JAVA PROGRAMMING

TOPIC: INHERITANCE

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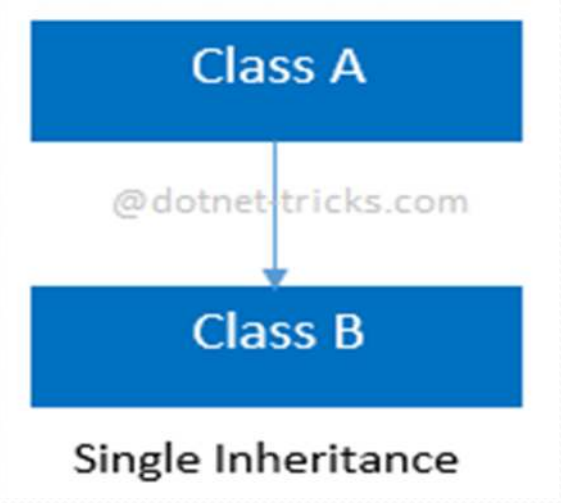
Different types of inheritance

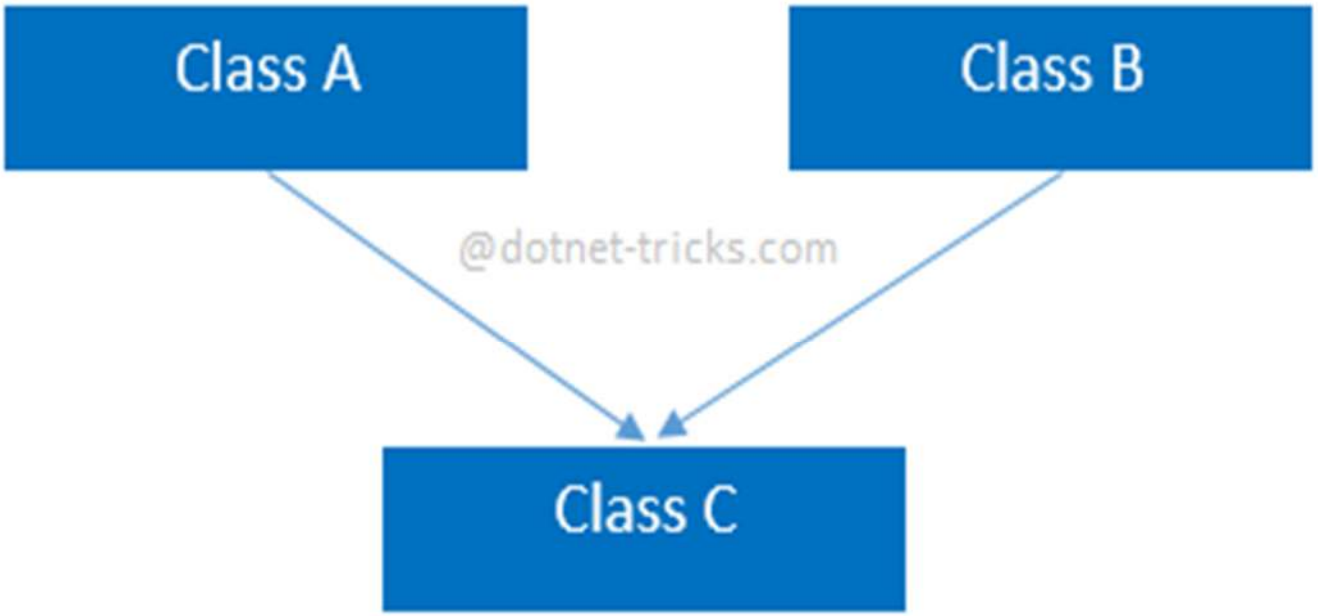
- Single
- Multiple
- Multilevel
- Hierarchical
- hybrid

Single Inheritance

- In this inheritance, a derived class is created from a single base class.
- In the given example, Class A is the parent class and Class B is the child class since Class B inherits the features and behavior of the parent class A



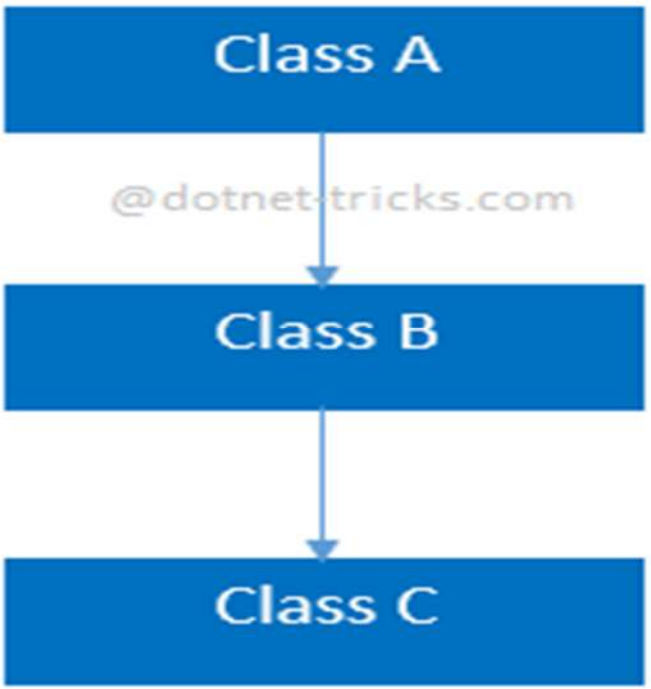
Single Inheritance



Multiple Inheritance

Multiple Inheritance

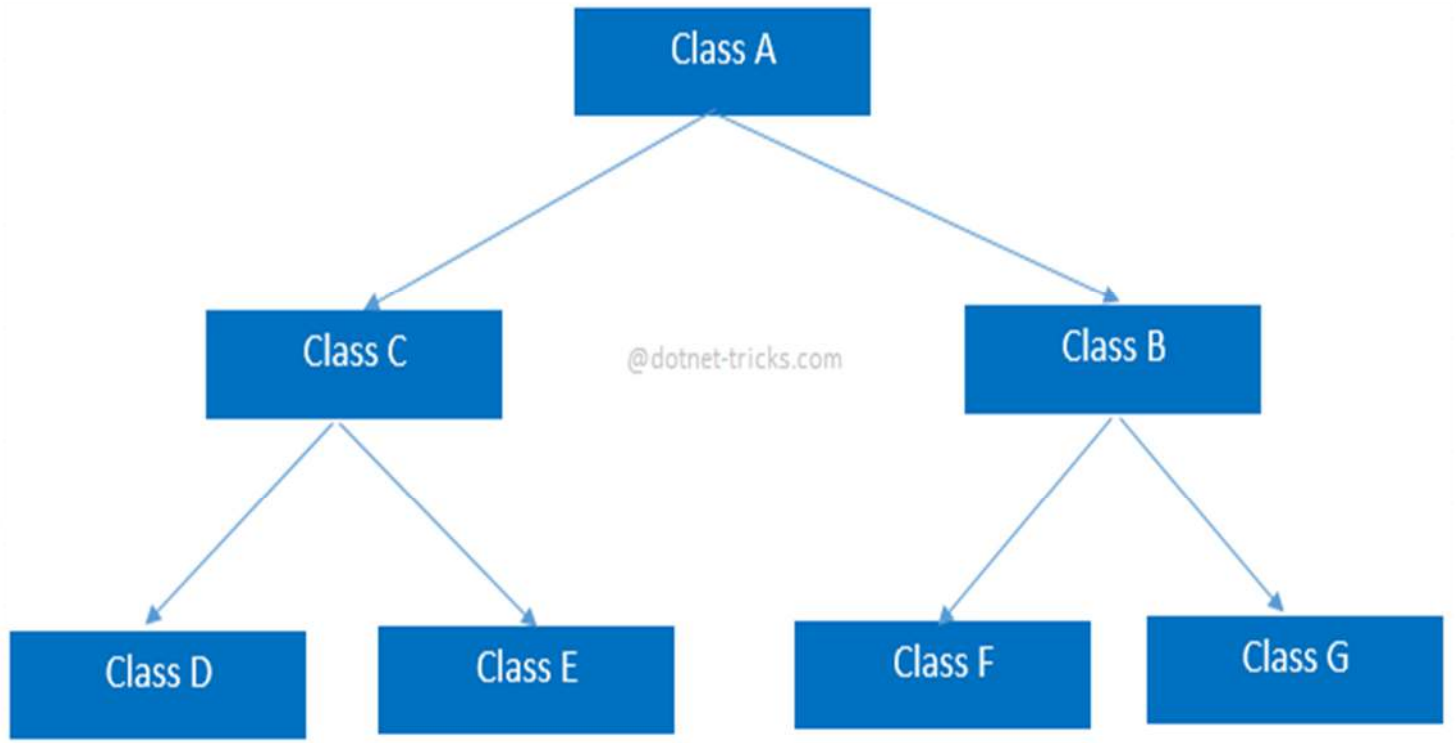
- In this inheritance, a derived class is created from more than one base class.
- This inheritance is not supported by .NET Languages like C#, F# etc. and Java Language.
- In the given example, class c inherits the properties and behavior of class B and class A at same level. So, here CLASS A and Class B both are the parent classes for Class C.



Multi-Level Inheritance

Multilevel Inheritance

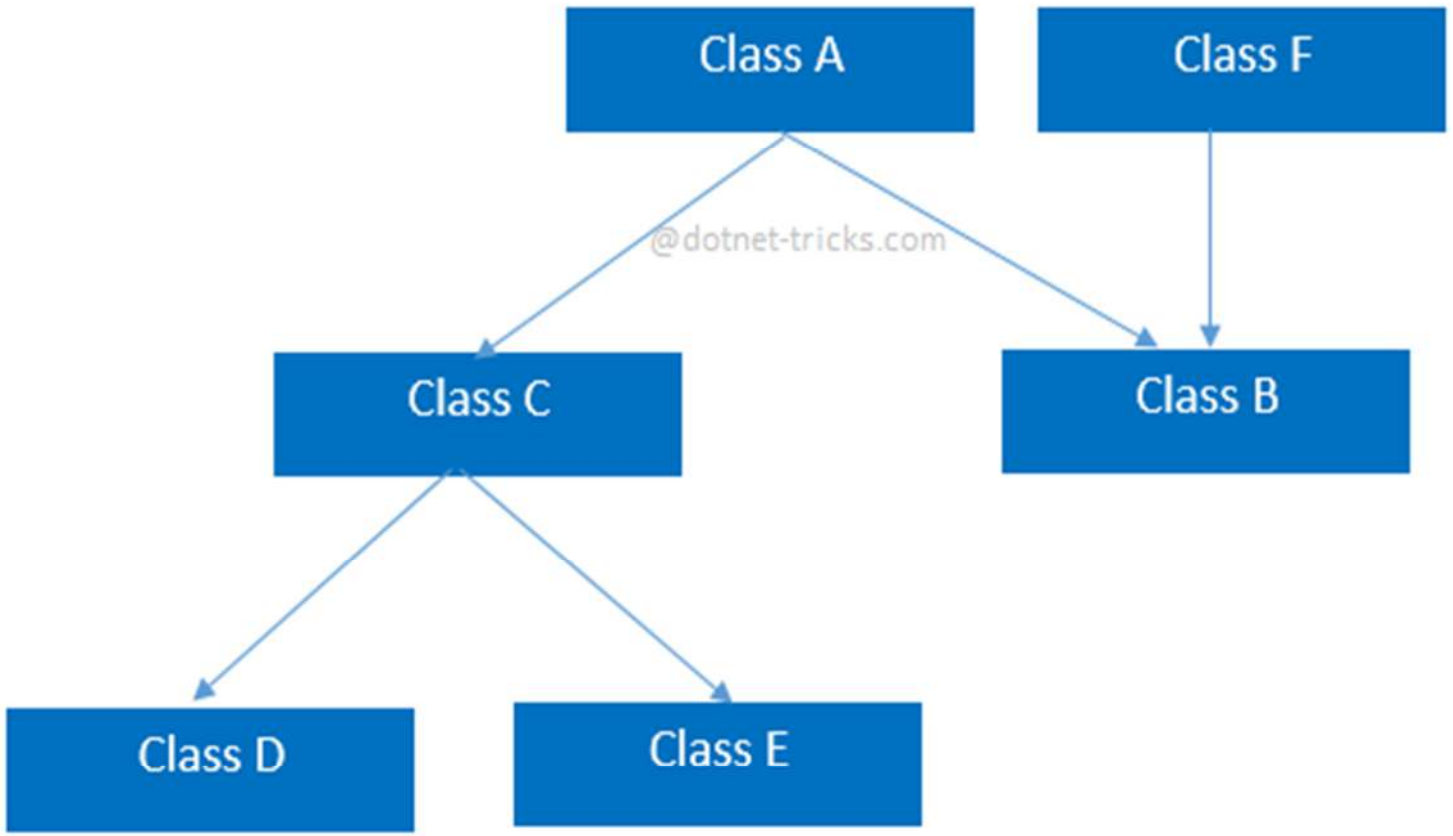
- In this inheritance, a derived class is created from another derived class.
- In the given example, class c inherits the properties and behavior of class B and class B inherits the properties and behavior of class A. So, here A is the parent class of B and class B is the parent class of C. So, here class C implicitly inherits the properties and behavior of class A along with Class B i.e there is a multilevel of inheritance.



Hierarchical Inheritance

Hierarchical Inheritance

- In this inheritance, more than one derived classes are created from a single base class and further child classes act as parent classes for more than one child classes.
- In the given example, class A has two childs class B and class C. Further, class B and class C both are having two childs - class D and E; class F and G respectively.



Hybrid Inheritance – (a combination of Hierarchical and multiple)

Hybrid Inheritance

- This is combination of more than one inheritance. Hence, it may be a combination of Multilevel and Multiple inheritance

polymorphism

- Polymorphism means the ability to take more than one form.
- It is extensively used in implementing inheritance
- There are 2 types of polymorphism in Java
  - Compile time polymorphism
  - Runtime time polymorphism

<u>Compile time polymorphism</u>

- Static polymorphism
- Polymorphism that is resolved during compiler time is known as compile time polymorphism

Runtime polymorphism

- Dynamic polymorphism
- It is a process in which a call to an overridden method is resolved at runtime.

Message passing

- The term msg passing is the dynamic process of asking an object to perform a specific action.
- There are 3 identifiable parts to any message-passing expression.
  - receiver
  - msg selector
  - arguments