Chapter9
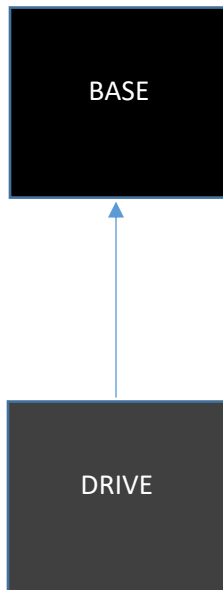
➢ UML ---> inhertance =Generalization

. Drived class   ACCESS   Base class

.if there no constructor in drived class, compiler will use constructor of Base class.

➢ Protected Access modifier: Allow to Drived class to Access the data of base class.
Or
Data of base use only in class or in drived class

Comparison	Access from own class	From dirved class	From outside class
Public	Yes	Yes	Yes
Protected	Yes	Yes	No
Private	Yes	No	No

➢ Base class =super class ---> parent
Drived class =sub class ----> child

➢ Constructor drived class:
In constructor drived class we can initialize data of constructor of base class

Class Base {
        Base ( ); <--- constructor.
        Base (x,y);<---constructor with argument
}

Class Drived {
        Dirved ( ):Base( );

        Drived (x,y):Base(x,y);
}

➢ Overriding member function : use Another function indrived class with same of func. In Base class .

Case1: same func with Arg&name find in Drived & Base calss& call it from
Drived calss ---> func of drived class

➢ Scope Resolution ---> ::   in overriding
Help to use definite function from base in drived class.

Ex.

Base {   Drived {
    Xfunc ( );   xfunc ( ){
}   Base::xfunc ( );
                                                        }
                                                    }

```
Call xfunc
of Base
class
```

➢ Public & private Inheritance :

.Public ---> class B : public c;
Can use function of c when make obj from B
Ex. B obj;
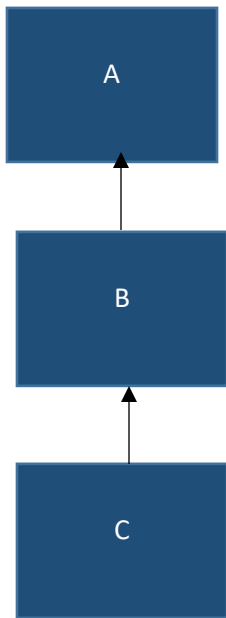Obj .functionc ( );

.private---> class B : private c;
Can't use function of c when use obj of B
Ex. B obj;
Obj.functionc ( ) (error)
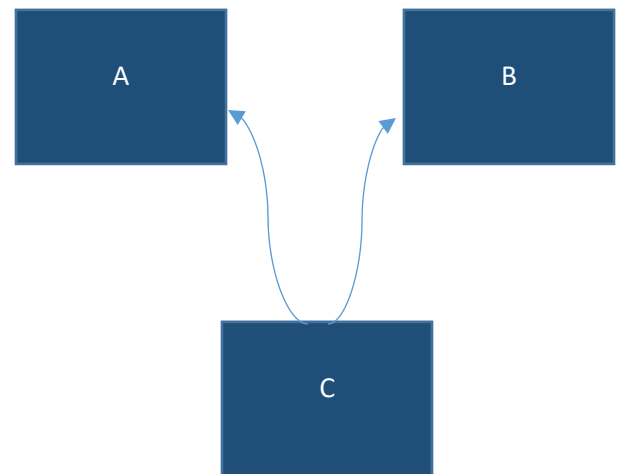Only uses in class B (drived class)

➢ Leve of inheritance :

class A {   }

class B : public A { };

class C : public B { };

➢ Multiple inheritance
   Ex. Class c: public A , public B
   { };

➢ Ambiguity in multiple inheritance
   . case1 : 2 Base class with same function name
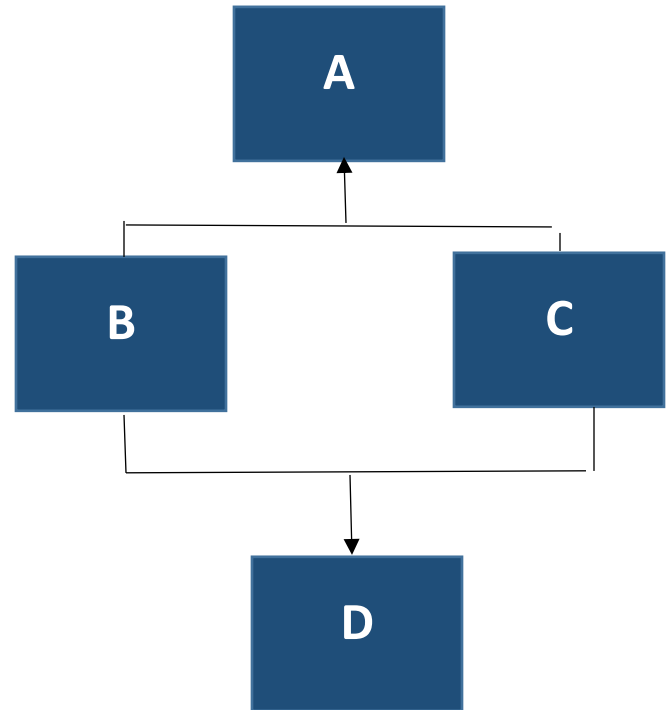   Which one will call by dirved class ?
   Solution :   class c: public A , public B

         Objc.A:: func ( );
         Objc.B:: func ( );

.case2: 2Drived class from base class & make another class drived from 2Drived class (make compile Error)

Solution is: Aggregation .

```
        A
       / \
      B   C
       \ /
        D
```

➤ Aggregation : class with in class

Inheritance ---> " kind of " (يستخدم عند وجود شيء عام)
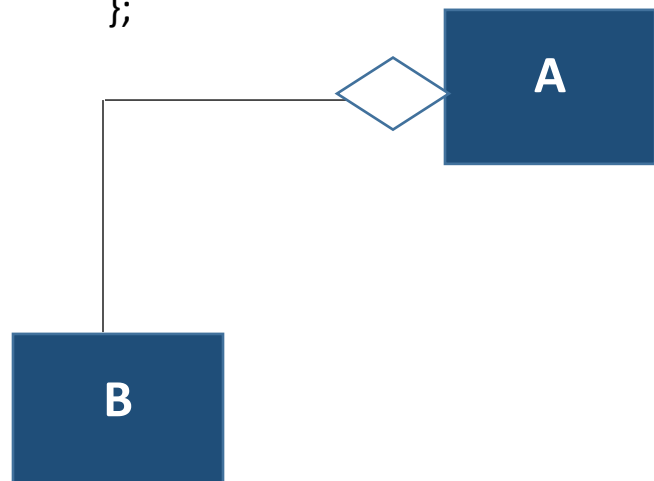EX. All bird has wings
Aggregation ---> "part_whole"(يستخدم عندما يكون الشئ جزء من)
Ex. Library has book (not only books)
EX.Aggreation---> class A { };
           Class B{
                A obj;
               };

```
  B ◇—— A
```

➢ Composition (strong Aggregation)
Concept : Aggregate depend on the class it's life time end by the class end .