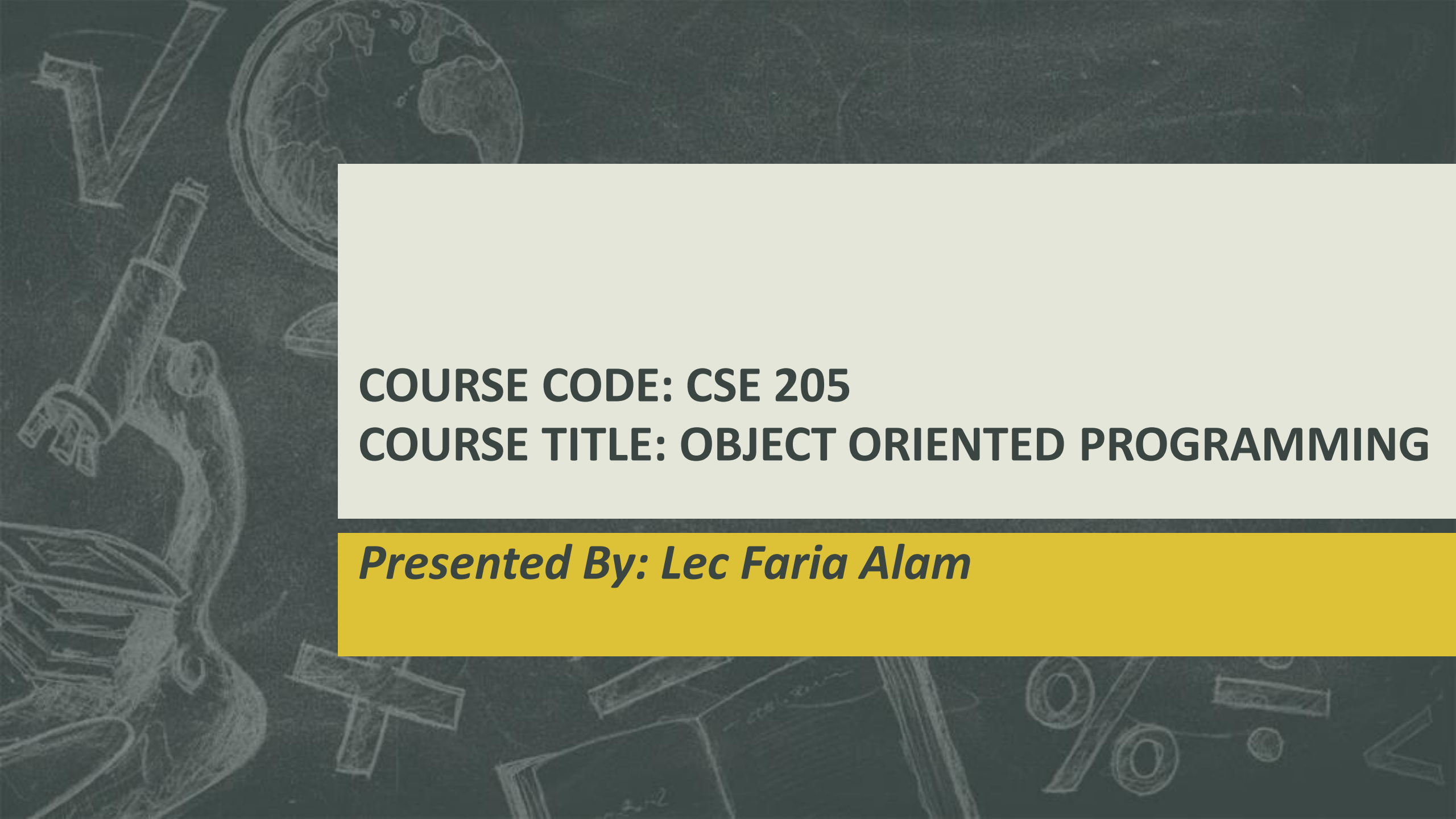
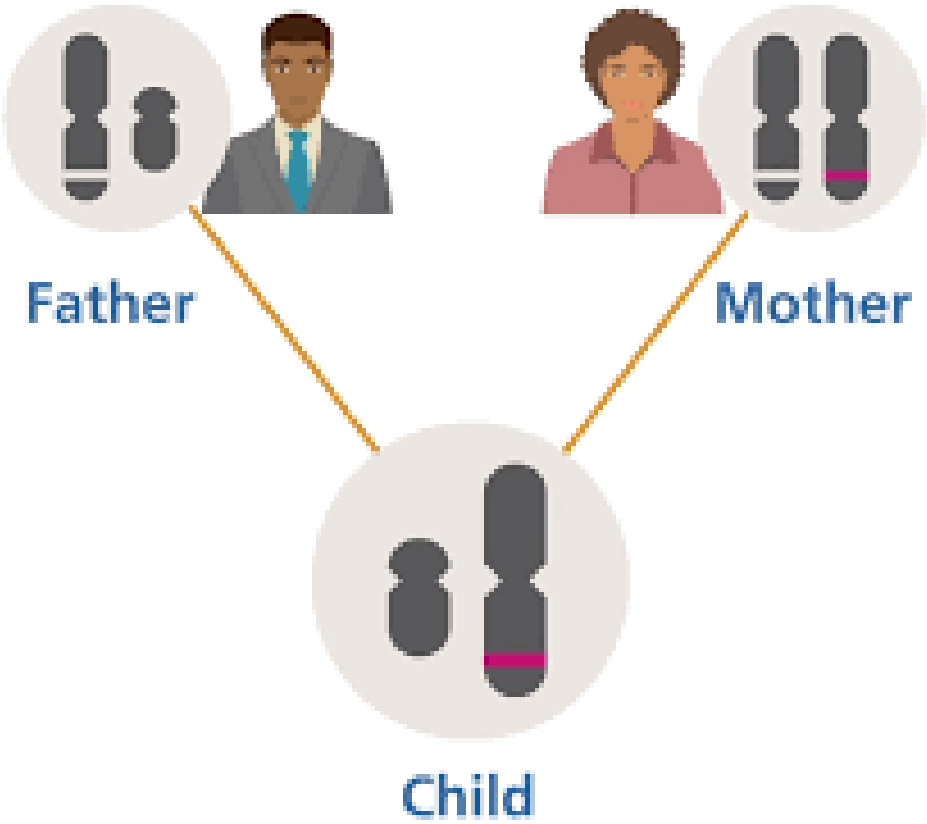


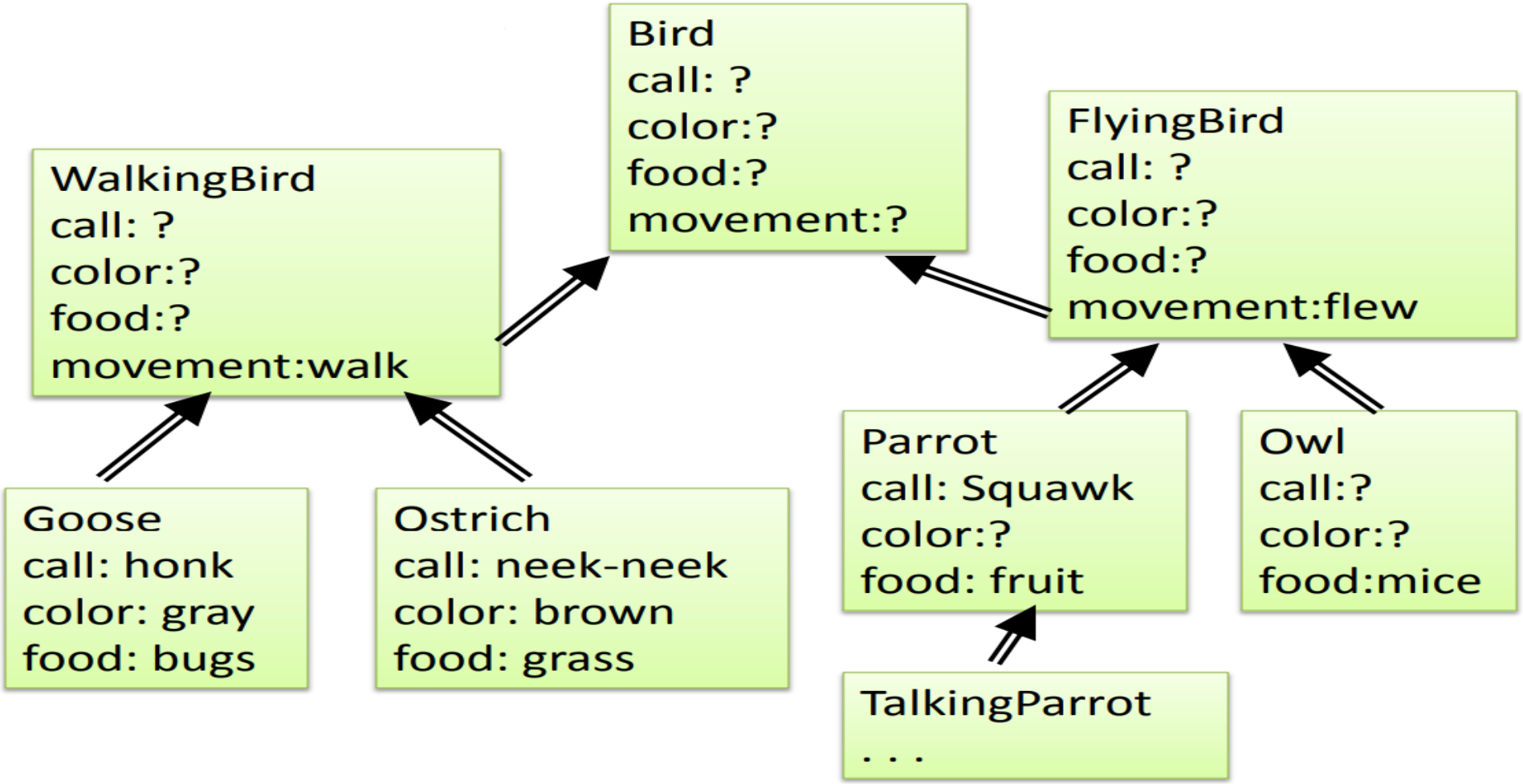
COURSE CODE: CSE 205
COURSE TITLE: OBJECT ORIENTED PROGRAMMING

Presented By: Lec Faria Alam

What Is Inheritance in General?



What Is Inheritance?



What Is Inheritance in OOP?

- Inheritance is the mechanism by which one class can inherit the properties of another.
- The new class is a specialized version of the existing class
- Two concepts of Inheritance
  - derived class (child) - The class that inherits properties from another class
  - base class (parent) - The class whose properties are inherited by a derived class

Inheritance

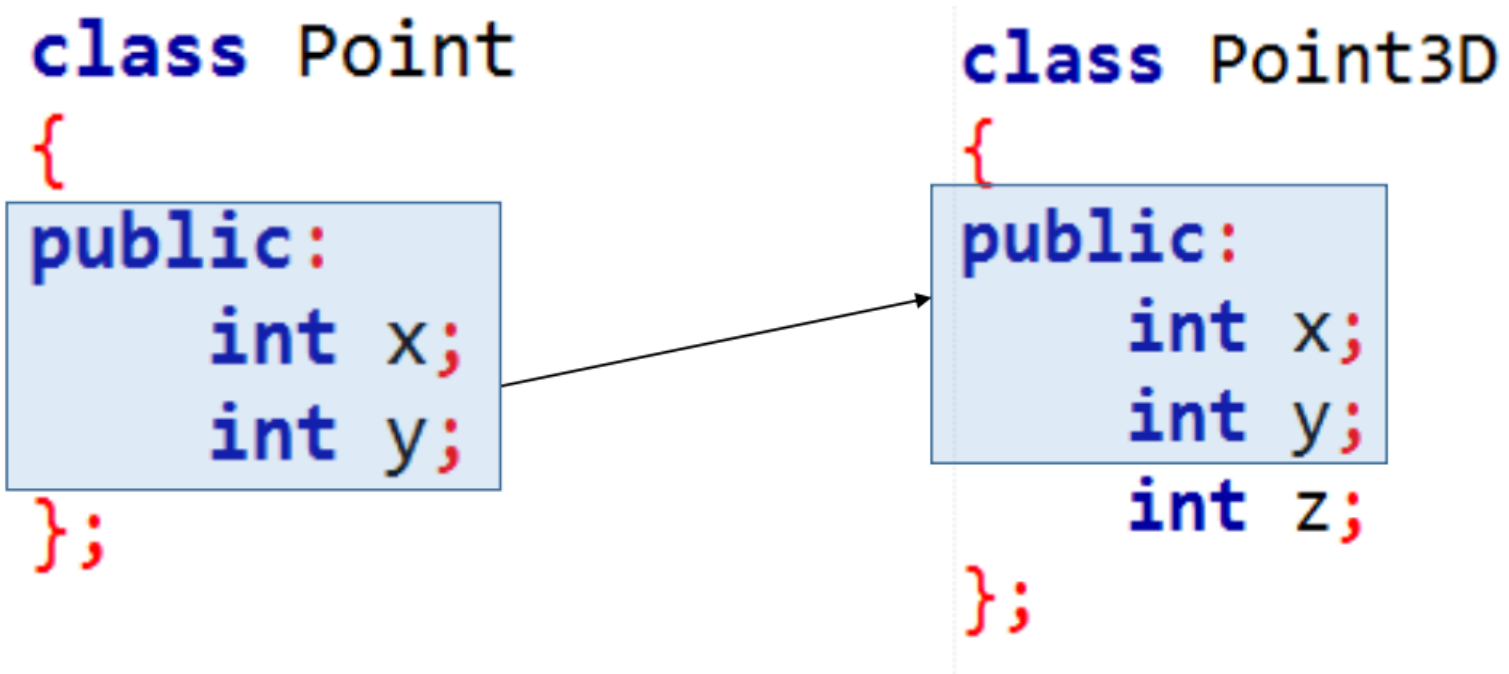
```
class Point
{
public:
    int x;
    int y;
};
```

Inheritance

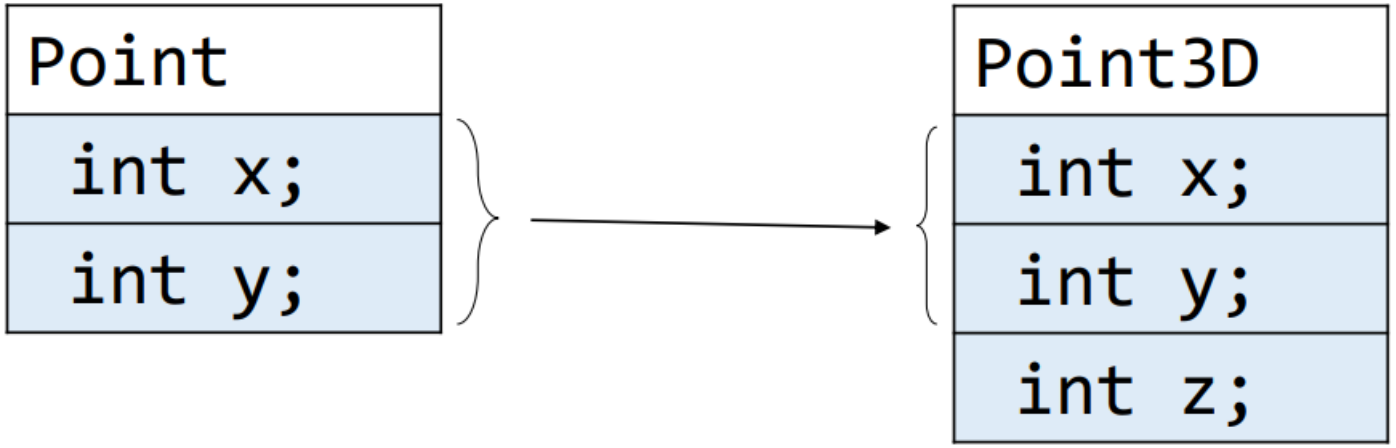
```
class Point
{
public:
    int x;
    int y;
};
```

```
class Point3D
{
public:
    int x;
    int y;
    int z;
};
```

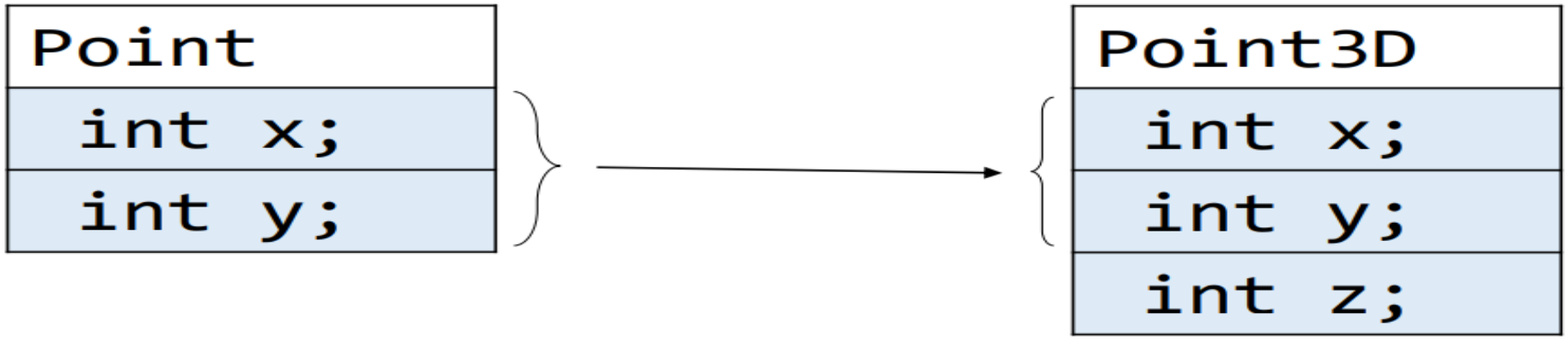
Inheritance



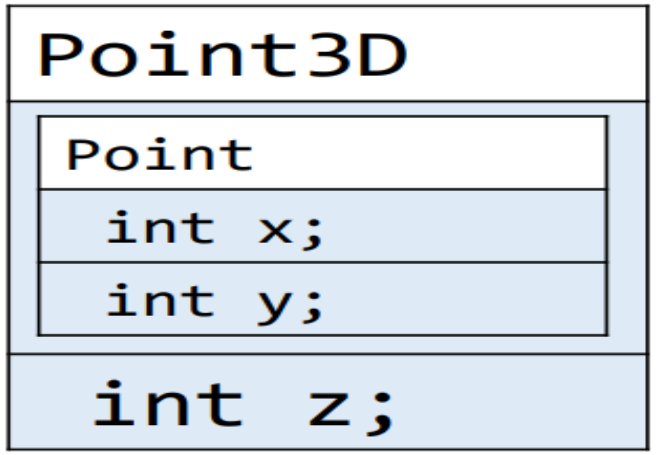
Inheritance



Inheritance



We need something like this:

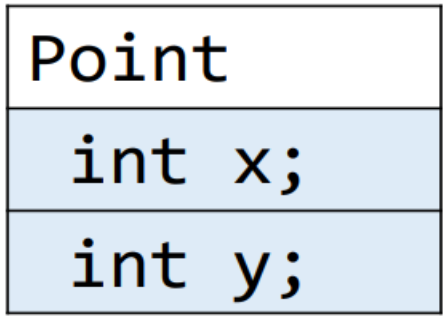


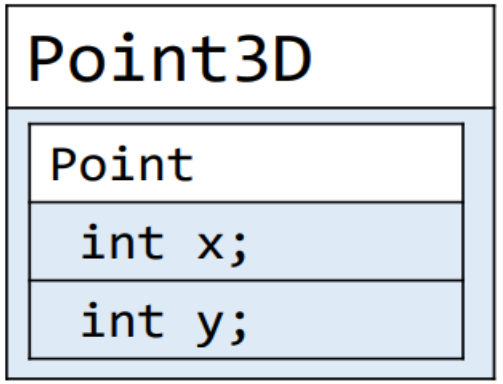
Inheritance

```
class Point
{
public:
    int x;
    int y;
};

class Point3D : public Point
{


};
```

Base Class

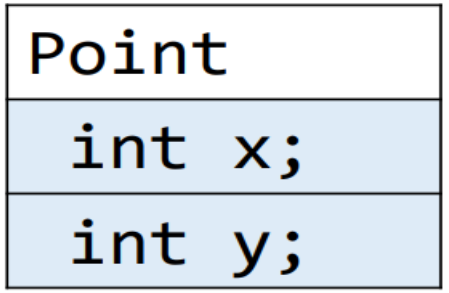
Derived Class



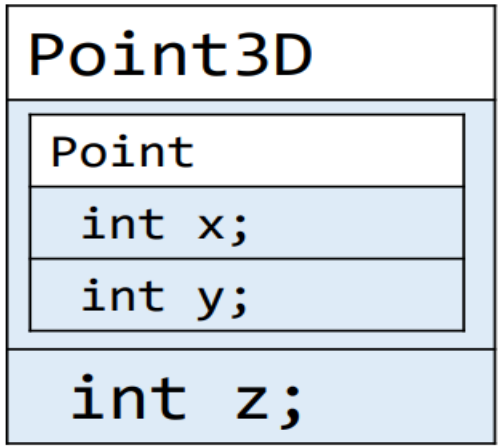


Inheritance

```
class Point
{
public:
     int x;
     int y;
};
```



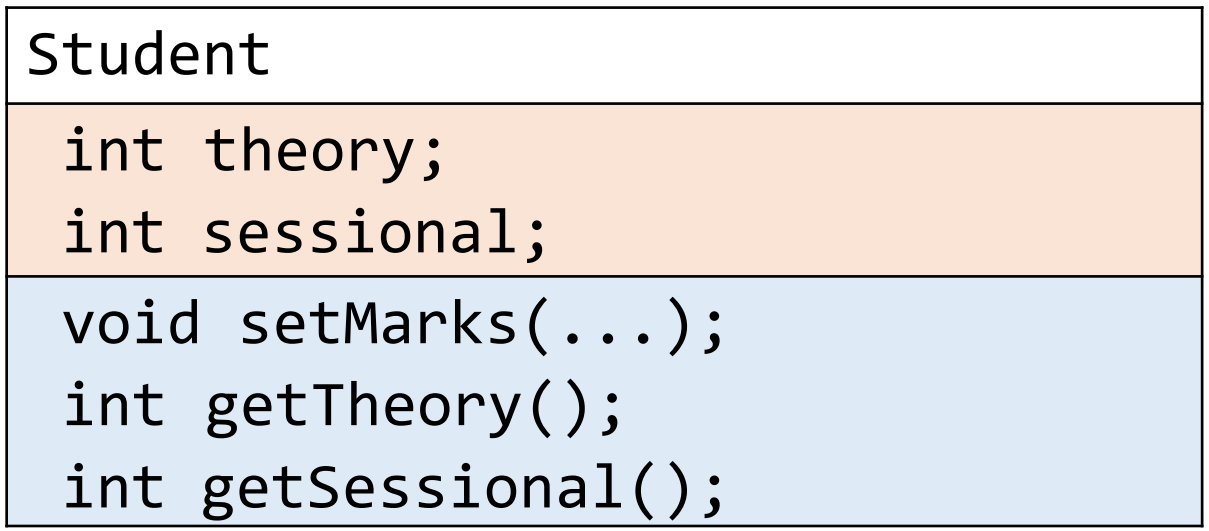

```
class Point3D : public Point
{
public:
     int z;
};
```



Class designer's view

Inheritance

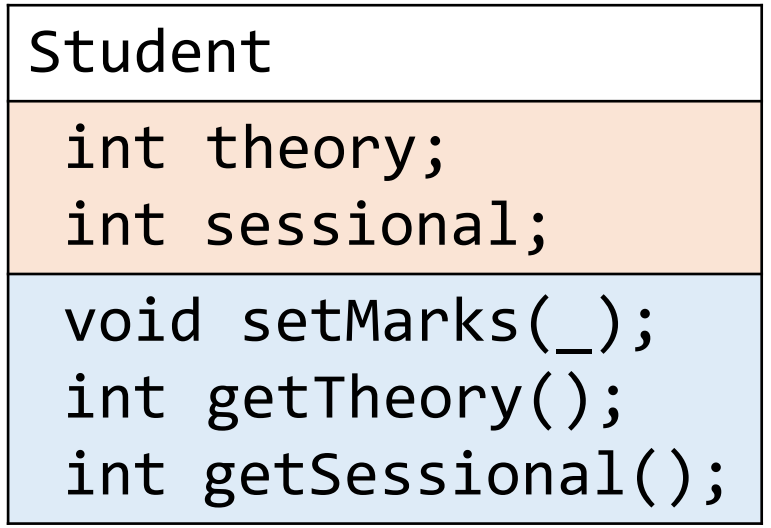
Student Class



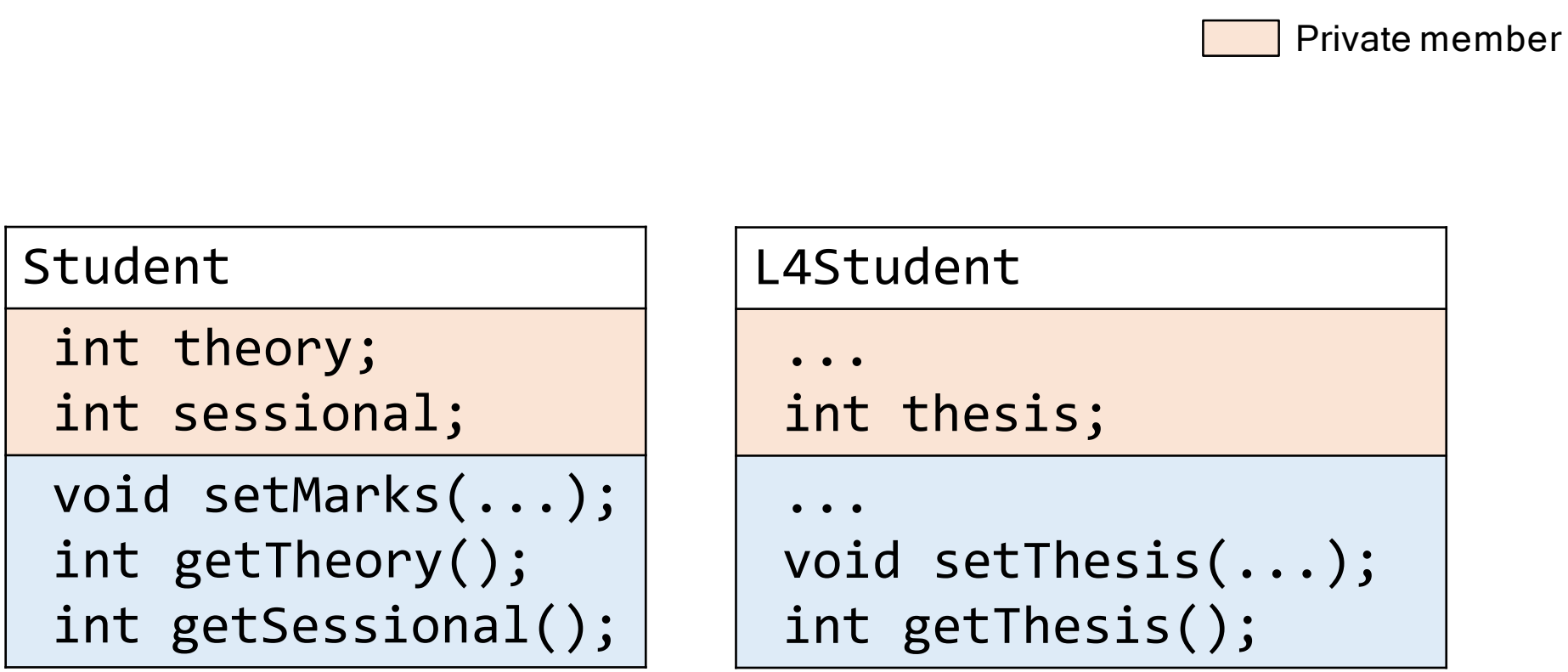
Private member

Inheritance

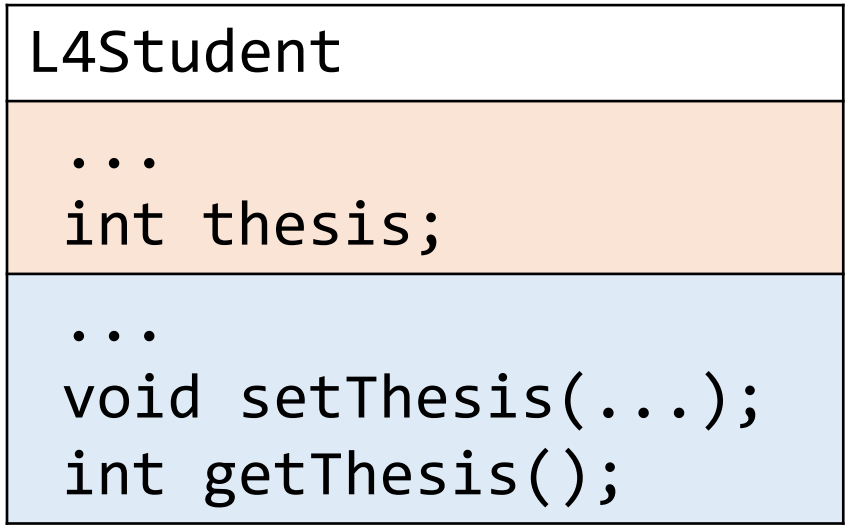
As we know, each student at every level has both theoretical and sessional courses. However, at level 4, there is an additional course called 'thesis.' Therefore, we need to design a class specifically for Level 4 students.



Extending Student Class



Extending Student Class

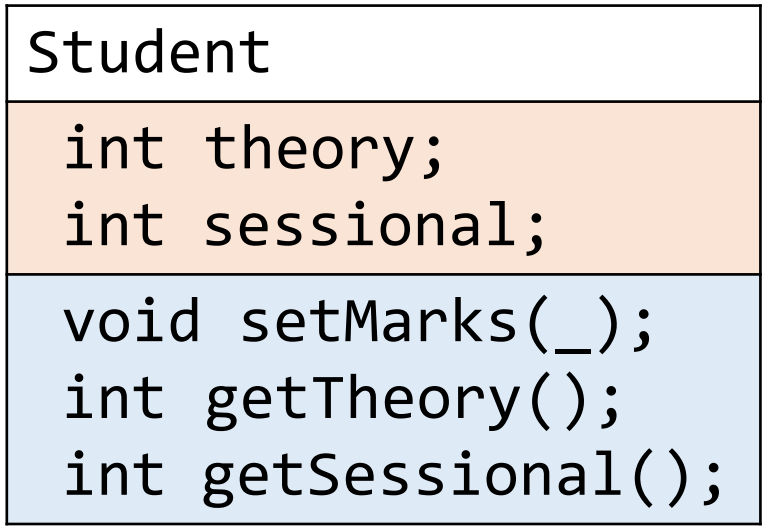


Private member

L4 students also have theoretical and sessional courses. Therefore, in the L4Student class, we also need to implement functionalities for setting theory and sessional marks. We already have a class called 'Student' that includes these functionalities, so we can inherit from that class.

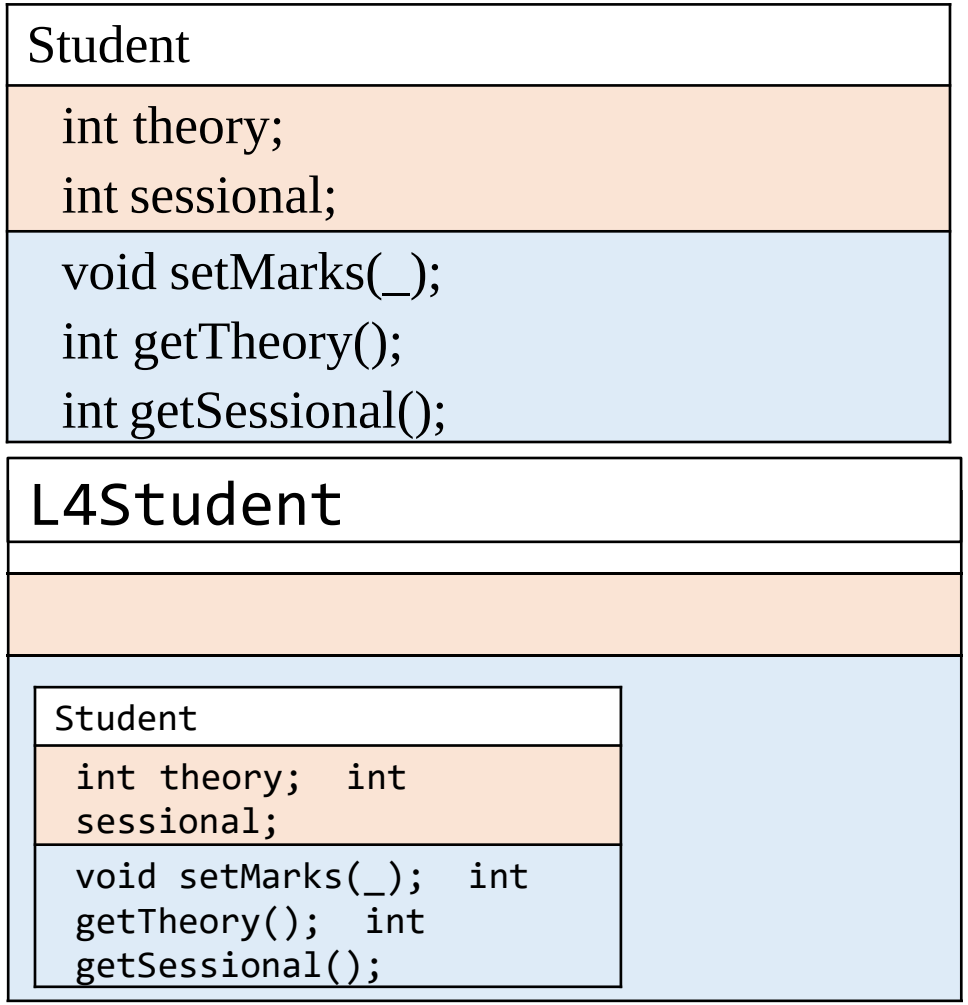
Extending Student Class

```
class L4Student : public Student
```



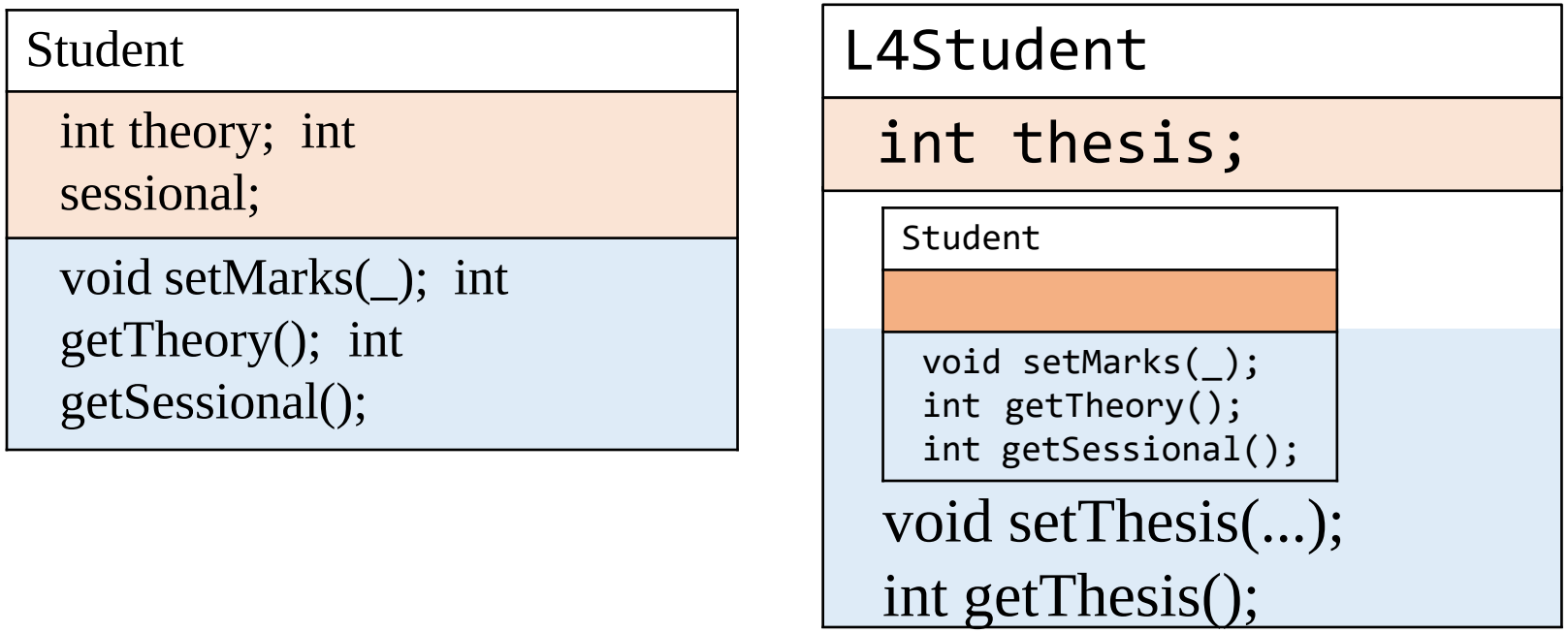
Extending Student Class

```
class L4Student : public Student
```



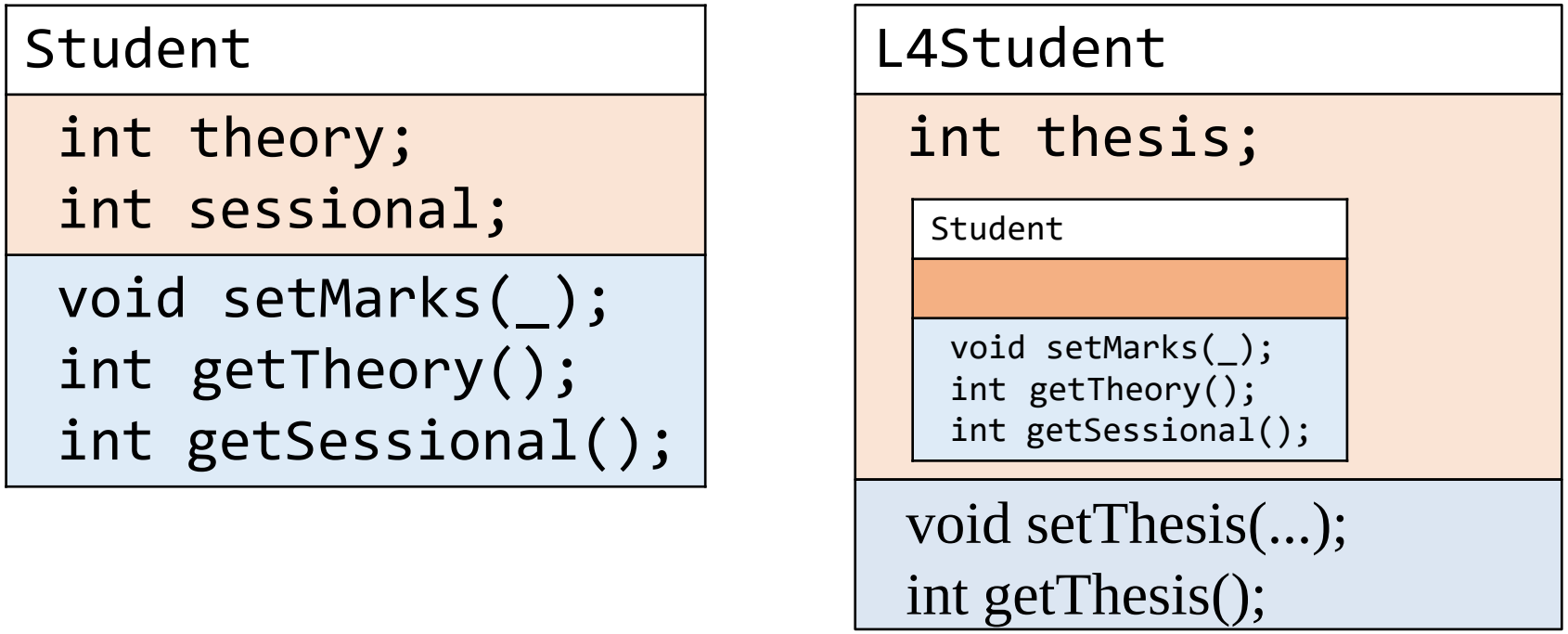
Extending Student Class

```
class L4Student : public Student
```



Extending Student Class

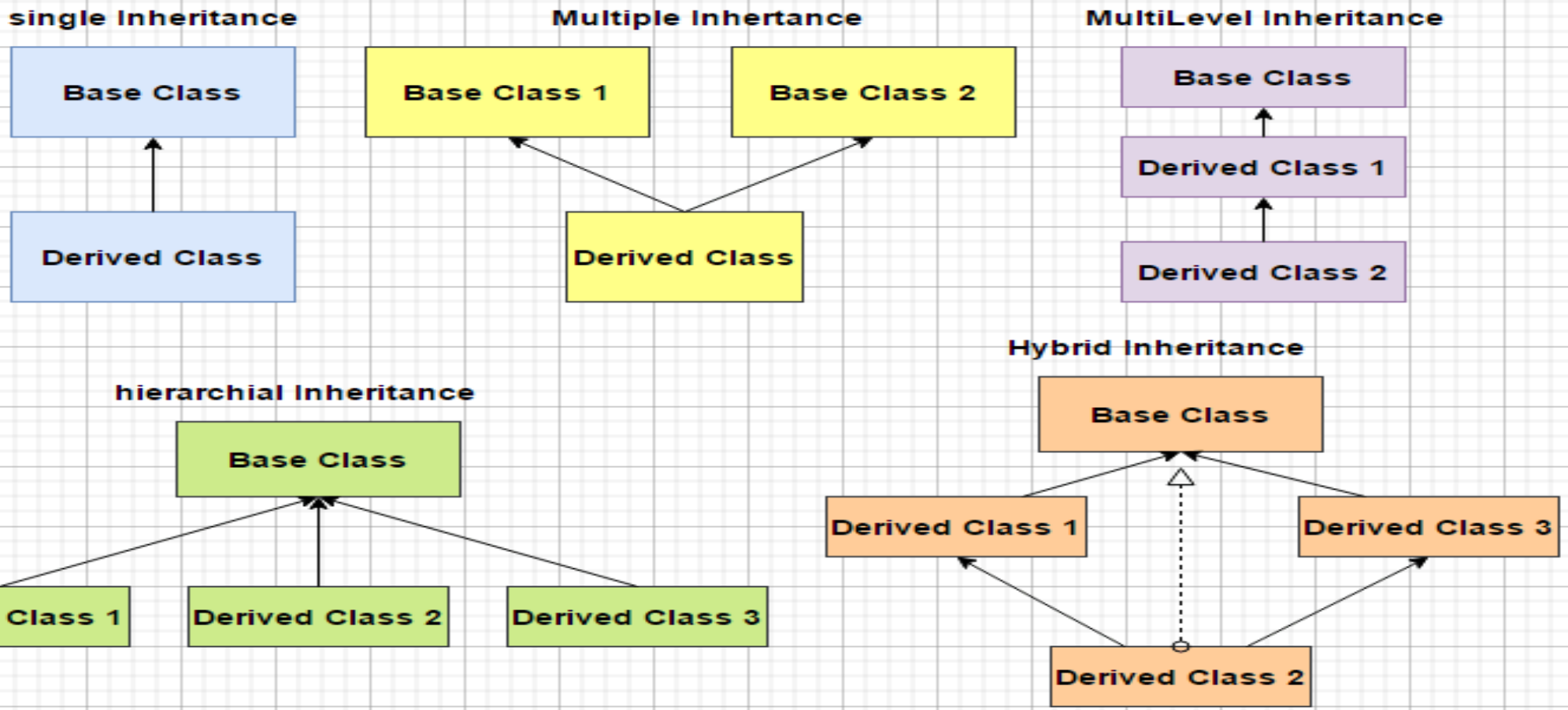
class L4Student : **private** Student



Access Specifier Summary

Inheritance	Base Class	Derived Class
public	Private: Protected: Public:	Private: Protected: Public:
protected	Private: Protected: Public:	Private: Protected: Public:
private	Private: Protected: Public:	Private: Protected: Public:

Types of Inheritance




Thank
you!