CompSci 4  
Java 5  
Dec 4, 2008

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

Name Surfer

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?..."
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

Not all problems solvable

- Traveling Band – schedule travel to cities to minimize distance

<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!

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?