This is CS 50.
This is CS 50. Harvard College’s Introduction to Computer Science I

COMPUTER SCIENCE 50

WEEK 0

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Divide and Conquer

http://www.youtube.com/watch?v=P4fcOLN9heU
Lolcats

http://www.youtube.com/watch?v=3jDfSqtG2E4
Roll Call

1. Stand up.
2. Think to yourself: “I am #1.”
3. Pair off with someone standing, add your numbers together, and adopt the sum as your new number.
4. One of you should sit down, the other should go back to step 3.
“Does everyone know more than me?”

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>I'm among &quot;those less comfortable&quot;</td>
<td>34.4%</td>
</tr>
<tr>
<td>I'm among &quot;those more comfortable&quot;</td>
<td>13.6%</td>
</tr>
<tr>
<td>I'm somewhere in between</td>
<td>51.9%</td>
</tr>
</tbody>
</table>
### Prior Coursework in CS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>71.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>19.6%</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>6.2%</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>2.1%</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>0.3%</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>0.3%</td>
</tr>
</tbody>
</table>
Gender Ratio

Fall 2007
- Male: 71%
- Female: 29%

Fall 2008
- Male: 62%
- Female: 38%
20th Anniversary Edition
Binary
Binary
## Binary

<table>
<thead>
<tr>
<th>128s</th>
<th>64s</th>
<th>32s</th>
<th>16s</th>
<th>8s</th>
<th>4s</th>
<th>2s</th>
<th>1s</th>
</tr>
</thead>
</table>

Binary

128s  64s  32s  16s  8s  4s  2s  1s
Binary

128s  64s  32s  16s  8s  4s  2s  1s
Binary

128s  64s  32s  16s  8s  4s  2s  1s
Binary
Binary

128s  64s  32s  16s  8s  4s  2s  1s

[Diagram of light bulbs representing binary values]
<table>
<thead>
<tr>
<th>Dec</th>
<th>Hx</th>
<th>Oct</th>
<th>Char</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>000</td>
<td>NULL</td>
<td>(null)</td>
</tr>
<tr>
<td>1</td>
<td>001</td>
<td>SOH</td>
<td>(start of heading)</td>
</tr>
<tr>
<td>2</td>
<td>002</td>
<td>STX</td>
<td>(start of text)</td>
</tr>
<tr>
<td>3</td>
<td>003</td>
<td>ETX</td>
<td>(end of text)</td>
</tr>
<tr>
<td>4</td>
<td>004</td>
<td>EOT</td>
<td>(end of transmission)</td>
</tr>
<tr>
<td>5</td>
<td>005</td>
<td>ENQ</td>
<td>(enquiry)</td>
</tr>
<tr>
<td>6</td>
<td>006</td>
<td>ACK</td>
<td>(acknowledge)</td>
</tr>
<tr>
<td>7</td>
<td>007</td>
<td>BEL</td>
<td>(bell)</td>
</tr>
<tr>
<td>8</td>
<td>010</td>
<td>BS</td>
<td>(backspace)</td>
</tr>
<tr>
<td>9</td>
<td>011</td>
<td>TAB</td>
<td>(horizontal tab)</td>
</tr>
<tr>
<td>10</td>
<td>012</td>
<td>LF</td>
<td>(NL line feed, new line)</td>
</tr>
<tr>
<td>11</td>
<td>013</td>
<td>VT</td>
<td>(vertical tab)</td>
</tr>
<tr>
<td>12</td>
<td>014</td>
<td>FF</td>
<td>(NP form feed, new page)</td>
</tr>
<tr>
<td>13</td>
<td>015</td>
<td>CR</td>
<td>(carriage return)</td>
</tr>
<tr>
<td>14</td>
<td>016</td>
<td>SO</td>
<td>(shift out)</td>
</tr>
<tr>
<td>15</td>
<td>017</td>
<td>SI</td>
<td>(shift in)</td>
</tr>
<tr>
<td>16</td>
<td>020</td>
<td>DLE</td>
<td>(data link escape)</td>
</tr>
<tr>
<td>17</td>
<td>021</td>
<td>DC1</td>
<td>(device control 1)</td>
</tr>
<tr>
<td>18</td>
<td>022</td>
<td>DC2</td>
<td>(device control 2)</td>
</tr>
<tr>
<td>19</td>
<td>023</td>
<td>DC3</td>
<td>(device control 3)</td>
</tr>
<tr>
<td>20</td>
<td>024</td>
<td>DC4</td>
<td>(device control 4)</td>
</tr>
<tr>
<td>21</td>
<td>025</td>
<td>NAK</td>
<td>(negative acknowledge)</td>
</tr>
<tr>
<td>22</td>
<td>026</td>
<td>SYN</td>
<td>(synchronous idle)</td>
</tr>
<tr>
<td>23</td>
<td>027</td>
<td>ETB</td>
<td>(end of trans. block)</td>
</tr>
<tr>
<td>24</td>
<td>030</td>
<td>CAN</td>
<td>(cancel)</td>
</tr>
<tr>
<td>25</td>
<td>031</td>
<td>EM</td>
<td>(end of medium)</td>
</tr>
<tr>
<td>26</td>
<td>032</td>
<td>SUB</td>
<td>(substitute)</td>
</tr>
<tr>
<td>27</td>
<td>033</td>
<td>ESC</td>
<td>(escape)</td>
</tr>
<tr>
<td>28</td>
<td>034</td>
<td>FS</td>
<td>(file separator)</td>
</tr>
<tr>
<td>29</td>
<td>035</td>
<td>GS</td>
<td>(group separator)</td>
</tr>
<tr>
<td>30</td>
<td>036</td>
<td>RS</td>
<td>(record separator)</td>
</tr>
<tr>
<td>31</td>
<td>037</td>
<td>US</td>
<td>(unit separator)</td>
</tr>
</tbody>
</table>

Source: www.asciitable.com
Geek Humor

I need you to sign off on my Phys-Ed homework.

This says you're supposed to do 100 sit-ups. You really did that many?

I did four.

Four isn't 100, Jason.

Allow me to explain the concept of binary numbers.

Allow me to explain the term 'fat chance.'
Lectures

Week 0

Lectures

Week 1

Lectures

Week 3

Lectures

Week 4

Lectures

Week 5

Lectures

Week 7

Lectures

Week 8

TCP/IP. HTTP. XHTML. PHP. SQL.
Lectures

Week 9

Lectures

Week 10

Expectations

- Attend all lectures and sections.
- Complete nine problem sets.
- Take two quizzes.
- Produce a final project.
- (No final exam.)
Grades

- Problem Sets (best 8 out of 9): 60%
- Quizzes: 30%
- Final Project: 10%

You may take the course pass/fail.
Website
http://www.cs50.net/

- Bulletin Board
- Grades
- Handouts
- Resources
- Software
- Videos
- Virtual Terminal Room
- ...

Website
http://www.cs50.net/
Books

None are required!

- Absolute Beginner’s Guide to C
- Programming in C
- How Computers Work
- Hacker’s Delight
Lectures

- MW 1 – 2:30pm.
- Plus this F and next F.
Sections

Online sectioning begins Wed 9/9!

- For “those less comfortable.”
- For “those more comfortable.”
- For those somewhere in between.
Staff

- Teaching Fellows
- Course Assistants
- Sysadmins
- AV, Producers, Videographers
- Scribes
- me
Office Hours
Start next week!
Virtual Office Hours

Start in two weeks!
### Workload

<table>
<thead>
<tr>
<th>Time Range</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 5 hours</td>
<td>4.0%</td>
</tr>
<tr>
<td>5 - 10 hours</td>
<td>38.4%</td>
</tr>
<tr>
<td>10 - 15 hours</td>
<td>33.3%</td>
</tr>
<tr>
<td>15 - 20 hours</td>
<td>17.4%</td>
</tr>
<tr>
<td>20+ hours</td>
<td>6.9%</td>
</tr>
</tbody>
</table>
3: Game of Fifteen
4: Sudoku
Teh Computer Science 50 learnz you about intertubes in teh cloudz. David J. Malan will pwn u ftw so watch out!

6: Mispellings
7: C$50 Finance
This is CS 50.
Algorithms

1 let socks_on_feet = 0
2 while socks_on_feet != 2
3 open sock drawer
4 look for sock
5 if you find a sock then
6 put on sock
7 socks_on_feet++
8 look for matching sock
9 if you find a matching sock then
10 put on matching sock
11 socks_on_feet++
12 close sock drawer
13 else
14 remove first sock from foot
15 socks_on_feet--
16 else
17 do laundry and replenish sock drawer
#include <stdio.h>

int main(int argc, char *argv[]) {
    printf("O hai, world!\n");
}

O hai, C!
hai.c
#include <stdio.h>

int main(int argc, char *argv[])
{
    printf("O hai, world!\n");
}

1000011 0000001 0010001 0000000 0011101 1111100 0110100 0011101
0000000 0100000 0000000 0000000 0000000 0000000 0000000 0000000
1010000 0000000 0000000 0000000 0101000 0000000 0000111 0110000
0001011 0000001 0001011 0000011 0000101 0000000 0000000 0000000
0000000 0100000 0000000 0000000 0000000 0000000 0000000 0000000
0000000 0010000 0000000 0000000 0000000 0000000 0000000 0000000
0000000 0000000 0000000 0000000 0000000 0000000 0000000 0000000
0111000 0001000 0000000 0100000 0000001 0000000 0000000 0000000
0000000 0000000 0000000 0000000 0000000 0000000 0000000 0000000
0000000 0010000 0000000 0100000 0000001 0000000 0000000 0000000
0000000 0000000 0000000 0000000 0100000 0000000 0000000 0000000
0000000 0010000 0000000 0100000 0000001 0000000 0000000 0000000
1111111 1111111 1111111 1111111 1111111 1111111 1111111 1111111
1001000 1000000 0000000 0100000 0000001 0000000 0000000 0000000
00101110 0110100 01111001 01101110 01100001 01101101 01110101 0110101 01101101
1001000 00000100 00000000 0100000 0000001 0000000 0000000 0000000
1110000 00001000 00000000 0100000 0000000 0000000 0000000 0000000
0101000 00000001 0000000 0000000 0000000 0000000 0000000 0000000
1011000 00000100 0000000 0000000 0000000 0000000 0000000 0000000
0000000 0000000 0000000 0000000 0000000 0000000 0000000 0000000
0000000 0000000 0000000 0000000 0000000 0000000 0000000 0000000
0000000 0000000 0000000 0000000 0000000 0000000 0000000 0000000
0000000 0000000 0000000 0000000 0000000 0000000 0000000 0000000
0000000 0000000 0000000 0000000 0000000 0000000 0000000 0000000
[...]
0 hai, Scratch!

Hai1.sb
Statements

```
say "O hai, world!"
wait 1 secs
play sound "meow"
```
Statements
Hai{2,3}.sb
Boolean Expressions

touching mouse-pointer ?

mouse down?

< <

and
Conditions
Conditions

Hai\{4,5\}.sb
Loops
Loops
Hai\{6,7,8\}.sb
Variables

Count\{1,2\}.sb
Arrays

- `add thing to inventory`
- `delete 1 of inventory`
- `insert thing at 1 of inventory`
- `replace item 1 of inventory with thing`
- `item 1 of inventory`
- `length of inventory`
Arrays

FruitcraftRPG.sb
Threads

Move1.sb
Threads

Move2.sb
Threads
Hai10.sb
Threads

David.sb
Events

Marco.sb

- When clicked:
  - Forever
    - If key space pressed?
      - Say Marco! for 2 secs
      - Broadcast event

- When I receive event:
  - Say Polo! for 2 secs
Sensors

singer.sb, Masquerade.sb, davidwu.sb
Oscartime
Oscartime.sb