Boolean Logic

Chapter 4

Boolean Logic?

- Write a program that will take (or accept) a value from the user and print the corresponding letter grade. For instance, if the user enters 91, the program prints an A. But if the user enters 68, the program prints a D.
- In order to solve this problem, we need to be able to compare values. That's the basis of Boolean Logic.

bool data type

- True
- False

Simple Comparisons

- Results in True or False:

- < less than
- > greater than
- == equal to
- != not equal to

Combinations

- <= less than or equal to
- >= greater than or equal to

Problems – True or False

- 7 > 4
- 7 > 21
- 9 > 3 * 2
- 20 < 40 / 2
- 30 <= 5 * 2 * 3
- 25 >= 5 ** 0.5

Boolean Operators

- A way to combine simple comparisons
- and: both sides are True, result is True, otherwise False
- or: either side is True, result is True, otherwise False

7 > 2 and 5 > 3
7 > 2 and 5 < 3
7 > 2 or 5 > 3
7 > 2 or 5 < 3
7 < 2 or 5 < 3

Special Boolean Operator

- Doesn't come between two other Boolean results
- ! (not): reverses the Boolean value that follows it

!(7 < 32)

! (52 == 100 – 50)

Write the condition

- `taxRate` is over 25% and `income` is less than $20,000
- `temperature` is less than or equal to 75 or `humidity` is less than 70%
- `age` is over 21 and `age` is less than 60
- `age` is 21 or 22