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**Programming with Java Operators and Strings**

**Understand Fundamental Operators**

Java operators are used to return a result from an expression using one, two, or three operands. Operands are the values placed to the right or left side of the operators. Prefix- and postfix-increment and prefix- and postfix-decrement operators use one operand. The conditional ternary operator (?:) uses three operands. All other operators use two operands.

The following topics will be covered in these pages:

* Assignment operators
* Arithmetic operators
* Relational operators
* Logical operators
* Operator precedence

**Assignment Operators**

Assignment operators are used to assign values to variables.

|  |  |
| --- | --- |
| = | Assignment operator |

**Compound Assignment Operators**

|  |  |
| --- | --- |
| + = | Assignment by addition operator |
| * = | Assignment by subtraction operator |

Although the use of compound assignment operators cuts down on keystrokes, it is generally good practice to use the “longhand” approach since the code is clearly more readable.

*It is common to represent assignments in pseudo-code with the colon and equal sign characters (for example, A := 20). Notice that := looks similar to +=, -=, and other Java assignment operators such as \*=, /=, and %=. Be aware, however, that the pseudo-code assignment representation (:=) is not a Java assignment operator, and if you see it in any Java code, it will not compile.*

**Arithmetic Operators**

**Basic Arithmetic Operators**

|  |  |
| --- | --- |
| + | Addition (sum) operator |
| - | Subtraction (difference) operator |
| \* | Multiplication (product) operator |
| / | Division (quotient) operator |
| % | Modulus (remainder) operator |

**Prefix-Increment, Postfix-Increment, Prefix-Decrement, and Postfix-Decrement Operators**

|  |  |
| --- | --- |
| ++x | Prefix-increment operator |
| --x | Prefix-decrement operator |
| x++ | Postfix-increment operator |
| x-- | Postfix-decrement operator |

Prefix-increment and prefix-decrement operators provide a shorthand way of incrementing and decrementing the variable by 1. Rather than creating an expression as y=x+1, you could write y=++x. Similarly, you could replace the expression y=x-1 with y=--x. This works because the execution of the prefix operators occurs on the operand prior to the evaluation of the whole expression. Postfix-increment and postfix-decrement characters execute the postfix operators after the expression has been evaluated. Therefore, y = x++ would equate to y=x followed by x=x+1. And y = x-- would equate to y=x followed by x=x-1.