Rajalakshmi Engineering College

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 2_MCQ

Attempt : 1
Total Mark : 15
Marks Obtained : 15

Section 1 : MCQ

1. What will be the output of the following code?

```
class Test {
   public static void main(String[] args) {
      int a = 4, b = 5;
      if ((a + b) % 2 == 0)
         System.out.print("Even");
      else
         System.out.print("Odd");
   }
}
```

Answer

Odd

Status : Correct ***Marks : 1/1***

2. What will be the output of the following code?

```
class ConditionTest {
    public static void main(String[] args) {
        int a = 7;
        if (a == 7)
            System.out.print("Match");
        else
            System.out.print("No Match");
    }
}
```

Answer

Match

Status : Correct ***Marks : 1/1***

3. What will be the output of the following code?

```
class LoopTest {
    public static void main(String[] args) {
        int i = 1;
        do {
            System.out.print(i + " ");
            i *= 2;
        } while (i <= 8);
    }
}
```

Answer

1 2 4 8

Status : Correct ***Marks : 1/1***

4. What will be the output of the following code?

```
public class Main {
    public static void main(String[] args) {
        int i = 1;
```

```
        while(i < 10) {
            i += 2;
        }
        System.out.println(i);
    }
}
```

Answer

11

Status : Correct ***Marks : 1/1***

5. What will be the output of the following code?

```
class Test {
    public static void main(String[] args) {
        int num = 15;
        if (num > 10)
            if (num % 3 == 0)
                System.out.print("Divisible");
            else
                System.out.print("Not Divisible");
    }
}
```

Answer

Divisible

Status : Correct ***Marks : 1/1***

6. What will be the output of the following code?

```
public class Main {
    public static void main(String[] args) {
        int i = 10;
        do {
            System.out.print(i + " ");
            i -= 3;
        } while(i > 0);
```

```
    }
}
```

Answer

10 7 4 1

Status : Correct ***Marks : 1/1***

7. What will be the output of the following code?

```
class ConditionTest {
    public static void main(String[] args) {
        int x = 10;
        if (x > 5)
            System.out.print("High");
    }
}
```

Answer

High

Status : Correct ***Marks : 1/1***

8. What will be the output of the following code?

```
class Loop {
    public static void main(String[] args) {
        for (int i = 1; i <= 3; i++) {
            for (int j = 1; j <= 2; j++) {
                System.out.print(i + "" + j + " ");
            }
        }
    }
}
```

Answer

11 12 21 22 31 32

Status : Correct ***Marks : 1/1***

9. What will be the output of the following code?

```
class Test {
   public static void main(String[] args) {
      int x = 5, y = 2;
      if (x + y == 10)
         System.out.print("Ten");
      else if (x - y == 3)
         System.out.print("Three");
      else
         System.out.print("None");
   }
}
```

Answer

Three

Status : Correct ***Marks : 1/1***

10. What will be the output of the following Java code snippet?

```
public class Main {
   public static void main(String[] args) {
      int score = 75;
      if(score >= 90) {
         System.out.println("Grade: A");
      } else if(score >= 80) {
         System.out.println("Grade: B");
      } else if(score >= 70) {
         System.out.println("Grade: C");
      } else {
         System.out.println("Grade: D");
      }
   }
}
```

Answer

Grade: C

Status : Correct ***Marks : 1/1***

11. What will be the output of the following code?

```
public class Main {
   public static void main(String[] args) {
      int sum = 0;
      for(int i = 1; i <= 5; i++) {
         sum += i;
      }
      System.out.println(sum);
   }
}
```

Answer

15

Status : Correct ***Marks : 1/1***

12. What will be the output of the following code?

```
class LoopTest {
   public static void main(String[] args) {
      int i = 1;
      while (i > 0) {
         System.out.print(i + " ");
         i++;
         if (i == 5) break;
      }
   }
}
```

Answer

1 2 3 4

Status : Correct ***Marks : 1/1***

13. What will be the output of the following code?

```
public class Main {
   public static void main(String[] args) {
```

```
        for(int i = 1; i <= 20; i = i * 2) {
            System.out.print(i + " ");
        }
    }
}
```

Answer

1 2 4 8 16

Status : Correct ***Marks : 1/1***

14. What will be the output of the following code?

```
class Main {
    public static void main(String[] args) {
        for (int i = 5; i > 0; i--) {
            System.out.print(i + " ");
        }
    }
}
```

Answer

5 4 3 2 1

Status : Correct ***Marks : 1/1***

15. What will be the output of the following Java code snippet?

```
public class Main {
    public static void main(String[] args) {
        int day = 4;
        String result = "";
        switch(day) {
            case 1:
                result = "Monday";
                break;
            case 2:
                result = "Tuesday";
                break;
```

```
            case 3:
                result = "Wednesday";
                break;
            default:
                result = "Other Day";
        }
        System.out.println(result);
    }
}
```

Answer

Other Day

Status : Correct ***Marks : 1/1***

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 2_Q2

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Samantha is a diligent math student who is exploring the world of programming. She is learning Java and has recently studied conditional statements. One day, her teacher gives her an interesting problem to solve, which takes a number as input and checks whether it is a multiple of 5 or 7.

Help her complete the task.

Input Format

The input consists of a single integer N, representing the number to be checked.

Output Format

If the number is a multiple of 5 but not 7, the output prints "N is a multiple of 5".

If the number is a multiple of 7, the output prints "N is a multiple of 7".

Otherwise the output prints "N is neither multiple of 5 nor 7" where N is an entered integer.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 10
Output: 10 is a multiple of 5

Answer

```
// You are using Java
import java.util.Scanner;
class Main{
   public static void main(String args[]){
      Scanner sc=new Scanner(System.in);
      int a=sc.nextInt();
      if(a%5==0 && a%7!=0){
         System.out.println(a+"is a multiple of 5");
      }
      else if(a%7==0){
         System.out.println(a+"is a multiple of 7");

      }
      else{
         System.out.println(a+"is neither multiple of 5 nor 7");
      }
   }
}
```

Status : Correct ***Marks : 10/10***

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 2_Q1

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Arun is working on a project to automate the process of determining whether a student has passed or failed based on their subject marks.

He aims to create a simple program that takes positive integers as marks for five subjects from the user. If the average of the marks is greater than or equal to 50, the student has passed the exam. Otherwise, the student has failed.

Help Arun to implement the project.

Input Format

The input consists of five space-separated integers, representing the marks in five subjects.

Output Format

The first line of output prints "Average score: " followed by an integer representing the average score.

The second line prints one of the following:

1. If the condition is satisfied, print "The student has passed".
2. Otherwise, the output prints "The student has failed".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 50 60 70 80 90

Output: Average score: 70
The student has passed

Answer

```
import java.util.Scanner;
class Main{
   public static void main(String args[]){
      Scanner sc = new Scanner(System.in);
      int a = sc.nextInt();
      int b = sc.nextInt();
      int c = sc.nextInt();
      int e = sc.nextInt();
      int d = sc.nextInt();
      int x = (a+b+c+e+d)/5;
      System.out.println("Average score: "+x);
      if(x >= 50){
         System.out.println("The student has passed");
      }else{
         System.out.println("The student has failed");
      }
   }
}
```

Status : Correct ***Marks : 10/10***

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 2_Q3

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

John is a fitness trainer, and he wants to use the BMI calculator to assess the body mass index of his clients. He has a list of clients based on their height and weight.

John plans to write a program to quickly determine the BMI and provide a classification for each client.

If BMI is less than 18.5, the program will classify it as "Underweight"If BMI is between 18.6 and 24.9, the program will classify it as "Normal Weight"If BMI is between 25.0 and 29.9, the program will classify it as "Overweight"If BMI is 30.0 or higher, the program will classify it as "Obese"

Note: Formula to calculate BMI = weight/(height*height)

Input Format

The first line of input consists of a double value, representing the height of the person in meters.

The second line consists of a double value, representing the weight of the person in kilograms.

Output Format

The first line of output prints "BMI: " followed by a double (rounded to two decimal places) representing the calculated BMI.

The second line prints "Classification: " followed by a string indicating the BMI category (Underweight, Normal Weight, Overweight, or Obese).

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1.2
45.2

Output: BMI: 31.39
Classification: Obese

Answer

```
// You are using Java
import java.util.Scanner;
class main{
   public static void main(String args[]){
      Scanner sc=new Scanner(System.in);
      double h=sc.nextDouble();
      double w=sc.nextDouble();
      double bmi=w/(h*h);
      System.out.printf("BMI: %.2f%n",bmi);
      if(bmi<18.5){
         System.out.println("Classification: Underweight");

      }
      else if(bmi>=18.6 && bmi<=24.9){
         System.out.println("Classification:Normal Weight");

      }
```

```
        else if(bmi>=25.0 && bmi<=29.9){
            System.out.println("Classification:Overweight");
        }
        else if(bmi>=30.0){
            System.out.println("Classification:Obese");

        }
    }
}
```

Status : Correct ***Marks : 10/10***

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 2_Q4

Attempt : 1
Total Mark : 10
Marks Obtained : 9

Section 1 : Coding

1. Problem Statement

Amit wants to evaluate the depreciation of his car over time to understand its current value and categorize it based on that value.

Write a program that helps him determine the current value of his car after a certain number of years of depreciation and classify it into one of three categories:

High: If the current value is greater than 10,000.Medium: If the current value is between 5,000 and 10,000, both inclusive.Low: If the current value is less than 5,000.

The depreciation rate of the car is 15% per year. The program should calculate the current value of the car after applying this depreciation over the given number of years and print the current value along with the category.

Input Format

The first line of input consists of an integer, representing the initial cost of the car.

The second line consists of an integer, representing the number of years the car has been depreciating.

Output Format

The first line of output prints a double value, representing the current value of the car, rounded off to two decimal places "Current Value: <value>".

The second line prints its category "Category: <categories>".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 20000
5
Output: Current Value: 8874.11
Category: Medium

Answer

```
// You are using Java
import java.util.Scanner;
class Main{
    public static void main(String args[]){
        Scanner sc=new Scanner(System.in);
        int a=sc.nextInt();
        int b=sc.nextInt();
        double rate=0.15;
        double currentValue=a*Math.pow(1-rate,b);
        if(currentValue<0){
            currentValue=0;
        }
        System.out.printf("Current Value:%.2f%n",currentValue);

        String category;
        if(currentValue>10000){
```

```
        category="High";
        }
        else if(currentValue>=5000){
           category="Medium";
        }
        else{
           category="Low";
        }
        System.out.println("Category: "+category);

    }
}
```

Status : Partially correct **Marks : 9/10**

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 2_Q5

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Ted, the computer science enthusiast, has accepted the challenge of writing a program that checks if the number of digits in an integer matches the sum of its digits.

Guide Ted in designing and writing the code to solve this problem using a 'do-while' loop.

Input Format

The input consists of an integer N, representing the number to be checked.

Output Format

If the sum is equal to the number of digits, print "The number of digits in N matches the sum of its digits."

Else, print "The number of digits in N does not match the sum of its digits."

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 20

Output: The number of digits in 20 matches the sum of its digits.

Answer

```
// You are using Java
import java.util.Scanner;
class Main{
    public static void main(String args[]){
        Scanner sc=new Scanner(System.in);
        int a=sc.nextInt();

        int temp=a;
        int sum=0;
        int digits=0;
        do{
            int digit=temp%10;
            sum=sum+digit;
            temp=temp/10;
            digits++;

        }while(temp>0);

        if(sum==digits){
            System.out.println("The number of digits in"+a+"matches the sum of its
digits.");
        }else{
            System.out.println("The number of digits in"+a+"does not match the sum
of its digits.");

        }
    }
}
```

Status : Correct *Marks : 10/10*

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 2_Q6

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Maya, a student in an arts and crafts class, wants to create a pattern using stars (*) in a specific format. She plans to use a program to help her construct the pattern.

Write a program that takes an integer as input and constructs the following pattern using nested for loops.

Input: 5

Output:

*

* *

```
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
```

Input Format

The input consists of a number (integer) representing the number of rows.

Output Format

The output displays the required pattern.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 5

Output:

```
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
```

Answer

```
// You are using Java
import java.util.Scanner;
class Main{
    public static void main(String args[]){
        Scanner sc=new Scanner(System.in);
```

```
        int a=sc.nextInt();
        for(int i=1;i<=a;i++){
            for(int j=1;j<=i;j++){
                System.out.print("*");
            }
            System.out.println();
        }
        for(int i=a-1;i>=1;i--){
            for(int j=1;j<=i;j++){
                System.out.print("*");
            }
            System.out.println();
        }
    }
}
```

Status : Correct **Marks : 10/10**

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 1_Q8

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

In the Kingdom of Finance, the royal treasury is managed by the treasurer, Sir Cedric. Sir Cedric tracks the daily expenses of the kingdom using an expense report that lists three major categories: food, clothing, and utilities. However, the King wants to know if the average daily expense is greater than at least two of these categories to ensure the kingdom is spending wisely.

Your task is to help Sir Cedric determine if the average daily expense is greater than two of the categories. Specifically, you need to calculate the average of the three expenses and check if it is greater than any two categories.

Note: Use the ternary operator

Input Format

Three integers a, b, and c represent the daily expenses for food, clothing, and utilities. Each integer is provided on a single line.

Output Format

The average of the three expenses, rounded to two decimal places.

A message indicating whether the average is greater than at least two of the expense categories.

1. If the average is greater than the two smallest monthly expenses, print "Average is greater than both X and Y," where X and Y are the two smallest expenses.
2. Otherwise, display "Average is not greater than two smallest expenses".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 4
6
10

Output: 6.67
Average is greater than both 4 and 6

Answer

```
// You are using Java
import java.util.Scanner;
class Main{
    public static void main(String args[]){
    Scanner sc=new Scanner(System.in);
    int a=sc.nextInt();
    int b=sc.nextInt();
    int c=sc.nextInt();
    double avg=((a+b+c)/3.0*100.0)/100.0;
    System.out.printf("%.2f\n",avg);
    if(avg<a&&(avg>b&&avg>c))
    {
        System.out.println("Average is greater than both "+b+" and "+c);
```

```
    }
    else if(avg<b&&(avg>a&&avg>c)){
        System.out.println("Average is greater than both "+a+" and "+c);

    }
    else if(avg<c&&(avg>b&&avg>a)){
        System.out.println("Average is greater than both "+a+" and "+b);

    }
    else{
        System.out.println("Average is not greater than two smallest expenses");
    }

    }
}
```

Status : Correct **Marks : 10/10**

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 1_Q9

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Phill is a quality control manager at a manufacturing plant. He needs to verify if a sensor reading at a midpoint station (S2) falls exactly halfway between the readings of the previous station (S1) and the next station (S3). Help him by developing a program that checks if the second sensor reading is the average (midpoint) of the first and third sensor readings.

Use the relational operator to solve the program.

Input Format

The first line of input consists of an integer S1, representing the sensor reading of the first station.

The second line consists of an integer S2, representing the sensor reading of the midpoint station.

The third line consists of an integer S3, representing the sensor reading of the next station.

Output Format

The first line of output displays a boolean value representing whether the sensor reading at the midpoint station is halfway between the readings of the first and the next stations.

The second line displays one of the following:

1. If the result is true, print "The second integer is halfway between the first and third integers."
2. Otherwise, print "The second integer is not halfway between the first and third integers."

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1
7
10

Output: false
The second integer is not halfway between the first and third integers.

Answer

```
// You are using Java
import java.util.Scanner;
class Main{
   public static void main(String args[]){
      Scanner sc=new Scanner(System.in);
      int a=sc.nextInt();
      int b=sc.nextInt();
      int c=sc.nextInt();
      int avg=(a+c)/2;
      if(avg==b){
         System.out.println("true");
         System.out.println("The second integer is halfway between the first and
third integers.");
```

```
        }
        else{
            System.out.println("false");
            System.out.println("The second integer is not halfway between the first
and third integers.");

        }
    }
}
```

Status : Correct **Marks : 10/10**

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 1_Q10

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Aishu is supervising a construction project that needs to be completed with the help of three workers: A, B, and C.

She knows how many days each of them would take to complete the entire project individually:

A can complete it in x days,B in y days,C in z days.

Initially, all three workers (A, B, and C) work together for d1 days.

After that, C leaves, and only A and B continue for another d2 days.

Then B also leaves, and A works alone to finish the remaining work.

Your tasks is to help aishu to implement this functionality using the class WorkDistribution and Method calculateWork(int x, int y, int z, int d1, int d2)

Calculate the total work completed in the first d1 days by A, B, and C.Calculate the work completed in the next d2 days by A and B.Determine the remaining work after these d1 + d2 days.

Input Format

The first line of input contains five space-separated integers: x y z d1 d2

where:

x represents the Days A takes to complete the work alone

y represents the Days B takes to complete the work alone

z represents the Days C takes to complete the work alone

d1 represents the Days A, B, and C work together

d2 represents the Days A and B work together (after C leaves)

Output Format

The first line of output prints "Work done in first d1 days (A+B+C): " followed by a double value rounded to 2 decimal places.

The second line of output prints "Work done in next d2 days (A+B): " followed by a double value rounded to 2 decimal places.

The third line prints "Remaining work: " followed by a double value rounded to 2 decimal places.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 10 20 30 2 2

Output: Work done in first d1 days (A+B+C): 0.37
Work done in next d2 days (A+B): 0.30
Remaining work: 0.33

Answer

```
// You are using Java
import java.util.Scanner;
class Main{
    public static void calculateWork(int x,int y,int z,int d1,int d2)
    {
        double aRate=1.0/x;
        double bRate=1.0/y;
        double cRate=1.0/z;

        double work1=d1*(aRate+bRate+cRate);
        System.out.printf("Work done in first d1 days(A+B+C):%.2f\n",work1);
        double work2=d2*(aRate+bRate);
        System.out.printf("Work done in next d2 days(A+B):%.2f\n",work2);
        double remainingWork=1.0-(work1+work2);
        if(remainingWork<0){
            remainingWork=0;
        }
        System.out.printf("Remaining work:%.2f\n",remainingWork);
    }
    public static void main(String[] args){

        Scanner sc=new Scanner(System.in);
        int x=sc.nextInt();
        int y=sc.nextInt();
        int z=sc.nextInt();
        int d1=sc.nextInt();
        int d2=sc.nextInt();
        calculateWork(x,y,z,d1,d2);
    }
}
```

Status : Correct **Marks : 10/10**