

# C++ in depth

## Inheritance

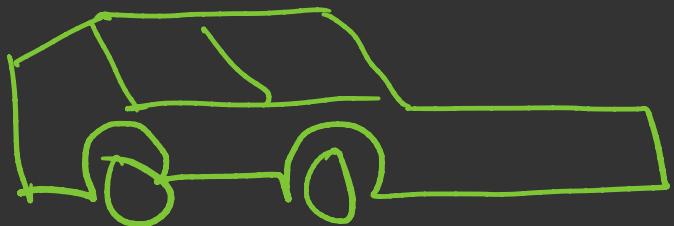


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## Agenda

- ① Introduction to Inheritance
- ② Inheritance implementation in C++
- ③ Types of inheritance
- ④ Visibility modes

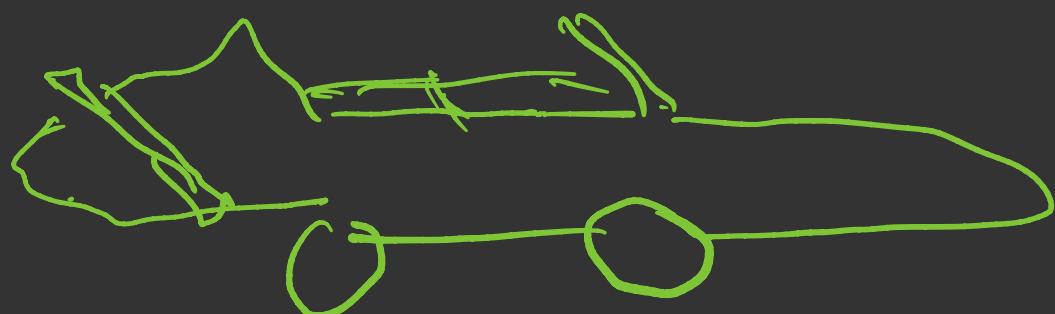
# Introduction



class Car

properties - 5

methods - 20



Sports Car

properties - 15

methods - 40

## Inheritance

Deriving a new class by inheriting properties and methods of an old class is known as Inheritance.

# Inheritance Implementation in C++

```
class BaseClass
```

```
{
```

```
};
```

```
class DerivedClass : visibilityMode BaseClass
```

```
{
```

```
};
```

old class

Base class

Super class

parent class

new class

Derived class

sub class

child class

private  
protected  
public



# Inheritance Relationship is-a

Sub -Category              Category

SportsCar is a Car

Doctor is-a Person

Banana is a Fruit

Table is a Furniture

Car is a Vehicle

Algebra is a Mathematics

is a

Specific is a Generic

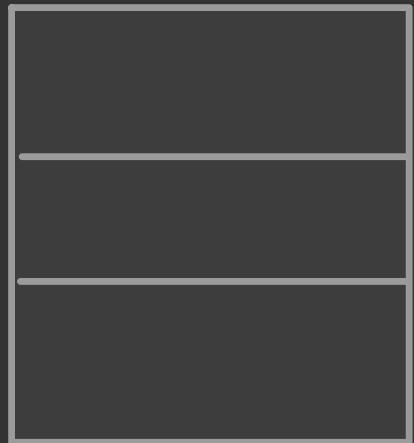
Derived Base

## Types of Inheritance

- ① Single Inheritance
- ② Multilevel Inheritance
- ③ Multiple Inheritance
- ④ Hierarchical Inheritance
- ⑤ Hybrid Inheritance

# Single Inheritance

A



class A

{

};

B

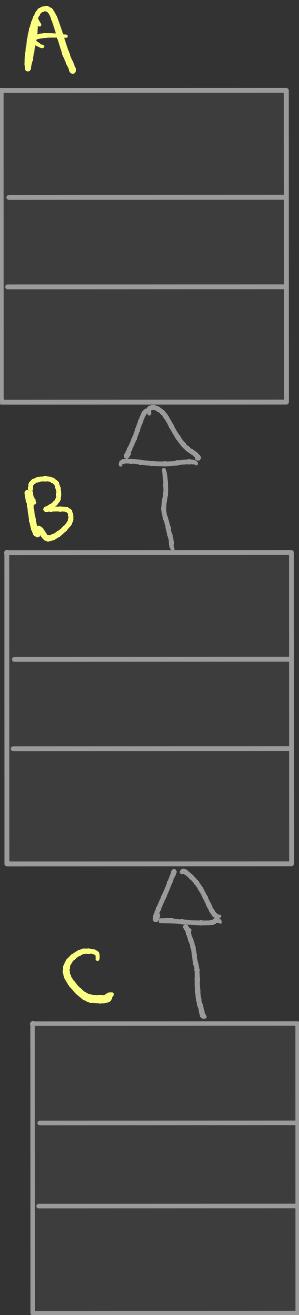


class B : public A

{

};

# Multilevel Inheritance



Class A

{

};

class B : public A

{

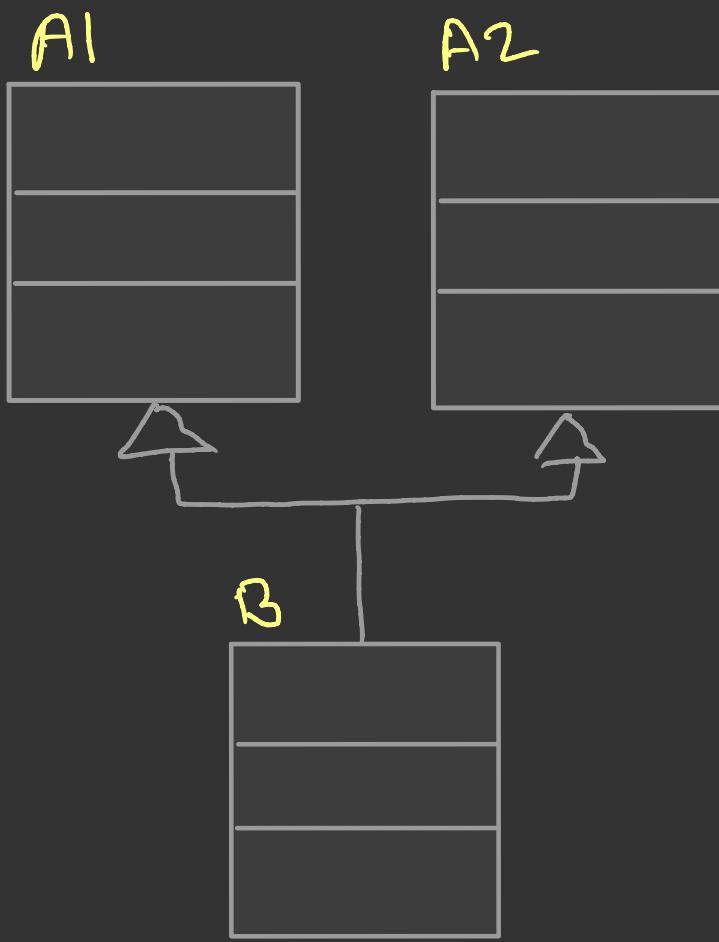
};

class C : public B

{

};

# Multiple Inheritance



class A1

{

};

class A2

{

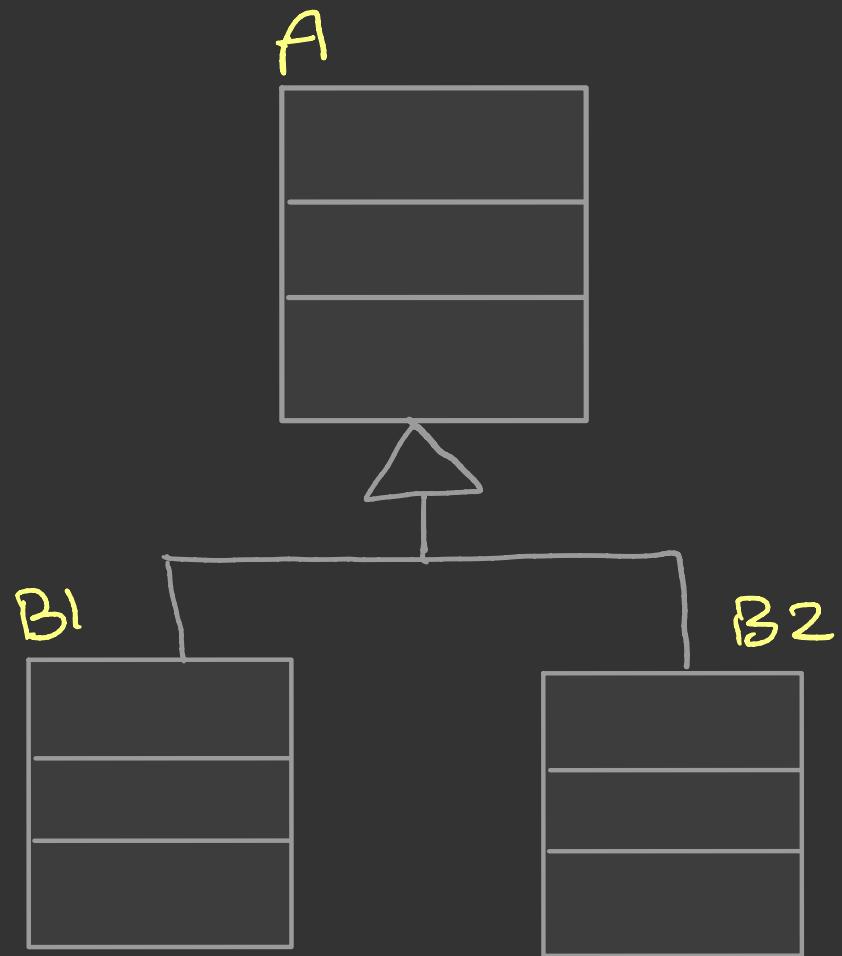
};

class B : public A1, public A2

{

};

# Hierarchical Inheritance



class A

{

};

class B1 : public A

{

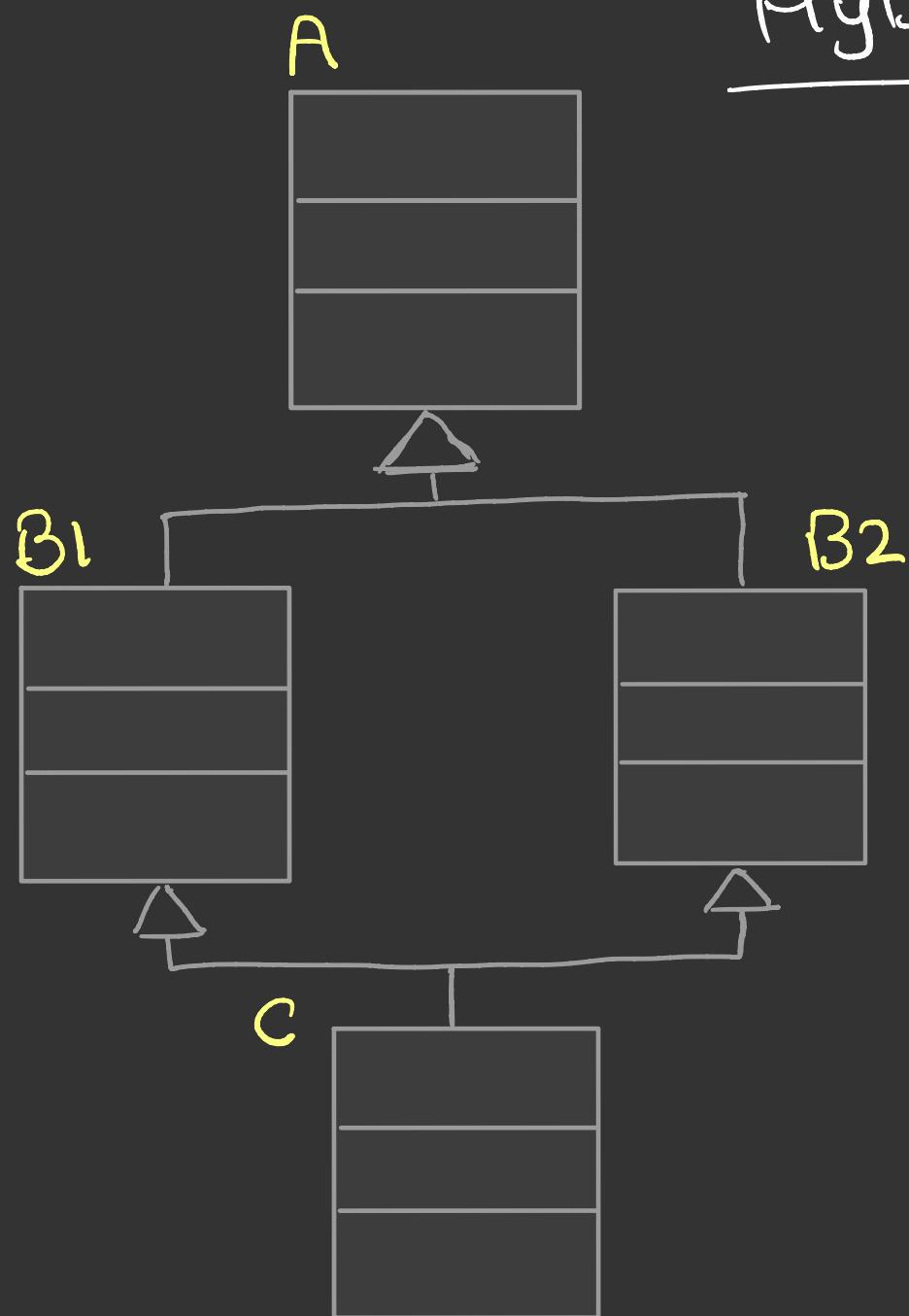
};

class B2 : public A

{

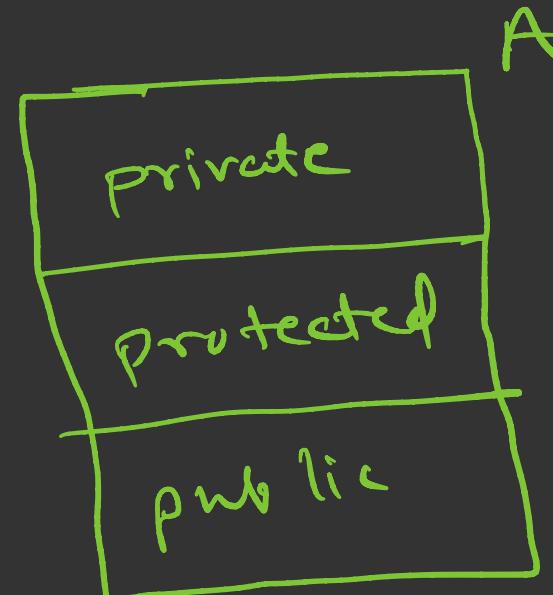
};

# Hybrid Inheritance



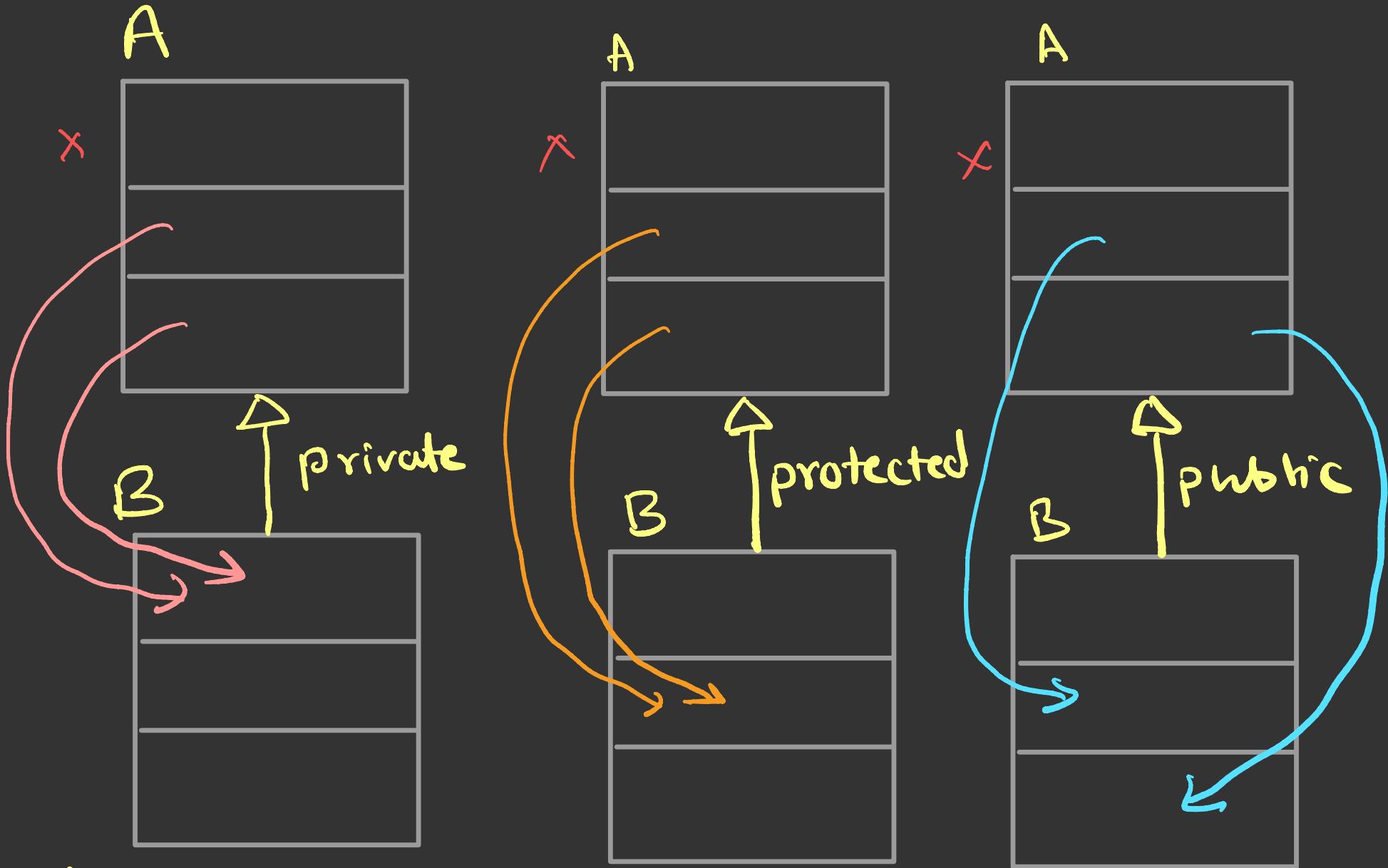
# Visibility Modes

- ① private
- ② protected
- ③ public



	private	protected	public
User 1	✗	✗	✓
User 2	✗	✓	✓

# Visibility Mode



Class B :   
A  
x ... y,

# Availability & Accessibility

Complex C1;

C1.a  $\cancel{x}$

C1.showData();

C1.f3();  $\cancel{x}$

