Constructors

You can create a `Scanner` object from many other input sources, such as:

- `System.in`, an object representing the keyboard
- A `File` object, usually created from its own constructor (*e.g.* `new File("foo.bar")`)
- A `String` object

Delimiters

By default, `Scanner` objects use blankspace (spaces, tabs, return characters, *etc.*) as delimiters to determine how much of the input stream to return. This can be changed by the `useDelimiter(String)` method. For example, calling `useDelimiter("/")` on a `Scanner` object makes the forward slash character the only delimiter used.

Getting Input

In its most basic form, `next()` returns the next `String` object in the input stream. That is, `next()` returns the sequence of characters up to the next delimiter character.

In contrast, `nextLine()` returns the `String` object (including embedded delimiters) up to the next end-of-line character.

If you know that the string is really a value of a specialized type, you can use one of the following alternative methods:

`nextBoolean()`	`nextDouble()`	`nextFloat()`
`nextInt()`	`nextLong()`	`nextShort()`

Checking for Input

In its most basic form `hasNext()` returns `true` if there is a `String` available to be returned by `next()`, and `false` otherwise.

The following methods perform similar checks for the primitive types. Note that the `hasNext()` method might return `true` at the same time that other methods below return `false`. (Why?)

`hasNextBoolean()`	`hasNextDouble()`	`hasNextFloat()`
`hasNextInt()`	`hasNextLong()`	`hasNextShort()`

A Sample Program

The following program assumes that the user supplies the name of an input file. In that file are a variety of strings, separated by forward slashes.

```
import java.io.*;
import java.util.Scanner;
class Test {
    public static void main (String[] args) {
        Scanner console = new Scanner(System.in); // keyboard
        Scanner file = null;                      // input file
        int numLines = 0;                         // lines to print
        try {
            file = new Scanner(new File(args[0]));
        }
        catch (ArrayIndexOutOfBoundsException exc) {
            System.out.println("No arguments given to program.");
            System.exit(1);
        }
        catch (FileNotFoundException exc) {
            System.out.println("File could not be opened.");
            System.exit(2);
        }
        System.out.println("How many lines should be printed?");
        numLines = console.nextInt();
        console.nextLine();
        while (numLines > 0) {
            numLines--;  // decrement counter
            if (file.hasNext()) { // input left in file?
                String input = file.nextLine();   // input line
                Scanner pieces = new Scanner(input); // breaks the
                pieces.useDelimiter("/");            // line into pieces
                while (pieces.hasNext()) {    // print the pieces
                    System.out.print(pieces.next());
                    if (pieces.hasNext())
                        System.out.print(" <-> ");
                }
                System.out.println("");
            }
        }
        System.out.println("Goodbye.");
    }
}
```