



FOSS 101: Engaging introductory students in the open source movement

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Who is this?



“Imagine a world in which every single person on the planet is given free access to the sum of all human knowledge.”

Jimmy (Jimbo) Wales invented...



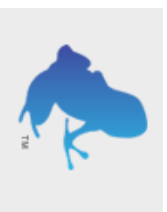
Ward
Cunningham
Inventor of Wiki
software



Sharing what we
know for free.

WIKIPEDIA
The Free Encyclopedia

What do these programs do?



Blue Poison Dart Frog
(*Dendrobates azureus*)

Free and Open Source Bittorrent Software



Invented by ...



Bram Cohen

Sharing our
bandwidth and disk
space for free.

FOSS is freedom to ...

- ... **run** the program.
 - ... **study** how the program works.
 - ... **share** copies with your neighbor.
 - ... **improve** the program so that the whole community benefits.
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- A software development process that emphasizes **peer review** and **transparency**.
- Does not discriminate against persons, groups, platforms, endeavors, or products.



Successful Open Source Projects



GNU/Linux



Mozilla Firefox



The Apache Software Foundation
<http://www.apache.org/>

Apache

MySQL



Companies
Supporting
FOSS



redhat

YAHOO!

N



invent



Google



Microsoft

Freedom & Openness Everywhere

- "Software is just the beginning ... open source is doing for mass innovation what the assembly line did for mass production. **Get ready for the era when collaboration replaces the corporation.**" -- Thomas Goetz, *Wired*, 11/2003



So...Do our students ...

- ..**use** good quality FOSS every day?
 - ..**like** the freedom and openness of the Internet?
 - ..**think** that Internet content should remain free?
 - ..**share** stuff with their friends for free?
- BUT
- **Do they know** that all (a lot) of this stuff is based on...

FOSS ?

FOSS 101

FOSS 101

- NSF CPATH grant.
- Engage students in building free and open source software to serve society.
- CS0 non-majors course—no prerequisite.
- “Numerical and symbolic reasoning” distribution credit (i.e., Math).
- Dual Goals:
 - Introduce programming in a FOSS context.
 - Engage students in discussion of the FOSS impact on society.

Course Details

- Two meetings/week, 75 minutes. **(Mistake 1)**
- Videoconference course (Mellon, Trinity, Wesleyan)
- Enrollment **(Mistake 2)**
 - 13 students (4 sen, 1 jun, 5 soph, 3 fresh)
 - 7 students with no previous CS experience **(good)**
 - 2 senior CS majors, 4 women (2 seniors)
- Graded work
 - Midterm and final examinations (40%)
 - Term paper and oral presentation (20%)
 - Homework and quizzes (20%)
 - Programming and FOSS projects (20%)

Classroom culture: Sharing and Collaboration

- Weekly computational homework exercises were displayed, discussed, and mostly not graded.
- Students were encouraged to help each other and share their solutions and insights.
- Pairs programming.
- Collaborative group assignments – e.g., building a Wiki page, programming assignments.
- **Missed Opportunity: No peer grading?**

Assignments

- Weekly ...
 - PHP/MYSQL homework (XAMPP, Eclipse)
 - Reading/discussion/writing assignments
- Wiki site for group/individual writing
 - Can history be open source (wikipedia)?
 - Open source news (group wiki exercise)
- Term paper and oral presentation
- Programming project: Charitable organization web app.
- HFOSS project: Study and contribute to Sahana through bug fixes, new features, documentation, etc. (**Mistake 3 – too ambitious by half**)

Great FOSS stories to tell



FSF
FREE SOFTWARE
FOUNDATION


open source™



Great In-class Discussions

- Open source is everywhere (Goertz, *Wired*)
- Can history be open source (Rosenzweig)
- Open source spying after 9/11 (NY Times)
- Mainstream media (Fox, CNN) vs. Participatory Media (Huffington Post, DailyKOS)
- The GNU Manifest (Stallman)
- Commons-based peer production and virtue (Benkler and Nissenbaum)
- Should DNA be open source? (Drew Endy)
- Martus, documenting human rights abuses

Student Evaluations

(Mistake: only Trinity Students did online evaluation)

- 7/8: Very (1) or moderately challenging.
 - 7/8: Very (6) or moderately worthwhile.
 - 8/8: Very (6) or moderately helpful assignments.
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- Wow. I really got to look at how computer science can relate to humanitarian efforts. I really loved delving into a world I'd barely seen before: Open Source. I now really understand it and know why it came about.
 - Before I thought that [FOSS] was only relevant to computer scientists and no one else. But that is not true. The open source movement is much more relevant to the greater humanitarian good.

Observations & Conclusions

- Student interest in free and open culture can serve as a hook into CS.
- Students liked contributing to HFOSS (3 applied to summer program, including 2 of 4 women)
- Students were accepting of technical challenges.
- Focusing on humanitarian FOSS taps into (some) students' interests in community service.
- **Secret: I'm learning as much from the students as they are learning from me!**



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- The Mellon Foundation supports the videoconferencing labs at Trinity, Connecticut College and Wesleyan.
- The course also benefited from the use of videoconference facilities developed with the support of the Mellon Foundation.
- Web sites
 - Course: <http://www.cs.trincoll.edu/~ram/cpsc110/>
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