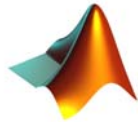


CS112 Retrospective

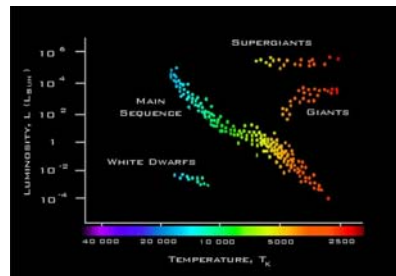
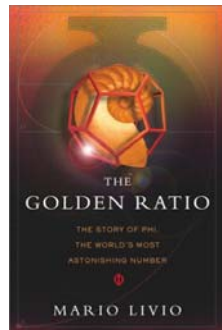
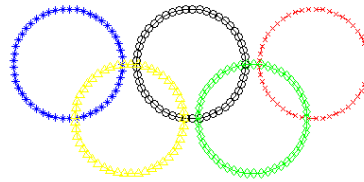


CS112 Scientific Computation
Department of Computer Science
Wellesley College

Assignment #1: Golden Ratio, Olympics, & Stars

- Variables and assignment
- Mathematical computations
- Vectors
- Plotting

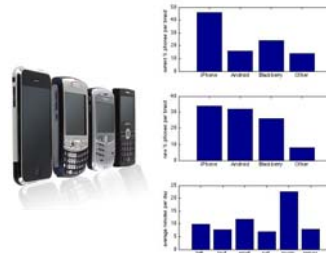
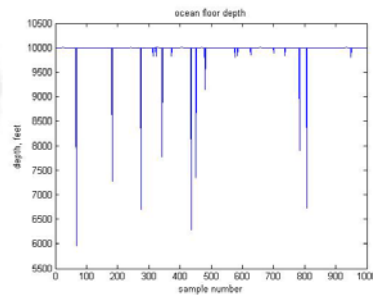
2010 Winter Olympics



Assignment #2: Conditionals, Colon Notation, Analyze/Visualize Ocean, Smartphone Data

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

```
>> nums = 1:8
nums =
     1     2     3     4     5     6     7     8
>> nums(1:2:5) = 10
nums =
    10     2    10     4    10     6     7     8
>> nums(2:3:8) = [13 9 16]
nums =
    10    13    10     4     9     6     7    16
>> nums2 = nums([1:3 6:8])
nums2 =
    10    13    10     6     7    16
>> nums([1:3 6:8]) = 12:-2:2
nums =
    12    10     8     4     9     6     4     2
>>
```

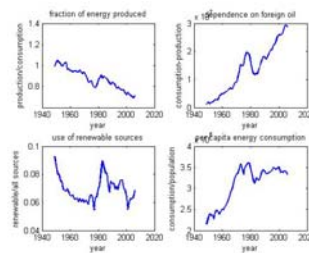


Assignment #3: Seeing is Believing, Gradesheets, Energy Data & Bean Counting

- Matrices
- Real and synthetic images
- Tables of data
- Image processing

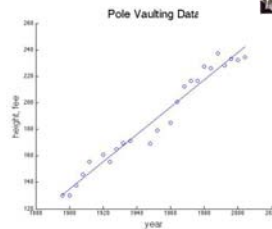
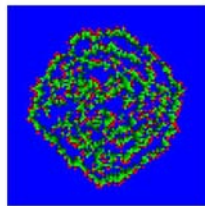
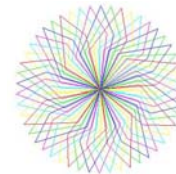
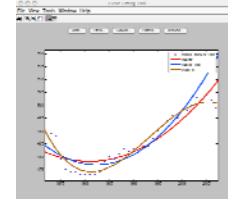


Name	Homework	Partic.	Exam 1	Exam 2	Final Project
Ann	83	90	76	80	88
Barb	79	80	80	81	70
Chelsea	90	90	92	98	94
Diana	72	75	63	75	73
Ella	88	90	78	89	82
Fiona	67	65	69	72	80



Assignment #4: cftool, Ubbi Dubbi, Pole Vault & Spread of Disease

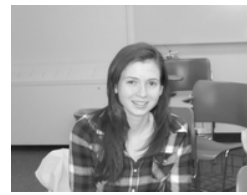
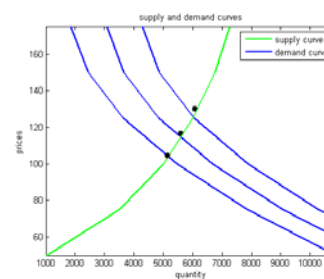
- Curve fitting & parameterized equations
- String processing
- Loops
- User-defined functions
- Regression models
- Simulating models



```
>>
>> newcs112 = ubbi('cs112')
newcs112 =
cs112
>>
>> test = ubbi('I am flying to America!')
test =
ubI ubam flubyubing tubo ubAmuberubicubal
>>
```

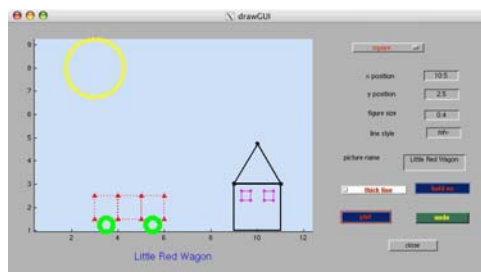
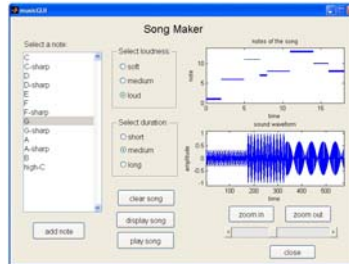
Assignment #5: Thumbnails & Favorites, Supply & Demand

- Reading/writing image files
- Designing "large" programs
- Structures
- Loops
- Interactive programming
- Computing equilibria



Assignment #6: GUI Sketchpad & Making Music

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

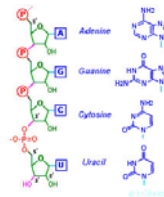


Assignment #7: Mystery of Life & Parlez-vous Francais?

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

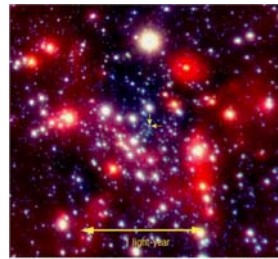
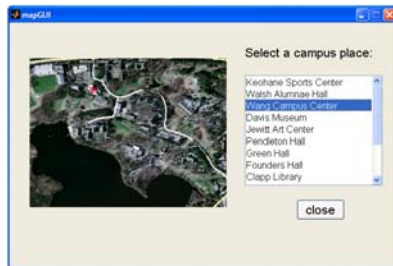
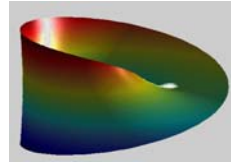
English	German	Finnish	French	Italian	Spanish
e 12.31	e 18.46	a 12.06	e 15.87	e 11.79	e 13.15
t 9.59	n 11.42	i 10.59	a 9.42	a 11.74	a 12.69
a 8.05	i 8.02	t 9.76	i 8.41	i 11.28	o 9.49
o 7.94	r 7.14	n 8.64	s 7.90	o 9.83	s 7.60
n 7.19	s 7.04	e 8.11	t 7.26	n 6.88	n 6.95
i 7.18	a 5.38	s 7.83	n 7.15	l 6.51	r 6.25
s 6.59	t 5.22	l 5.86	r 6.46	r 6.37	l 6.25
r 6.03	u 5.01	o 5.54	u 6.24	t 5.62	l 5.94
h 5.14	d 4.94	k 5.20	l 5.34	s 4.98	d 5.58

```
>> translateRNA
sequence 1: Val Thr Stop
sequence 2: Ala Leu Cys
sequence 3: Ile Met Ala Trp Thr StopLys
sequence 4: Tyr Leu Ser Ile Tyr Leu Ser Ile
sequence 5: Leu Tyr StopSer Leu StopGln
sequence 6: Gln Thr Val Glu Arg Ala Leu
sequence 7: Arg Cys Arg Ala Thr Leu Arg Val
Ser
>>
```



Assignment #8: Mobius Strip & Reaching for the Stars

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



The Centre of the Milky Way
(VLT/Yepun + NACO)
ESO PR Photo 24/12 (17 October 2010) © European Southern Observatory

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

CS Department Alumnae Address Book

Grad school in computer science

Manager of database administration at Johnson & Johnson

Director of applications engineering at AirFlash

Program management for Lotus multilingual products

Web application development

Teaching computer science

Product manager in Silicon Valley

Senior consultant at Cambridge Technology Partners

Human-computer interaction

Information technology at Morgan Stanley

Foreign exchange trading applications for Citi Smith Barney

GE corporate research and development

Microsoft

Ad agency

Program associate at the Center for Democracy and Technology

Med school

Credit Suisse

Senior program manager

Architecture

Teach English

Software engineer

Bioinformatics

Medical system analysis in healthcare industry