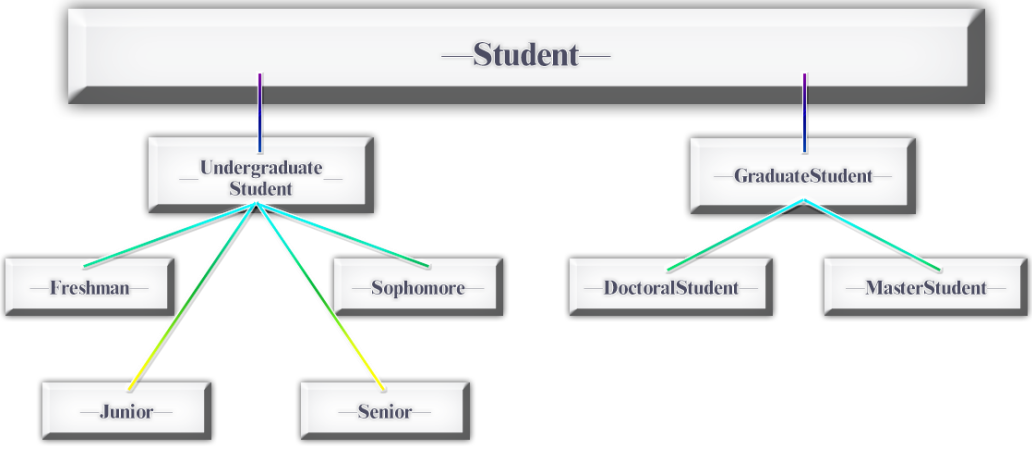
1. State whether each of the following is true or false. If false, explain why.
   (1) Base-class constructors are not inherited by derived classes.
   True, because the member data in derived class may be different from Base-class, you need to initialize the member data by your own constructor in derived class. However, you can call the Base-class's constructor to initialize the member data that you have derived from Base-class.
   (2) An is-a relationship is implemented via composition.
   False, is-a relationship means inheritance, not the composition such as a member function that Base-class do not have.
   (3) A Student class has an is-a relationship with the Faculty and Course classes.
   True, a student must have some feature in both faculty and course.
   (4) Private members of a private base class are inaccessible to the derived class.
   True, when a private member data derived with private inheritance will be hidden in the derived class.
   (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, the protected member data allow the derived class to access, but it doesn't allow the outside access in spites of friends

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.



UndergraduateStudent and GraduateStudent both derive the Student class, so both have some same features.
Freshman, Sophomore, Junior and Senior all derive the UndergraduateStudent class, so all of them have some same features.
DoctoralStudent and MasterStudent both derive the GraduateStudent class, so both have some same features.

All of the public member data or functions in Student class share in the UndergraduateStudent, GraduateStudent, Freshman, Sophomore, Junior and Senior, DoctoralStudent and MasterStudent.
All of the public member data or functions in UndergraduateStudent class share in the Freshman, Sophomore, Junior and Senior.
All of the public member data or functions in GraduateStudent class share in the DoctoralStudent and MasterStudent.