软件工程

张爽

东北大学软件学院

Class & Object

- **Class: abstract data type that supports *inheritance* .**
- **Objects are instantiations of classes.**

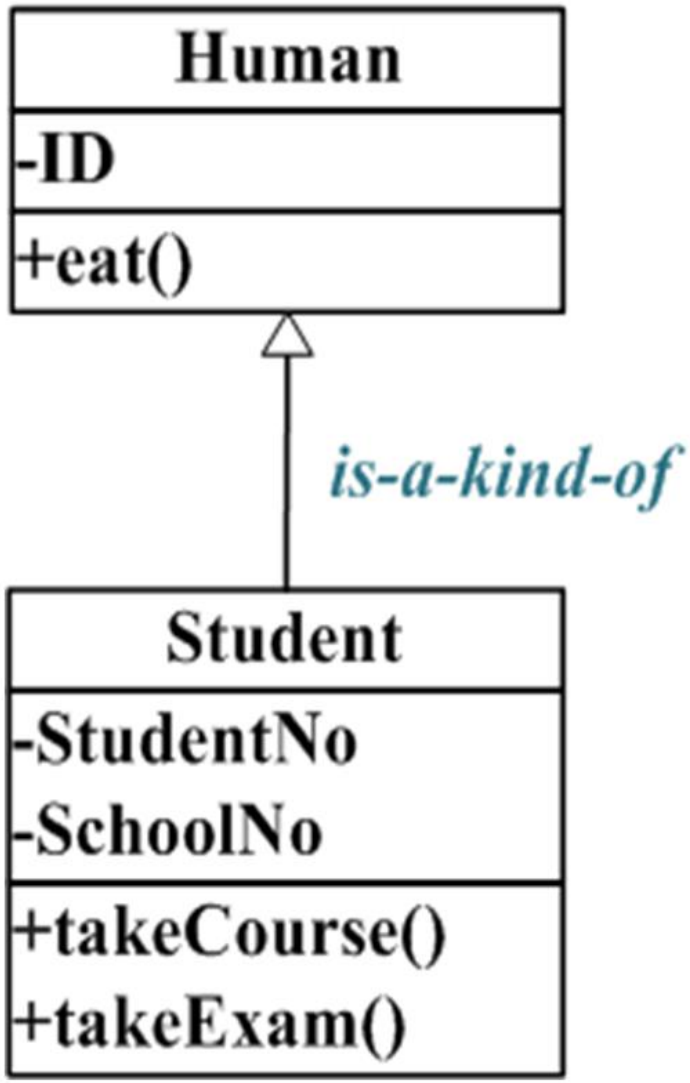
4.4 Inheritance

Inheritance

- **Define *humanBeing* to be a *class***
  - **A *humanBeing* has *attributes*, e.g., ID, name, etc.**
- **Define *Student* to be a *subclass* of *HumanBeing***
  - **A *Student* inherits all attributes and methods of *humanBeing*.**
  - **A *Student* has all attributes of a *HumanBeing*, plus attributes of his/her own (e.g., SchoolNo, StudentNo).**

Inheritance

- **UML notation ---- Inheritance is represented by a large open triangle.**



Super Class
Base Class
Parent Class

Sub Class
Derived Class
Child Class

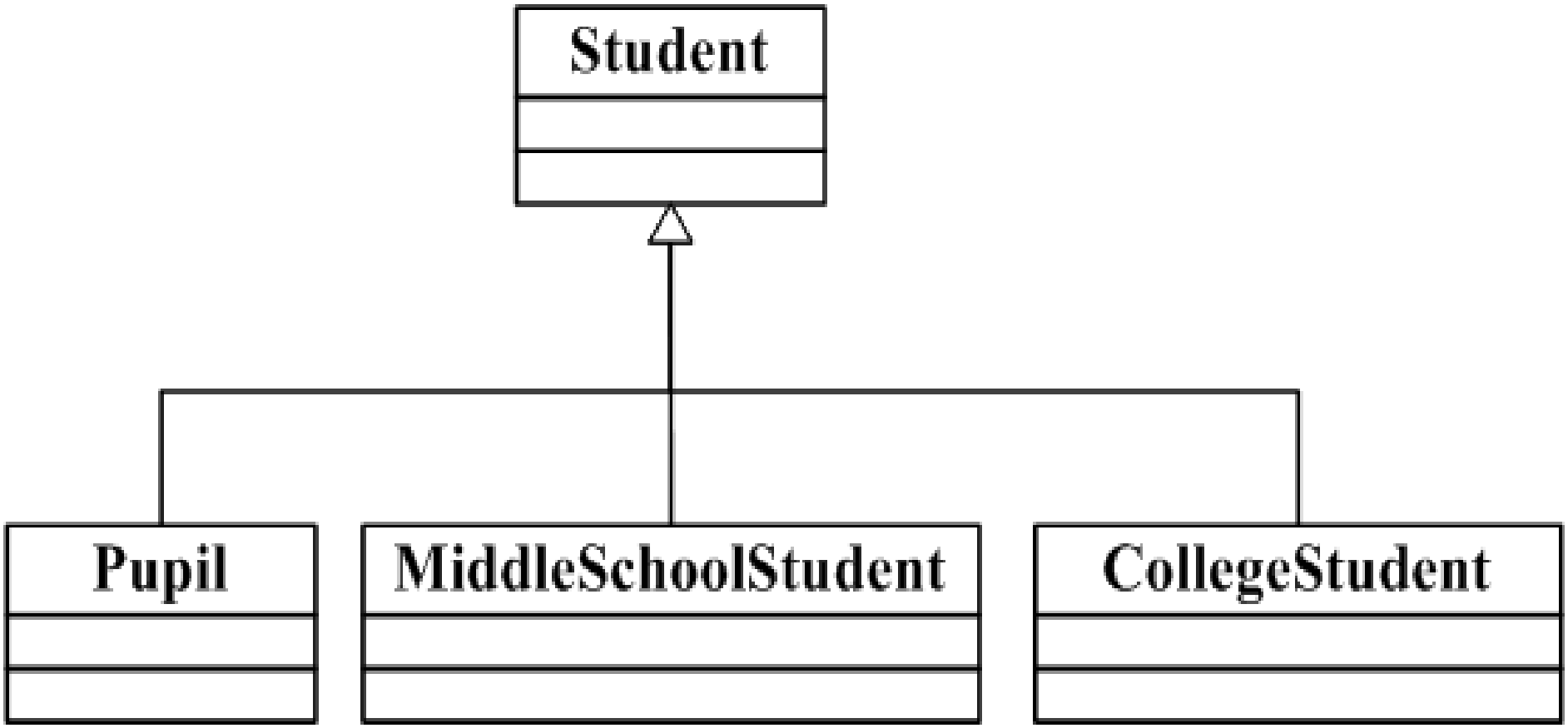
Java Implementation

The property of inheritance is an essential feature of object-oriented languages such as Java, Smalltalk, C++.

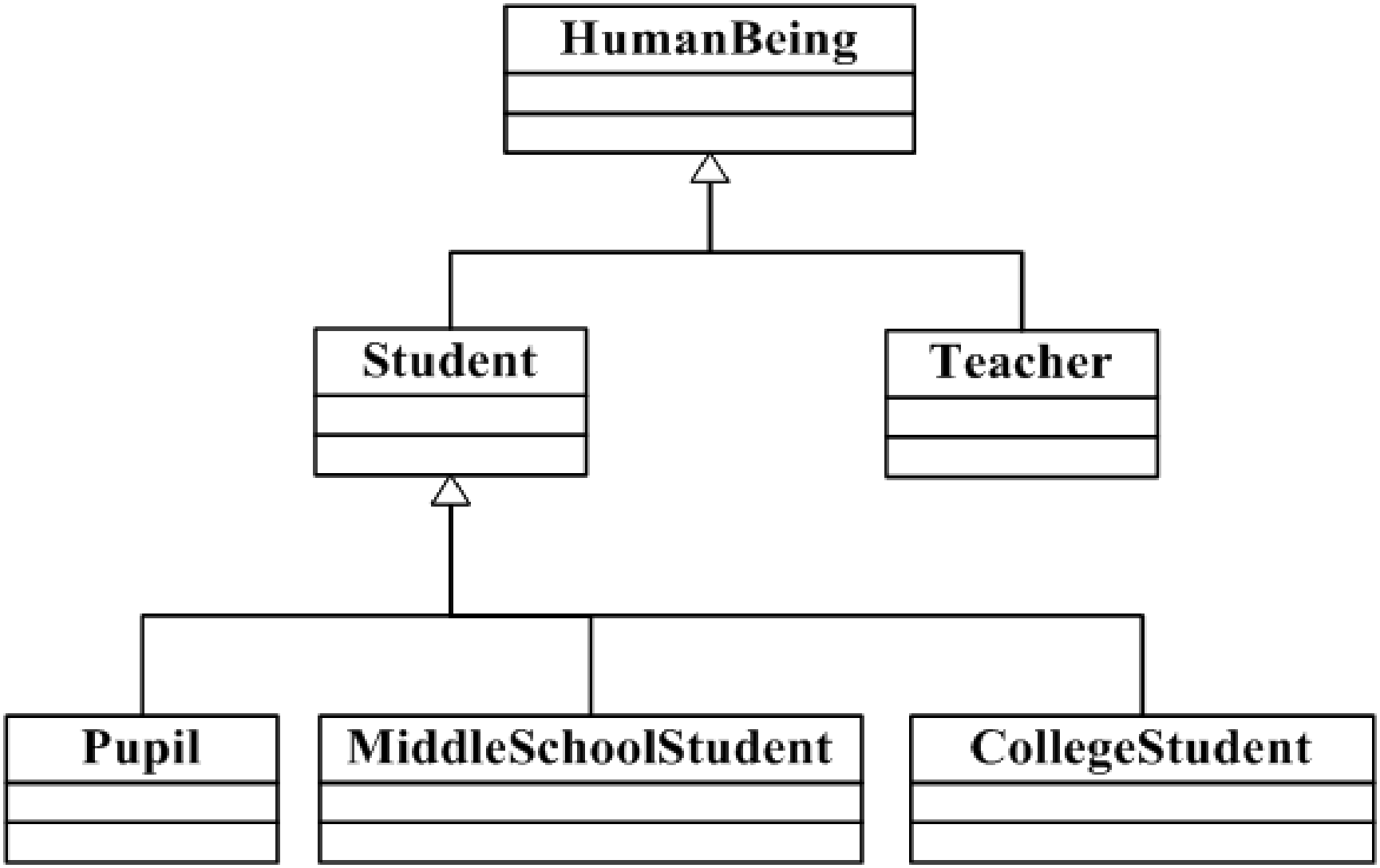
```
class Humanbeing
{
        int ID;
        String Name;
        // public declarations of operations on
            HumanBeing
}

class Student extends HumanBeing
{
        String SchoolNo;
        String StudentNo;
        // public declarations of operations on
            Student
}
```

Inheritance



Inheritance



Inheritance

- **Thinking: *Fragile base-class* problem**