

14.2 Fundamentals of Characters and Strings

Characters are the fundamental building blocks of Java source programs. Every program is composed of a sequence of characters that—when grouped together meaningfully—are interpreted by the Java compiler as a series of instructions used to accomplish a task. A program may contain **character literals**. A character literal is an integer value represented as a character in single quotes. For example, 'z' represents the integer value of z, and '\t' represents the integer value of a tab character. The value of a character literal is the integer value of the character in the **Unicode character set**. Appendix B presents the integer equivalents of the characters in the ASCII character set, which is a subset of Unicode (discussed in online Appendix H).

Recall from [Section 2.2](#) that a string is a sequence of characters treated as a single unit. A string may include letters, digits and various **special characters**, such as +, -, *, / and \$. A string is an object of class **String**. **String literals** (stored in memory as **String** objects) are written as a sequence of characters in double quotation marks, as in:

"John Q. Doe"	(a name)
"9999 Main Street"	(a street address)

"Waltham, Massachusetts"	(a city and state)
"(201) 555-1212"	(a telephone number)

A string literal may be assigned to a **String** reference. The declaration

```
String color = "blue";
```



initializes **String** variable **color** to refer to a **String** object that contains the string "blue".



Performance Tip 14.1

*To conserve memory, Java treats all string literals with the same contents as a single **String** object that has many references to it.*