Rajalakshmi Engineering College

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Batch: 2028
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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 3_Q3

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

You are developing a warehouse management system for a shipping company. The system uses an integer array to represent the weights of packages in a specific order. To verify that the weight capacity is not exceeded, the program needs to calculate the sum of the weights of the first and last packages in the list.

Task:

Write a code to calculate the sum of the weights of the first and last packages in the list. The program should take an integer array as input and return the total weight of the first and last packages.

Input Format

The first line of the input is an integer N representing the size of the array.

The second line of the input is N space-separated integer values.

Output Format

The output is displayed in the following format:

"Sum of the first and last elements: <<Sum>>"

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
10 20 30 40 50
Output: Sum of the first and last elements: 60

Answer

```
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        int n = sc.nextInt();
        int[] arr = new int[n];

        for (int i = 0; i < n; i++) {
            arr[i] = sc.nextInt();
        }

        int sum = arr[0] + arr[n - 1];

        System.out.println("Sum of the first and last elements: " + sum);

        sc.close();
    }
}
```

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

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 3_Q2

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Monica is interested in finding a treasure but the key to opening is to get the sum of the main diagonal elements and secondary diagonal elements.

Write a program to help Monica find the diagonal sum of a square 2D array.

Note: The main diagonal of the array consists of the elements traversing from the top-left corner to the bottom-right corner. The secondary diagonal includes elements from the top-right corner to the bottom-left corner.

Input Format

The first line of input consists of an integer N, representing the number of rows and columns.

The following N lines consist of N space-separated integers, representing the 2D array elements.

Output Format

The first line of output prints "Sum of the main diagonal: " followed by an integer, representing the sum of the main diagonal.

The second line prints "Sum of the secondary diagonal: " followed by an integer, representing the sum of the secondary diagonal.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 3
1 2 3
4 5 6
7 8 9

Output: Sum of the main diagonal: 15
Sum of the secondary diagonal: 15

Answer

```
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);


        int n = sc.nextInt();

        int[][] matrix = new int[n][n];

        for (int i = 0; i < n; i++) {
            for (int j = 0; j < n; j++) {
                matrix[i][j] = sc.nextInt();
            }
        }

        int mainDiagonalSum = 0;
```

```
        int secondaryDiagonalSum = 0;

        for (int i = 0; i < n; i++) {
            mainDiagonalSum += matrix[i][i];
            secondaryDiagonalSum += matrix[i][n - 1 - i];
        }

        System.out.println("Sum of the main diagonal: " + mainDiagonalSum);
        System.out.println("Sum of the secondary diagonal: " +
secondaryDiagonalSum);

        sc.close();
    }
}
```

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

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 3_Q1

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Rosh is intrigued by numerical patterns. Today, she stumbled upon a puzzle while working with arrays. She wants to compute the sum of the third-largest and second-smallest elements from a list of integers. She seeks your help to implement a program that solves this for her efficiently.

Input Format

The first line of input is an integer N, representing the size of the array.

The second line of input consists of N space-separated integers, representing the elements of the array.

Output Format

The output displays a single integer representing the sum of the third-largest and second-smallest elements in the array.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 10
10 20 30 40 50 60 70 80 90 100

Output: 100

Answer

```
import java.util.*;

class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        int[] arr = new int[n];
        for (int i = 0; i < n; i++) {
            arr[i] = sc.nextInt();
        }
        TreeSet<Integer> sortedSet = new TreeSet<>();
        for (int num : arr) {
            sortedSet.add(num);
        }
        List<Integer> sortedList = new ArrayList<>(sortedSet);
        if (sortedList.size() < 3) {
            System.out.println("Not enough unique elements");
            return;
        }
        int secondSmallest = sortedList.get(1);
        int thirdLargest = sortedList.get(sortedList.size() - 3);
        int result = secondSmallest + thirdLargest;
        System.out.println(result);
    }
}
```

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

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 2_Q8

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

A bank generates secure codes using 3-digit numbers where each digit is unique, and the code must be divisible by 3. You are tasked with generating the first N such codes based on user input, ensuring the digits are unique and the number is divisible by 3.

Note: Use nested for loops to solve.

Input Format

The first line contains an integer N representing the number of valid codes to generate.

Output Format

The output prints N line,s each line contains a valid 3-digit code.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5

Output: 102
105
108
120
123

Answer

```
import java.util.Scanner;

 class SecureCodeGenerator {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int N = scanner.nextInt();
        int count = 0;

        // Loop through all 3-digit numbers
        for (int i = 1; i <= 9; i++) {
            for (int j = 0; j <= 9; j++) {
                for (int k = 0; k <= 9; k++) {
                    if (i != j && i != k && j != k) {
                        int num = i * 100 + j * 10 + k;
                        if (num % 3 == 0) {
                            System.out.print(num + " ");
                            count++;
                            if (count == N) {
                                return;
                            }
                        }
                    }
                }
            }
        }
    }
}
```

Status : Correct *Marks : 10/10*

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 2_Q8

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

A bank generates secure codes using 3-digit numbers where each digit is unique, and the code must be divisible by 3. You are tasked with generating the first N such codes based on user input, ensuring the digits are unique and the number is divisible by 3.

Note: Use nested for loops to solve.

Input Format

The first line contains an integer N representing the number of valid codes to generate.

Output Format

The output prints N line,s each line contains a valid 3-digit code.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5

Output: 102
105
108
120
123

Answer

```
import java.util.Scanner;

 class SecureCodeGenerator {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int N = scanner.nextInt();
        int count = 0;

        // Loop through all 3-digit numbers
        for (int i = 1; i <= 9; i++) {
            for (int j = 0; j <= 9; j++) {
                for (int k = 0; k <= 9; k++) {
                    if (i != j && i != k && j != k) {
                        int num = i * 100 + j * 10 + k;
                        if (num % 3 == 0) {
                            System.out.print(num + " ");
                            count++;
                            if (count == N) {
                                return;
                            }
                        }
                    }
                }
            }
        }
    }
}
```

Status : Correct *Marks : 10/10*

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 2_Q7

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

You are taking part in a coding challenge where your task is to design a program that conjures a mesmerizing numerical pyramid pattern. The enchanting pattern is fashioned using a for loop and is customized based on user input.

Participants are prompted to unveil the pyramid's magic by specifying its height - essentially dictating the number of rows in this spellbinding creation.

Write a program that employs to weave this captivating numerical pyramid as shown below.

Example

Input:
4

Output:

Input Format

The input consists of a positive integer n representing the number of rows in the pattern.

Output Format

The output prints the required pyramid pattern, as shown in the sample output.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 4

Output: 1
 123
 12345
1234567

Answer

```
import java.util.Scanner;

 class NumberPyramid {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      int n = scanner.nextInt();

      for (int i = 1; i <= n; i++) {

         for (int s = 1; s <= n - i; s++) {
            System.out.print(" ");
         }
```

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

            if (i != n) {
                System.out.print(" ");
            }
        }
    }
}
```

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

```
import java.util.Scanner;

 class StarPattern {
   public static void main(String[] args) {
       Scanner scanner = new Scanner(System.in);
```

```
        int rows = scanner.nextInt();


        for (int i = 1; i <= rows; i++) {
            for (int j = 1; j <= i; j++) {
                System.out.print("* ");
            }
        }

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

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

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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

```
import java.util.Scanner;

class DigitSumCheck {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int N = scanner.nextInt();

        int temp = N;
        int sum = 0;
        int digitCount = 0;

        do {
            int digit = temp % 10;
            sum += digit;
            digitCount++;
            temp = temp / 10;
        } while (temp > 0);

        if (sum == digitCount) {
            System.out.print("The number of digits in " + N + " matches the sum of its
digits.");
        } else {
            System.out.print("The number of digits in " + N + " 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_Q4

Attempt : 1
Total Mark : 10
Marks Obtained : 10

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

```
import java.util.Scanner;

class CarDepreciation {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        int initialCost = scanner.nextInt();
        int years = scanner.nextInt();

        double depreciationRate = 0.15;
        double currentValue = initialCost;


        for (int i = 0; i < years; i++) {
            currentValue = currentValue * (1 - depreciationRate);
        }
```

```
        String category;
        if (currentValue > 10000) {
            category = "High";
        } else if (currentValue >= 5000) {
            category = "Medium";
        } else {
            category = "Low";
        }

        System.out.printf("Current Value: %.2f\n", currentValue);
        System.out.println("Category: " + category);
    }
}
```

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

```
import java.util.Scanner;

class BMICalculator {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        double height = scanner.nextDouble();
        double weight = scanner.nextDouble();

        double bmi = weight / (height * height);

        String classification;
        if (bmi < 18.5) {
            classification = "Underweight";
        } else if (bmi >= 18.6 && bmi <= 24.9) {
            classification = "Normal Weight";
        } else if (bmi >= 25.0 && bmi <= 29.9) {
```

```
            classification = "Overweight";
        } else {
            classification = "Obese";
        }

        System.out.printf("BMI: %.2f Classification: %s\n", bmi, classification);
    }
}
```

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

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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

```
import java.util.Scanner;

 class MultipleChecker {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int N = scanner.nextInt();

        if (N % 5 == 0 && N % 7 != 0) {
            System.out.println(N + " is a multiple of 5");
        } else if (N % 7 == 0) {
            System.out.println(N + " is a multiple of 7");
        } else {
            System.out.println(N + " is neither multiple of 5 nor 7");
        }

        scanner.close();
    }
}
```

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 StudentResult {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      int total = 0;
      for (int i = 0; i < 5; i++) {
         int mark = scanner.nextInt();
         total += mark;
      }
      int average = total / 5;
      System.out.println("Average score: " + average);
      if (average >= 50) {
         System.out.println("The student has passed");
      } else {
         System.out.println("The student has failed");
      }
      scanner.close();
   }
}
```

Status : Correct *Marks : 10/10*

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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 : 11

Section 1 : MCQ

1. 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***

2. 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***

3. 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***

4. 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***

5. 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***

6. 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***

7. 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***

8. 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

Status : Skipped ***Marks : 0/1***

9. 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***

10. 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***

11. 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***

12. 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

Status : Skipped ***Marks : 0/1***

13. 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***

14. 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

Even

Status : Wrong ***Marks : 0/1***

15. 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

1 4 7 10

Status : Wrong ***Marks : 0/1***

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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

```
import java.util.Scanner;

class WorkDistribution {
    public void calculateWork(int x, int y, int z, int d1, int d2) {
        double workABC = d1 * (1.0 / x + 1.0 / y + 1.0 / z);
        double workAB = d2 * (1.0 / x + 1.0 / y);
        double remaining = 1 - (workABC + workAB);

        System.out.printf("Work done in first d1 days (A+B+C): %.2f\n", workABC);
        System.out.printf("Work done in next d2 days (A+B): %.2f\n", workAB);
        System.out.printf("Remaining work: %.2f\n", remaining);
    }

    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();
        sc.close();

        WorkDistribution wd = new WorkDistribution();
        wd.calculateWork(x, y, z, d1, d2);
    }
}
```

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;

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        int S1 = sc.nextInt();
        int S2 = sc.nextInt();
        int S3 = sc.nextInt();

        boolean isHalfway = (S2 * 2 == S1 + S3);
```

```
        System.out.println(isHalfway);
        System.out.println(isHalfway
            ? "The second integer is halfway between the first and third integers."
            : "The second integer is not halfway between the first and third integers.");

        sc.close();
    }
}
```

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 : 5

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

```
import java.util.*;

 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*1.0) + (b*1.0) + (c*1.0)) / 3.0;
```

```
        int[] expenses = {a, b, c};
        Arrays.sort(expenses);
        int x = expenses[0];
        int y = expenses[1];

        String message = (avg > x && avg > y)
            ? "Average is greater than both " + x + " and " + y
            : "Average is not greater than two smallest expenses";

        System.out.printf("%.2f\n", avg);
        System.out.println(message);
    }
}
```

Status : Partially correct **Marks : 5/10**

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 1_Q7

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement:

Miles is working on a program that involves analyzing two integers. He wants to check if either one of the integers is both:

Less than or equal to zero, andOdd.Can you help him create a program that identifies whether either of the integers meets these conditions?

Input Format

The input consists of two integers on separate lines, denoted as 'input1' and 'input2'.

Output Format

A single line with a boolean result (either 'true' or 'false') indicating whether either 'input1' or 'input2' is both less than or equal to zero and odd.

Refer to the sample output for format specifications

Sample Test Case

Input: -45
10
Output: true

Answer

```
import java.util.Scanner;

public class Main{
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      int input1 = scanner.nextInt();
      int input2 = scanner.nextInt();
      boolean result = (input1 <= 0 && input1 % 2 != 0) || (input2 <= 0 && input2 %
2 != 0);
      System.out.println(result);
      scanner.close();
   }
}
```

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

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 1_Q6

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Joey is learning about bitwise operations and is working on a project that involves extracting specific bits from integers. He needs to write a program that takes an integer and the number of bits N as input and outputs the value of the lowest N bits of the integer.

Help Joey in his project to understand and visualize how bitwise operations work in practical scenarios.

Input Format

The first line of input consists of an integer X, representing the given integer.

The second line consists of an integer N, representing the number of bits to extract.

Output Format

The output displays "Result: " followed by an integer representing the value of the lowest N bits of the given integer.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 85
2
Output: Result: 1

Answer

```
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int x = scanner.nextInt();
        int n = scanner.nextInt();
        int mask = (1 << n) - 1;
        int result = x & mask;
        System.out.println("Result: " + result);
        scanner.close();
    }
}
```

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

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 1_Q5

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement:

Emily has a beautiful circular garden in her backyard. She's interested in calculating two important measurements for her garden: the circumference and the area. To do this, she needs a program that can take the radius of her circular garden as input and provide the calculated circumference and area as output. The formulas she should use are as follows:

To calculate the circumference (C) of a circle, you can use the formula:

C = 2 * π * r

A = π * r^2

Where:

C represents the circumference.

A represents the area.

π (pi) is approximately 3.14159.

r is the radius of the circle.

Emily is not a programmer, and she needs your help to create a program that will make these calculations for her garden.

Input Format

The first line of input contains a single double-point number radius, representing the radius of the circle.

Output Format

The output should consist of two lines:

The first line should print the circumference of the circle rounded to 2 decimal places, followed by the unit "meters".

The second line should print the area of the circle rounded to 2 decimal places, followed by the unit "square meters".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 3.0

Output: Circumference: 18.85 meters
Area: 28.27 square meters

Answer

```
// You are using Java
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        double radius = scanner.nextDouble();
```

```
        double pi = 3.14159;
        double circumference = 2 * pi * radius;
        double area = pi * radius * radius;
        System.out.printf("Circumference: %.2f meters\n", circumference);
        System.out.printf("Area: %.2f square meters\n", area);
        scanner.close();
    }
}
```

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

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 1_Q4

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Vishal and Arun are discussing the properties of numbers. Vishal gives Arun two integers. He asks Arun to check if the sum of these two numbers is a multiple of their product.

Can you assist Arun and determine whether the sum is a multiple of the product?

Input Format

The input consists of two space-separated integers.

Output Format

The output prints:

1. "Sum is Multiple of Product" if the sum of the two numbers is divisible by their product.
2. "Sum is Not Multiple of Product" otherwise.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1 2

Output: Sum is Not Multiple of Product

Answer

```
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int a = scanner.nextInt();
        int b = scanner.nextInt();
        int sum = a + b;
        int product = a * b;
        if (sum % product == 0) {
            System.out.println("Sum is Multiple of Product");
        } else {
            System.out.println("Sum is Not Multiple of Product");
        }
        scanner.close();
    }
}
```

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

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 1_Q3

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem statement

Manoj, a developer at MoneyMatters Inc., is working on improving the company's financial system. He needs to create a program that takes an integer input, converts it into a double, and displays both the original integer and the converted double value.

Input Format

The input consists of a single integer representing a monetary amount.

Output Format

The first line of the output displays the "Original Integer: ", followed by an integer representation of the input value.

The second line displays the "Converted Double: ", followed by a double value representing the input as a decimal value.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 20

Output: Original Integer: 20
Converted Double: 20.0

Answer

```
// You are using Java
import java.util.Scanner;

class FinancialConversion {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int inputAmount = scanner.nextInt();

        double convertedAmount = (double) inputAmount;

        System.out.println("Original Integer: " + inputAmount);
        System.out.print("Converted Double: " + convertedAmount);
    }
}
```

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

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 1_Q2

Attempt : 2
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. PROBLEM STATEMENT:

Dave got two students who wants help with their doubt. Each handouts an integer and wants to find if one Integer Positive While the Other is Not Divisible by 3. Write a program to achieve this and conclude for them.

Input Format

The first line of input represents the first integer.

The second line of input represents the second integer.

Output Format

The output should display as "One of the integers is positive while the other is not divisible by 3." or "Neither of the integers meets the condition."

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 4
3
Output: One of the integers is positive while the other is not divisible by 3.

Answer

```
// You are using Java
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        int num1 = scanner.nextInt();
        int num2 = scanner.nextInt();

        boolean condition1 = (num1 > 0 && num2 % 3 != 0);
        boolean condition2 = (num2 > 0 && num1 % 3 != 0);

        if (condition1 || condition2) {
            System.out.println("One of the integers is positive while the other is not
divisible by 3.");
        } else {
            System.out.println("Neither of the integers meets the condition.");
        }

        scanner.close();
    }
}
```

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

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 1_Q1

Attempt : 2
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Gloria is responsible for monitoring the performance of two machines in a factory. She needs to determine which of the two machines is operating closest to the optimal temperature of 100 degrees Celsius using the relational operator.

Assist Gloria in displaying the machine's temperature, which is closer to 100, and the difference from 100.

Input Format

The first line of input consists of an integer N, representing the temperature of the first machine.

The second line consists of an integer M, representing the temperature of the second machine.

Output Format

The output prints "The integer closer to 100 is X with a difference of Y" where X is the temperature of the closer machine and Y is the difference from 100.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 90
80
Output: The integer closer to 100 is 90 with a difference of 10

Answer

```
import java.util.Scanner;

public class Main {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);


      int N = scanner.nextInt();
      int M = scanner.nextInt();


      int diffN = Math.abs(100 - N);
      int diffM = Math.abs(100 - M);
      if (diffN < diffM) {
         System.out.println("The integer closer to 100 is " + N + " with a difference
of " + diffN);
      } else {
         System.out.println("The integer closer to 100 is " + M + " with a difference
of " + diffM);
      }

      scanner.close();
   }
}
```

Status : Correct *Marks : 10/10*

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 1_MCQ

Attempt : 1
Total Mark : 15
Marks Obtained : 14

Section 1 : MCQ

1. What is the output of the following code?

```
class TestClass {
    public static void main(String[] args) {
        int a = 5;
        int b = 10;

        int sum = a + b;
        int bitwiseAnd = a & b;
        int bitwiseOr = a | b;

        System.out.println(sum);
        System.out.println(bitwiseAnd);
        System.out.println(bitwiseOr);
    }
}
```

Answer

15015

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

2. What is the output of the following code?

```
class TestClass {
   public static void main(String[] args) {
      int a = 10;
      int b = 3;
      System.out.println(a / b);
   }
}
```

Answer

3

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

3. What is the output of the following code?

```
class TestClass {
   public static void main(String[] args) {
      int x = 5;
      int X = 10;

      int sum = x + X;
      int bitwiseResult = x | X;

      System.out.println(sum);
      System.out.println(bitwiseResult);
   }
}
```

Answer

1515

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

4. Which of the following data types is used to store floating-point numbers with greater precision?

Answer

double

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

5. Which of the following is not a primitive data type?

Answer

double

Status : Wrong ***Marks : 0/1***

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

```
import java.util.*;

class OperatorPrecedenceExample {
    public static void main(String[] args) {
        int a = 5, b = 3, c = 2;
        int result = a + b * c;

        System.out.println(result);
    }
}
```

Answer

11

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

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

```
class DivisionExample {
    public static void main(String[] args) {
        double num1 = 10.5;
```

```
    double num2 = 3;
        int result = (int)(num1 / num2);
        System.out.println(result);
    }
}
```

Answer

3

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

8. What is the output of the following code?

```
class TestClass {
    public static void main(String[] args) {
        int count = 8;
        count = count ^ 1;

        System.out.println(count);
    }
}
```

Answer

9

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

9. Which of the following data types is used to store single characters?

Answer

char

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

10. What will be the output of the following program?

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

```
        int a = 10;
        double b = 5;
        System.out.println(a / b);
    }
}
```

Answer

2.0

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

11. What is the output of the following program?

```
class Arithmetic {
    public static void main(String[] args) {
        char ch = 'A';
        System.out.println(ch);
    }
}
```

Answer

A

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

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

```
import java.util.*;

class TernaryOperatorExample {
    public static void main(String[] args) {
        int a = 5, b = 10;
        int result = (a > b) ? a : b;
        System.out.println(result);
    }
}
```

Answer

10

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

13. What is the output of the following program?

```
class Demo {
   public static void main(String[] args) {
      String text = "Hello, World!";
      System.out.println(text);
   }
}
```

Answer

Hello, World!

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

14. What is the output of the following code?

```
import java.util.*;

class RelationalOperatorExample {
   public static void main(String[] args) {
      int x = 8, y = 4;
      boolean result = (x != y);

      System.out.println(result);
   }
}
```

Answer

true

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

15. What is the result of the following expression?

```
import java.util.*;
```

```
class ComplexExpressionExample {
    public static void main(String[] args) {
        int a = 5, b = 2, c = 3, d = 4;
        int result = a + b * c / d - b;

        System.out.println(result);
    }
}
```

Answer

4

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