


36 Inheritance & Its Different Types with Examples in C++ - C++ Tutorials for Beginners #36.mp4 - VLC media player

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INHERITANCE IN C++ - OVERVIEW

- Reusability is a very important feature of OOPs
- In C++ we can reuse a class and add additional features to it
- Reusing classes saves time and money
- Reusing already tested and debugged class will save a lot of effort of developing and debugging the same thing again.

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OOPS
↓
Inheritance

```
class Employee {  
    ① name  
    Age  
    DOB  
}
```

→ class Programmer.
→ DRY
→ on Manager
→ clerk
→ + additional vars & m.f.


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DRY → Do not Repeat Yourself

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WHT IS INHERITANCE IN C++

- The concept of Reusability in C++ is supported using Inheritance
- We can reuse the properties of an existing class by inheriting from it
- The existing class is called as the **Base Class**
- The new class which is inherited is called as the **Derived Class**
- Reusing classes saves time and money
- There are different types of inheritance in C++

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Assistant:
Base class

Employee → Programmer
Base class Derived class


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FORMS OF INHERITANCE IN C++

- Multiple Inheritance
- Hierarchical Inheritance
- Multilevel Inheritance
- Hybrid Inheritance
- Single Inheritance



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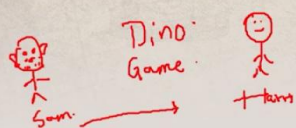
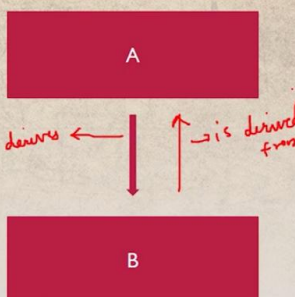
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SINGLE INHERITANCE IN C++

- A derived class with only one Base Class

Employee → Programmer



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MULTIPLE INHERITANCE IN C++

- A derived class with more than one Base class

The diagram illustrates multiple inheritance. At the top, two red boxes labeled 'A' and 'B' are shown. Above box 'A' is the handwritten word 'Employee', and above box 'B' is the handwritten word 'Assistant'. Arrows point from both boxes 'A' and 'B' down to a single red box labeled 'C' at the bottom. The handwritten word 'Programmer' is written between the two arrows, indicating that class 'C' inherits from both 'A' and 'B'.

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HIERARCHICAL INHERITANCE IN C++

- Several derived classes from a single base class

The diagram illustrates hierarchical inheritance. At the top, a single red box labeled 'C' is shown. Below it, two red boxes labeled 'A' and 'B' are shown. Arrows point from box 'C' down to both boxes 'A' and 'B'. The handwritten word 'Programmer' is written above box 'A', and the handwritten word 'Manager' is written above box 'B', indicating that both 'A' and 'B' inherit from 'C'.

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HIERARCHICAL INHERITANCE IN C++

- Several derived classes from a single base class

Employee

Programmer = Employee + More...

Manager

```
graph TD; C[C] --> A[A]; C[C] --> B[B];
```

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MULTILEVEL INHERITANCE IN C++

- Deriving a class from already derived class

Animal

Mammal = Animal + More...

Cow = Mammal + More...

```
graph TD; A[A] --> B[B]; B[B] --> C[C];
```

Animal



Mammal

Cow

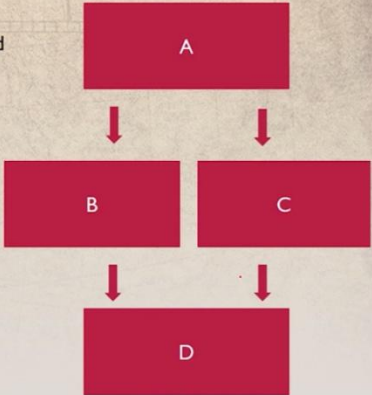
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 **HYBRID INHERITANCE IN C++** 

- **Hybrid inheritance** is a combination of multiple **inheritance** and multilevel **inheritance**.
- A class is derived from two classes as in multiple **inheritance**.
- However, one of the parent classes is not a base class.



```
graph TD; A[A] --> B[B]; A[A] --> C[C]; B[B] --> D[D]; C[C] --> D[D];
```

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