CompSci 4
Java 5
Dec 4, 2008

Prof. Susan Rodger
Announcements

• Be a UTA for CompSci 4– sign up
  – Next semester with Alice 3.0 – with the Sims
  – Paid ($), great learning experience!

• Evaluations

• Final project presentations Sat Dec 13
  – Section 1: 9am-noon
  – Section 2: 7pm-10pm

• Java Quiz

• Checkoffs
Opportunities this Summer

• Short term and long term opportunities($) working with Alice in June, maybe longer
• June 2009 – workshops with K-12 teachers
Rodger Extra Office Hours

• Extra hours today, tomorrow, and Monday
  – Thursday (today): 10:15-11:15, 1:15-2:15
  – Friday: 9-12, 2-5pm
  – Monday: limited hours Monday, will email them

• Must Check off by Monday at latest!
CompSci 6 Demos

- Feb 19 – Bouncing Balls
- Feb 28 – Name Surfer
- Mar 04 – Generate Random text
- Mar 18 – images
- Apr 08 – Drawing with Recursion
Bouncing Balls
Generate Random Text – from The Lorax by Seuss

• our times as fast as before! And that Lorax? He didn't show up any more. But the next week he knocked on my new office door. He snapped, ``I'm the Lorax, "please pardon my cough they cannot live here. So I'm sending them off. "Where will they go ?...
Images

![Image of a T-Rex toy](trex.jpg)

- **Open**
- **Reverse Colors**
- **Mirror Vertically**
- **Mirror Horizontally**
- **Save**
- **Expand**
- **Blur**
- **EdgeDetect**
Drawing with Recursion
What to take away about Computer Science?

- CS is problem solving
- CS is organizing data, and searching
Areas of Computer Science all over the map

- Robots
- Social Networking
- Healthcare
- Animation
- Devices
Not all problems solvable

• Traveling Band – schedule travel to cities to minimize distance
Traveling Band

• Visit each city once
• Minimize distance traveled
• How do you calculate the best path?
• Given N cities, try all paths, find the minimum
  – Boston, New York, Durham, Atlanta, Memphis
  – New York, Durham, Memphis, Atlanta, Boston
  – Durham, Atlanta, New York, Boston, Memphis
  – Etc?
<table>
<thead>
<tr>
<th>Number of Cities</th>
<th>All paths - N!</th>
<th>time to solve $10^9$ instruct/sec</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>3 million</td>
<td>&lt; sec</td>
</tr>
<tr>
<td>15</td>
<td>$10^{12}$</td>
<td>16 min</td>
</tr>
<tr>
<td>18</td>
<td>$10^{15}$</td>
<td>11 days</td>
</tr>
<tr>
<td>20</td>
<td>$10^{18}$</td>
<td>31 years</td>
</tr>
<tr>
<td>25</td>
<td>$10^{25}$</td>
<td>$10^8$ years</td>
</tr>
</tbody>
</table>

- Can’t solve exactly, must approximate!