Instead of this absurd division into sexes, they ought to class people as static and dynamic.
—Evelyn Waugh

Is it a world to hide virtues in?
—William Shakespeare

But what, to serve our private ends, Forbids the cheating of our friends?
—Charles Churchill

This above all: to thine own self be true.
—William Shakespeare

Don't be “consistent,” but be simply true.

Oliver Wendell Holmes, Jr.

**Objectives**

In this chapter you’ll learn:

- Encapsulation and data hiding.
- To use keyword `this`.
- To use `static` variables and methods.
- To import `static` members of a class.
- To use the `enum` type to create sets of constants with unique identifiers.
- To declare `enum` constants with parameters.
- To organize classes in packages to promote reuse.
Self-Review Exercises

8.1 Fill in the blanks in each of the following statements:

a) When compiling a class in a package, the `javac` command-line option _______ specifies where to store the package and causes the compiler to create the package’s directories if they do not exist.

ANS: `-d`.

b) String class static method _______ is similar to method `System.out.printf`, but returns a formatted String rather than displaying a String in a command window.

ANS: `format`.

c) If a method contains a local variable with the same name as one of its class’s fields, the local variable _______ the field in that method’s scope.

ANS: shadows.

d) The _______ method is called by the garbage collector just before it reclaims an object’s memory.

ANS: `finalize`.

e) A(n) _______ declaration specifies one class to import.

ANS: single-type-import.

f) If a class declares constructors, the compiler will not create a(n) _______.

ANS: default constructor.

g) An object’s _______ method is called implicitly when an object appears in code where a `String` is needed.

ANS: `toString`.

h) Get methods are commonly called _______ or _______.

ANS: accessor methods, query methods.

i) A(n) _______ method tests whether a condition is true or false.

ANS: predicate.

j) For every `enum`, the compiler generates a static method called _______ that returns an array of the enum’s constants in the order in which they were declared.

ANS: `values`.

k) Composition is sometimes referred to as a(n) _______ relationship.

ANS: has-a.

l) A(n) _______ declaration contains a comma-separated list of constants.

ANS: `enum`.

m) A(n) _______ variable represents classwise information that is shared by all the objects of the class.

ANS: static.

n) A(n) _______ declaration imports one static member.

ANS: single static import.

o) The _______ states that code should be granted only the amount of privilege and access that it needs to accomplish its designated task.

ANS: principle of least privilege.

p) Keyword _______ specifies that a variable is not modifiable.

ANS: `final`.

q) There can be only one _______ in a Java source-code file, and it must precede all other declarations and statements in the file.

ANS: package declaration.

r) A(n) _______ declaration imports only the classes that the program uses from a particular package.

ANS: type-import-on-demand.
s) The compiler uses a(n) _______ to locate the classes it needs in the classpath.
ANS: class loader.

t) The classpath for the compiler and JVM can be specified with the _______ option to
the javac or java command, or by setting the _______ environment variable.
ANS: -classpath, CLASSPATH.

u) Set methods are commonly called _______ because they typically change a value.
ANS: mutator methods.

v) A(n) _______ imports all static members of a class.
ANS: static import on demand.

w) The public methods of a class are also known as the class's _______ or _______.
ANS: public services, public interface.

Exercises

NOTE: Solutions to the programming exercises are located in the ch08solutions folder.
Each exercise has its own folder named ex08_## where ## is a two-digit number represent-
ing the exercise number. For example, exercise 8.4’s solution is located in the folder
ex08_04.

8.2 Explain the notion of package access in Java. Explain the negative aspects of package access.
ANS: Package access allows a class, method, or variable to be accessible within the same
package. Package access does not promote good OOP when applied to an instance
variable because it destroys the notion of information hiding.

8.3 What happens when a return type, even void, is specified for a constructor?
ANS: It is treated as a method and is not considered to be a constructor.