

Java for beginners

Abstract



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Agenda

- ① Abstract class
- ② Abstract Method

C++

There was no abstract keyword in C++.

but, concept of abstract class was there

What is abstract class in C++?

It is a class which cannot be instantiate, that is, you cannot create object of an abstract class.

but, you can create a pointer of an abstract class.

How to create an abstract class in C++?
You can make a class abstract by declaring at least one pure virtual function in the class

```
class A
{
    int x, y;
public:
    virtual void fun( int, int ) = 0;
    void f1() { ... }
    void f2() { ... }
};
```

class A is an abstract class

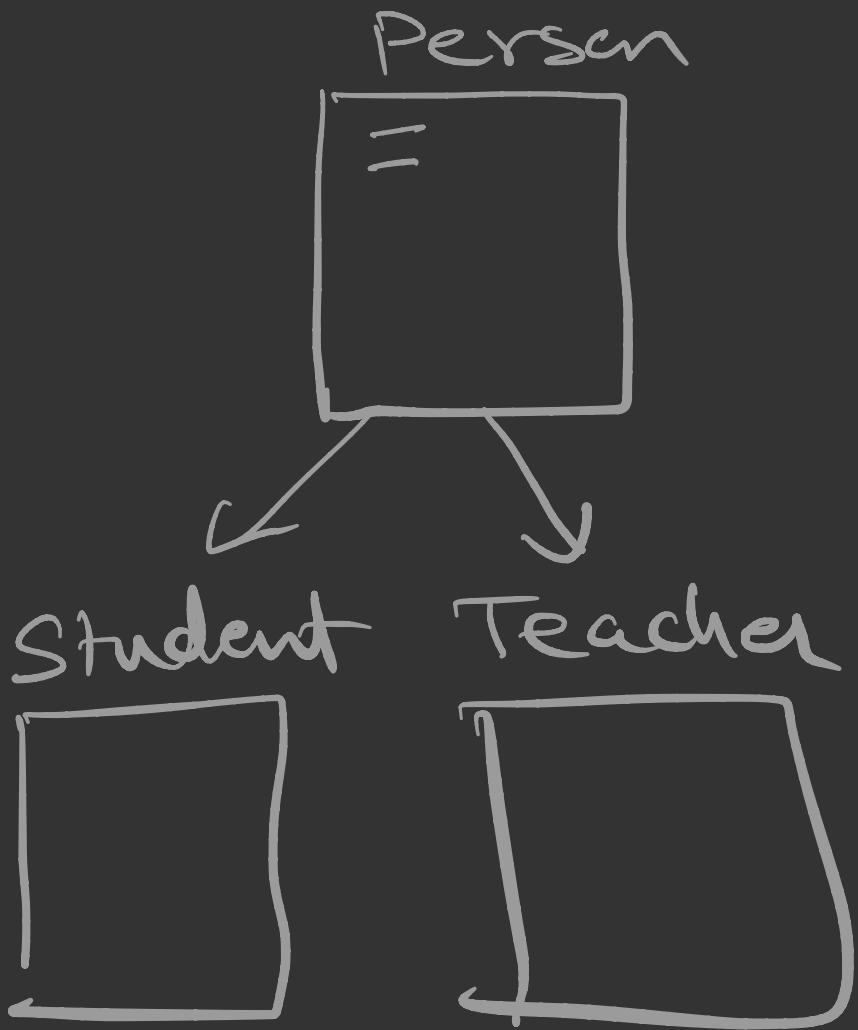
Why we create an abstract class?

Abstract class can only be used as a
Base class.

```
class B : public A  
{
```

```
public:  
    void fun( int a, int b ) // override  
{  
    }  
}
```

;



Abstract = without details

Abstract Class

Java abstract classes are used to declare common characteristics of subclasses.

An abstract class cannot be instantiated

Abstract classes are declared with the **abstract** keyword

Syntax

abstract class A {

\equiv

}

A obj = new A(); Error

You can create reference of abstract class.

More about Abstract Classes

It can only be used as a superclass
for other classes that extend the
abstract class.

Like any other class, an abstract class can contain fields that describe the characteristics and methods that describe the actions that a class can perform.

Abstract Method

An abstract class can include methods that contain no implementation.

These are called abstract methods.

The abstract method declaration must then end with a semicolon rather than a block.

abstract class A {

 abstract public void f1();

 void f2() { -- }
 void f3() { -- }

}

A obj = new A();

If a class has any abstract method, whether declared or inherited, the entire class must be declared abstract.

```
abstract class A {  
    abstract public void f1();  
}
```

class B extends A {

Class B should also be
an abstract class, as it
contains an abstract
method (inherited from
class A)

```
B obj = new B();
```

Find out the problem

class Person {

abstract void show();

}

Error: Class Person is
not abstract

An object must have an implementation for all of its methods.

You need to create a subclass that provides an implementation for the abstract method.

You cannot make an abstract
method private.