

Task:1 Basic Conditional statements and looping Programs.

a) Give 5 numbers, how many are even or odd

Aim: To design an algorithm and Java program that takes 5 numbers as input and determines how many of them are even and how many are odd.

Algorithm:

Step 1 : Start

Step 2 : Initialize two counters

Step 3 : Read 5 numbers from the user.

Step 4 : For each number.

* If the number $\% 2 == 0 \rightarrow$ increment even count.

* else \rightarrow increment odd count.

Step 5 : Display evencount and odd count

Step 6 : Stop.

Program

```
import java.util.Scanner;
Public class Evenodd Counter{
    Public static void main (String [] args){
        Scanner sc = new Scanner (System.in);
        int evenCount=0, oddCount=0;
        int [] numbers = new int [5];
        System.out.println ("Enter 5 numbers:");
        for (int i=0; i<5; i++){
            numbers[i] = sc.nextInt();
            if (numbers[i] % 2 == 0){
                evenCount++;
            }else{
                oddCount++;
            }
        }
        System.out.println ("Total Even Numbers: " + evenCount);
        System.out.println ("Total odd Numbers: " + oddCount);
        sc.close();
    }
}
```

Input:

enter 5 numbers:

12, 15, 9, 4, 3

Output:

Total Even Numbers: 2

Total odd Numbers: 3

b) Sum of last digit of two given numbers

Aim: To write a program that finds the sum of the last digits of two given numbers.

Algorithm:

1. Start
2. Input two numbers, say a and b,
3. Find the last digit of 'a' using $a \% 10$
4. Find the last digit of 'b' using $b \% 10$
5. Add these two last digits.
6. Output the result
7. Stop.

Program

```
import java.util.Scanner;  
Public class LastDigitSum{  
Public static void main (String [] args){  
Scanner sc = new Scanner (System.in);  
System.out.print ("Enter first number:");  
int a = sc.nextInt();  
System.out.print ("Enter second number:");  
int b = sc.nextInt();  
int lastDigitA = a % 10;  
int lastDigitB = b % 10;  
int sum = lastDigitA + lastDigitB;  
System.out.println ("sum of last digits = " + sum)  
sc.close();  
}
```

Result:

The given program was successfully verified
and executed.

Input

enter first number: 22

enter second number: 28

Output

Sum of last digits = 10

Q) To check whether a given number is Prime
Aim: To design and implement a java program that determines whether a user- inputted integer is a prime number.

Algorithm:

Step 1 : Start

Step 2 : Initialize an integer variable flag initialized to 1.

Step 3 : Read an integer numbers from the user.

Step 4 : If $\text{num} \leq 1$, set $\text{flag} = 0$

Step 5 : If $n > 1$, start a loop with a counter i begins at 2

Step 6 : if $\text{num} \% i == 0$

Step 7 : If $\text{flag} == 1$ display is prime

Step 8 : Stop.

Program

```
import java.util.Scanner;  
class Isprime{  
    public static void main (String [] args){  
        Scanner sc = new Scanner (System. in);  
        System.out.print ("Enter a number:");  
        int num = sc.nextInt();  
        int flag = 1;  
        if (num <= 1){  
            flag = 0;  
        } else {  
            for (int i = 2; i <= num / 2; i++){  
                if (num % i == 0){  
                    flag = 0;  
                    break;  
                }  
            }  
        }  
        if (flag == 1){  
            System.out.println ("The number is prime");  
        } else {  
            System.out.println ("The number is not prime");  
        }  
    }  
}
```

Input:

Enter a number: 66

Output:

Not a prime number.

{

if (flag == 1){

System.out.println ("prime number");

} else {

System.out.println ("not a prime number");

{

{

{

d) Factorial of a number

Aim: To calculate the factorial of a given number positive integers using an iterative approach.

$$n! = n(n-1)(n-2)\dots$$

Algorithm:

Step 1: Start

Step 2: Read an integer num from the user.

Step 3: Set fact = 1

Step 4: Initialize i=1 to i <= num

→ multiply fact by i and get the fact value with new value.

Step 5: After the loops ends, fact contains the factorial of num Print the result.

Step 6: Stop.

Program

```
import java.util.Scanner;
class Factorial{
    public static void main (String [] args){
        Scanner sc = new Scanner (System.in);
        System.out.print ("Enter a number:");
        int num = sc.nextInt();
        int fact = 1;
        for (int i=1; i<=num; i++){
            fact = fact * i;
        }
        System.out.println ("Factorial of "+num+" is: "+fact)
    }
}
```

Result: Hence the above java code was successfully

Input:

under a number : 42

Output:

factorial of +2 is : 0

e) Nth Fibonacci

Ques: To develop a Java program that reads an integer N from the user and prints the N^{th} fibonacci number using an iterative approach.

Algorithm:

Step 1 : start

Step 2 : The user to enter the value of N .

Step 3 : Initialize variable $a=0, b=1, c$

Step 4 : If $n=1$ then output a

If $n=2$ then output b .

Step 5 : Repeat from $i=3$ to n , $c=a+b, a=b, b=c$

Step 6 : End.

Programs:

```
import java.util.Scanner;
class Nth Fibonacci{
    public static void main (String [] args){
        Scanner sc = new Scanner (System.in);
        System.out.print ("Enter value of N:");
        int n = sc.nextInt();
        int a = 0, b = 1, c;
        if (n == 1){
            System.out.println ("Nth Fibonacci number is :" + a);
        } else if (n == 2){
            System.out.println ("Nth Fibonacci number is :" + b);
        } else {
            for (int i = 3, i <= n; i++) {
                c = a + b;
                a = b;
                b = c;
            }
            System.out.println ("Nth Fibonacci number is :" + c);
        }
    }
}
```

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RESULTS Hence the Java program was successfully executed	

Input

enter a number n=56

Output

nth Fibonacci number is: 2144908973