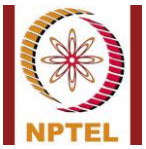

NPTEL Online Certification Courses

Indian Institute of Technology Kharagpur

PROGRAMMING IN JAVA

Assignment 1

TYPE OF QUESTION: ONLINE PROGRAMMING

Number of questions: 5 **Total mark: 5×2 = 10**

QUESTION 11:

Problem Statement:

Complete the code segment **to find the perimeter and area of a circle given a value of radius**. You should use `Math.PI` constant in your program. If radius is zero or less than zero then print " please enter non zero positive number ".

Public Test Cases:

Input: 2.0

Output:

```
12.566370614359172
12.566370614359172
```

Private Test Cases:

Input: 2.5

Output:

```
15.707963267948966
19.634954084936208
```

Prefixed Fixed Code:

```
import java.util.Scanner;
public class Exercise1_1 {
	public static void main(String[] args) {
Scanner s = new Scanner(System.in);
	double radius= s.nextDouble();
	double perimeter;
	double area;
```

Template Code:

```
//Calculate the perimeter
  //Calculate the area
```

Suffixed Fixed Code:

```
  }
}
```

Invisible code: NA

Sample Solution:

```
//Prefixed Fixed Code:
import java.util.Scanner;
public class Exercise1_1 {
	public static void main(String[] args) {
Scanner s = new Scanner(System.in);
	double radius= s.nextDouble();
	double perimeter;
	double area;
//Template Code:
      //Initialize a value to radius
if(radius<=0)
{
 System.out.println("please enter non zero positive number ");
}
else
{
 perimeter = 2 * Math.PI * radius;
area = Math.PI * radius * radius;
System.out.println(perimeter);
 System.out.println(area);
}//Suffixed Fixed Code:
 }
}
```

QUESTION 12:

Problem Statement:

Complete the code segment **to find the largest among three numbers x,y, and z. You should use if-then-else construct in Java.**

Public Test Cases:

Input: 2 3 4

Output:

4

Private Test Cases:

Input: -4 -2 -3

Output:

-2

Private Test Cases:

Input: 5 5 5

Output:

5

Private Test Cases:

Input: -5 0 5

Output

5

Prefixed Fixed Code:

```
import java.util.Scanner;
public class Exercise1_2 {
	public static void main(String[] args) {
Scanner s = new Scanner(System.in);
	 int x = s.nextInt();
	 int y = s.nextInt();
int z = s.nextInt();
int result = 0;
```

```
//Use if...else ladder to find the largest among 3 numbers and store
the largest number in a variable called result.
```

Template Code:

Suffixed Fixed Code:

```
}
}
```

Invisible code: NA

Sample Solution:

```
//Prefixed Fixed Code:
import java.util.Scanner;
public class Exercise1_2 {
       public static void main(String[] args) {
Scanner s = new Scanner(System.in);
        int x = s.nextInt();
        int y = s.nextInt();
int z = s.nextInt();
int result = 0;
 //Use if...else ladder to find the largest among 3 numbers and
store the largest number in a variable called result.
if(x >= y && x >= z)
        {
            result=x;
        }
        else if(y >= z)
        {
            result=y;
        }
        else
        {
            result=z;
        }
     //Evaluation code
System.out.println(result);
//Suffixed Fixed Code:
}
}
```

QUESTION 13:

Problem Statement:

Consider First n even numbers starting from zero(0).Complete the code segment to **calculate sum of all the numbers divisible by 3 from 0 to n.Print the sum.**

Example:

Input: n = 5

----
0 2 4 6 8
Even number divisible by 3:0 6
sum:6

Public Test Cases:

Input: 10

Output:

36

Private Test Cases:

Input: 1

Output:

0

Private Test Cases:

Input: 2

Output

0

Prefixed Fixed Code:

```
import java.util.Scanner;
public class Exercise1_3 {
       public static void main(String[] args) {
         Scanner sc = new Scanner(System.in);
         int n=sc.nextInt();
        int sum=0;
```

```
//Use for or while loop do the operation.
```

Template Code:

Suffixed Fixed Code:

```
}
}
```

Invisible code: NA

Sample Solution:

```
//Prefixed Fixed Code:
import java.util.Scanner;

public class Exercise1_3 {

       public static void main(String[] args) {

         Scanner sc = new Scanner(System.in);

         int n=sc.nextInt();

        int sum=0;

       //Use for or while loop to sum first n positive even numbers
starting from 0 which are divisible by 3.
      int result=1;
int i=0;
while(result<=n)
       {
        if(i%2==0)
        {
             if(i%3==0)
             {
                   sum=sum+i;

          }
             result=result+1;
        }
        i=i+1;
       }
      System.out.println(sum);//Suffixed Fixed Code:
 }
}
```

QUESTION 14:

Problem Statement:

Complete the code segment to **check whether the number is an Armstrong number or not.**

Armstrong Number: A positive number is called an Armstrong number if it is equal to the sum of cubes of its digits for example $153 = 1^3+5^3+3^3$, 370, 371, 407, etc.

Public Test Cases:

Input: 153

Output:

1

Private Test Cases:

Input: 203

Output:

0

Private Test Cases:

Input: 0

Output:

1

Private Test Cases:

Input: 1

Output:

1

Prefixed Fixed Code:

```
import java.util.Scanner;
public class Exercise1_4 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n=sc.nextInt();
           int result=0;
```

Template Code:

```
//Use while loop check the number is Armstrong or not.
//store the output(1 or 0) in result variable.
```

Suffixed Fixed Code:

```
}
}
```

Sample Solution:

```
//Prefixed Fixed Code:
import java.util.Scanner;
public class Exercise1_4 {
    public static void main(String[] args) {
         Scanner sc = new Scanner(System.in);
         int n=sc.nextInt();
int result=0;
//Use while loop check the number is Armstrong or not.
//store the output(1 or 0) in result variable.
int temp=n;
int c=0,t;
//Use while loop to check the number is Armstrong or not.
    while(n>0)
      {
            t=n%10;
            n=n/10;
            c=c+(t*t*t);
      }
      if(temp==c)
            result=1;
      else
            result=0;
    //Evaluation code
    System.out.println(result);
//Suffixed Fixed Code:
}
}
```

QUESTION 15:

Problem Statement:

Complete the code segment to **help Ram , find the highest mark and average mark secured by him in "s" number of subjects.**

Public Test Cases:

Input: 10 40 40 30 20

Output:

```
40
28.0
```

Private Test Cases:

Input: 20 50 60 40 70

Output:

```
70
48.0
```

Private Test Cases:

Input: 0 0 0 0 0

Output

```
0
0.0
```

Prefixed Fixed Code:

```
import java.util.Scanner;
public class Exercise1_5{
    public static void main(String[] args) {
       Scanner input = new Scanner(System.in);
          double mark_avg;
          int result;
          int i;
          int s;
       //define size of array
        s = input.nextInt();
      //The array is defined "arr" and inserted marks into it.
       int[] arr = new int[s];
       for(i=0;i<arr.length;i++)
         {
      arr[i]=input.nextInt();
          }
```

Template Code:

```
//Initialize maximum element as first element of the array.
   //Traverse array elements to get the current max.
   //Store the highest mark in the variable result.
   //Store average mark in avgMarks.
```

Suffixed Fixed Code:

```
}
}
```

Sample Solution:

```
//Prefixed Fixed Code:
import java.util.Scanner;
public class Exercise1_5{
    public static void main(String[] args) {
       Scanner input = new Scanner(System.in);
          double mark_avg;
          int result;
          int i;
          int s;
       //define size of array
        s = input.nextInt();
     //The array is defined "arr" and inserted marks into it of integer
type.
       int[] arr = new int[s];
       for(i=0;i<arr.length;i++)
         {
      arr[i]=input.nextInt();
         }
//initialise maximum element as first element of array.
          int max=arr[0];
       double sum=arr[0];
         //traverse array elements to get the current max
   for(i=1;i<arr.length;i++)
         {
          sum=sum+arr[i];
          if(arr[i]>max)
             max =arr[i];
         }

    //Store the highest mark in the variable max
   //Store average mark in avgMarks
     result=max;
    mark_avg=sum/(arr.length);
 //Evaluation code
    System.out.println(result);
    System.out.println(mark_avg);
//Suffixed Fixed Code:

}
}
```

**********END*******