**Chapter 9. Inheritance and Polymorphism**

* Object-oriented programming allows you to derive new classes from existing classes. This is called *inheritance*
* A subclass inherits accessible data fields and methods from its superclass, and may also add new data fields and methods

**9.2. Superclasses and Subclasses**

* In Java terminology, a class C1 extended from another class C2 is called a *subclass*, and C2 is called a *superclass*.
* A superclass is also referred to as a *supertype*, a parent class, or a base class, and a subclass as a *subtype*, a child class, an extended class, or a derived class.
* A subclass inherits accessible data fields and methods from its superclass, and may also add new data fields and methods.
* Consider geometric objects. Suppose you want to design the classes to model geometric objects like circles and rectangles.
* Geometric objects have many common properties and behaviors. They can be drawn in
  + a certain color,
  + filled or unfilled.
* Thus a general class GeometricObject can be used to model all geometric objects.
* This class contains the properties
  + color and
  + filled and their appropriate
  + get and
  + set methods. Assume that this class also contains the
  + dateCreated property and the
  + getDateCreated() and
  + toString() methods. The toString() method returns a string representation for the object.
* Since a circle is a special type of geometric object, it shares common properties and methods with other geometric objects.
* Thus it makes sense to define the Circle class that extends the GeometricObject class. Likewise, Rectangle can also be declared as a subclass of GeometricObject.
* [Figure 9.1](mk:@MSITStore:F:\Java\Java%20Reference\Prentice.Hall.Introduction.to.Java.Programming.Comprehensive.Version.6th.Edition.ebook-LRN(1).chm::/9.2.%20Superclasses%20and%20Subclasses.htm#ch09fig01) shows the relationship among these classes. An arrow pointing to the superclass is used to denote the inheritance relationship between the two classes involved
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