

Lecture 4 — Software Engineering and Intellectual Property

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Why Do I Care?

Q: I'm just writing software.
Why do I care about Intellectual Property?

A:  versus 

Q: “What is Intellectual Property¹?”

A: Intellectual Property is:

- a government-granted monopoly on certain actions;
- an analogy to other types of property, e.g. real property, tangible property.

¹Richard Stallman advocates not using that term at all:
<https://www.gnu.org/philosophy/not-ipr.en.html>.

Q: Why does IP exist?

A: [per the US Constitution]

“to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”

If people can make money by writing books, more people might write books.

Q: Why is the analogy to other types of property misleading?

A:



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Q: Why is the analogy to other types of property misleading?

A: [per Thomas Jefferson]

“He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me.”

Useful economics keyword: IP is “non-rivalrous”.

Q: What does “government-granted monopoly” mean?

A: “The Man” will come and take you away if you do not stop the offending behaviour.

Q: Which actions are regulated by IP law?

A: It depends (on the kind of IP).

Q: What kinds of IP are there?

A: The most important kinds of IP for software engineers are:

- copyrights;
- patents;
- trade secrets; and
- trademarks.

At the University of Waterloo,
inventors (i.e. you) own
the intellectual property they create.

(Though not while you're on co-op).

Part I

About Copyright



What does copyright do?



(credit Fry1989, Wikimedia Commons, BY-SA 2.0)

A copyright owner is allowed to prevent others from:

- producing and selling copies of the work;
- performing/displaying/transmitting the work; and
- creating derivative works.

What does copyright apply to?

Creative works.

Examples: code, movies, literary works, maps.

Not lists-of-facts, e.g. phone books.

Who first owns the copyright?

The author of the work, or for works-for-hire created in the course of the author's employment, the employer.

Can be sold.

How long does copyright last?

In Canada, creator's lifetime plus 50 years.
In the US, creator's lifetime plus 70 years.

When can you copy?

Copyright protections are not absolute;
exceptions:

- fair dealing (Canada)/fair use (United States);
- public domain works;
- free software/Creative Commons materials.

Exceptions to copyright: fair dealing/fair use

Exceptions to copyright protection,
e.g. copying a short excerpt from a book for
education is allowed.

(Also, “classroom exception”: why I can show
you videos).

US fair use is more permissive than
Canadian fair dealing.

Works not copyrighted: the Public Domain

Works on which copyright has expired/was waived can be freely used.

(United States Government works are public domain, but not Canadian government works.)

Hack the copyright system to allow re-use.

Work is still under copyright, but author grants permission to copy under certain conditions, e.g. must-attribute-author, or (GPL) use only in other GPL'd code.

(Some Open Educational Resources textbooks are coming out which help reduce textbook costs by being freely distributable.)

Plagiarism: not quite the same as copyright infringement.

Plagiarism is the use of materials for academic credit without permission.

What happens if caught:

- meeting with the instructor;
- typical penalty = 0 on the assignment and -5% on the course;
- document case to punish subsequent offenses more severely.

Plagiarism Exercise: Some Questions

Why might you be tempted to plagiarize?

What should you do to avoid plagiarism?

Part II

About Patents

What do patents apply to?

According to Industry Canada²:

Patents cover new and useful inventions (product, composition, machine, process) or any new and useful improvement to an existing invention.

That is: you share your invention with the world and get a limited-time monopoly on using your invention.

²https://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr03652.html

It's complicated, and varies country-by-country.

Copyright protects particular implementations.

Patents can (sometimes) protect a process that the computer is carrying out.

Patent Trolls



(credit Ty Semaka for EFF, BY-SA 2.0; actually a copyright troll)

Some companies own patents
but don't build things.

Business model:
launch patent infringement lawsuits
and settle cases for money.

Part III

About Trade Secrets



A trade secret is information that is not disclosed to the world.

Protected from theft (perhaps by a non-disclosure agreement) but not from reverse engineering.

Unlike patents, trade secrets do not expire.

Part IV

About Trademarks (™)

What Trademarks Do

Protect consumers against confusingly-similar names/identities.