

RELATIONAL OPERATORS*

Kenneth Leroy Busbee

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Abstract

An introduction to the six common relational operators used in programming.

1 Overview of the Relational Operators

The relational operators are often used to create a **test expression** that controls program flow. This type of expression is also known as a **Boolean expression** because they create a Boolean answer or value when evaluated. There are six common relational operators that give a Boolean value by comparing (showing the relationship) between two operands. If the operands are of different data types, implicit promotion occurs to convert the operands to the same data type.

Definition 1: relational operator

An operator that gives a Boolean value by evaluating the relationship between two operands.

Operator symbols and/or names vary with different programming languages. The C++ programming language operators with their meanings are:

| C++ Operator | Meaning |
|--------------|---------------------------|
| < | less than |
| > | greater than |
| <= | less than or equal to |
| >= | greater than or equal to |
| == | equality (equal to) |
| != | inequality (not equal to) |

Table 1

Exercise 1

(Solution on p. 3.)

Evaluate the following Boolean expressions:

1. $9 < 25$
2. $9 < 3$
3. $9 > 14$

*Version 1.11: Jan 15, 2010 11:05 am -0600

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4. $9 \leq 17$
5. $9 \geq 25$
6. $9 == 13$
7. $9 != 13$
8. $9 !< 25$

The answers to Boolean expressions within the C++ programming language are a value of either 1 for true or 0 for false.

Be careful. In math you are familiar with using this symbol $=$ to mean equal and \neq to mean not equal. In the C++ programming language the \neq is not used and the $=$ symbol means assignment.

2 Demonstration Program in C++

2.1 Creating a Folder or Sub-Folder for Source Code Files

Depending on your compiler/IDE, you should decide where to download and store source code files for processing. Prudence dictates that you create these folders as needed prior to downloading source code files. A suggested sub-folder for the **Bloodshed Dev-C++ 5 compiler/IDE** might be named:

- Demo_Programs

If you have not done so, please create the folder(s) and/or sub-folder(s) as appropriate.

2.2 Download the Demo Program

Download and store the following file(s) to your storage device in the appropriate folder(s). You may need to right click on the link and select "Save Target As" in order to download the file. Following the methods of your compiler/IDE, compile and run the program(s). Study the source code file(s) in conjunction with other learning materials.

Download from Connexions: Demo_Relational_Operators.cpp¹

¹See the file at <http://cnx.org/content/m19549/latest/Demo_Relational_Operators.cpp>

Solutions to Exercises in this Module

Solution to Exercise (p. 1)

Answers:

1. 1
2. 0
3. 0
4. 1
5. 0
6. 0
7. 1
8. Error, the "not less than" is not a valid operator.