CODE, CODING, CONTROVERSY
Programming Languages

- There are different categories of programming languages.
- Some are compiled (human-readable code checked for syntax and turned into machine-executable code all at once before the program can run).
- Some are interpreted (human-readable code checked for syntax and turned into machine-executable code line by line as needed while running).
while there is music playing {
    if the floor is clear ahead {
        flip a coin
        if it was heads then do a basic figure
        otherwise do a promenade figure
    }
    otherwise if we are at a corner
    do a turning figure
    otherwise it must be crowded
    so do a figure that stalls you
}
while (musicPlaying()) {
    if (floor.clearAhead()) {  //assumes object called floor
        if (flipCoin()==heads)
            perform(basic);
        else
            perform(promenade);
    }
    else if (floor.corner())
        perform(turn);
    else if (floor.trafficAhead())  //assumes object called floor
        perform(stall);
}
In theory, you want to select a language that will best allow you to express your algorithm on a certain set of hardware.

A goal of Java was total platform independence.

The “AppStore” originally mandated ObjectiveC.

Microsoft created a modified version of C++ for their Visual Studio suite.

The people in charge of high school AP exams and college intro courses.

The web was supposed to be “neutral” but different browsers support different scripting languages and style sheet options.
To “hack” means...

- To write computer programs for enjoyment.
- To manipulate a computer program skillfully.
- To cut or chop irregularly, roughly, or violently.
- To gain access to a computer illegally.
Olden Day Hacks: Browser Detection

if (document.body) {
    // Internet Explorer version of code here;
}
else {
    // Netscape Navigator version of code here;
}
Olden Day Hacks: CSS for Device Size

myOuterWidth=800;
myOuterWidth=window.outerWidth;

style=1;  //default to big screen
if (myOuterWidth <= 800) style=2;  //getting smaller
if (myOuterWidth <= 400) style=3;  //really tiny

document.write("<link rel = stylesheet"
    +"href = "CSS/style"+style+".css" "
    +"type = "text/css" />");
Slightly More Modern Approach

Internet Explorer introduced a new feature where you can have part of your code ignored by other browsers.

```html
<link rel=stylesheet type="text/css" href="non-IE8.css" />

<!--[if IE 8]>
<link rel="stylesheet" type="text/css" href="IE8.css" />
<![endif]-->

<!--[if lt IE 8]>
<link rel="stylesheet" type="text/css" href="IEother.css" />
<![endif]-->
```
“White Hat” Hackers

NBC 5 in Chicago story about a team at Argonne National Lab

- http://www.youtube.com/watch?v=frBBGJqkz9E
Who gets to see the code?

In most cases, people who are outside of the company producing software do not get to see the source code.

This can lead to “security by obscurity” – a company hopes people can’t crack their system because they don’t know how it is written.

Others argue that by having the source code be open, software can be made more secure by having more concerned eyes looking for flaws.
Voting Booths

Certain types of integer variables in programming languages have an upper limit on the values they can store.

In C++ there is something called a “short integer” which can store values between −32768 and +32767.

In Florida in 2004, one set of machines hit this limit (32767) and the count rolled over (to −32768) and then started counting its way back up.

The readout didn’t include a +/- sign so it looked like votes were being subtracted as more votes came in.
Researchers Hack Voting Machine for $26

Open-Source Voting

A bill requiring electronic voting systems to be open-source was brought up in California in 2008, so this is being explored.

Questions that should be asked:
• What problems does OSV solve?
• What new problems could its widespread use introduce?
• Is it any better than using paper ballots that can be scanned?