If-statement

Examples

Below, we show two ways of writing an if-statement. The second way, to the right, uses a <block>, i.e. a sequence of statements and declarations enclosed in braces. It is preferable to put the opening brace as shown, with a blank before it, and *not* on its own line. The closing brace is on its own line and indented as shown. Some suggest that it is a good idea always to use a <block> because it is less prone to errors when the code has to be changed.

```
// Set x to the maximum of x and y.
if (y > x) x= y;
```

```
// Set x to the maximum of x and y.
if (y > x) {
   x= y;
}
```

In the following example, a local variable is declared in the <block>. Declare it there and *not* before the if-statement. Always declare local variables as close to their first use as possible. Also, one can write the statement as shown to the right, since the code in the block is short, simple, and obvious.

```
// if x < y, swap x and y
if (x < y) {
   int t= x;
   x= y;
   y= t;
}
```

```
// if x < y, swap x and y
if (x < y) {int t= x; x= y; y= t;}
```

Below is an *if-else statement*: an if-statement with an else-clause.

```
// Print whether n is negative or not and, if so, add 1 to n.
if (n >= 0) {
   System.out.println("n is non-negative");
}
else {
   System.out.println("n is negative");
   n= n+1;

}
```

The following example shows how to write a sequence of if-else statements that have a simple pattern.

```
// Set the grade depending on the testscore
if (testscore >= 90) grade= 'A';
else if (testscore >= 80) grade= 'B';
else if (testscore >= 70) grade= 'C';
else if (testscore >= 60) grade= 'D';
else grade= 'F';
```

Syntax and semantics of the if-statement

The if-statement has two forms; the second form is sometimes called an if-else statement.

(1) if (<boolean-expression>) <statement>

(2) if (<boolean-expression>) <statement 1>
else <statement 2>

where a <statement> is a single statement or a <block>, i.e. has the form { <statement/declaration-sequence> }

To execute form (1), evaluate the <boolean-expression>; if true, execute the <statement>

To execute form (2), evaluate the <boolean-expression>; if true, execute the <statement 1>, otherwise execute the <statement 2>.