Boolean Logic and Expressions

CSCI 51, Stough

February 5, 2009

Recall that in Java, a `boolean` is a primitive data type with two possible values, `true`(1) or `false`(0). To know whether some expression is true or false (e.g., "the operator entered is the '+' sign") is necessary for encoding some algorithms. The "if" and "if/otherwise" conditional structures require the evaluation of some boolean expression. There are two kinds of operators that return `boolean`s, the boolean operators (that is, operators on booleans) `NOT` (`!`), `OR` (`||`), and `AND` (`&&`), and the relational operators that operate on numbers, `==`, `!=`, `<`, `>`, `<=`, and `>=`. Let `A` and `B` be `boolean`s,

Write the truth tables for `NOT`, `OR`, and `AND`

Write the truth table for the expression `(A && !B) || B`. Can you think of a more simple expression with the same truth table?

Write the truth table for the expression `!(A && B)`. How about `!A || !B`.

Write a boolean expression that states: either 4 times x is less than y or y is between 0 and 100, inclusive.