CS 113 – Computer Science I

Lecture 03 – Input/Output

Tuesday 09/12/2023
Announcements

• HW00 – due last night
• HW01 – releasing later today
  • Due Monday 09/18

• Read & Follow Instructions
  • Don’t just skim the labs & homework

• Office hours:
  • Monday: 2:45-4:00pm
  • Tuesday: 9:30-10:45am (I’ll try to get there by 9:15)
Growth mindset

Feeling frustrated with programming doesn't mean I lack intelligence. I believe I can improve through persistent effort.

*not being too harsh on myself when making mistakes and, instead, seeing it as a way to improve and get better*

*not getting discouraged if something is challenging or even if I fail*

*I can succeed by persisting in my studies as opposed to giving up if things don’t go according to plan*
Outline

Review

Reading in data
Operators & Expressions

• Examples of operators:
  • +, −, /, *, %

• Expression
  • 55 + c
Order of operations

• 24 + 10 / 2;
• (24 + 10) / 2;

• Operations between floats and ints:
  • 1 / 3
  • 1 / 3.0
String Operators (Textbook: 2.8)

What is the term for combining strings together?
  • Concatenation

What is the concatenation operator?
  • +
Exercise:

<table>
<thead>
<tr>
<th>Expression</th>
<th>Value</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;42.64&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 + 3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 − 5 * 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;hot&quot; + &quot;dog&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Exercise: Miles to Kilometers

Write a program called MilesToKMs.java that asks a user for miles and then prints out the distance in kilometers

• java MilesToKMs
  50 miles is 80 kilometers
Reading in Data
Scanner class

Another way for reading in data

Scanner sc = new Scanner(System.in);

System.in specifies we are reading from user input

What type is “sc”? Is it an int, double, or string?

It’s a Scanner type.
Using Scanner object

Javadocs:
https://docs.oracle.com/javase/8/docs/api/java/util/Scanner.html

Reading in an integer:
nextInt();

Reading in a string:
nextLine();
### Formatting Strings

<table>
<thead>
<tr>
<th>Format Specifier</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>%d</code></td>
<td>Integer in base 10 (&quot;decimal&quot;)</td>
<td>12345</td>
</tr>
<tr>
<td><code>,d</code></td>
<td>Integer with comma separators</td>
<td>12,345</td>
</tr>
<tr>
<td><code>%08d</code></td>
<td>Padded with zeros, at least 8 digits wide</td>
<td>00012345</td>
</tr>
<tr>
<td><code>%f</code></td>
<td>Floating-point number</td>
<td>6.789000</td>
</tr>
<tr>
<td><code>.2f</code></td>
<td>Rounded to 2 decimal places</td>
<td>6.79</td>
</tr>
<tr>
<td><code>%s</code></td>
<td>String of characters</td>
<td>&quot;Hello&quot;</td>
</tr>
<tr>
<td><code>%x</code></td>
<td>Integer in base 16 (&quot;hexadecimal&quot;)</td>
<td>bc614e</td>
</tr>
</tbody>
</table>

Table 3.1: Example format specifiers