

Rajalakshmi Engineering College

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Branch: REC
Department: CSE (CS) - Section 2
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_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;

class ClosestTo100Checker {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int a = scanner.nextInt();
        int b = scanner.nextInt();
        int diffA = (a > 100) ? (a - 100) : (100 - a);
        int diffB = (b > 100) ? (b - 100) : (100 - b);
        int closerInt = (diffA < diffB) ? a : b;
        int closerDiff = (diffA < diffB) ? diffA : diffB;
        System.out.println("The integer closer to 100 is " + closerInt + " with a
difference of " + closerDiff);
        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;
```

```
class NumberCheck {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int input1 = scanner.nextInt();
        int input2 = scanner.nextInt();

        boolean result = (input1 > 0 && input2 % 3 != 0) || (input2 > 0 && input1 % 3 != 0);
        System.out.println(result ? "One of the integers is positive while the other is not divisible by 3. " : "Neither of the integers meets the condition. ");
    }
}
```

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.

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

```
import java.util.Scanner;

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

        double radius = inputScanner.nextDouble();
```

```
        double pi = 3.14159;
        double circumference = 2 * pi * radius;
        double area = pi * Math.pow(radius, 2);

        System.out.printf("Circumference: %.2f meters\n", circumference);
        System.out.printf("Area: %.2f square meters\n", area);

        inputScanner.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

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

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int a = sc.nextInt();
        int b = sc.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");
        }
    }
}
```

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

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

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

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;
```

```
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_PAH

Attempt : 1
Total Mark : 40
Marks Obtained : 40

Section 1 : Coding

1. 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;

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

```
int input1 = scanner.nextInt();

int input2 = scanner.nextInt();

double oneThirdOfSecond = input2 / 3.0;
System.out.printf("One-third of Truck: %.2f\n", oneThirdOfSecond);
String result = (input1 < oneThirdOfSecond) ?
    "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

2. 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;

class BitwiseANDWith15 {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int input = scanner.nextInt();
        int result = input & 15;
        System.out.println(result);
    }
}
```

Status : Correct

Marks : 10/10

3. 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.*;

class ClosestToZero {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int input1 = scanner.nextInt();
        int input2 = scanner.nextInt();
        int result = (Math.abs(input1) < Math.abs(input2)) ? input1 :
        (Math.abs(input1) == Math.abs(input2)) ? 0 : input2;
        System.out.println("The integer closest to zero is: " + result);
    }
}
```

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;

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

        int input1 = scanner.nextInt();
        int input2 = scanner.nextInt();

        System.out.println((input1 % 2 == input2 % 2) ? "Both integers are either
even or odd" : "The integers have different parities");
    }
}
```

Status : Correct

Marks : 10/10

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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;
```

```
class TriangleType {  
    public static void main(String[] args) {  
        Scanner scanner = new Scanner(System.in);  
  
        double a = scanner.nextDouble();  
  
        double b = scanner.nextDouble();  
  
        double c = scanner.nextDouble();  
  
        String result = (a == b && b == c) ? "Equilateral" : (a != b && b != c && a != c) ?  
        "Scalene" : "Isosceles";  
  
        System.out.println("The triangle is " + result);  
        scanner.close();  
    }  
}
```

Status : Correct

Marks : 10/10

2. 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);
    }
}
```

Status : Correct

Marks : 10/10

3. 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;

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

        int itemsPerPack = scanner.nextInt();
        int customers = scanner.nextInt();
        int priorityCustomerMultiplier = 2;

        int totalItemsNeeded = customers * itemsPerPack;
        int priorityCustomerShare = itemsPerPack * priorityCustomerMultiplier;
        int totalItemsWithPriorityCustomer = totalItemsNeeded +
        priorityCustomerShare;

        int packsNeeded = (totalItemsWithPriorityCustomer + itemsPerPack - 1) /
        itemsPerPack;

        System.out.print(packsNeeded);
    }
}
```

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;

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

        int input1 = scanner.nextInt();
        int input2 = scanner.nextInt();

        double average = (input1 + input2) / 2.0;

        String result = (input2 > average) ? "Above Average" : "Below Average";
        System.out.println(result);
        scanner.close();
    }
}
```

Status : Correct

Marks : 10/10