Implementing a MOOC

David J. Malan
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CS50
an introduction to the intellectual enterprises of computer science and the art of programming
This is CS50.

- lectures
- sections
- walkthroughs
This is CS50.

- 8 problem sets
- 2 quizzes
- 1 project
evolution

- Harvard College
- Harvard Extension School
- CS50.tv
- Academic Earth
- iTunes U
- YouTube
- ...

...
MIT and Harvard announce edX

Joint partnership builds on MITx and Harvard distance learning; aims to benefit campus-based education and beyond
This is CS50x.

- 8 problem sets
- 2 quizzes
- 1 project
This is CS50x.

- lectures
- sections
- walkthroughs
- shorts
TODOs

- content
- psets
- q&a
- quizzes
- shorts
- software
- Appliance
- Discuss
- Gradebook
- Sandbox
- Run
- Spaces
- Check
- Submit
- Video
CURRENT COURSES

HarvardX
CS50x Introduction to Computer Science I

View Course

HarvardX
PH207x Health in Numbers: Quantitative Methods in Clinical & Public Health Research

View Archived Course
WEEK 0

You were most recently in Lecture. If you're done with that, choose another section on the left.
lectures
sections
and watch the short on compilers. Be sure you're reasonably comfortable when it comes time to submit this problem set's form.

What's a pre-processor? How does it relate?
What's a compiler?
What's an assembler?
What's a linker? How does it relate?
walkthroughs
shorts
437

400 + 30 + 7
4 \times 100 + 3 \times 10 + 7 \times 1

4
So most every day, you probably type or at least see "HTTP". In fact, if you're watching or listening to this over the web, you're using...
implementation details
services

- Amazon
  - CloudFront (CF)
  - Elastic Compute Cloud (EC2)
  - Elastic Load Balancing (ELB)
  - Simple Email Service (SES)
  - Simple Storage Service (S3)
  - Route 53
  - Virtual Private Cloud (VPC)
- Dotsub
- edX
- GitHub
- iTunes U
- Pingdom
- YouTube
preliminary results
day 0

2:00pm: CS50x goes live
2:02pm: 500 users online
3:00pm: 10,000 users online
day 0

30,000 students
6,000 discussions
8,000 replies to discussions
60,000 in-video questions answered
  81% answered correctly
as of today

150,000 students have registered
100,000 students have engaged
12,000 pset0 submissions
submissions

![Bar chart showing submissions for different assignments.](chart.png)
unique visitors
unique visitors
<table>
<thead>
<tr>
<th>Country / Territory</th>
<th>Visits</th>
<th>Visits %</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>292,682</td>
<td>29.25%</td>
</tr>
<tr>
<td>India</td>
<td>94,151</td>
<td>9.41%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>57,881</td>
<td>5.78%</td>
</tr>
<tr>
<td>Canada</td>
<td>32,180</td>
<td>3.22%</td>
</tr>
<tr>
<td>Russia</td>
<td>29,134</td>
<td>2.91%</td>
</tr>
<tr>
<td>Spain</td>
<td>27,299</td>
<td>2.73%</td>
</tr>
<tr>
<td>Brazil</td>
<td>26,645</td>
<td>2.66%</td>
</tr>
<tr>
<td>Ukraine</td>
<td>20,596</td>
<td>2.06%</td>
</tr>
<tr>
<td>Germany</td>
<td>17,743</td>
<td>1.77%</td>
</tr>
<tr>
<td>Egypt</td>
<td>16,854</td>
<td>1.68%</td>
</tr>
</tbody>
</table>
### why taking CS50x?

<table>
<thead>
<tr>
<th>Choices</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>To learn about computer science</td>
<td>58.52%</td>
<td>7791</td>
</tr>
<tr>
<td>To learn how to program</td>
<td>55.79%</td>
<td>7427</td>
</tr>
<tr>
<td>To fill in some gaps in my knowledge</td>
<td>46.99%</td>
<td>6256</td>
</tr>
<tr>
<td>Just for fun</td>
<td>34.99%</td>
<td>4658</td>
</tr>
<tr>
<td>To pursue a new career</td>
<td>21.89%</td>
<td>2914</td>
</tr>
<tr>
<td>As a precursor to another CS course</td>
<td>17.33%</td>
<td>2307</td>
</tr>
<tr>
<td>As a refresher</td>
<td>15.74%</td>
<td>2096</td>
</tr>
</tbody>
</table>

Total Entries: 13313
comfort level?

<table>
<thead>
<tr>
<th>Choices</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>I'm somewhere in between</td>
<td>44.49%</td>
<td>5246</td>
</tr>
<tr>
<td>I'm among &quot;those more comfortable&quot;</td>
<td>37.20%</td>
<td>4386</td>
</tr>
<tr>
<td>I'm among &quot;those less comfortable&quot;</td>
<td>18.31%</td>
<td>2159</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>11791</strong></td>
</tr>
</tbody>
</table>
prior courses?

<table>
<thead>
<tr>
<th>Choices</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>55.95%</td>
<td>6597</td>
</tr>
<tr>
<td>1</td>
<td>21.65%</td>
<td>2553</td>
</tr>
<tr>
<td>3+</td>
<td>13.46%</td>
<td>1587</td>
</tr>
<tr>
<td>2</td>
<td>8.94%</td>
<td>1054</td>
</tr>
</tbody>
</table>

Total 11791
education

- High School
- Bachelors
- Other
- Masters
- PhD
**intention?**

<table>
<thead>
<tr>
<th>Choices</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>I plan to do ALL of the work (including problem sets, quizzes, and the final project)</td>
<td>84.08%</td>
<td>11193</td>
</tr>
<tr>
<td>I plan to watch the videos</td>
<td>12.42%</td>
<td>1653</td>
</tr>
<tr>
<td>I plan to do SOME of the work</td>
<td>6.14%</td>
<td>818</td>
</tr>
<tr>
<td><strong>Total Entries</strong></td>
<td><strong>13313</strong></td>
<td></td>
</tr>
</tbody>
</table>
importance of certificate?

<table>
<thead>
<tr>
<th>Choices</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>A certificate would be nice to have, but that's not my primary goal</td>
<td>65.22%</td>
<td>7690</td>
</tr>
<tr>
<td>I'm taking CS50x because I want the certificate</td>
<td>29.98%</td>
<td>3535</td>
</tr>
<tr>
<td>I'm not particularly interested in receiving a certificate</td>
<td>1.68%</td>
<td>198</td>
</tr>
</tbody>
</table>
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