

Announcements

- **Lab 3 is due tonight**
- **Lab 4 is posted and due on Wed March 4th**
 - We will meet in the lab this Wednesday
 - No 8:30 AM session on Wednesday
- **Midterm is one week from today**

Today's Topics

- **Copyright and other Legal Issues**
- **Engineering Ethics**
- **Group Problem**

Copyrights and other Legal Issues

Disclaimer

I am not a lawyer

Legal Environment

- Software is developed in a complex legal and economic framework.
- Every software engineer needs to be **aware** of some parts of the framework,
- But you **need a lawyer** for anything other than the most basic legal issues.

Legal Topics in Software

- Jurisdiction (international, federal, state laws)
- Intellectual property (copyright, patent, trademark, trade secrets)
- Contracts and licenses
- Privacy
- Free speech and its limitations (government secrets, obscenity)
- Commerce (ISPs, e-commerce)
- Employment (personnel, your next job, etc.)

Legal Change

- Changes in laws usually follow changes in technical world.
- Lawyers and politicians typically have poor technical backgrounds.
- The interpretation of many laws is unclear as they have may never have been tested in court because of the cost of litigation.
- Law usually develops incrementally. As a result, strange analogies are often made between new technological paradigms and old world systems.

Jurisdiction: Boundaries

- “The Internet has no boundaries”
 - If you break a law in Finland, but you were on the Internet in the United States, what happens to you?
 - Where do you pay taxes?
- United States has Federal law, which covers the entire USA, and 50 states, each with its own laws
 - Relationship between US law and International Law is complex and changing.

Copyright

- Copyright is Federal law, which applies to literary works.
- Originally applied to textual materials, but gradually extended to cover text, music, photographs, designs, software, ...
- Copyright applies to the expression of ideas (e.g., the words used), not to the ideas themselves, nor to physical items.
- Software
 - Copyright applies to the program instructions, but not to the concepts behind the instructions, nor to the files on disk or on paper where the programs instructions are stored.

Ownership of Copyright (USA)

- At creation
 - Copyright is automatically owned by the creator.
 - Except works for hire, where the employer owns the copyright.
- Transfer of copyright
 - In the USA, copyright is property that can be sold or licensed.
 - The agreement is written as a contract.

Copyright

- In the USA, copyright gives the owner exclusive right to:
 - Reproduce
 - Distribute
 - Perform
 - Display
 - License others to reproduce, distribute, perform, or display
- Special exceptions
 - First sale. The owner of an object, e.g., a book, can sell the object without permission of the copyright owner.
 - Fair use. Limited use is permitted without permission of the copyright owner, e.g., in a review or short quotation.

Copyright: Derivative Software

- When software is derived from other software:
 - Copyright in new code only is owned by new developer
 - Conditions that apply to old code apply to derived work
- If you write S, which includes code derived from A and B, you cannot distribute or licenses S
 - unless the copyright owners permit you to distribute both A and B.
- When creating a software product, you should have documented rights to use everything from which it is derived.

- **You are a student in CS 436. When you finish your iPhone project:**
 - What use can you make of your work?
 - What use can your client make of it?
 - What use can WashU make of it?
- **WashU's policy is that you own the copyright in the work that you do for a class.**
 - Anybody else, including WashU or your clients, needs your permission before using the software in any way.

Questions

- **When software is written, who owns the copyright?**
 - The person who writes the software
 - Except works for hire, where the employer owns copyright
- **How can somebody else be permitted to use the software?**
 - By permission from the copyright owner (usually a license)
- **How can copyright be transferred to somebody else?**
 - Copyright is property that can be sold or given away (usually a contract)

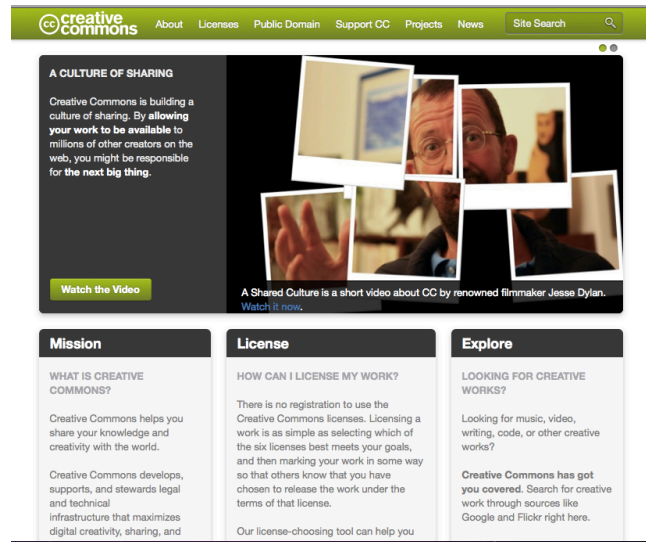
Questions

- **You work free-lance for company X.**
- **When you finish, who owns your work?**
 - It depends on the circumstances.
 - Have a written contract before beginning work.
- **What use can you make of the work?**
 - If you hold the copyright -- unrestricted (unless you have signed away some of your rights).
 - Otherwise -- none without agreement(perhaps some minor use under "fair use").

Contracts and Licenses

- **Contracts allow intellectual property to be sold**
 - Economic agreement in exchange for some consideration (e.g., money)
- **Written document with signatures**
 - Permanent or temporary, whole or part
 - Exclusive or non-exclusive
 - Termination, problems and difficulties
 - Terms and conditions as agreed
 - Enforceable by courts
 - For simple agreements, an exchange of letters is a convenient form of contract.

Creative Commons



www.creativecommons.org

GNU Public License



• Open sources software is an important part of modern computing that does not fit well into contract law.

• GNU is the most widely used public license

• Developers who write software can release it under the terms of the GNU GPL. When they do, it will be free software and stay free software, no matter who changes or distributes the program. We call this copyleft: the software is copyrighted, but instead of using those rights to restrict users like proprietary software does, we use them to ensure that every user has freedom.

MIT vs GNU vs BSD

- **MIT License**
 - If your goal is that your code be accessible by the greatest possible number of developers and derivative works, and you do not mind the code being used in proprietary programs
- **GNU**
 - If you prefer that your project's code not be used in proprietary programs, or if you at least don't care whether or not it can be used in proprietary programs, choose the GNU license
 - <http://www.gnu.org/licenses/gpl-faq.html>
- **BSD**
 - Similar to MIT and must include a boiler plate disclaimer
 - Copyright (c) <year>, <copyright holder> All rights reserved. Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met: 1. Redistributions of source code must retain the above copyright...

Intellectual Property: Patents

- Patents apply to inventions
- Should be: non-obvious, novel, useful
- Requires a complex process of patent application
- 17 years from award (20 years from application)
- Copyright applies to the expression of ideas, patents to the implementation of the ideas themselves.

Software Patents

- **Problems with software patents**
 - Poor quality of patent examiners can lead to broad patents for routine computing concepts
 - Usually difficult to know where ideas originate
- **International differences**
- **The situation is a serious mess!**

Trade Secrets and Non-Disclosure Agreements

- **Trade Secret**

"... information, including a formula, pattern, compilation, program, device, method, technique, or process that derives independent economic value from not being generally known and not being readily ascertainable and is subject to reasonable efforts to maintain secrecy."

Uniform Trade Secrets Act

- Example: Source code of a commercial product

- **Non-Disclosure Agreement**

- Legal agreement not to disclose trade secrets. **Read carefully.**

Trade Secrets

- A trade secret does not expire - as long as it is kept secret.
- Competitors may not use secrets obtained through extraordinary means.
- If you learn trade secrets when working for one employer, you must not disclose them to another employer.

Trademark

- Specific name or phrase
- Unique within a line of business, in a specific country (e.g., only one electronics firm called *Apple* in the USA, but could be a shipping line called *Apple* in the USA or a different electronics firm called *Apple* in another country.)
- Generic terms cannot be trademarked (e.g., dispute over name *Windows*)
- Trademarks can be lost if they are not defended
 - Lost trademarks: aspirin, kleenex
 - Held trademarks: Coke, Pepsi

Privacy in the Workplace

- **Test for employers/employees**
 - "Do you have a reasonable expectation of privacy?"
- **Work-related material on business machines is definitely not private.**
- **Some organizations, e.g., most universities, treat private email on business machines as private, but this is not the law.**
 - Never send anything by email that you would not be prepared for your employer to see.

As a software engineer, you may come across other people's private information. Keep it private. If in doubt consult your supervisor.

Business Email

- **Electronic Communications Privacy Act (1986)**
says all business communication belongs to that business.
- **Deleting email can be ruled intentionally destroying company records.**

Employment Law: Your Next Job ...

- **Your employment contract may restrict your next job**
 - not working for competitors, etc.
- **Trade-secret information**
 - non-disclosure agreement (NDA)
- **Contamination**
 - knowledge of trade secrets may prevent you working on similar projects for others
- **Ask before you accept the job!**
- **Read the employment contract before you sign it!**

Ethics

Professional and ethical responsibility

- Software engineering involves wider responsibilities than simply the application of technical skills
- Software engineers must behave in an honest and ethically responsible way if they are to be respected as professionals
- Ethical behaviour is more than simply upholding the law

ACM/IEEE Code of Ethics

- The professional societies in the US have cooperated to produce a code of ethical practice.
- Members of these organisations sign up to the code of practice when they join.
- The Code contains eight Principles related to the behaviour of and decisions made by professional software engineers, including practitioners, educators, managers, supervisors and policy makers, as well as trainees and students of the profession.

Code of ethics - principles

- PUBLIC
- CLIENT AND EMPLOYER
- PRODUCT
- JUDGMENT
- MANAGEMENT
- PROFESSION
- COLLEAGUES
- SELF

Public

- **Software engineers shall act consistently with the public interest.**
 - Accept fully responsibility for their work
 - Be fair and avoid deception in all statements, particularly public ones
 - Moderate the interests of the software engineer with the public good.

Client and Employer

- **Software engineers shall act in a manner that is in the best interests of their client and employer consistent with the public interest.**
 - Provide services in their area of competence
 - Do not knowingly use software that was obtained illegally
 - Keep private any confidential information gained

Product

- **Software engineers shall ensure that their products and related modifications meet the highest professional standards possible.**
 - Strive for high quality, acceptable cost, and a reasonable schedule.
 - Ensure proper and achievable goals and objectives
 - Work to follow professional standards when available

Judgment

- **Software engineers shall maintain integrity and independence in their professional judgment.**
 - Maintain objectivity with respect to any software or related documents when asked to evaluate
 - Disclose to all concerned parties those conflicts of interest that can not be avoided or escaped
 - Do not engage in deceptive financial practices such as bribery, double billing, or other improper financial practices

Management

- **Software engineering managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance.**
 - Ensure good management for any project you work on
 - Ensure engineers are informed of standards before being held to them.

Profession

- **Software engineers shall advance the integrity and reputation of the profession consistent with the public interest.**
 - Help develop an organizational environment favorable to acting ethically
 - Promote public knowledge of software engineering
 - Report others in violation of the engineering code

Colleagues and Self

- **COLLEAGUES**
 - Software engineers shall be fair to and supportive of their colleagues.
- **SELF**
 - Software engineers shall participate in lifelong learning regarding the practice of their profession and shall promote an ethical approach to the practice of the profession.

Ethical dilemmas?

Ethical dilemmas

- Disagreement in principle with the policies of senior management
- Your employer acts in an unethical way and releases a safety-critical system without finishing the testing of the system
- Participation in the development of military weapons systems or nuclear systems

Group Problem

- Break up into groups and discuss the ethical dilemmas presented to you