

# Rajalakshmi Engineering College

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Department: CSE (CS) - Section 1

Batch: 2028

Degree: B.E - CSE (CS)

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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 : 8

#### **Section 1 : MCQ**

- 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**

World!

**Status : Wrong**

**Marks : 0/1**

- 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**

5

**Status : Wrong**

**Marks : 0/1**

3. 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**

10015

**Status : Wrong**

**Marks : 0/1**

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 data types is used to store single characters?

**Answer**

char

**Status : Correct**

**Marks : 1/1**

6. 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**

3.333333333333335

**Status : Wrong**

**Marks : 0/1**

7. 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**

8. 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*

4

**Status : Wrong**

**Marks : 0/1**

9. 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*

Compilation error

**Status : Wrong**

**Marks : 0/1**

10. 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**

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

**Answer**

string

**Status : Correct**

**Marks : 1/1**

12. 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

13. 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

14. 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

15. 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**

false

**Status : Wrong**

**Marks : 0/1**

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## 2024\_28\_III\_OOPS Using Java Lab

### 2028\_REC\_OOPS using Java\_Week 1\_Q1

Attempt : 1

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 diff_N = Math.abs(N - 100);
        int diff_M = Math.abs(M - 100);

        if (diff_N < diff_M) {
            System.out.println("The integer closer to 100 is " + N + " with a difference of " + diff_N);
        } else if (diff_M < diff_N) {
            System.out.println("The integer closer to 100 is " + M + " with a difference of " + diff_M);
        } else {
            System.out.println("The integer closer to 100 is " + N + " with a difference of " + diff_N);
        }
    }
}
```

```
        of "+diff_N);  
    }  
  
    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\_Q2

Attempt : 1

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**

```
import java.util.Scanner;

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

        int first = scanner.nextInt();
        int second = scanner.nextInt();

        boolean firstPositive = first > 0;
        boolean secondPositive = second > 0;
        boolean firstNotDivisibleBy3 = first % 3 != 0;
        boolean secondNotDivisibleBy3 = second % 3 != 0;

        boolean condition = (firstPositive && secondNotDivisibleBy3) ||
                            (secondPositive && firstNotDivisibleBy3);

        if (condition) {
            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\_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**

```
import java.util.Scanner;

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

        int originalInteger = scanner.nextInt();

        double convertedDouble = (double) originalInteger;

        System.out.println("Original Integer: " + originalInteger);
        System.out.println("Converted Double: " + convertedDouble);

        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 num1 = scanner.nextInt();
        int num2 = scanner.nextInt();
        int sum = num1 + num2;
        int product = num1 * num2;
        if (product != 0 && 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\_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:

$$C = 2 * \pi * r$$

$$A = \pi * r^2$$

Where:

C represents the circumference.

A represents the area.

$\pi$  (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***

```
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\_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\_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, and Odd. 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 condition1 = (input1 <= 0) && (input1 % 2 != 0);

        boolean condition2 = (input2 <= 0) && (input2 % 2 != 0);

        boolean result = condition1 || condition2;

        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\_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.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 c = scanner.nextInt();

        double average = (a + b + c) / 3.0;
```

```
int smallest = (a <= b) ? ((a <= c) ? a : c) : ((b <= c) ? b : c);  
int largest = (a >= b) ? ((a >= c) ? a : c) : ((b >= c) ? b : c);  
int middle = (a + b + c) - smallest - largest;
```

```
System.out.printf("%.2f\n", average);
```

```
String result = (average > smallest && average > middle) ?  
    "Average is greater than both " + smallest + " and " + middle :  
    "Average is not greater than two smallest expenses";
```

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

```
scanner.close();
```

```
}
```

**Status :** Partially correct

**Marks :** 5/10

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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***

```
import java.util.Scanner;

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

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

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

```
        System.out.println(isMidpoint);

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

        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\_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  $d_1$  days by A, B, and C. Calculate the work completed in the next  $d_2$  days by A and B. Determine the remaining work after these  $d_1 + d_2$  days.

#### ***Input Format***

The first line of input contains five space-separated integers:  $x \ y \ z \ d_1 \ d_2$

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

$d_1$  represents the Days A, B, and C work together

$d_2$  represents the Days A and B work together (after C leaves)

#### ***Output Format***

The first line of output prints "Work done in first  $d_1$  days (A+B+C):" followed by a double value rounded to 2 decimal places.

The second line of output prints "Work done in next  $d_2$  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  $d_1$  days (A+B+C): 0.37

Work done in next  $d_2$  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 rateA = 1.0 / x;
        double rateB = 1.0 / y;
        double rateC = 1.0 / z;

        double combinedRateABC = rateA + rateB + rateC;
        double workDonePhase1 = combinedRateABC * d1;

        double combinedRateAB = rateA + rateB;
        double workDonePhase2 = combinedRateAB * d2;

        double totalWorkDone = workDonePhase1 + workDonePhase2;
        double remainingWork = 1.0 - totalWorkDone;

        System.out.printf("Work done in first d1 days (A+B+C): %.2f\n",
                           workDonePhase1);
        System.out.printf("Work done in next d2 days (A+B): %.2f\n",
                           workDonePhase2);
        System.out.printf("Remaining work: %.2f\n", remainingWork);
    }
}

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

        int x = scanner.nextInt();
        int y = scanner.nextInt();
        int z = scanner.nextInt();
        int d1 = scanner.nextInt();
        int d2 = scanner.nextInt();
```

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

        scanner.close();
    }
}
```

**Status : Correct**

**Marks : 10/10**

# Rajalakshmi Engineering College

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Batch: 2028

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Scan to verify results



## 2024\_28\_III\_OOPS Using Java Lab

### 2028\_REC\_OOPS using Java\_Week 1\_CY

Attempt : 1

Total Mark : 40

Marks Obtained : 40

#### **Section 1 : Coding**

##### **1. Problem Statement:**

"Write a program that helps identify the type of a triangle based on the lengths of its three sides. The program prompts the user to input the lengths of sides 'a', 'b', and 'c', and then it classifies the triangle as 'Equilateral' if all sides are equal, 'Isosceles' if two sides are equal, or 'Scalene' if all sides are different. Can you provide the Java code for this task?"

##### ***Input Format***

The first line of the input is an integer 'a' representing the length of side 'a.'

The second line of the input is an integer 'b' representing the length of side 'b.'

The third line of the input is an integer 'c' representing the length of side 'c.'

### **Output Format**

The program outputs a single line that specifies the type of the triangle:  
"Equilateral," "Isosceles," or "Scalene."

### **Sample Test Case**

Input: 3

4

5

Output: The triangle is Scalene

### **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 c = scanner.nextInt();

        if (a == b && b == c) {
            System.out.println("The triangle is Equilateral");
        } else if (a == b || b == c || a == c) {
            System.out.println("The triangle is Isosceles");
        } else {
            System.out.println("The triangle is Scalene");
        }

        scanner.close();
    }
}
```

**Status : Correct**

**Marks : 10/10**

## 2. Problem Statement

In a logistics company, each delivery pack contains a specific number of items, and the priority customer receives double the amount. Write a program to determine the total number of delivery packs required for the operation, considering the number of items per pack and the number of customers given as input by the user.

Example

Input:

Number of items per pack = 96

Number of customers = 8

Output:

10

Explanation:

Given the number of items per pack = 96 and the number of customers = 8, the calculations are as follows:

Total number of items needed = number of items per pack \* number of customers =  $96 * 8 = 768$ . Priority customer's share = double the amount of items per pack =  $2 * 96 = 192$ . Total items with the priority customer = total items needed + priority share =  $768 + 192 = 960$ . Number of packs needed =  $(960 + 96 - 1) / 96 = 10.98$  Since we cannot have a fraction of a pack, the output is 10.

### ***Input Format***

The input consists of two space-separated integers N and C, representing the number of items per pack and the number of customers.

### ***Output Format***

The output displays an integer, representing the total number of delivery packs required for the operation.

Refer to the sample output for formatting specifications.

### **Sample Test Case**

Input: 1 1

Output: 3

### **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 C = scanner.nextInt();
```

```
        int totalItemsForCustomers = N * C;
```

```
        int priorityCustomerItems = 2 * N;
```

```
        int totalItems = totalItemsForCustomers + priorityCustomerItems;
```

```
        int packsNeeded = (totalItems + N - 1) / N;
```

```
        System.out.println(packsNeeded);
```

```
        scanner.close();
```

```
}
```

```
}
```

**Status : Correct**

**Marks : 10/10**

### **3. Problem Statement:**

Gilbert is tasked with writing a program that checks whether a given

integer is an odd number. An odd number is one that cannot be exactly divided by 2. The program should take an integer as input and determine if it is an odd number or not. The task is to implement the logic to check if the provided integer is odd and return the result.

#### ***Input Format***

The first line of the input contains an integer, "input".

#### ***Output Format***

The output should display a boolean value, "result," which should be set to true if the input integer is an odd number and false if it is even.

Refer to the sample output for formatting specifications.

#### ***Sample Test Case***

Input: 0

Output: Is the integer odd? false

#### ***Answer***

```
import java.util.Scanner;

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

        int input = scanner.nextInt();

        boolean result = (input % 2 != 0);

        System.out.println("Is the integer odd? " + result);

        scanner.close();
    }
}
```

Status : Correct

Marks : 10/10

#### 4. PROBLEM STATEMENT:

Jule a mathematician expert is given two integers to find if the second integer is above the average of the first and second integer. Write a program that achieves this using the ternary operator.

##### ***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 be displayed as "Below Average" or "Above Average"

REFER THE SAMPLE TESTCASES FOR THE FORMAT SPECIFICATIONS.

##### ***Sample Test Case***

Input: 1

1

Output: Below Average

##### ***Answer***

```
import java.util.Scanner;

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

        int first = scanner.nextInt();
        int second = scanner.nextInt();

        double average = (first + second) / 2.0;
```

```
        String result = (second > average) ? "Above Average" : "Below Average";
        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\_PAH

Attempt : 1

Total Mark : 40

Marks Obtained : 40

#### **Section 1 : Coding**

##### **1. PROBLEM STATEMENT:**

Maria, a software developer, is working on a project to create a simple program to determine which of two integers is closest to zero. The integers can be either positive or negative. The program needs to take two integer inputs and calculate which one is closer to zero. If both integers are equidistant from zero, the program should return 0.

##### ***Input Format***

The input contains two lines:

The first line of the input contains an integer, which can be either a positive or a negative integer.

The second line of the input contains an integer, which can be either a positive or a negative integer.

### **Output Format**

The output displays the integer that is closest to zero in the following format:

"The integer closest to zero is: [closest\_integer]"

Here, [closest\_integer] should be replaced with the integer that is closer to zero based on its absolute value.

Refer to the sample output for the formatting specifications.

### **Sample Test Case**

Input: 5

8

Output: The integer closest to zero is: 5

### **Answer**

```
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();

        int abs1 = Math.abs(num1);
        int abs2 = Math.abs(num2);

        int closest;
```

```
if (abs1 < abs2) {  
    closest = num1;  
} else if (abs2 < abs1) {  
    closest = num2;  
} else {  
  
    closest = 0;  
}  
  
System.out.println("The integer closest to zero is: " + closest);
```

```
scanner.close();  
}  
}
```

Status : Correct

Marks : 10/10

## 2. Problem Statement

In the Kingdom of Delivery Logistics, there is a giant truck used for transporting packages across the kingdom. The truck has a maximum capacity represented by an integer, and each package also has a specific weight. The truck's efficiency and safety depend on whether the weight of the package is below a certain threshold.

The kingdom's delivery service has a rule: if the weight of a package is less than one-third of the truck's total capacity, the package is eligible for quick processing and dispatch. However, if the weight is too heavy, the package will require special handling.

As a logistics manager, you need to check whether the weight of the package is less than one-third of the truck's total capacity.

Write a program using a ternary operator that helps determine whether the package weight meets the requirement for quick processing or if it needs special handling.

### ***Input Format***

The first line of input consists of an integer  $p$ , representing the weight of the package.

The second line consists of an integer  $w$ , representing the total weight capacity of the truck.

### ***Output Format***

The first line of output prints "One-third of Truck: X," where  $X$  is one-third of the truck's total weight capacity as a double value with two decimal places.

The second line of output displays one of the following:

1. If  $p$  is less than one-third of the truck's total weight capacity, print "Package weight is less than one-third of the truck's capacity".
2. Otherwise, print "Package weight is not less than one-third of the truck's capacity".

Refer to the sample output for the formatting specifications.

### ***Sample Test Case***

Input: 13

60

Output: One-third of Truck: 20.00

Package weight is less than one-third of truck's capacity

### ***Answer***

```
import java.util.Scanner;
```

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

```
        int p = scanner.nextInt();  
        int w = scanner.nextInt();
```

```
        double oneThird = w / 3.0;

        System.out.printf("One-third of Truck: %.2f%n", oneThird);

        String result = (p < oneThird) ?
                "Package weight is less than one-third of truck's capacity" :
                "Package weight is not less than one-third of truck's capacity";

        System.out.println(result);

        scanner.close();
    }
}
```

**Status :** Correct

**Marks :** 10/10

### 3. Problem Statement

Mickey and Miney are walking through a magical forest. The forest is full of enchanted stones, each with a unique number. There is a legend that says the magic power of the stones can be revealed by using a special operation. To determine the magic power of a given stone, you need to perform a bitwise AND operation with the number 15.

Each stone's number is represented by an integer, and Mickey needs to find the magic power of each stone by applying this operation.

Your task is to help Mickey compute the result of the bitwise AND operation of the given stone number with 15, and print the result.

#### ***Input Format***

The input consists of a single integer.

#### ***Output Format***

The output should display a single integer, which is the result of the bitwise AND operation between input and 15.

Refer to the sample output for format specifications.

**Sample Test Case**

Input: 25

Output: 9

**Answer**

```
import java.util.Scanner;

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

        int stoneNumber = scanner.nextInt();

        int magicPower = stoneNumber & 15;

        System.out.println(magicPower);

        scanner.close();
    }
}
```

**Status : Correct**

**Marks : 10/10**

**4. PROBLEM STATEMENT:**

Maria, a software developer, is working on a program to determine if two given integers which can be either positive or negative integers have the same parity (both even or both odd). She needs your help in writing this program.

Write a program that takes two integers as input and checks if both integers are either even or odd.

### ***Input Format***

The input consists of two lines:

The first line consists of an integer (input1) which can be either positive or negative.

The second line consists of an integer (input2) which can be either positive or negative.

### ***Output Format***

The output is displayed in the following format:

If both integers have the same parity (i.e., both even or both odd), print:

"Both integers are either even or odd"

Otherwise, print:

"The integers have different parities"

Refer to the sample output for the formatting specifications.

### ***Sample Test Case***

Input: 2

-4

Output: Both integers are either even or odd

### ***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();

if ((input1 % 2) == (input2 % 2)) {
    System.out.println("Both integers are either even or odd");
} else {
    System.out.println("The integers have different parities");
}
scanner.close();
}
```

**Status :** Correct

**Marks :** 10/10