

## 5) Methods in Java

### 1) Defining Methods

**Answer:-** In Java, a **method** is a block of code designed to perform a specific task. Methods are essential for organizing and reusing code in a structured way.

Syntax:-

```
accessModifier returnType methodName(parameters)

{
    // Method body
}
```

### 2) Method Parameters and Return Type

**Answer:-** In Java, **method parameters** and **return types** play a crucial role in determining how methods receive input and return output.

**Example :-**

#### Method With Parameters and Return Type

```
public double calculateArea(double radius)
{
    return 3.14 * radius * radius;
}
```

#### Method With No Parameters But a Return Type

```
public String getWelcomeMessage()
{
    return "Hello, World!";
}
```

#### Method With Parameters and No Return Type

```
public void printName(String name)
{
    System.out.println("Name: " + name);
}
```

## 3) Method Overloading

**Answer:-** The two or more method name should be same in a single class but its behaviors(data types, arguments) are different i.e Method Overloading.

**Example :-**

**class Addition**

```
{
    int x,y;
    public void sum()
    {
        x=20;
        y=10;
        System.out.println("First Sum is : "+(x+y));
    }
    public void sum(int a)
    {
        x=y=a;
        System.out.println("Second Sum is : "+(x+y));
    }
    public void sum(int a,int b)
    {
        x=a;
        y=b;
        System.out.println("Third Sum is : "+(x+y));
    }
    public void sum(float a)
    {
        x=y=(int)a;
        System.out.println("Fourth Sum is : "+(x+y));
    }
}
```

**public class** MethodOverloadingDemo

```
{
    public static void main(String[] args)
    {
        Addition a1=new Addition();
        a1.sum();
        a1.sum(20);
        a1.sum(30, 30);
        a1.sum(10.04f);
    }
}
```

## 4) Static Methods and Variables

**Answer:-**

## **Static Variables :**

A static variable is a variable that belongs to the class rather than instances of the class. It is shared across all objects of the class.

## **Static Methods**

A static method is a method that belongs to the class and not to any specific object. It can be called without creating an instance of the class.

