Inheritance is one of the fundamental concepts of **Object-Oriented Programming (OOP)** that allows a class (child/derived class) to inherit fields, properties, and methods from another class (parent/base class). It helps in code reusability and establishing a relationship between classes.

**Types of Inheritance in C#**

1. **Single Inheritance** - A derived class inherits from a single base class.
2. **Multilevel Inheritance** - A class inherits from another derived class.
3. **Hierarchical Inheritance** - Multiple classes inherit from a single base class.
4. **Multiple Inheritance (via Interfaces)** - A class implements multiple interfaces (since C# doesn’t support multiple class inheritance).

**Syntax**

csharp

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class Parent // Base class

{

public void Display()

{

Console.WriteLine("This is the Parent class");

}

}

class Child : Parent // Derived class

{

public void Show()

{

Console.WriteLine("This is the Child class");

}

}

class Program

{

static void Main()

{

Child obj = new Child();

obj.Display(); // Inherited method

obj.Show(); // Child class method

}

}

**Output:**

python

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This is the Parent class

This is the Child class

**Access Modifiers & Inheritance**

* **public** → Accessible everywhere.
* **private** → Not inherited. Accessible only inside the base class.
* **protected** → Accessible in derived classes.
* **internal** → Accessible within the same assembly.
* **protected internal** → Accessible in the same assembly and derived classes.

**Method Overriding in Inheritance**

To modify the base class method in the derived class, use virtual (base) and override (derived).

csharp

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class Parent

{

public virtual void Show()

{

Console.WriteLine("Parent class method");

}

}

class Child : Parent

{

public override void Show()

{

Console.WriteLine("Overridden method in Child class");

}

}

class Program

{

static void Main()

{

Parent obj = new Child();

obj.Show(); // Calls overridden method in Child

}

}

**Output:**

pgsql

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Overridden method in Child class

**Base Keyword**

The base keyword is used to access the base class members.

csharp

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class Parent

{

public void Display()

{

Console.WriteLine("Parent class method");

}

}

class Child : Parent

{

public void Show()

{

base.Display(); // Calls base class method

Console.WriteLine("Child class method");

}

}

class Program

{

static void Main()

{

Child obj = new Child();

obj.Show();

}

}

**Output:**

kotlin

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Parent class method

Child class method