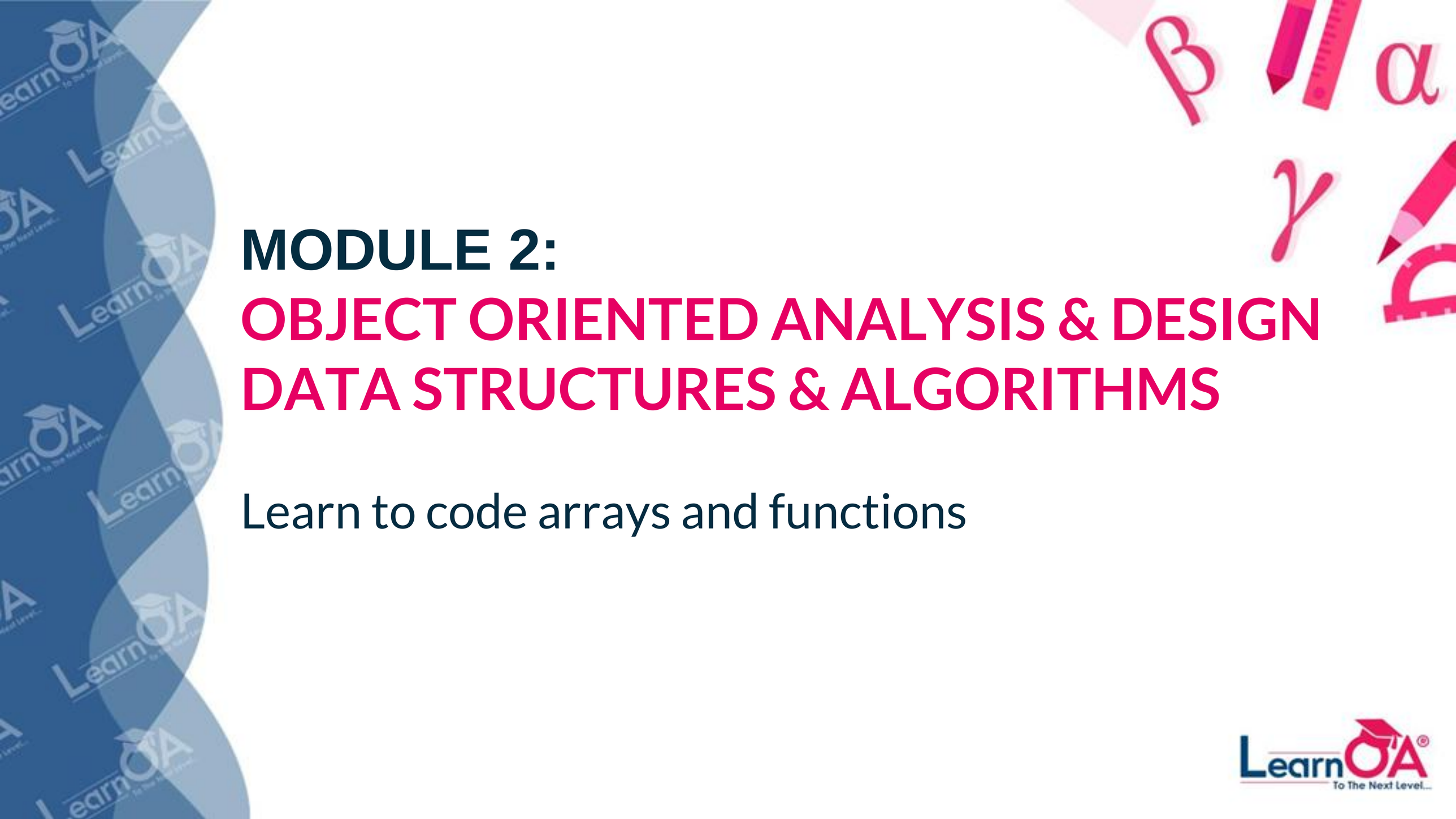


MODULE 2:
OBJECT ORIENTED ANALYSIS & DESIGN
DATA STRUCTURES & ALGORITHMS

Learn to code arrays and functions

LearnOA
To The Next Level...

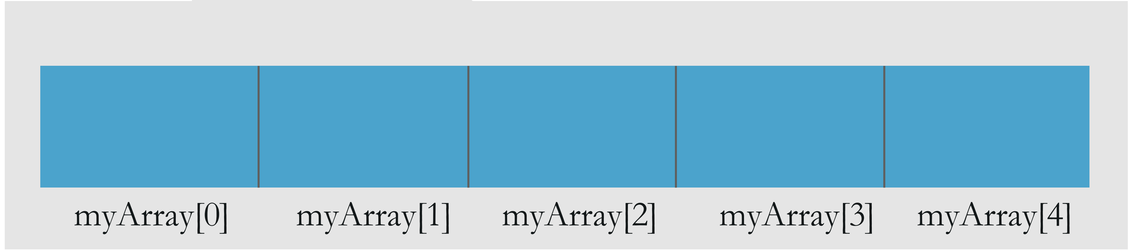
Java Arrays

Java Arrays – One Dimensional

Array is an object which contains fixed number of elements of a similar data type under same name

```
arrayRefVar   =   new dataType[arraySize];
```

```
myArray   =   new int[5]
```



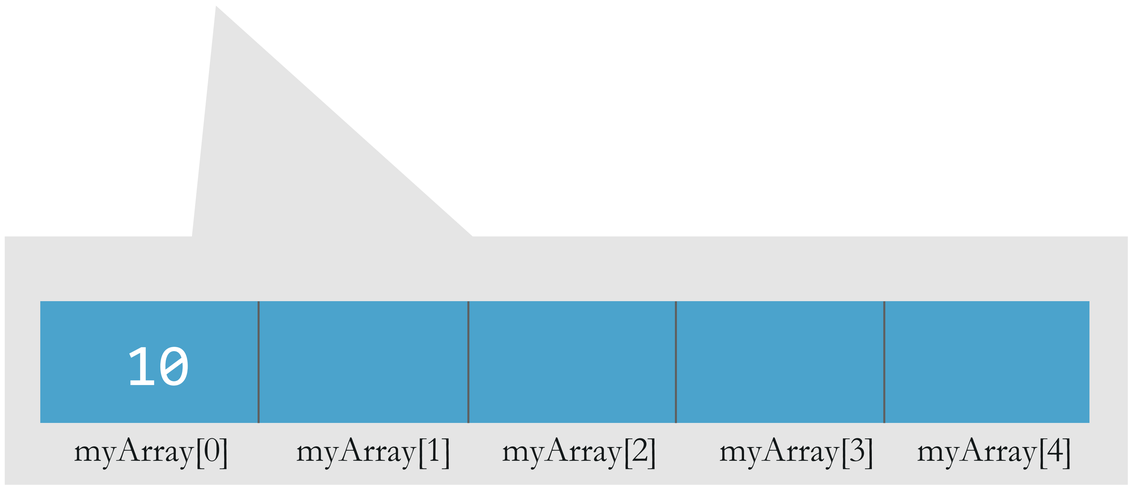

```
myArray[0]   =   10
```

Java Arrays – One Dimensional

Array is an object which contains fixed number of elements of a similar data type under same name

```
arrayRefVar   =   new dataType[arraySize];
```

```
myArray   =   new int[5]
```



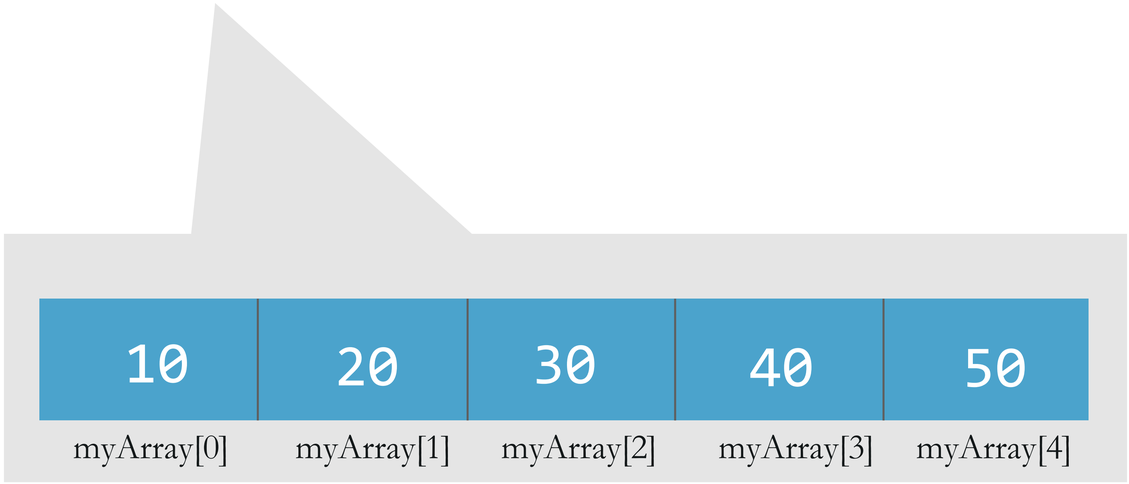

```
myArray[1]   =   20
myArray[2]   =   30
myArray[3]   =   40
myArray[4]   =   50
```

Java Arrays – One Dimensional

Array is an object which contains fixed number of elements of a similar data type under same name

```
arrayRefVar   =   new dataType[arraySize];
```

```
myArray       =   new int[5]
```

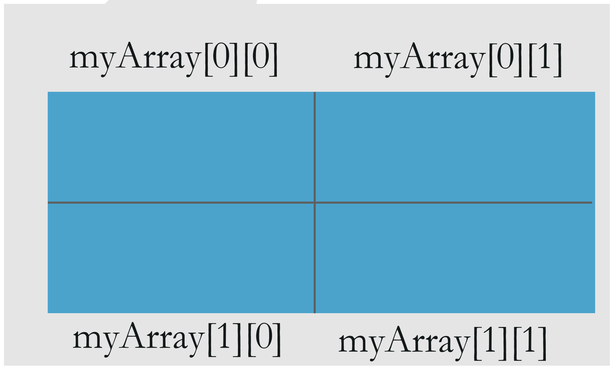


Java Arrays – Two Dimensional

Like a 1D array, a 2D array is also a collection of data cells, all of the same type, which can be given a single name

```
datatype[][] arrayRefVar   =   new dataType[row][col];
```

```
int[][] myArray    =   new int[2][2]
```



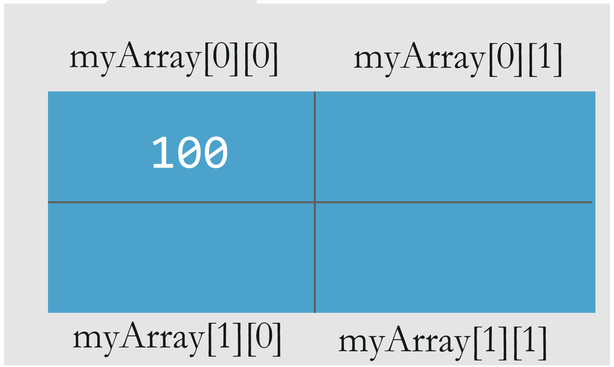

```
myArray[0][0]   =   100
```

Java Arrays – Two Dimensional

Like a 1D array, a 2D array is also a collection of data cells, all of the same type, which can be given a single name

```
datatype[][] arrayRefVar   =   new dataType[row][col];
```

```
int[][] myArray    =    new int[2][2]
```



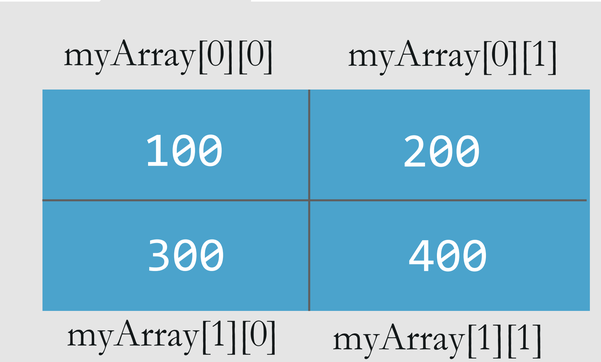

```
myArray[0][1]  =  200
myArray[1][0]  =  300
myArray[1][1]  =  400
```

Java Arrays – Two Dimensional

Like a 1D array, a 2D array is also a collection of data cells, all of the same type, which can be given a single name

```
datatype[][] arrayRefVar   =   new dataType[row][col];
```

```
int[][] myArray    =    new int[2][2]
```



Java Classes

A class may contain

```
class <class_name>{
    field;
    method;
}
```

- Fields
- Methods
- Constructors
- Blocks
- Nested Class & Interface

Java Methods

Java Methods

A method is a set of code that is grouped together to perform a specific operation

A method must be written inside a class

Each method has its own signature

Java provides two types of methods

- Pre Defined or Standard Library Methods
- User Defined Methods

Java User Defined Methods

To use a method, you need to perform two steps:

- Method Initialization
- Method Invocation

Java Methods

Method Initialization

```
modifier returnType nameOfMethod (Parameter List)
{
    // method body
}
```

- ✔A method can be parameterized or non-parameterized
- ✔Method definition consists of a method header and a method body
- ✔You can ***Overload Method*** i.e. Provide same name to more than one method but their data type or parameter list must be different

Java Methods

Method Invocation

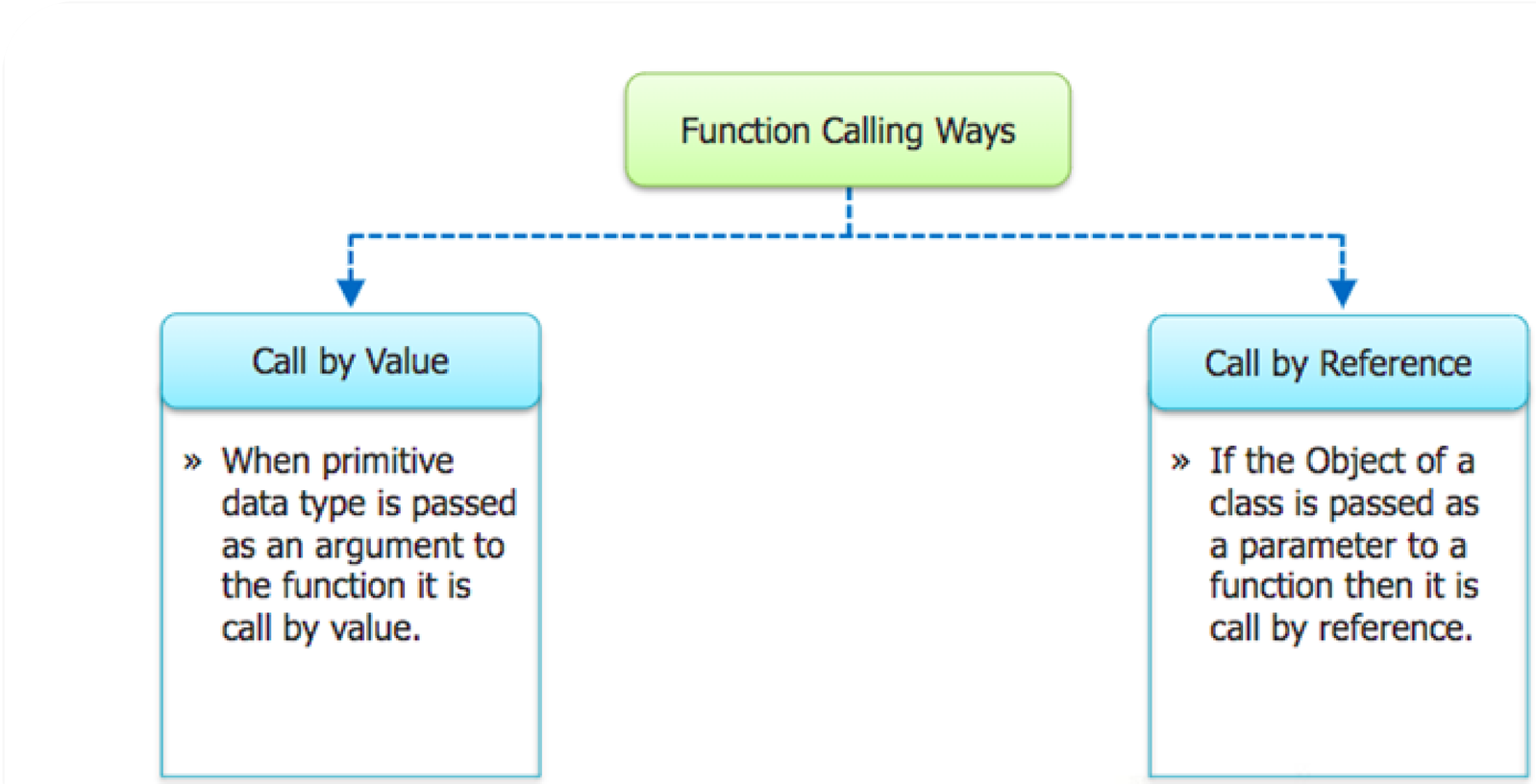
```
methodName()

methodName(parameter1, parameter2...)
```

- ✔To use a method it needs to be invoked or called
- ✔When a program invokes a method, the program control gets transferred to the called method
- ✔A method can be called in two ways:
  - Call by Value
  - Call by Reference

Method Value Vs Reference

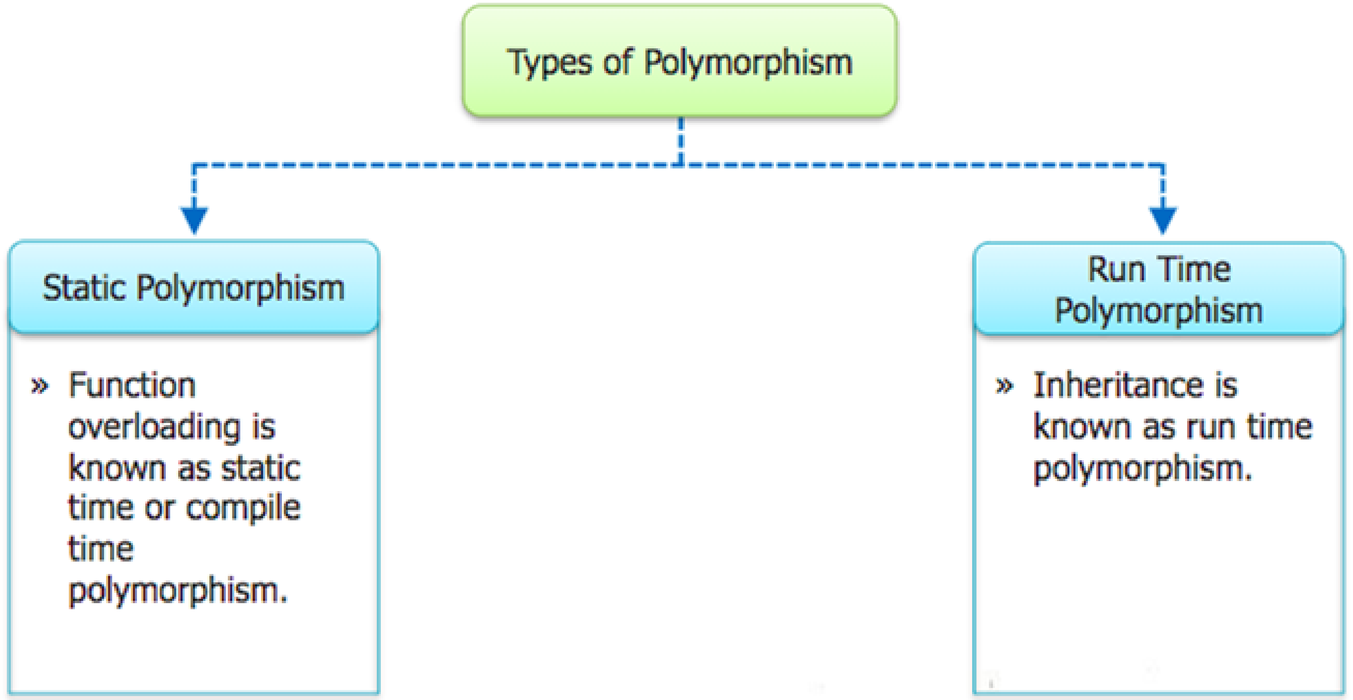
Value Vs Reference



Polymorphism

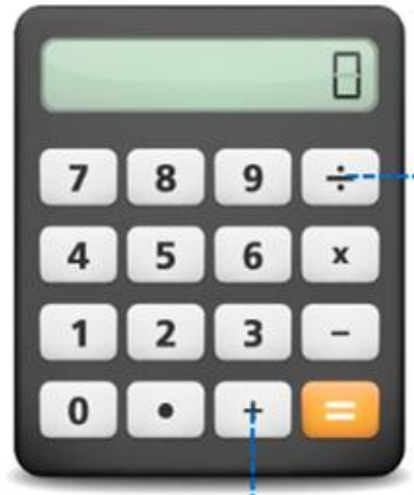
Polymorphism

Polymorphism means the system behaves differently in different programming context.



Polymorphism

Functions by different operators in a Calculator.



"÷" operator

```
÷ can divide:

    → two integers
    → two decimals
```

"+" operator

```
+ can add:

    → two integers
    → three integers
    → two decimals
    → three decimals
```

Thank You!