Boolean Expressions and if

9-17-2010

Opening Discussion

- Do you have any questions about the quiz?

- Let's look at solutions to the interclass problem.

- Minute essay comments

  - Solution to quadratic function.

  - Use of pow.

  - Will tests mimic quizzes?

Motivating Conditional Execution

- For my roller skating class I have a component of the grade based on an endurance test where you have to skate for 12 minutes. This component is worth 20 points. The grade you get is 0 for 20 or fewer laps and 20 for 40 or more laps. Between those extremes you get one point for every lap over 20.

- Calculating this value requires that we do different things in different situations. This is called conditional execution.

if

- The most basic form of conditional execution is the if.

- The syntax is as follows:

  - if(*condition*) *expr* else *expr*

- When Scala gets to an if, it evaluates the condition. The condition is an expression of type Boolean.

- If the condition is true it evaluates the first expression, otherwise it evaluates the second expression.

Expression or Statement

- In Scala you can use if as an expression, so it returns a value, or just as a statement where you ignore the value.

- When used as a statement, the else is optional.

Code Blocks

- In Scala you can make complex statements or expressions by putting multiple statements inside of curly braces.

- If it is used as an expression, the value of the expression will be the value of the last expression in it.

Comparisons

- The condition needs to be a Boolean expression.

- The most common basic forms of these are comparisons.

- Use == and != for equality and non-equality.

- The ordering comparison operators are <, >, <=, and >=.

Coding the Example

- Let's write the code for the skating problem example.

- Guarding division is another example.

- What are some other simple examples of places where conditional execution would be helpful?

Minute Essay

- When might you want to use conditional execution? (Hint: any time you would use if in a sentence probably works.)

- Interclass problem:

  - Come up with an example of code that needs an if and write it.