PÉCSI TUDOMÁNYEGYETEM
TERMÉSZETTUDOMÁNYI KAR

“Methodology of Programming I”

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PTE

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Inheritance:

In java inheritance is the mechanism by which one class is allowed to inherit the features of another class.

It means creating new classes based on existing ones. In addition, you can add new fields and methods to your current class as well.

Definitions:

For inheritance in Java the extends keyword is used.

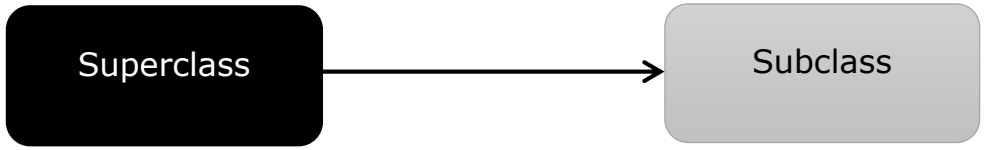
Using the extends keyword indicates the current class derived from an existing class to increase functionality.

The class which features are inherited is known as a superclass (or a base class or a parent class).

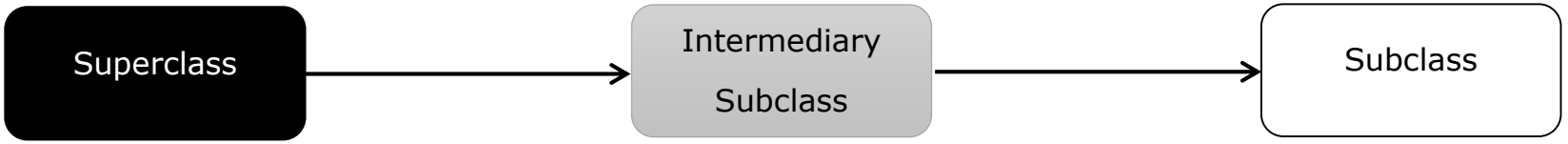
The class that inherits the other class is known as a subclass (or a derived class, extended class, or child class).

Types of inheritance in Java:

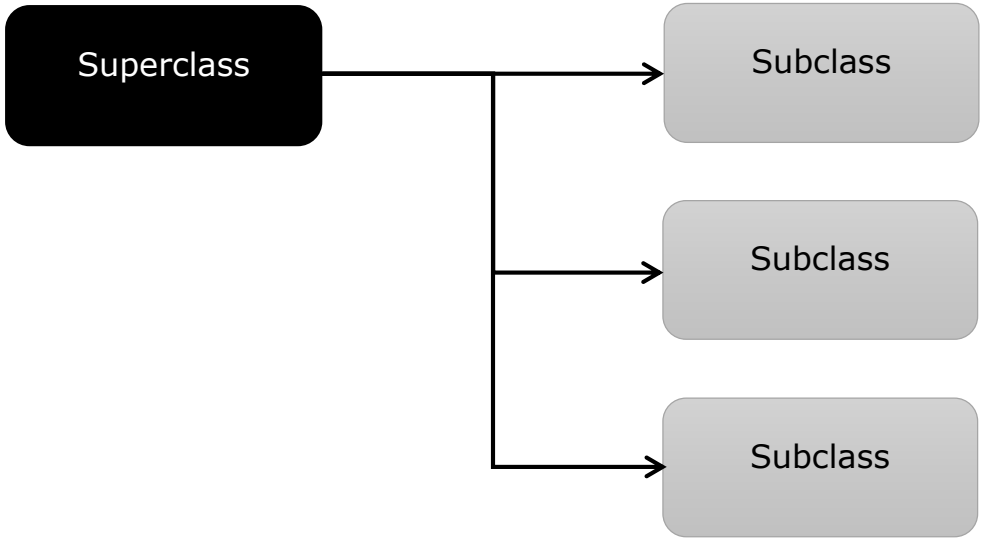
- **Single inheritance**: Subclasses inherit the features of one superclass.



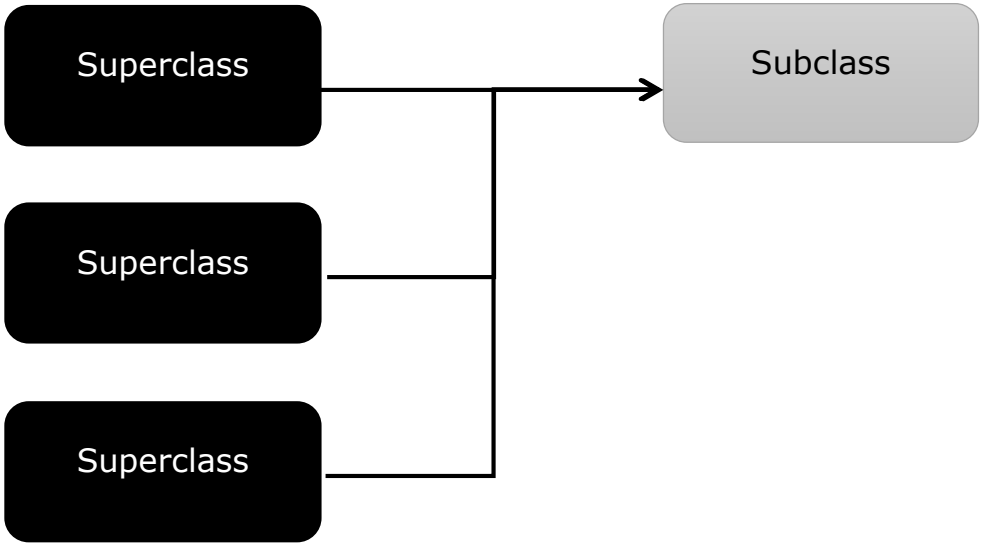
- **Multilevel inheritance**: A derived class will be inheriting a base class, and as well as the derived class also acts as the base class for other classes.



- **Hierarchical inheritance**: One class serves as a superclass (base class) for more than one subclass.



- **Multiple inheritance**: One class can have more than one superclass and inherit features from all parent classes. Java does not support multiple inheritance for classes. This approach in Java is achievable by using interfaces.



- **Hybrid inheritance**: It is a mix of two or more of the above types of inheritance.

super keyword:

It is a reference variable; that is used to refer to parent class objects.

This keyword came into the picture with the concept of Inheritance. It is majorly used in the following contexts:

- Use of super with variables
- Use of super with methods
- Use of super with constructors

Override:

In any object-oriented programming language, Overriding is a feature that allows a subclass or child class to provide a specific implementation of a method that is already provided by one of its super-classes.

When a method in a subclass has the same name, same parameters, and same return type as a method in its superclass, then the method in the subclass is said to override the method in the superclass with a @Override annotation right above the method.

The access modifier for an overriding method can allow more, but not less access than the overridden method from the parent class.

Final methods, private methods, and static methods cannot be overridden.

Polymorphism:

The word “poly” means many and “morphs” means forms, so it means many forms.

Polymorphism uses the same method to perform different tasks. This allows us to perform a single action in different ways.

Types of polymorphism:

- Compile-time Polymorphism

  Method Overloading

- Runtime Polymorphism

  Method Overriding

References:

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