

Rajalakshmi Engineering College

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Branch: REC

Department: IT - Section 3

Batch: 2028

Degree: B.E - IT

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

Status : Correct

Marks : 10/10

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 5_Q2

Attempt : 1

Total Mark : 10

Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

You are working as a developer for CityBank, which wants to build a basic account management system.

Each customer at the bank has:

An Account Number (integer)
A Customer Name (string)
An Initial Balance (double)

The bank allows two types of transactions:

Deposit – increases the balance.
Withdrawal – decreases the balance only if enough funds are available.

If the withdrawal amount is greater than the balance, the withdrawal should not happen, and the balance should remain the same.

You are required to implement this system using:

A class with attributes for account details. A constructor to initialize account details. Setter methods to update details if needed. Getter methods to retrieve details. Objects of the class to represent customers.

Finally, display each customer's account details after all transactions.

Input Format

The first line of input contains an integer N, representing the number of customers.

For each customer:

- The next line contains the account number (integer).
- The following line contains the customer name (string).
- The next line contains the initial balance (double).
- The next line contains the deposit amount (double).
- The next line contains the withdrawal amount (double).

Output Format

For each customer, print the details in the following format:

1. Account Number: <account_number>
2. Customer Name: <customer_name>
3. Final Balance: <final_balance> (rounded to one decimal place)

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1

1234

Rahul Sharma

5000

2000

3000

Output: Account Number: 1234

Customer Name: Rahul Sharma

Final Balance: 4000.0

Answer

```
import java.util.Scanner;
class Account {
    private int accountNumber;
    private String customerName;
    private double balance;
    public Account(int accountNumber, String customerName, double
initialBalance) {
        this.accountNumber = accountNumber;
        this.customerName = customerName;
        this.balance = initialBalance;
    }
    public void setAccountNumber(int accountNumber) {
        this.accountNumber = accountNumber;
    }
    public void setCustomerName(String customerName) {
        this.customerName = customerName;
    }
    public void setBalance(double balance) {
        this.balance = balance;
    }
    public int getAccountNumber() {
        return accountNumber;
    }
    public String getCustomerName() {
        return customerName;
    }
    public double getBalance() {
        return balance;
    }
    public void deposit(double amount) {
        if (amount >= 0) {
            balance += amount;
        }
    }
    public void withdraw(double amount) {
        if (amount >= 0 && amount <= balance) {
            balance -= amount;
        }
    }
}
```

```
}

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int N = Integer.parseInt(sc.nextLine());
        Account[] customers = new Account[N];
        for (int i = 0; i < N; i++) {
            int accountNumber = Integer.parseInt(sc.nextLine());
            String customerName = sc.nextLine();
            double initialBalance = Double.parseDouble(sc.nextLine());
            double depositAmount = Double.parseDouble(sc.nextLine());
            double withdrawalAmount = Double.parseDouble(sc.nextLine());
            Account account = new Account(accountNumber, customerName,
                initialBalance);
            account.deposit(depositAmount);
            account.withdraw(withdrawalAmount);
            customers[i] = account;
        }
        for (Account acc : customers) {
            System.out.printf("Account Number: %d Customer Name: %s Final
Balance: %.1f%n",
                acc.getAccountNumber(), acc.getCustomerName(), acc.getBalance());
        }
        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_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.io.*;
import java.util.Scanner;
class main{
    public static void main(String[] args){
        Scanner input = new Scanner(System.in);
        int oint = input.nextInt();
        double cdouble = oint;
        System.out.println("original integer: "+ oint);
        System.out.print("converted double: "+ cdouble);
    }
}
```

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.io.*;
import java.util.Scanner;

class Main{
    public static void main(String[] args){
        Scanner input = new Scanner(System.in);
        int a = input.nextInt();
        int b = input.nextInt();
        int c = a+b;
        int d = a*b;
        if(c==d){
            System.out.print("sum is multiple of product");
        }else{
            System.out.print("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:

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

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

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

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

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

```
    float r = input.nextFloat();
    float c = 2*3.14159f*r;
    float a = 3.14159f*(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

```
import java.io.*;
import java.util.Scanner;

class Main{
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        int x = input.nextInt();
        int n = input.nextInt();
        String binary = Integer.toBinaryString(x);
        int len = binary.length();
        if (len > n) {
            String subbinary = binary.substring(len - n, len);
            int result = Integer.parseInt(subbinary,2);
            System.out.println("Result: "+ result);
        }else{
            int result = Integer.parseInt(binary,2);
            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;
public class Main {
    public static void main(String []args){
        int a,b;
        Scanner S = new Scanner(System.in);
        a=S.nextInt();
        b=S.nextInt();
        boolean n=(a<=0 )&& (a%2!=0);
        boolean m=(b<=0 )&& (b%2!=0);
        if(n||m) {
            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 : 10

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.io.*;
import java.util.Scanner;
class Main{
    public static void main (String[] args){
        Scanner input = new Scanner (System.in);
        float a = input.nextFloat();
        float b = input.nextFloat();
        float c = input.nextFloat();
        float avg = (a+b+c)/3;
        int a1 =(int)a;
        int b1 =(int)b;
        int c1 =(int)c;
        System.out.printf("%.2f\n",avg);
```

```
if(avg>a && avg>b){  
    System.out.printf("average is greater than both %d and %d\n",a1,b1);  
}else if(avg>a && avg>c){  
    System.out.printf("average is greater than both %d and %d\n",a1,c1);  
}else if(avg>b && avg>c){  
    System.out.printf("average is greater than both %d and %d\n",b1,c1);  
}else{  
    System.out.printf("average is not greater than two smallest expenses");  
}  
}  
}  
}
```

Status : Correct

Marks : 10/10

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 1_Q9

Attempt : 1

Total Mark : 10

Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Phill is a quality control manager at a manufacturing plant. He needs to verify if a sensor reading at a midpoint station (S2) falls exactly halfway between the readings of the previous station (S1) and the next station (S3). Help him by developing a program that checks if the second sensor reading is the average (midpoint) of the first and third sensor readings.

Use the relational operator to solve the program.

Input Format

The first line of input consists of an integer S1, representing the sensor reading of the first station.

The second line consists of an integer S2, representing the sensor reading of the midpoint station.

The third line consists of an integer S3, representing the sensor reading of the next station.

Output Format

The first line of output displays a boolean value representing whether the sensor reading at the midpoint station is halfway between the readings of the first and the next stations.

The second line displays one of the following:

1. If the result is true, print "The second integer is halfway between the first and third integers."
2. Otherwise, print "The second integer is not halfway between the first and third integers."

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1

7

10

Output: false

The second integer is not halfway between the first and third integers.

Answer

```
import java.io.*;
import java.util.Scanner;

public class Main{
    public static void main(String[] args){
        Scanner input = new Scanner(System.in);
        int s1 = input.nextInt();
        int s2 = input.nextInt();
        int s3 = input.nextInt();
        int mid = (s1+s3)/2;
        if(mid ==s2){
            System.out.println("true");
            System.out.println("The second integer is halfway between the first and")
        }
    }
}
```

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

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.io.*;
import java.util.Scanner;

class Main{
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        double x = input.nextFloat();
        double y = input.nextFloat();
        double z = input.nextFloat();
        double d1 = input.nextFloat();
        double d2 = input.nextFloat();
        double A = 1.0 / x;
        double B = 1.0 / y;
        double C = 1.0 / z;
        double day1 = d1*(A + B + C);
        double day2 = d2*(A + B);
        double remaining = 1.0 - (day1 + day2);
        System.out.printf("work done in first d1 days (A + B + C):%.2f\n", day1);
        System.out.printf("work done in next d2 days (A + B):%.2f\n", day2);
        System.out.printf("remaining work: %.2f", remaining);
    }
}
```

Status : Correct

Marks : 10/10