

Cornell University
Computing and Information Science

CS 5150 Software Engineering
22. Legal Aspects of Software Development

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Legal Environment

Software is developed in a complex **legal** and **economic** framework.

Every software developer needs to be **aware** of parts of the framework.

A senior manager or consultant will frequently work with lawyers.

You **need a lawyer** for anything other than the most basic legal issues.

Legal Change

Law usually develops incrementally

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.

Strange analogies are often made between new technological paradigms and old world systems.

Sources

It is often useful to read the text of a law.

See: Cornell's Legal Information Institute for the US Code (the actual wording of the law), federal regulations, and much more useful information, <http://www.law.cornell.edu/>.

But **do not try to interpret the law by yourself**. You may be reading the wrong law, or not know how it has been interpreted by the courts.

Do not assume that the interpretation by the courts is what you would expect from reading the statutes.

Be very careful about legal advice on web sites. **Much of it is simplistic or wrong.**

Legal Topics in Software Development

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

Statutes and Precedents

The United States follows **Common Law**. The law is a combination of:

- **Statutes** (bills) passed by Congress and the 50 states.
- **Regulations** issued by the government.
- **Precedents** (judgments) made by courts.

Jurisdiction: USA

United States has:

- **Federal law**, which covers the entire USA, with the federal court system headed by the US Supreme Court
- **50 states**, each with its own laws and its own court system

Much of state law that covers computing is **based on** the **Uniform Commercial Code**, but there are many differences between the states.

Jurisdiction: Boundaries

The relationship between US law and **international law** is complex and changing.

- 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?
- What if you are in California and you break a law in Minnesota?
- Where do you pay taxes?

Intellectual Property Law: 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), 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 printouts of the programs instructions.

Copyright

In the USA, copyright gives the **owner** exclusive right to:

- reproduce or copy
- distribute
- perform or execute in public
- display in public
- license others to reproduce, distribute, perform, or display

Special exceptions (which rarely apply to software)

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.

[In theory, copyright last for only a period of years, but the period is much longer than the life of any software.]

Ownership of Copyright (USA)

Who owns copyright?

Copyright is an example of **intellectual property**. It has an owner and can be sold or licensed.

At creation

In the USA, copyright is established **automatically** when a work is created.

- Copyright is **automatically** owned by the creator.
- Except **works for hire**, where the employer owns the copyright.
- Special rules apply when the work is created by several people.

Transfer of copyright

- In the USA, copyright is intellectual property that can be **sold** or **licensed**.
- The agreement to sell copyright is written as a **contract**.

Copyright and Work for Hire

U. S. Code Title 17

§ 201. Ownership of copyright

(a) **Initial Ownership.** — Copyright in a work protected under this title vests initially in the author or authors of the work. The authors of a joint work are coowners of copyright in the work.

(b) **Works Made for Hire.** — In the case of a work made for hire, the employer or other person for whom the work was prepared is considered the author for purposes of this title, and, unless the parties have expressly agreed otherwise in a written instrument signed by them, owns all of the rights comprised in the copyright.

Ownership of Software

- If you are employed, copyright in the code that you write belongs to **your employer** (e.g., if you work for a Cornell department).
- If you work free lance, you must **have a contract** with the organization you are working for that is explicit about who owns the copyright in work that you do.
- If you do not own the copyright, you need permission to copy, or use the software, **even if you wrote the code** (e.g., you cannot make a copy for your personal use).

Cornell Copyright

Read the Cornell Copyright Policy:

<https://www.dfa.cornell.edu/tools-library/policies/copyright>

Cornell's policy is that **you own the copyright** in the work that you do for class. Anybody else, including Cornell or your clients, needs your permission before using the software in any way.

The feasibility study for your project must include a commitment to your clients that they will have extensive rights to the software (either transfer of ownership or a comprehensive license).

CS 5150 Entrepreneurial Projects

If your project is for a start-up company or other entrepreneurial venture, it is essential to agree on ownership of software and sharing of potential rewards as part of the **feasibility study**.

If in any doubt, ask for advice.

Example:

Film **The Social Network**

Student Projects

There are two examples of project agreements on the web site. See the page on [Projects -> Client Expectations and Business Considerations](#).

Before putting examples of feasibility studies and other reports on the Web site, I need permission from the student authors:

- The student authors own the copyright.
- The Family Educational Rights and Privacy Act gives students privacy in the work that they do for courses.

Copyright: Derivative Software

When software is derived from other software:

- Copyright in the **new code only** is owned by new developer or employer
- Conditions that apply to **old code** apply to derived work

If you write S, which includes code derived from A and B, you cannot copy, use, distribute or license S unless the copyright owners of both A and B give permission.

When creating a software product, you should have **documented** rights to use everything from which it is derived.

Example:

Python distribution

Copyright: An Old Exam Question

When software is written, who owns the copyright?

How can somebody else be permitted to use the software?

How can copyright be transferred to somebody else?

Copyright: An Old Exam Question

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 intellectual property that can be sold or given away

(usually a contract)

Copyright: An Old Exam Question

You are employed for company X writing software.
When you leave, who owns your work?

What use can you make of the work?

Copyright: An Old Exam Question

You are employed for company X writing software.

When you leave, who owns your work?

The company (work for hire)

What use can you make of the work?

None, without permission of the copyright owner.
(Perhaps some minor use under "fair use".)

Copyright: An Old Exam Question

You do free-lance work for company X.
When you finish, who owns your work?

What use can you make of the work?

Copyright: An Old Exam Question

You do free-lance work 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").

CS 5150 Course Web Site

Who has permission to use the materials on the CS 5150 Web site?

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Software Contracts

Contracts allow software to be licensed or sold

- A contract is an agreement in exchange for some consideration (e.g., money)
- It should be a written document signed by both parties
- A contract is enforceable by courts

For simple agreements, an exchange of letters may be a convenient form of contract.

"A verbal contract isn't worth the paper it's written on." (Attributed to Yogi Berra.)

Software Contracts

A typical contract might include wording that defines:

- The software that is covered by the agreement
- Who owns the software
- Whether any patents or other intellectual property are involved and who owns them
- Payment amounts and dates
- Whether the agreement is permanent or temporary
- Whether the agreement is exclusive or non-exclusive
- Terms about contingencies, termination, problems, and difficulties
- Any other terms and conditions that are agreed by both parties

Open Source Software

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

Examples of open source licenses

BSD license:

A class of extremely simple and very liberal licenses for computer software, originally developed at the University of California at Berkeley (UCB). Often suitable for academic projects.

Apache license:

A permissive license that does not require a derivative work of the software, or modifications to the original, to be distributed using the same license. Widely used, e.g., Android.

GNU public license:

A less permissive license, which requires that derived works can only be distributed under the same license terms.

Intellectual Property: Patents

Patents apply to inventions

- Should be: non-obvious, novel, useful
- Requires a complex process of patent application
- 20 years from application

Copyright applies to the expression of ideas, patents to the ideas themselves.

Software Patents

Problems with software patents

- Usually difficult to know where ideas originate.
- Poor quality of patent examiners has lead to broad patents for routine computing concepts.
- There are often hundreds of patents covering essentially the same idea.
- International differences.

The Supreme Court has recently created precedents that may lead to stricter examination of patent applications.

New law on first to file may make the software situation even worse.

Patent Abuse

Because of the huge number of dubious patents that have been granted, companies can often use the threat of patent litigation as a commercial weapon:

- **Large companies** harass smaller competitors to delay the introduction of competing products and to force them into expensive litigation.
- **Patent trolls** are companies whose entire business is to threaten patent litigation. They buy large numbers of patents and extort money from companies whose products use ideas related to the patents.

If you have a senior position in computing you are likely to receive letters threatening patent litigation. If you do, consult a lawyer.

Trade Secrets and Non-Disclosure Agreements

Trade secret: confidential business information

Examples

- Specification of a product before it is publicly announced
- Source code of a commercial product

Legal definition

"... 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

Non-Disclosure Agreement

Legal agreement not to disclose trade secrets. It is often reasonable to sign a non-disclosure agreement, but **read it carefully before signing.**

Trade Secrets

Trade secrets

- Owner must make **reasonable efforts** to maintain secrecy, e.g., label information “Confidential” and restrict access to designated people.
- A trade secret does not expire, as long as reasonable efforts are made to keep it secret.
- If somebody leaks a trade secret without authorization, it remains a trade 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.

Example

If you work for some companies, e.g., Apple, you may be required to sign a non-disclosure agreement that prevents you telling anybody even what project you are working on.

Privacy

Laws and social norms about privacy are changing rapidly. In general the following are **invasions of privacy**:

- intrusion into the private life of somebody
- appropriation of name or likeness
- unreasonable publicity
- false light

The borderline between appropriate **data mining** and illegal invasion of privacy is vague.

Be very careful about collecting personal data without the knowledge of the individual, e.g., medical or financial data.

There are special laws about privacy of **children**.

European law is stricter in protecting privacy than US law, e.g., recent Google policy on recording Wi-Fi locations.

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 material on business machines as private, but this is not the law.

Privacy in Email

Legally, email is like a **postal letter**:

There is an expectation of privacy in transit, but mail loses its special protected status once it leaves the letter carrier's grasp, e.g., in a corporate mail box

For **email**:

There is an expectation of privacy while signal travels over the Internet, but email loses its protected status at the mail server whether you have read it or not

Never send anything by email that you would not be prepared for your employer to see.

Business Email

The Electronic Communications Privacy Act (1986) says all business communication belongs to that business.

Deleting email can be ruled intentionally destroying company records.

Email is frequently subpoenaed in legal disputes:

Never send anything by email that you would not be prepared to be seen as evidence in a court of law.

Private Information

Private information

As a software developer, and particularly if you work as a system administrator, you may come across private information, e.g.,

- Personal records, such as medical records, financial information, etc.
- Information about dishonest, immoral, or illegal activities
- Corporate secrets

General rule: keep the information private.

If in doubt, e.g., the information implies serious criminal activities, consult your supervisor or a senior manager.

Free Speech

In the USA, the First Amendment protects many aspects of free speech, including news reporting, religious expression, etc., but there are major exceptions (e.g., state secrets, defamation, obscenity, racial hatred).

In the USA, some aspects (e.g., obscenity) are governed by state laws with big differences among states.

Laws in other countries may be very different (e.g., blasphemy, criticism of the government).

If you manage a web site that allows users to express opinions on these matters, make sure that you have policies and procedures to control the content.

Employment Law: Personnel

Every state has strict and complex laws about recruitment, hiring, termination (firing), on-job conditions, and terms and conditions of employment. If you supervise other people, you need to know the basics of these laws.

Many employers run short courses for their supervisors or have a booklet with the key issues.

If in doubt, consult an expert.

Employment Law: Your Next Job ...

- Your employment contract may restrict your next job (not working for competitors, etc.)
- Trade-secret information (non-disclosure agreements may prevent you from including all your experience on your resume)
- 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!

Employment Law: Unpaid Internships

Some companies exploit interns.

Unpaid internships

- An unpaid internship must provide training similar to that which would be given in an educational environment.
- If the intern does any work for the employer, (for example, performing clerical work, writing code, or assisting customers), the intern is an employee and must be paid at least minimum wage and overtime.

See: United States Department of Labor, [Internship Programs Under The Fair Labor Standards Act](http://www.dol.gov/whd/regs/compliance/whdfs71.htm) (<http://www.dol.gov/whd/regs/compliance/whdfs71.htm>).

Employment contracts

If the employment contracts contains unreasonable terms do not sign.

Remember, you have bargaining power. Companies need people like you.

Practical Advice

Be aware of the law, but do not pretend to be a lawyer.

Use a professional for:

- Contracts and licenses (unless very simple exchange of letters)
- Troubles (complaints, injunctions, subpoenas, etc.)
- Personnel issues (particularly firing)

When in doubt, consult your supervisor or a senior manager.

When you become a senior manager, make use of your organization's lawyers.