

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 even count and odd count

Step 6: Stop.

Program

```
import java.util.Scanner;
public class EvenOddCounter {
    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) {
                //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.next().Int();  
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 number 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 ; begin at 2

Step 6 : if $n \% i == 0$

Step 7 : If $\text{flag} == 1$ display as 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;
```

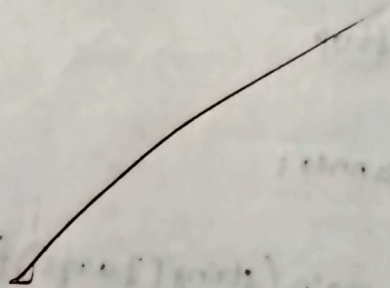
```
        }
```

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.

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

Algorithm:

Step 1: Start

Step 2: Read an integer num from the user.

Step 3: Set fact = 1

Step 4: initialize $i = 1$ to $i \leq \text{num}$

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

Step 5: After the loop 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 C[] 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:

enter a number: 42

Output:

factorial of 42 is: 0

e) Nth Fibonacci

Aim: 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.

Program:

```
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);
```

```
}
```

```
}
```

Result: Hence the Java program was successfully executed.

| VELTECH | |
|---------------------|---|
| Sl. No. | 1 |
| NAME | 1 |
| RESULT AND ANALYSIS | 1 |
| MARKS | 1 |
| DATE | 1 |

Input

enter a number $n=56$

output

n^{th} Fibonacci number is: 2 1 4 4 9 0 8 9 7 3