
# INHERITANCE

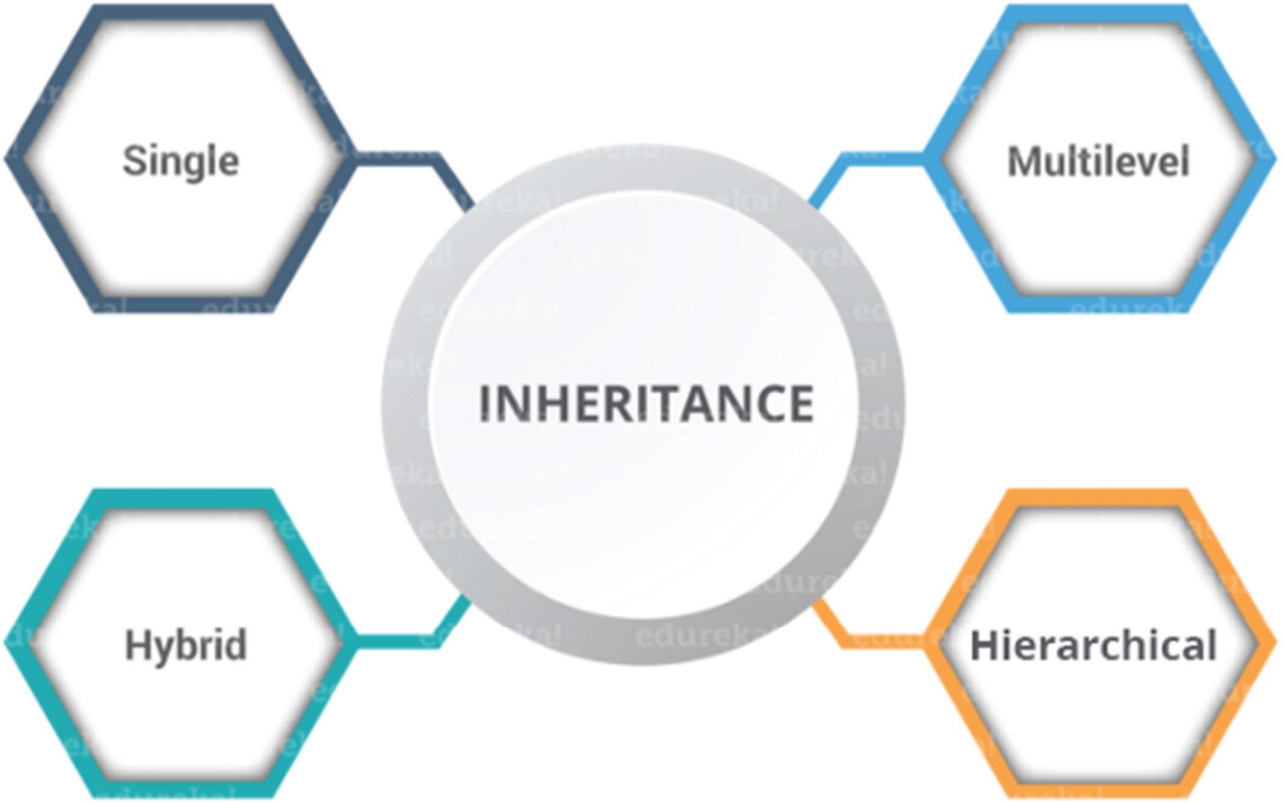
**The process of obtaining the data members and methods from one class to another class is known as inheritance.**

**Allows to carry the features of the parent class to the subclasses. Inheritance is the mechanism in which derived class acquires the properties of a base class. Here base class is the superclass and derived class is the subclass.**

# Some Important Terms in Inheritance

- **Class: It is a user-defined data type or blueprint from which objects are created.**
- **Super Class: A superclass in Java is the class from which the features are inherited. It is also called a parent class**
- **Sub Class – A subclass in Java is the class that inherits the features of the superclass. It can have its own features and methods as well. It is a child class.**

# Types of Inheritance



# Single Inheritance

**In single inheritance, one class inherits the properties of another. It enables a derived class to inherit the properties and behaviour from a single parent class.**

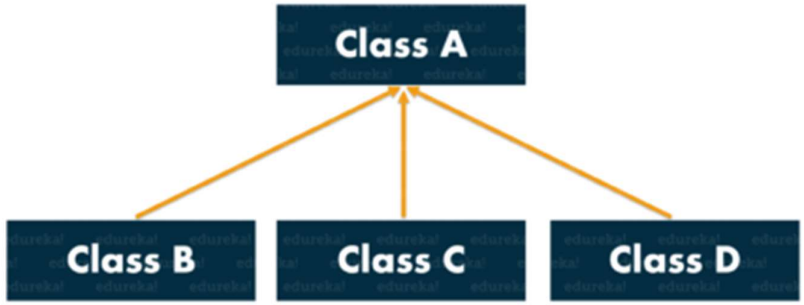

***Class A is parent class and Class B is child class which inherits the properties and behaviour of the parent class.***

# Multi-level Inheritance

**When a class is derived from a class which is also derived from another class, i.e. a class having more than one parent class but at different levels, such type of inheritance is called Multilevel Inheritance.**

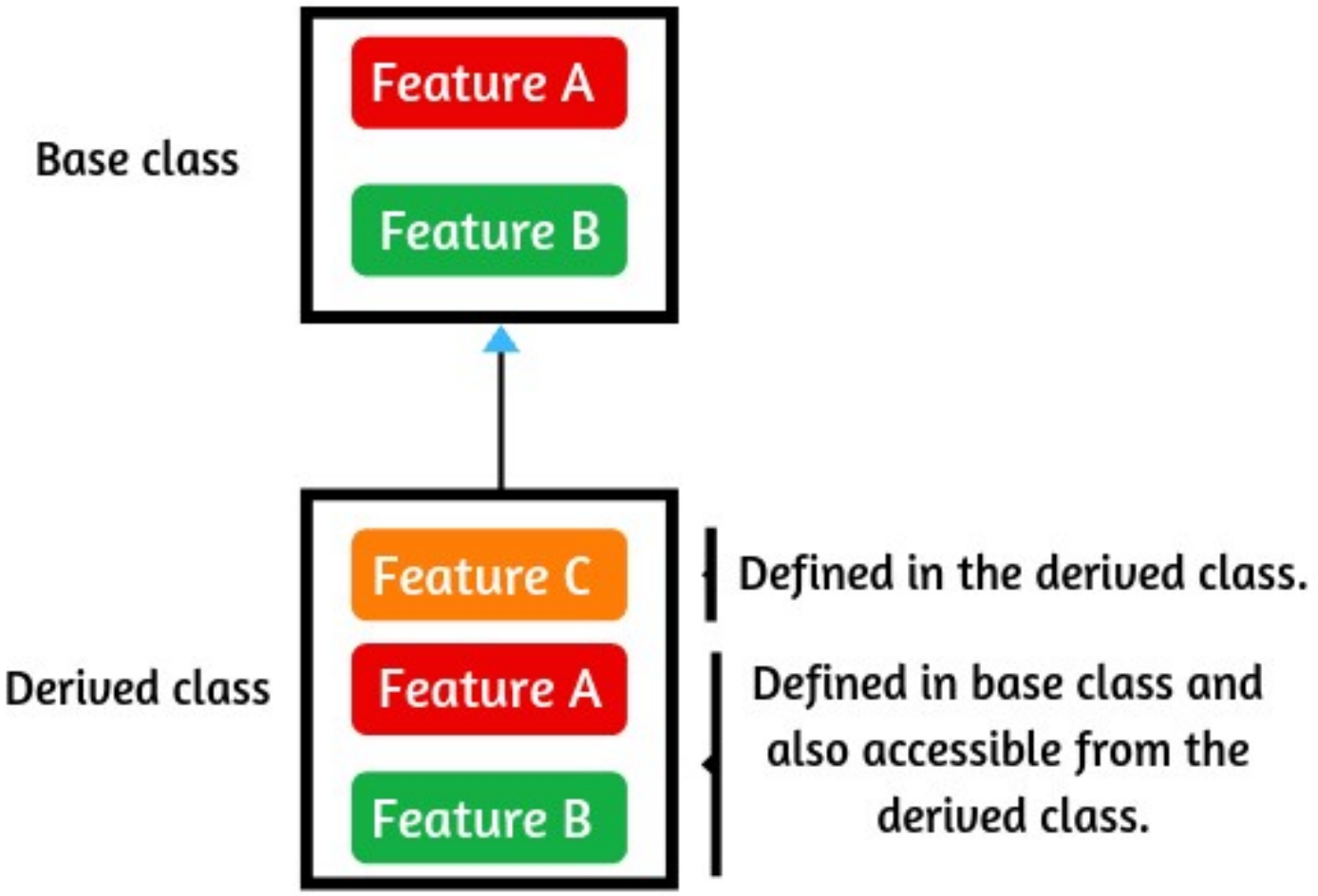
# Hierarchical Inheritance

**When a class has more than one child classes (subclasses) or in other words, more than one child classes have the same parent class, then such kind of inheritance is known as hierarchical.**



# Hybrid Inheritance

**This can be a combination of any of the other three inheritance model.**


Base class
Feature A
Feature B
Derived class
Feature C
Feature A
Feature B
Defined in the derived class.
Defined in base class and also accessible from the derived class.

**Inheritance is a compile-time mechanism. A parent class can have any number of derived class but a derived can have only one parent class. Therefore, Java does not support multiple inheritance.**

# Reusability

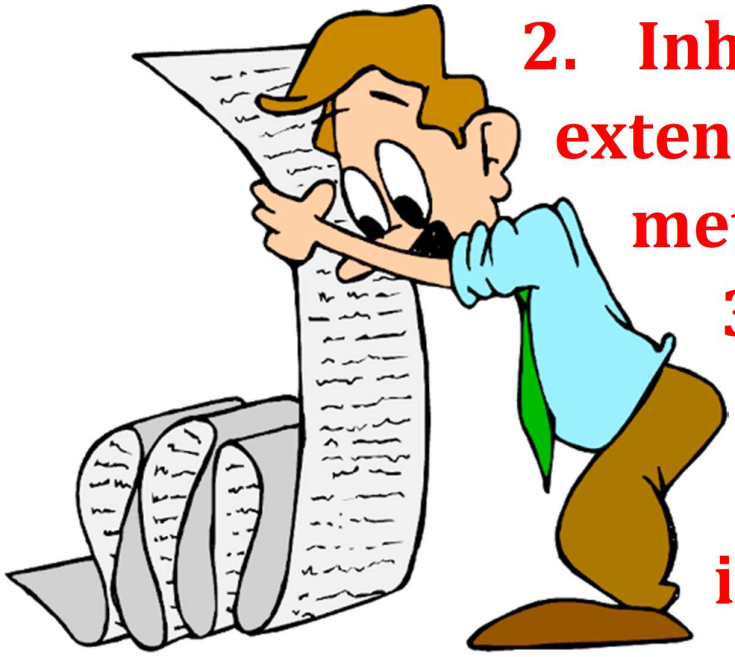
**A mechanism that facilitates to reuse fields and methods of the existing class into new class is known as reusability. When you create a new class, you can use the same fields and methods already defined in the previous class. This is called reusability.**

# Advantages of Inheritance

1. Can minimize the length of duplicate code in an application by putting the common code in the superclass and sharing amongst several subclasses.
2. Due to reducing the length of code, redundancy of the application is also reduced.
3. Make application code more flexible to change because a class that inherits from the superclass, can be used interchangeable.

# Key points

1. Inheritance is one of the most important features of OOPs concepts in Java that facilitate to use code written in a class inside other classes.



2. Inheritance is implemented by extending a class and adding variables and methods in its child class.
3. The various forms of inheritance are single inheritance, hierarchical inheritance, and multilevel inheritance.
4. The main advantage of using inheritance is that it allows code to be reused.

# NEXT LECTURE: ABSTRACTION