Rajalakshmi Engineering College

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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:

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

```java
import java.util.Scanner;

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

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

        double average = (first + second) / 2.0;

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

        System.out.println(result);

        sc.close();
    }
}
```

Status : Correct   *Marks : 10/10*

2. Problem Statement

In the faraway land of Arithmetica, there exists an ancient calculator that can only perform bitwise operations. The calculator is locked with a secret code that only works when the number is modified using a special operation called right shifting.

The ruler of Arithmetica, King Thales, needs your help to unlock the calculator. The lock on the calculator is encoded with a number, and the

calculator will only open if you apply a right shift by 2 on the number. Your task is to help King Thales determine the magic number that will unlock the ancient calculator.

Input Format

The first line of input represents an integer.

Output Format

The output should display the right-shifted value by 2 bits.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 16
Output: 4

Answer

```java
import java.util.Scanner;

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

        int num = sc.nextInt();

        int shifted = num >> 2;

        System.out.println(shifted);

        sc.close();
    }
}
```

Status : Correct   *Marks : 10/10*

3. 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);
```

```
    int num1 = sc.nextInt();
    int num2 = sc.nextInt();

    if ((num1 % 2 != 0 && num2 % 2 != 0) || (num1 % 7 == 0 || num2 % 7 == 0)) {
        if (num1 % 2 != 0 && num2 % 2 != 0) {
            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*

4. 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

```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 c = sc.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");
        }

        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_MCQ

Attempt : 1
Total Mark : 15
Marks Obtained : 14

Section 1 : MCQ

1. What is the output of the following program?

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

Answer

Hello, World!

Status : Correct   *Marks : 1/1*

2. What is the output of the following code?

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

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

Answer

4

Status : Wrong   *Marks : 0/1*

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

```java
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*

4. What is the output of the following code?

```java
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*

5. 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*

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

Answer

double

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

Answer

string

Status : Correct   *Marks : 1/1*

9. 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*

10. 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*

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 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*

13.   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*

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?

```
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*

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Scan to verify results

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 sc = new Scanner(System.in);

        int num1 = sc.nextInt();
        int num2 = sc.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);
    sc.close();
    }
}
```

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

```java
import java.util.Scanner;

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

        int input1 = sc.nextInt();
        int input2 = sc.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");
        }

        sc.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

```java
import java.util.Scanner;
import java.text.DecimalFormat;

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

    int p = sc.nextInt();
    int w = sc.nextInt();

    double oneThird = w / 3.0;

    DecimalFormat df = new DecimalFormat("0.00");
    System.out.print("One-third of Truck: " + df.format(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);

    sc.close();
  }
}
```

Status : Correct   *Marks : 10/10*

4. 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

```java
import java.util.Scanner;

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

        int stoneNumber = sc.nextInt();

        int magicPower = stoneNumber & 15;

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

```
        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_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

```java
import java.util.Scanner;

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

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

        int diffN = Math.abs(N - 100);
        int diffM = Math.abs(M - 100);

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

            System.out.println("The integer closer to 100 is " + N + " with a difference
of " + diffN);
        }

        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_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

```java
import java.util.Scanner;

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

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


        if ((first > 0 && second % 3 != 0) || (second > 0 && first % 3 != 0)) {
            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.");
        }

        sc.close();
    }
}
```

Status : Correct   *Marks : 10/10*

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Scan to verify results

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

```java
import java.util.Scanner;
public class Main {
public static void main(String[] arg){
    Scanner Scanner = new Scanner(System.in);
    int number=Scanner.nextInt();
    double m = (double) number;
    System.out.println("Original Integer:" + number);
    System.out.println("Converted Double:" +m);
  }
}
```

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

```java
import java.util.Scanner;
class main
{
    public static void main(String args[])
    {
        Scanner s = new Scanner(System.in);
        int a = s.nextInt();
        int b = s.nextInt();

        int sum = a+b;
        int prod = a*b;

        if(sum%prod == 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_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

```java
import java.util.*;
class main
{
   public static void main(String[] args)
   {
      Scanner s = new Scanner(System.in);
      double r = s.nextDouble();
```

```java
        double c = 2*3.14159*r;
        double a = 3.14159*r*r;
        System.out.printf("Circumference: %.2f meters\n",c);
        System.out.printf("Area: %.2f square meters",a);
    }

}
```

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

```java
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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Scan to verify results

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

```java
import java.util.*;
class main
{
public static void main(String args[])
  {
    Scanner s = new Scanner(System.in);
    int a = s.nextInt();
    int b = s.nextInt();
    if((a<=0 && a%2!=0) || (b<=0 && b%2!=0))
    {
      System.out.println("true");
    }
    else
    {
      System.out.println("false");
    }
  }
}
```

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;
import java.text.DecimalFormat;
import java.util.Arrays;

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

        int a = sc.nextInt();
        int b = sc.nextInt();
        int c = sc.nextInt();

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

```java
DecimalFormat df = new DecimalFormat("0.00");

int[] arr = {a, b, c};
Arrays.sort(arr);

String result = (avg > arr[0] && avg > arr[1])
    ? "Average is greater than both " + arr[0] + " and " + arr[1]
    : "Average is not greater than two smallest expenses";

System.out.println(df.format(avg) + " " + result);

    sc.close();
    }
}
```

Status : Partially correct   *Marks : 5/10*

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Scan to verify results

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

```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 == (S1 + S3) / 2.0);

        System.out.print(isHalfway + " ");
```

```java
        if (isHalfway) {
            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.");
        }

        sc.close();
    }
}
```

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

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Scan to verify results

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

```java
import java.util.Scanner;
import java.text.DecimalFormat;

class WorkDistribution {

    public void calculateWork(int x, int y, int z, int d1, int d2) {
        DecimalFormat df = new DecimalFormat("0.00");

        double rateA = 1.0 / x;
        double rateB = 1.0 / y;
        double rateC = 1.0 / z;

        double work1 = (rateA + rateB + rateC) * d1;

        double work2 = (rateA + rateB) * d2;

        double remaining = 1.0 - (work1 + work2);

        if (remaining < 0) remaining = 0;

        System.out.println("Work done in first d1 days (A+B+C): " +
df.format(work1));
        System.out.println("Work done in next d2 days (A+B): " + df.format(work2));
        System.out.println("Remaining work: " + df.format(remaining));
    }
}

public class Main {
    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();

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