Announcements

- Start Java next time
  - We will use Eclipse with Java
- Assignment 6 due tonight

Topics for the Exam

- No HTML
- Alice Chapters 1-2, 4-7, 9-10
  - Focus on Chap 5-7, 9-10
- Topics
  - Random numbers
  - Looping structures
  - Variables
  - If/else
  - Lists/Arrays

Random Numbers

- Assume they work
  - Can use == to compare integers
  - Use “integer only” if you want an integer
  - Use “random number” to generate random numbers
    - Maximum is “up to but not including”
    - Default values

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<table>
<thead>
<tr>
<th>Looping Structures</th>
<th>Conditionals – If/Else</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Loop</td>
<td>• Format</td>
</tr>
<tr>
<td>– Simple and complicated</td>
<td>if (condition)</td>
</tr>
<tr>
<td>• While</td>
<td>do if true</td>
</tr>
<tr>
<td>• When to use “while” vs. “if”</td>
<td>else</td>
</tr>
<tr>
<td></td>
<td>do if false</td>
</tr>
<tr>
<td></td>
<td>• Nested ifs</td>
</tr>
<tr>
<td></td>
<td>• 3 Logical and 6 relational operators</td>
</tr>
<tr>
<td></td>
<td>• When do you use an “if” vs “while”</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th>Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Types</td>
<td>• Create a list</td>
</tr>
<tr>
<td>– Local variable</td>
<td>• Process a list</td>
</tr>
<tr>
<td>– Parameter</td>
<td>– For all in order</td>
</tr>
<tr>
<td>– World variable</td>
<td>– For all together</td>
</tr>
<tr>
<td>– Class variable</td>
<td>– Item-in-list</td>
</tr>
<tr>
<td>• What do you do with a variable?</td>
<td>• List search</td>
</tr>
<tr>
<td>– It stores a value</td>
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<tr>
<td>• Initialize it</td>
<td></td>
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<tr>
<td>• Use its value</td>
<td></td>
</tr>
<tr>
<td>• Update it</td>
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</tbody>
</table>
Array

• Create an Array
• Process an array
  – Loop – complicated version
  – Use value from array
  – Set value in array
• Search for item in an array

How to Study for the Exam

• Write methods from old classworks
• Lecture notes
• Reading quizzes – will make available
• Reading in book
• Understand the topics

Problem

• Objects are a Bunny and a bunch of frogs. They are all facing the same direction. The Bunny is behind the frogs.
• The frogs are all in a list called “frogs”
• The Bunny and frogs will be moving each time an event occurs. The bunny will move 0.5 meters and the frogs 0.15 meters each time.
• When the Bunny is at least the “Bunny’s depth” in front of all the frogs, it should turn around and say “Stop”

Animation

• Start
• Finish
Write function IsBunnyInFront
• Returns true if Bunny is at least Bunny’s depth in front of all the frogs in the list frogs
• Else returns false

Write method moveAndCheck
• Moves all the frogs in the list frog 0.15m
• Moves the bunny 0.5m
• If the bunny is in front of all the frogs, turns around and says Stop.