CS112 Retrospective
& the Future

Assignment #1: Golden Ratio, Olympics, & Stars

- Variables and assignment
- Mathematical computations
- Vectors
- Plotting

CS112 Scientific Computation
Department of Computer Science
Wellesley College
Assignment #2: Conditionals, Colon Notation, Analyze/Visualize Ocean/Smartphone Data

- Conditionals
- Cell arrays
- Indexing & colon notation
- Logical values and expressions
- Data analysis and visualization

Assignment #3: Mystery, Thatcher Illusion, Gradesheets, Energy Data & Face Recognition

- Matrices
- Real and synthetic images
- Tables of data
- Image processing
Assignment #4: Spirograph, Pole Vault, cftool, Spread of Disease

- Curve fitting & parameterized equations
- Loops
- User-defined functions
- Regression models
- Simulating models

Assignment #5: Facebook Friends, Favorite Songs, Rising Data

- Structures & storing structures in a vector
- while loops
- colormaps

```
>> printStudentInfo(students)
andrea's favorite song is "Dark Horse" and she has 42 Facebook friends

>> printStudentInfo(students)
carol's favorite song is "Team" and she has 61 Facebook friends

>> printStudentInfo(students)
jean's favorite song is "Pompeii" and she has 23 Facebook friends

>> mostFacebookFriends(students)
nora has the most Facebook friends, with 142
```
Assignment #6: GUI Sketchpad & Making Music

- Structures
- Graphics handles
- Properties
- GUIs
- Layout editor

Assignment #7: Thumbnails & Parlez-vous Francais?

- Reading/writing files
- Working with directories
- Analyzing textual data
- Cell arrays
- Frequency statistics

<table>
<thead>
<tr>
<th>English</th>
<th>German</th>
<th>Finnish</th>
<th>French</th>
<th>Italian</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.31</td>
<td>18.46</td>
<td>12.06</td>
<td>15.87</td>
<td>11.79</td>
<td>15.15</td>
</tr>
<tr>
<td>0.59</td>
<td>11.42</td>
<td>10.59</td>
<td>9.42</td>
<td>11.74</td>
<td>12.69</td>
</tr>
<tr>
<td>9.05</td>
<td>8.02</td>
<td>9.70</td>
<td>4.41</td>
<td>11.20</td>
<td>9.49</td>
</tr>
<tr>
<td>7.94</td>
<td>7.24</td>
<td>8.04</td>
<td>8.90</td>
<td>9.83</td>
<td>7.93</td>
</tr>
<tr>
<td>7.14</td>
<td>7.64</td>
<td>8.11</td>
<td>7.26</td>
<td>8.88</td>
<td>6.95</td>
</tr>
<tr>
<td>7.18</td>
<td>5.38</td>
<td>7.83</td>
<td>7.15</td>
<td>6.51</td>
<td>6.25</td>
</tr>
<tr>
<td>5.58</td>
<td>5.22</td>
<td>5.86</td>
<td>6.64</td>
<td>6.37</td>
<td>6.24</td>
</tr>
<tr>
<td>6.03</td>
<td>5.61</td>
<td>5.54</td>
<td>5.24</td>
<td>5.62</td>
<td>5.94</td>
</tr>
<tr>
<td>5.14</td>
<td>4.94</td>
<td>5.20</td>
<td>5.54</td>
<td>4.98</td>
<td>5.58</td>
</tr>
</tbody>
</table>

Spanish 19.19 entre broma y broma, la verdad se asoma
German 36.33 viele kochte verdrehten den brei
Finnish 21.68 ihmetapauskin voii tavoittelevan alla luenta nilkin
French 13.05 il faut battre le fer pendant qu’il est chaud
English 10.55 this great English sentence is too long and trite
Italian 10.26 con piacere volgo l’occasione di ringraziare tutti gli amici italiani che con i loro consigli
Assignment #8: Mobius Strip, Campus Places, Reaching for the Stars

• Types of numbers
• Color images & colormaps
• 3D visualization

What else is there in CS?

• Having taken CS112, you have the tools to solve fundamental problems with computer programs
• In future computational courses, you can investigate more complex and creative problems
What next in CS?

CS 112 Computation for the Sciences
CS 204 Introduction to Front-End Web Development
CS 220 Human-Computer Interaction
CS 225 Making and Fabrication: Methods, Culture, and a Heuristic Approach to Technology
CS 240 Introduction to Machine Organization
CS 332 Visual Processing by Computer and Biological Vision Systems

CS 111 Computer Programming and Problem Solving
CS 230 Data Structures
CS 232 Artificial Intelligence
CS 234 Data, Analytics & Visualization
CS 313 Computational Biology