Rajalakshmi Engineering College

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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

```
// You are using Java
// You are using Java
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);
      int closer, difference;
      if (diffN < diffM) {
         closer = N;
         difference = diffN;
      } else {
         closer = M;
         difference = diffM;
      }
      System.out.println("The integer closer to 100 is " + closer + " with a
difference of " + difference);
      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

```
// You are using Java
// You are using Java
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();

        boolean condition = ( (a > 0 && b % 3 != 0) || (b > 0 && a % 3 != 0) );

        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 number = scanner.nextInt();
        double converted = (double) number;
        System.out.println("Original Integer: " + number + " Converted Double: " +
converted);
        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 (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_PAH

Attempt : 1
Total Mark : 40
Marks Obtained : 32.5

Section 1 : Coding

1. 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);
   }
}
```

Status : Partially correct ***Marks : 2.5/10***

2. 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 dispalyed 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 == 0 && input2 % 2 == 0) || (input1 % 2 != 0 && input2 % 2 != 0))
{
            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**

3. 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**

4. 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 sc = new Scanner(System.in);

      // Read inputs
      int num1 = sc.nextInt();
      int num2 = sc.nextInt();

      int closest;
      if (Math.abs(num1) < Math.abs(num2)) {
         closest = num1;
      } else if (Math.abs(num2) < Math.abs(num1)) {
         closest = num2;
      } else {
         closest = 0;
      }

      System.out.println("The integer closest to zero is: " + closest);
      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_CY

Attempt : 1
Total Mark : 40
Marks Obtained : 38.5

Section 1 : Coding

1. 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 sc = new Scanner(System.in);

        // Read the integer input
        int input = sc.nextInt();

        // Check if odd
        boolean result = (input % 2 != 0);

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

        sc.close();
    }
}
```

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

2. Problem Statement:

Tom is tasked with writing a program that determines whether a given integer is the square of another integer. A perfect square is a number that can be expressed as the square of an integer. The program should take an integer as input and determine if it is a perfect square or not.

The task is to implement the logic to check if the provided integer is the square of an integer and return the result.

Input Format

The first line of the input contains an integer, "input", where |input| represents the absolute value of the integer.

Output Format

The output should display a boolean value, "result," which should be set to true if the input is a perfect square (the square of an integer), and false if it is not.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 16
Output: Is the integer a perfect square? true

Answer

```
import java.util.Scanner;

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

        // Read the integer input
        long input = sc.nextLong(); // using long for large values in range

        boolean result = false;

        // Perfect squares cannot be negative
        if (input >= 0) {
            long sqrt = (long) Math.sqrt(input);
            result = (sqrt * sqrt == input);
        }

        // Output
        System.out.println("Is the integer a perfect square? " + result);

        sc.close();
    }
}
```

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 = 10.98Since 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 sc = new Scanner(System.in);

      // Read number of items per pack and number of customers
      int N = sc.nextInt(); // Items per pack
      int C = sc.nextInt(); // Number of customers

      // Total items needed for all customers
      int totalItems = N * C;

      // Priority customer's extra share
      int priorityShare = 2 * N;

      // Total items considering priority customer
      int totalWithPriority = totalItems + N +1; // Because priority customer
already included in totalItems, add one extra N
                                 // (priority customer gets double, so extra N more)

      // Calculate packs needed (ceiling division)
      int packsNeeded = (totalWithPriority + N - 1) / N;

      // Output result
      System.out.println(packsNeeded);

      sc.close();
   }
}
```

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

4. Problem Statement

Mandy is a software engineer working on a program to analyze two integers based on specific conditions using a logical operator. She needs to determine if both integers are odd or if at least one of them is divisible by 7.

Depending on the result, she wants to print different messages.

If the condition is met, the program should identify and print the first number that is divisible by 7 or indicate that both numbers are odd.If the condition is not met, the program should print a message indicating the condition was not met, along with the input numbers.

Input Format

The first line of input consists of an integer representing the first input number.

The second line consists of an integer representing the second input number.

Output Format

The output displays "Condition met: " followed by an integer representing the first number divisible by 7, or prints "Both numbers are odd" if the two inputs are odd.

If the condition is not met, it displays "Conditions not met: " followed by the two input integers, separated by a space.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 7
14
Output: Condition met: 7

Answer

```
import java.util.Scanner;

public class Main {
```

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

        // Read inputs
        int num1 = sc.nextInt();
        int num2 = sc.nextInt();

        // Check if both numbers are odd
        boolean bothOdd = (num1 % 2 != 0) && (num2 % 2 != 0);

        // Check if at least one number is divisible by 7
        boolean divisibleBy7 = (num1 % 7 == 0) || (num2 % 7 == 0);

        // Apply logic
        if (bothOdd || divisibleBy7) {
            if (bothOdd) {
                System.out.println("Condition met: Both numbers are odd");
            } else {
                if (num1 % 7 == 0) {
                    System.out.println("Condition met: " + num1);
                } else {
                    System.out.println("Condition met: " + num2);
                }
            }
        } else {
            System.out.println("Conditions not met: " + num1 + " " + num2);
        }

        sc.close();
    }
}
```

Status : Partially correct **Marks : 8.5/10**

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 1_MCQ

Attempt : 2
Total Mark : 15
Marks Obtained : 15

Section 1 : MCQ

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

11

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

2. 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***

3. 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***

4. 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***

5. 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***

6. 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***

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

Answer

char

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

3

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

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

10

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

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

Answer

string

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

11. 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***

12. 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***

13. 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***

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

Answer

double

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

15. 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***