CSCI 144
Introduction to Computer Science: Multimedia

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Saint Louis University

Slides originally courtesy of Greenberg, Xu, Kumar

Administrivia
CSCI 144: Spring 2015
Intro to Computer Science: Multimedia

Course Website: cs.slu.edu/~goldwasser/144
Instructor:
Dr. Michael Goldwasser (goldwamh@slu.edu)  Grading

Lectures
TuTh 11:00a to 12:15p in Ritter Hall 316

TA-Support
>10 hrs/week in Ritter Hall 121

Office Hours
See Syllabus. Walk-ins are welcome
Administrivia

Software

Processing 2.X
- Already installed our Lab
- Also available for your own computer @ www.processing.org

Book

Creative Coding & Generative Art in Processing 2
by Ira Greenberg, Dianna Xu, Deepak Kumar, friendsofEd/APress, 2013. Available at the Campus Bookstore or amazon.com or other vendors.

What is Computing?
Computing: Your Parent’s View

Computing: internet, e-mail, network...
Computing: Digital Photography


Computing: Entertainment...

youtube

NETFLIX

hulu
Computing: Entertainment...

Cutting Edge Computer Science
Google’s Autonomous Car

- Nevada made it legal for autonomous cars to drive on roads in June 2011
- California introduced a similar bill in Aug 2012
2011 Jeopardy!

• In February 2011, IBM Watson bested Brad Rutter (biggest all-time money winner) and Ken Jennings (longest winning streak)
• IBM is currently applying Watson’s technology to medical diagnosis and legal research
Areas in Computer Science

- Artificial Intelligence
- Robotics
- Human-Computer Interaction
- Computer Graphics
- Computer Vision
- Operating Systems
- Computer Networking
- Databases
- Computer Security
- Ubiquitous Computing

What is Computer Science?

Computer science is the study of solving problems using computation
- Computers are part of it, but the emphasis is on the problem solving aspect

Computer scientists work across disciplines:

- Mathematics
- Biology (bioinformatics)
- Chemistry
- Physics
- Geology
- Geoscience
- Archeology
- Psychology
- Sociology
- Cognitive Science
- Medicine/Surgery
- Engineering
- Linguistics
- Art
- ...
Algorithms

An algorithm is an effective method for solving a problem expressed as a finite sequence of instructions. For example,

Put on shoes
  left sock
  right sock
  left shoe
  right shoe
Programming = Writing Apps

Programming is the process of designing, writing, testing, debugging / troubleshooting, and maintaining the source code of computer programs. This source code is written in a programming language.

A program

```c
int areaOfCircle(int radius){
    return PI*radius*radius;
}

r = 10;
area = areaOfCircle(r);
```
Programming Languages

<table>
<thead>
<tr>
<th>Processing</th>
<th>Python</th>
<th>Lisp</th>
</tr>
</thead>
<tbody>
<tr>
<td>int areaOfCircle(int radius) { return PI<em>radius</em>radius; }</td>
<td>def areaOfCircle(radius): return PI<em>radius</em>radius;</td>
<td>(defun areaOfCircle (radius) (return (* PI radius radius)))</td>
</tr>
<tr>
<td>( r = 10 ); area = areaOfCircle(r);</td>
<td>( r = 10 ) area = areaOfCircle(r)</td>
<td>(setq r 10) (setq area (areaOfCircle r))</td>
</tr>
</tbody>
</table>

A more interesting program...

```cpp
class Eye {
    int ex, ey;
    int size;
    float angle = 0.0;

    Eye(int x, int y, int s) {
        ex = x;
        ey = y;
        size = s;
    }

    void update(int mx, int my) {
        angle = atan2(my - ey, mx - ex);
    }

    void display() {
        pushMatrix();
        translate(ex, ey);
        fill(0, 0, size);
        rotate(angle);
        fill(153);
        ellipse(size/4, 0, size/2, size/2);
        popMatrix();
        // display()
        // class Eye
    }
}
```
Our Goal

• Use computing to realize works of art

• Explore new metaphors from computing: images, animation, interactivity, visualizations

• Learn the basics of computing

• Have fun doing all of the above!

Creative Introduction to Computing
Examples

Shepard Fairey
Summertime

Summertime,
And the livin’ is easy
Fish are jumpin’
And the cotton is high

Your daddy’s rich
And your mamma’s good lookin’
So hush little baby
Don’t you cry

One of these mornings
You’re going to rise up singing
Then you’ll spread your wings
And you’ll take to the sky

But till that morning
There’s a’nothing can harm you
With daddy and mamma standing by

Summertime,
And the livin’ is easy
Fish are jumpin’
And the cotton is high

Your daddy’s rich
And your mamma’s good lookin’
So hush little baby
Don’t you cry

Lyrics by George Gershwin
Map-based

October 30, 2012
5:59 am EST

(top speed: 39.7 mph
average: 6.4 mph)

Map-based
Box Office Earnings

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