OOP CONCEPT IN JAVA

E-mail : **asif.io.edu@gmail.com**

Requirement

Object Oriented Programing in concept in which more emphases are give in **function/method** rather than **data**.

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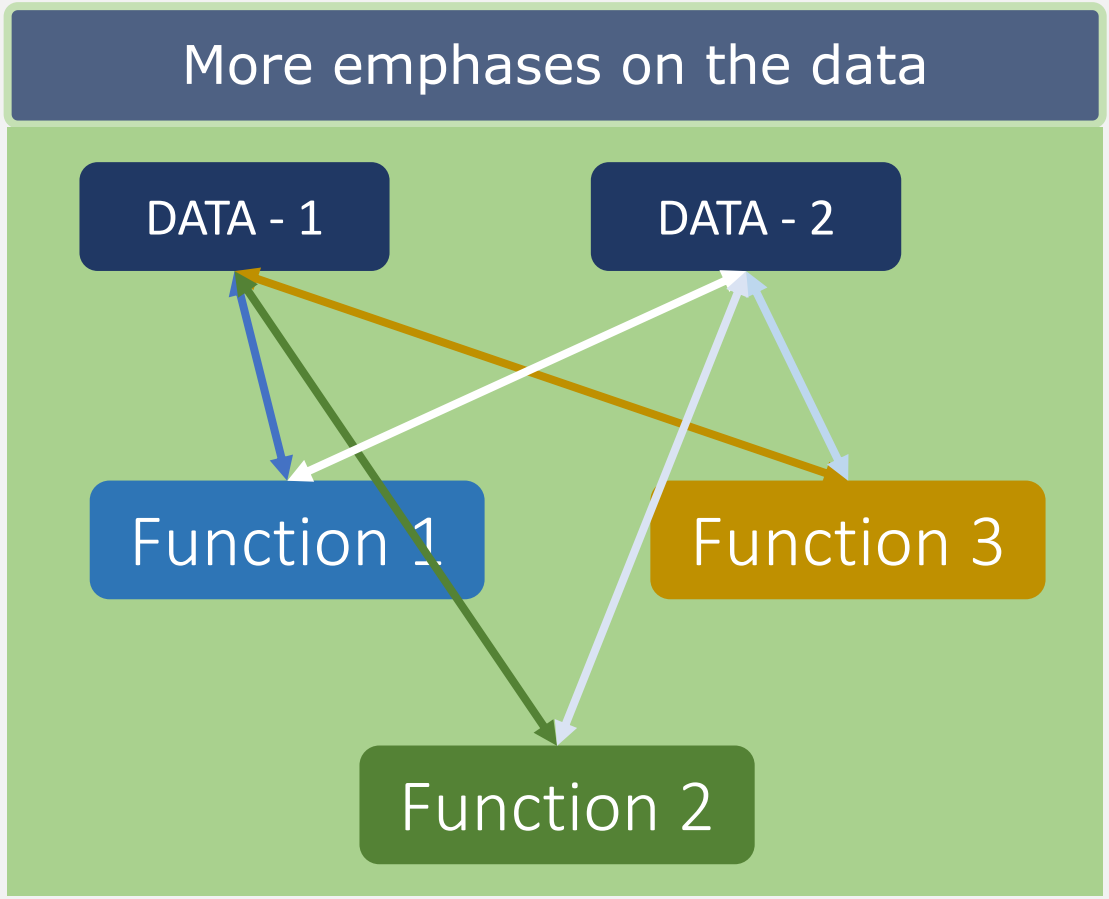
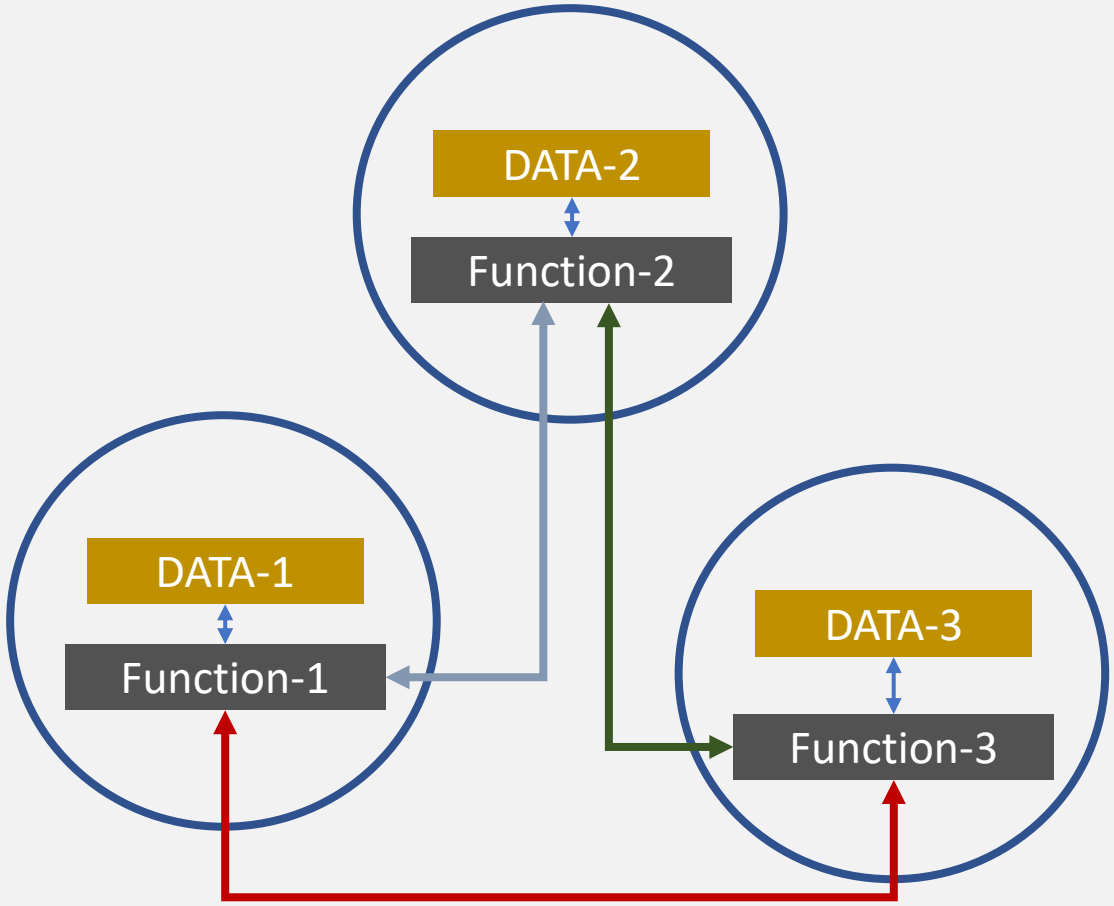




ABSTRACTION

POLYMORPHISM

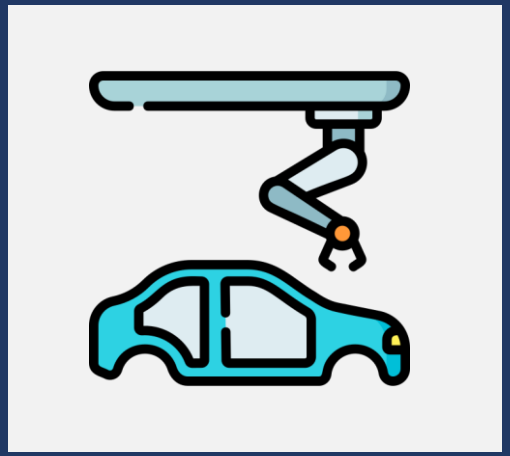
INHERITANCE

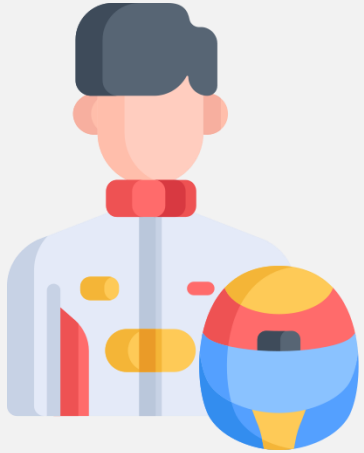
ENCAPSULATION

ABSTRACTION

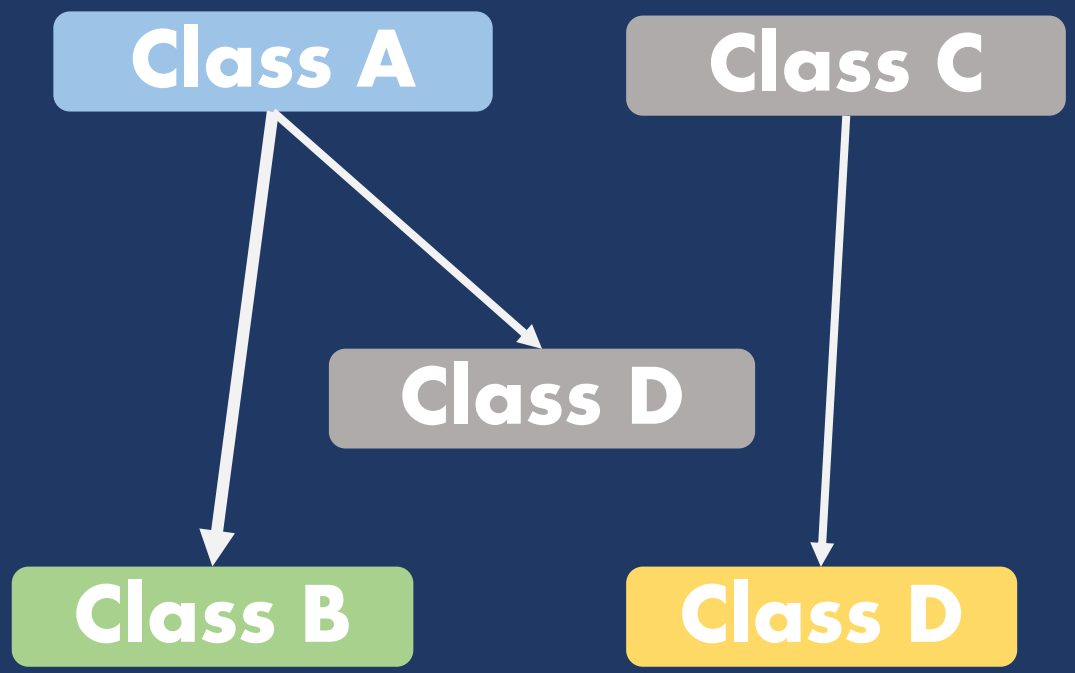
Data Abstraction is the property by virtue of which only the essential details are displayed to the user.

The trivial or the non-essential units are not displayed to the user.





INHERITANCE



Inheritance is the mechanism in java by which one class is allowed to inherit the features(attributes and methods) of another class.

- 👉 The parent class is known as base class.
- 👉 The children class is known as driver class.
- 👉 Multiple inheritance is not allowed in java. Means a children class can't have more then one parent class.
- 👉 "extend" keyword is used to implement inheritance in java.
- 👉 Child class override the method of parent's class in java.

E-mail : asif.io.edu@gmail.com

POLYMORPHISM

Polymorphism means one block of code can perform different task.

Poly = many
Morphism = form

One man but different role
(Father, Husband, Son, Brother)

SON

WIFE

MOTHER

SISTER

E-mail : asif.io.edu@gmail.com

Polymorphism - Code

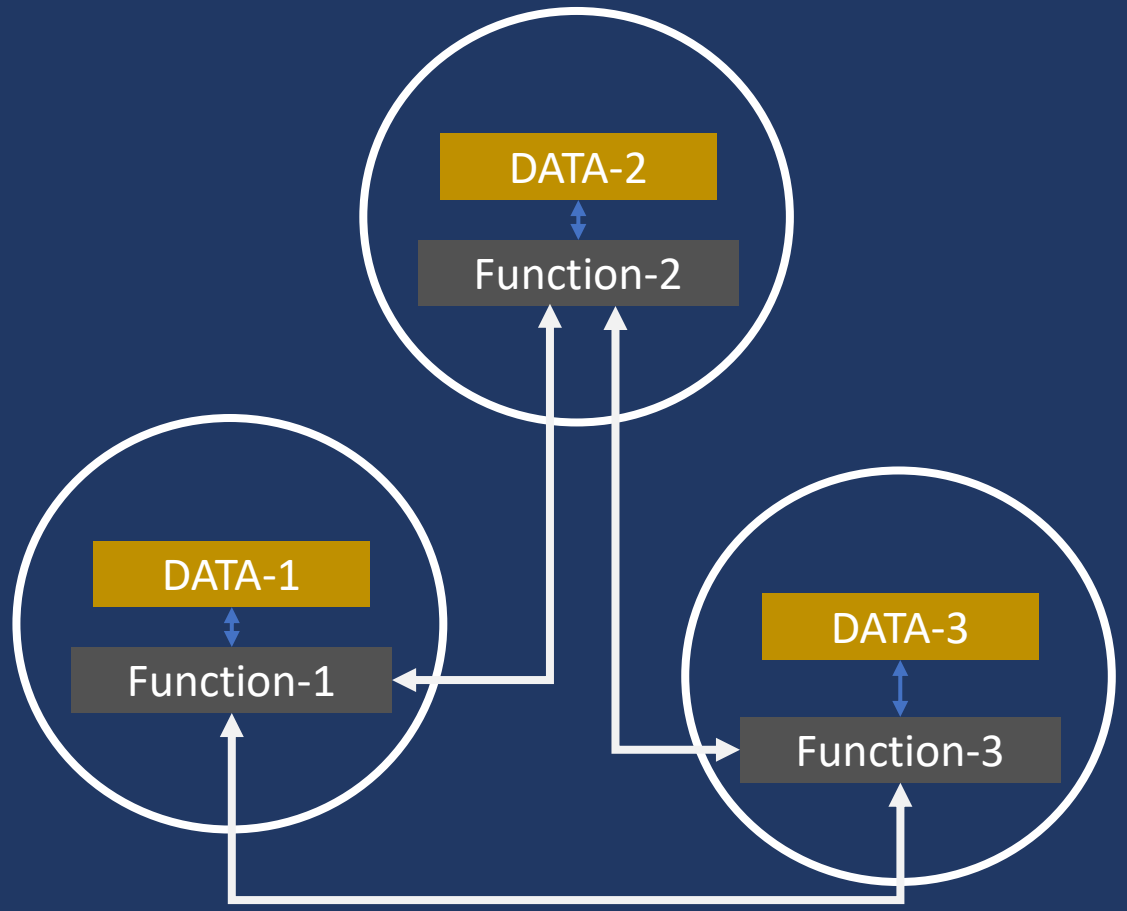
```java
public class Intro {
    public static void main(String[] args) {
        //Three different types of arrays.
        String[] name = {"Asif","Nasima", "Zeeshan","Anam"};
        Integer[] roll = {21,43,56,23};
        Character[] grade = {'A','B','D','A'};

        //Single methods printing three different Arrays
        printArray(name);
        printArray(roll);
        printArray(grade);
    }

    //Generic Method -- (example of polymorphism)
    //One method is used for printing three different type of arrays.
    3 usages
    public static <Thing> void printArray(Thing[] arr){
        for (int i = 0; i < arr.length; i++) {
            System.out.println(i+"-->"+arr[i]);
        }
        System.out.println("------------------");
    }
```

```
0-->Asif
1-->Nasima
2-->Zeeshan
3-->Anam
------------------
0-->21
1-->43
2-->56
3-->23
------------------
0-->A
1-->B
2-->D
3-->A
------------------
```

ENCAPSULATION



Encapsulation in Java is a process of wrapping **code** and **data** together into a **single unit**

👉 We wrap the attributes and function into a single unit.

👉 We make all the attributers private so the other class can't access them.

👉 Then we can create getters and setters so that we can access those attributes only through the functions.

👉 This technique of securing data is known as encapsulation.

E-mail : asif.io.edu@gmail.com

Encapsulation - Code

```java
public class Intro {
    public static void main(String[] args) {

        //Initializing object by using constructor
        BluePrint ct01 = new
                BluePrint( nam: "Himanshu", age: 17, ph: "42356776");
        BluePrint ct02 = new
                BluePrint( nam: "Saloni", age: 15, ph: "0987654345");

        //Accessing the data using Function
        ct01.getDetails();
        ct02.getDetails();

    }

}
```

```java
public class BluePrint {
    //these are attributes
    2 usages
    private String name;
    2 usages
    private int age;
    2 usages
    private String mob;

    //The 'this' keyword refers to the current
    // object in a method or constructor.
    2 usages
    BluePrint(String nam, int age, String ph){
        this.name = nam;
        this.age = age;
        this.mob = ph;
    }

    //Wrapping data and function in single unit
    2 usages
    public void getDetails(){
        System.out.println(this.name);
        System.out.println(this.age);
        System.out.println(this.mob);
        System.out.println("====================");
    }

}
```

E-mail : asif.io.edu@gmail.com

Java by ASIF.IO

E-mail : asif.io.edu@gmail.com