

Comp 311

Functional Programming

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Announcement

- Homework 2 is done
- Homework 3 is due Oct 30
- Midterm exam details are on the calendar
- Final exam date and time is on the calendar
(no room assignment yet)

More on Operators

Operator Precedence

Based on starting character, lowest to highest:

1. Assignment operators[†]
2. Any letter
3. |
4. ^
5. &
6. = !
7. < >
8. :
9. + -
10. * / %
11. All other symbols

[†] *The = operator, plus any other operator that ends with =, but doesn't start with =, and is not <=, >=, or !=*

Precedence Example

1 % 2 → 4 ** 2 == 5 EQ true ^ false

1 % (2 → 4) ** 2 == 5 EQ true ^ false

(1 % (2 → 4)) ** 2 == 5 EQ true ^ false

((1 % (2 → 4)) ** 2) == 5 EQ true ^ false

((1 % (2 → 4)) ** 2) == 5 EQ (true ^ false)

(((1 % (2 → 4)) ** 2) == 5) EQ (true ^ false)

Colon Operators

- Binary operators ending with `:` are applied in reverse
 - The receiver is the *second* argument
 - The parameter is the *first* argument
- $X :: Y \Rightarrow Y.\` :: \`(X)$
- $X +: Y \Rightarrow Y.\` +: \`(X)$
- $X :+ Y \Rightarrow X.\` :+ \`(Y)$

Destructuring with Binary Constructor Patterns

Binary case class factory methods can be used in patterns as binary operators for destructuring:

- The “cons” operator for matching head and tail of list:
`val x :: xs = List(1, 2, 3, 4)`
- Any arity-2 case class constructor works:
`val a Tuple2 b = 5 → "five"`
- Used a lot in Scala’s parser combinators:
`A ~ B // match A followed by B`