

Lecture 23

Java – Relational (Conditional) Operators

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| Boolean values

- Each time you ask Java **if one number is greater than another**, the question results in the **creation of some specific data** - a **Boolean** value
- The name comes from **George Boole (1815-1864)**, the author of the fundamental work, The Laws of Thought, which contains the definition of **Boolean algebra** - a part of algebra which makes use of **only two distinct values: true and false**

| Questions and Answers

- A programmer writes a program, and the **program asks questions**
- A computer executes the program and provides the answers. **The program must be able to react according to the received answers**
- Fortunately, computers know only **two kinds of answers**:
 - **yes**, this is **true**;
 - **no**, this is **false**.
- To ask questions, Java uses a set of very special operators
 - **==** Equality operator (is equal) :: **Are these values equal**
 - Take care **=** is an **assignment** operator

| Relational (Conditional) operator

- The == (equal to) operator compares the values of two operands. If they are equal, the result of the comparison is true. If they are not equal, the result of the comparison is false
- var == 0
 - Note that **we cannot find the answer** if we do **not know what value** is currently stored in the variable
 - If the **variable has been changed many times during the execution** of your program, or its initial value is entered from the console, the **answer to this question can be given** only by **Java and only at runtime**

| Relational (Conditional) operator

- $x == y$ // x is equal to y
- $x != y$ // x is not equal to y
- $x > y$ // x is greater than y
- $x < y$ // x is less than y
- $x >= y$ // x is greater than or equal to y
- $x <= y$ // x is less than or equal to y

| Making use of the answers

- **What can you do with the answer** (i.e., the result of a comparison operation) you get from the computer?
 - you can **memorize it** (store it in a variable) and make use of it later
 - you can use the answer you get to **make a decision** about the future of the program
- You need a **special instruction for this purpose**

| References

- Java: How to Program, 9th Edition (Deitel) 9th Edition by Paul Deitel , Harvey M. Deitel
- Head First Java, 2nd Edition 2nd Edition by Kathy Sierra, Bert Bates
- Think Java: How to Think Like a Computer Scientist 1st Edition by Allen B. Downey, Chris Mayfield