Arithmetic Expressions

Chapter 3
For Next Time

- Read Chapter 3
The Common Arithmetic Operators

<table>
<thead>
<tr>
<th>Operator</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>addition</td>
</tr>
<tr>
<td>−</td>
<td>subtraction</td>
</tr>
<tr>
<td>*</td>
<td>multiplication</td>
</tr>
<tr>
<td>/</td>
<td>division</td>
</tr>
<tr>
<td>%</td>
<td>modulus (remainder)</td>
</tr>
</tbody>
</table>
Binary vs. Unary Operators

- +, −, *, /, % are *binary* operators
  - Two operands
- + (unary) and − (unary) are *unary* operators
  - One operand
Precedence and Associativity

- The unary operators have highest precedence
- Next comes the multiplicative operators (*, /, %)
- Finally, the additive operators (+, -)
- This is the same precedence rules as normal arithmetic
- Evaluation is performed for these operators left to right
+ is Overloaded

- An operator that has different meanings in different contexts is said to be overloaded
- + with numbers means *addition*
- + with strings means *concatenation*
  - Splicing one string with another
  - Strings can be concatenated with non-strings
Arithmetic Abbreviations

- $x = x + 1$;
  - $x += 1$;
  - $x++;$ or $++x$;

- Similar for $-$, $\ast$, $/$, $\%$
Computing with Objects