Chapter 12 Assignment

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**12.7:** Discuss four ways in which you can assign base-class and derived-class references to variables of base-class and derived class types.

1. You can assign a base class reference to a base class variable.

2. You can assign a derived class reference to a base class variable.

3. Assign a derived class reference to a base class which can only be referred to base class members. Compiler error will be reported if it refers to derived class only members through the base class variable.

4. Assigning a base class reference to a derived class variable causes a complilation error. If can be avoided by casting the base class reference to a derived class.

**12.8:** Compare and contrast abstract classes and interfaces. Why would you use an abstract class? Why would you use an interface?

Both are used for abstraction. Abstract classes can have both abstract and non-abstract classes whereas interfaces can only have abstract methods. Variables declared in interfaces are final where they can be final and non-final in abstract classes.

Abstract classes are used to provide a base class which other classes can inherit.

Interfaces are used to complete abstraction and define the boundaries of the system. They define and standardize the way systems interact.