

# METHODS

## METHODS

- The method is a block of instructions that is used to perform a specific task.
- It is used to transfer data.

### Syntax to define a method :

```
[access modifier] [modifier] return type name([datatype var1, datatype var2, ...])  
{  
    }  
}
```

## TERMINOLOGIES

### 1) Method signature

- Method name
- Formal argument

### 2) Method declaration

- Access modifier
- Modifier
- Return type
- Signature

### 3) Method definition

- Method declaration
- Method body / implementation / block

## ACCESS MODIFIERS

Access modifiers are used to change the accessibility of a member. We have four levels of access modifiers

1. private
2. default
3. protected
4. public

## MODIFIER

They are the keywords which are responsible to modify the characteristics/behaviour of the member. E.g. of modifiers:

- 1.static
- 2.abstract
- 3.final
- 4.synchronized, etc

## RETURN TYPE

- The return type is a data type that specifies what type of data is returned by the method after execution.
- The method after execution can return a value back to the caller.
- Therefore it is mandatory to specify what type of data is returned by the method in the method declaration statement, This is done with the help of return type.

A method can have the following return types

1. void
2. Primitive data type
3. Non-primitive data type

## VOID

- void is a data type that is used as a return type when the method returns nothing.
- It is a keyword In java.

## NOTE

- A method can't create inside another method.
- A class can have any number of methods.
- A method will get executed only when it is called, we can call a method with the help of a method call statement.

## METHOD CALL STATEMENT

The statement which is used to call a method is known as a method call statement.

### Syntax to create a method call statement

```
methodName([Actual arguments]);
```

- We can call a no-argument method without passing an actual argument in the method call statement.
- We can call a parameterized-argument method with passing an actual argument in the method call statement.

## METHOD CALL STATEMENT FLOW

- Execution of calling method is paused.
- Control is transferred to the called method.
- Execution of called method begins.
  - Once the execution of the called method is completed the control is transferred back to the calling method.
- Execution of calling method resumes.

## CALLING METHOD

The method which is trying to call another method is known as the calling method (caller).

## CALLED METHOD

The method which is being called by the caller is known as a called method.

## MAIN METHOD

The execution of a java program always starts from the main method defined as follows:-

```
public static void main(String[] args)
{
}
```

## PURPOSE OF THE MAIN METHOD

- Start the execution
- Control the flow of the execution
- End of execution



## NOTE

- A method can be executed only when it is called, we can call a method any number of times, therefore it is said to be code reusability.
- The main method is always called by JVM.

## TYPES OF METHODS

Based on number of arguments methods can be classified into 2 types:-

- No argument method
- Parameterized method

### NO ARGUMENT METHOD

A method which does not have formal argument is known as no argument method.

Example:-

```
public static void add()  
{  
    System.out.println("No argument constructor");  
}
```

## PARAMETERIZED METHOD

- The method which has formal argument is known as Parameterized method.
- Parameterized methods are used to accept the data.

## FORMAL ARGUMENT

A variable which is declared in the method declaration is known as Formal argument.

## ACTUAL ARGUMENT

The value in the method call statement is known as Actual argument.

## RETURN STATEMENT

A method after execution will return a data back to the caller with the help of return statement.

### return

- return is a keyword.
- It is a control transfer statement.
- When the return statement is executed, the execution of the method is terminated and control is transferred to the calling method.

## STEPS TO USE THE RETURN STATEMENT

Step 1: Provide a return type for a method(it should not be void).

Step 2: Use the return statement in the value to be returned.

**RULE:-** The type specified as return type should be same as the type of value passed in a return statement

## FEATURES OF RETURN STATEMENT

1. It is applied at the end of a method, from where it terminates.
2. No statement in the method can be executed after return statement.
3. It can only return a single value from a method to its caller.
4. A function may have more than one termination points, Thus, a number of return statements may be included to terminate the method from a specific point. Eg, if( $x > y$ )

```
        return(x);  
    else  
        return(y);
```

## METHOD OVERLOADING

If more than one method is created with the same name but different formal arguments in the same class are known as Method Overloading.

For example:-java.lang. Maths;

abs(int i);  
abs(long i);  
abs(float i);  
abs(double i);



Overloaded methods in Maths class of java.lang package ,having same method names but different formal arguments

## EXAMPLE

