

CSci 4235

Lecture 1

About Me

- 5 years at Netscape: Source331, XUL
- Lead for Mozilla's Camino project
- 9 years at Google, 6 on Chrome
- 4 year Google Summer of Code mentor
- Tech Lead of Google Chrome on Mac and iOS



About this class

- Open source is here to stay
- Analysis of multiple, real world examples
- Real world social and software engineering
- Large scale application development

What we will cover

- Design Patterns
- Cross-platform design issues
- Project planning
- Development Tools
- Methods of communication
- Open Source ethics
- Copyrights, patents, and licenses

Skills you should learn

- Grok large scale software systems written by others
- Code reviews, use of common tools
- Use of source code control tools (git, SVN)
- Evaluate and choose an open source license
- Setting up a development environment for a large-scale project from scratch
- Use of common communications tools (e.g., IRC)

Materials

- The Cathedral and The Bazaar
 - Required
 - A bit dated
 - Available for free online
- Design Patterns
 - Recommended, but worth it

Use Blackboard!

- Important announcements
- Syllabus and projects
- Links to required readings (free!)
- Additional readings and documentation (Outline section)
- All lecture notes

Projects

- Two individual, one group
- Using JS/HTML and C++ to do simple development in Chromium
 - Chrome extensions
- In-class presentation
 - Workings of an open source project

Important Dates

- 9/1 — No class, Labor Day
- 10/13 — No class, Prof travel
- 10/20 — Midterm
- 12/15 — Final (likely)

Grading

- 10% 1st project
- 10% 2nd project
- 10% presentation
- 30% group project
- 20% midterm
- 20% final

Computer needed

- Will be downloading source code and building Chromium
- Need a computer (Mac/Win/Linux) and enough hard drive space to compile (20+ Gb)
- Tools are all free
 - MSDN available free for GWU students,
 - Xcode available for free @ Mac App Store

Contacting Me

- Email: mpinkert@gwu.edu
- IRC: irc.freenode.net
 - pinkerton on [#chromium](#) or [#CSci4235](#)
- No formal office hours unless needed
- Online 8-4 during week but might be busy

Syllabus

- Academic Integrity policy
 - Sharing work violates the Academic Integrity policy
 - It *will not* be tolerated and will be reported to University
- Late policy
 - No late assignments accepted

What is "open source", really?

- Open source vs closed source
- “Free” vs “for free”
- “Freeware” vs “free software” vs “shareware”
- Open source != free software?
- Licensing
 - GPL/MPL/LGPL/MIT/BSD/CopyLeft/etc
- Commercial software
- Proprietary software

Contrast

- Commercial software
 - Restrictive license, rights retained
 - No access to source
 - Usually no recourse if vendor goes bankrupt or just stops developing the software
 - Sold for rights to use
- Open source
 - Licenses generally liberal
 - You can read the source, alter it if needed, ensuring longevity of the software
 - May be sold for distribution costs, installation/customization fee, but usually not for right to use

Major Personalities

- Free Software Foundation/GNU
 - Richard Stallman (RMS)
- Open Source Foundation
- Linus Torvalds
- Eric S. Raymond (ESR)
- Larry Wall
- Tim O'Reilly

CatB

- Cathedral and the Bazaar
- Essay on different ways to run an open source project
 - Rules of the road
- Cathedral - centralized ownership
- Bazaar - distributed ownership

Examples

- OSes: Linux, BSD, Gnu
- Desktop environments: KDE, Gnome, X
- Applications: OpenOffice, GIMP, VLC, Blender, Audacity, Pidgin
- Browsers: Firefox, Chromium, Konqueror (and Gecko, WebKit/Blink, KHTML)
- Servers: Apache, WordPress, ...
- Development tools: Eclipse, Emacs, Vim, gcc, Clang, Perl, Python, SVN, git, ...
- Libraries: Everything, the kitchen sink, ...

Why use open source?

- Cost
- Quality
- Speed
- Versatility
- Verifiability
 - Heartbleed bug in OpenSSL?

Why would anyone do this?

- Reward isn't always the best motivator
- *“To the extent one's experience of being self-determined is limited, one's creativity will be reduced as well.”*
- *“People who see themselves as working for money, approval or competitive success find their tasks less pleasurable, and therefore do not do them as well”*
 - Richard Ryan, associate Psychology professor at the University of Rochester

Why work on open source?

- Prestige/ego
- Self expression
- Complete freedom in what you decide to work on
- Bolster your resume
- Learn new skills
- Increasingly, you can get paid to do so

Getting started with Chrome

- Download Chrome and a few extensions
- Install dev tools for your platform
- Checkout source with git
 - <http://www.chromium.org/Home>
- Build it
- Take a peek at the sources

History of Mozilla

- Source331 project
- Why?
- Cleansing the source
- 3rd party components
- Security
- Wang

History of Mozilla

- Gromit and Raptor
- WONTFIX
- SeaMonkey: 3 months becomes 3 years
- Netscape6, 7, and 8

The bazaar failed

- Began with bad foundation
- Actually a cathedral
- Weak module ownership
- Tried to please everyone
- Date driven, feature-set too ambitious
- Did win with QA

Finally some success

- Gecko embedded in several high profile applications
- Netscape 7.x sucked less
- Firefox, Thunderbird, and Camino
 - Focused applications, avoid kitchen-sink
 - Functionality and UI decisions made by a small team
- Reversed IE's market share for the first time ever
- An open source project changed the face of the web and moved the needle.

Reading

- Get familiar with Chrome extensions
 - <https://developer.chrome.com/extensions/overview>
- Design Patterns
 - Chapters 1 and 2
 - <http://www.dofactory.com/Patterns/Patterns.aspx>
 - http://www.tutorialspoint.com/design_pattern/