1 Running Java: Compilation, Loading, and Execution

Before a Java program can be executed, it must be compiled and loaded. The compiler checks that the Java program is legal: that the program conforms to the Java syntax (grammar), that operators (such as +) are applied to operands (such as 5 and x) of the correct type, and so on. If so, the compiler generates so-called class files. Execution then starts by loading the needed class files.

Thus running a Java program involves three stages: compilation (checks that the program is well-formed), loading (loads and initializes classes), and execution (runs the program code).

2 Names and Reserved Names

A legal name (of a variable, method, field, parameter, class, interface or package) starts with a letter or dollar sign ($), and continues with zero or more letters or dollar signs or underscores or digits (0–9). Avoid dollar signs in class names. Uppercase letters and lowercase letters are considered distinct. A legal name cannot be one of the following reserved names:

- abstract
- char
- else
- for
- interface
- protected
- switch
- try
- assert
- class
- enum
- goto
- long
- public
- synchronized
- void
- boolean
- const
- extends
- if
- native
- return
- this
- volatile
- break
- continue
- false
- implements
- new
- short
- throw
- while
- byte
- default
- final
- import
- null
- static
- throws
- case
- do
- finally
- instanceof
- package
- strictfp
- transient
- catch
- double
- float
- int
- private
- super
- true

3 Java Naming Conventions

The following naming conventions are often followed, although not enforced by Java:

- If a name is composed of several words, then each word (except possibly the first one) begins with an uppercase letter. Examples: setLayout, addLayoutComponent.
- Names of variables, fields, and methods begin with a lowercase letter. Examples: vehicle, myVehicle.
- Names of classes and interfaces begin with an uppercase letter. Examples: Cube, ColorCube.
- Named constants (such as final static fields) are written entirely in uppercase, and the parts of composite names are separated by underscores (_). Examples: CENTER, MAX_VALUE.
- Package names are sequences of dot-separated lowercase names. Example: java.awt.event. For uniqueness, they are often prefixed with reverse domain names, as in com.sun.xml.util.

4 Comments and Program Layout

Comments have no effect on the execution of the program but may be inserted anywhere to help humans understand the program. There are two forms: one-line comments and delimited comments. Program layout has no effect on the computer’s execution of the program but is used to help humans understand the structure of the program.