**Day5**

**Methods/Functions**

A function is a block of code that performs a specific task.

Why are functions used?

1. If some functionality is performed at multiple places in software, then  rather than writing the same code, again and again, we create a function  and call it everywhere. This helps reduce code redundancy.
2. Functions make maintenance of code easy as we have to change at one  place if we make future changes to the functionality.
3. Functions make the code more readable and easy to understand.

The **syntax** for function declaration is :

return-type function\_name (parameter 1, parameter2,  …… parameter n){  //function\_body

}

return-type

The **return type** of a function is the data type of the variable that that function  returns.

For eg - If we write a function that adds 2 integers and returns their sum then  the return type of this function will be ‘int’ as we will return a sum that is an  integer value.

When a function does not return any value, in that case the return type of the  function is ‘void’.

**function\_name**

It is the unique name of that function.

It is always recommended to declare a function before it is used.

**Parameters**

A function can take some parameters as inputs. These parameters are specified  along with their data types.

For eg- if we are writing a function to add 2 integers, the parameters would be  passed like –

int add (int num1, int num2)

**main function**

The main function is a special function as the computer starts running the code  from the beginning of the main function. Main function serves as the entry  point for the program.

**Example** :

package com.apnacollege;

public class Main {

   //A METHOD to calculate sum of 2 numbers - a & b

   public static void sum(int a, int b) {

       int sum = a + b;

       System.*out*.println(sum);

   }

   public static void main(String[] args) {

      int a = 10;

      int b = 20;

*sum*(a, b); // Function Call

   }

}

**Qs. Write a function to multiply 2 numbers.**

**import java.util.\*;**

**public class Functions {**

**//Multiply 2 numbers**

**public static int multiply(int a, int b) {**

**return a\*b;**

**}**

**public static void main(String args[]) {**

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

**int a = sc.nextInt();**

**int b = sc.nextInt();**

**int result = multiply(a, b);**

**System.out.println(result);**

**}**

**}**

**Qs. Write a function to calculate the factorial of a number.**

**​​import java.util.\*;**

**public class Functions {**

**// public static int calculateSum(int a, int b) {**

**//     int sum = a + b;**

**//     return sum;**

**// }**

**// public static int calculateProduct(int a, int b) {**

**//    return a \* b;**

**// }**

**public static void printFactorial(int n) {**

**//loop**

**if(n < 0) {**

**System.out.println("Invalid Number");**

**return;**

**}**

**int factorial = 1;**

**for(int i=n; i>=1; i--) {**

**factorial = factorial \* i;**

**}**

**System.out.println(factorial);**

**return;**

**}**

**public static void main(String args[]) {**

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

**int n = sc.nextInt();**

**printFactorial(n);**

**}**

**}**

There are different input test cases

Test case 1

Input n=-1,-2,……..(n<0)

Expected Output:- Invalid Input

Test case 2

Input n=0

Expected output:-1

**Qs. Write a function to calculate the product of 2 numbers.**

**import java.util.\*;**

**public class Functions {**

**// public static int calculateSum(int a, int b) {**

**//     int sum = a + b;**

**//     return sum;**

**// }**

**public static int calculateProduct(int a, int b) {**

**return a \* b;**

**}**

**public static void main(String args[]) {**

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

**int a = sc.nextInt();**

**int b = sc.nextInt();**

**System.out.println(calculateProduct(a, b));**

**}**

**}**

**Ques:-** Difference between Method and function?

**Answer**:- A function is a set of instructions or procedures to perform a specific task, and a method is a set of instructions that are associated with an object.

**Ques:-** Difference between Method and class?

Answer:-

