

### 1.2.2 main

When the program is run, the special function `main` is invoked.

A Java program consists of a collection of interacting classes, which contain methods. The Java equivalent of the function or procedure is the *static method*, which is described in Section 1.6. When any program is run, the special static method `main` is invoked. Line 6 of Figure 1.1 shows that the static method `main` is invoked, possibly with command-line arguments. The parameter types of `main` and the `void` return type shown are required.

### 1.2.3 Terminal Output

`println` is used to perform output.

The program in Figure 1.1 consists of a single statement, shown on line 8. `println` is the primary output mechanism in Java. Here, a constant string is placed on the standard output stream `System.out` by applying a `println` method. Input and output is discussed in more detail in Section 2.6. For now we mention only that the same syntax is used to perform output for any entity, whether that entity is an integer, floating point, string, or some other type.

## 1.3 Primitive Types

Java defines eight *primitive types*. It also allows the programmer great flexibility to define new types of objects, called *classes*. However, primitive types and user-defined types have important differences in Java. In this section, we examine the primitive types and the basic operations that can be performed on them.

### 1.3.1 The Primitive Types

Java's primitive types are integer, floating-point, Boolean, and character.

The Unicode standard contains over 30,000 distinct coded characters covering the principal written languages.

Java has eight primitive types, shown in Figure 1.2. The most common is the integer, which is specified by the keyword `int`. Unlike with many other languages, the range of integers is not machine-dependent. Rather, it is the same in any Java implementation, regardless of the underlying computer architecture. Java also allows entities of type `byte`, `short`, and `long`. Floating-point numbers are represented by the types `float` and `double`. `double` has more significant digits, so use of it is recommended over use of `float`. The `char` type is used to represent single characters. A `char` occupies 16 bits to represent the Unicode standard. The Unicode standard contains over 30,000 distinct coded characters covering the principal written languages. The low end of Unicode is identical to ASCII. The final primitive type is `boolean`, which is either `true` or `false`.