

Boolean Expressions and if

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Opening Discussion

- Do you have any questions about the quiz?
- Minute essay comments
 - Solution to quadratic function. Start with the math.
 - Will we learn if/then?

Higher Order Functions

- This is the reason function literals exist. These are functions that take other functions as arguments or return other functions.
- The compose method is higher order.
- We could write our own compose function that is a higher order function.
- We will see a lot more higher order functions in chapter 7.

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.)