

1. State whether each of the following is *true* or *false*. If *false*, explain why.

(1) Base-class constructors are not inherited by derived classes.

True

(2) An *is-a* relationship is implemented via composition.

False

is-a是一個inheritance的關係

(3) A **Student** class has an *is-a* relationship with the **Faculty** and **Course** classes.

False

是is-a relationship

(4) **Private** members of a **private** base class are inaccessible to the derived class.

True

(5) A base class's **protected** members can be accessed in the base-class definition, in derived-class definitions and in **friends** of the base class and its derived classes.

True

2. Draw an inheritance hierarchy for students at a university. Use **Student** as the base class of the hierarchy, then include classes **UndergraduateStudent** and **GraduateStudent** that derive from **Student**. Continue to extend the hierarchy as deep (i.e., as many levels) as possible. For example, **Freshman**, **Sophomore**, **Junior** and **Senior** derive from **UndergraduateStudent**, and **DoctoralStudent** and **MasterStudent** derive from **GraduateStudent**. After drawing the hierarchy, discuss the relationships that exist between the classes. (Note: You don't need to write any code for this exercise.)

