Week 13 - Wednesday

COMP 4290

Last time

- What did we talk about last time?
- Physical security
- Lockpicking

Questions?

Project 3

Assignment 5

Samuel Costa Presents

Legal Issues

Legal issues in computer security

- Motivations for studying legal issues:
  - To know what protection the law gives us for computers and data
  - To respect laws that protect the rights of others with respect to computers and data
  - To help, as experts, to recommend improvements to these laws
- Computer law is complicated
- Computer law changes quickly, but never as fast as technology itself

Areas of interest

- We will look at four areas where the law intersects with the usage of computers:
  - Protecting computer systems against criminals
    - What is your legal recourse when criminals attack?
  - Protecting code and data
    - What are the copyright issues at stake?
  - Protecting programmers' and employers' rights
    - What is the legal environment of a software development workplace?
  - Protecting users of programs
    - What is your legal recourse if a program you buy doesn't work?

Protecting Programs and Data

Copyright

- **Copyright** protects the *expression* of an idea
  - Two people could have had the same idea independently
  - Many laws including the copyright law of 1978 and the DMCA apply to copyright
- Copyright applies to an *original* work which must be in some *tangible* medium of expression
- Works with no clear author or that are old enough are in the **public domain**, owned by everyone
- Copyright is supposed to promote the free exchange of ideas by protecting the authors

Fair use, piracy, and infringement

- **Fair use** includes the uses that a copyrighted work can be put to
  - If you buy a work, you can use it in the ways outlined in the purchasing agreement
  - Without purchasing the work, it can be used and copied for criticism, comment, reporting, teaching, and research
- **Piracy** includes any uses of a copyrighted work that do not fall under fair use
- Copyright gives the author rights to the **first sale**
  - After the first sale, the purchaser can sell it to someone else
  - This system is reasonable for books or works of art but more complex for software

Copyrights standards

- Copyrighted material must be clearly marked with the word "copyright" or ©, the author's name, and the year
- Registering a copyright is unnecessary at a philosophical level
  - But you are not able to claim damages until you have done so
- In the US, a copyright lasts for 70 years after the death of the last surviving author or 95 years after publication for a work copyrighted by a company
- International standards give only 50 years after the death of the last surviving author or 50 years after publication

Infringement

- If someone has violated the protections of your copyright (called **infringing**), you must go to court to claim damages
- The infringement must be substantial, and it must be copying, not coincidentally creating the same thing
- If two people create the same thing independently, they can **both** copyright their versions

Copyrights for computer software

- Copyrights are good for books, songs, and photographs
  - Copying is obvious
  - The line between public domain and creativity is clear
- Computer programs can be copyrighted but it doesn't work as well
  - You can copyright the source code, the expression of the idea
  - But that won't copyright the algorithm, the idea behind it
  - You also have to publish the source code in order to copyright it

DMCA

- The Digital Millennium Copyright Act (DMCA) of 1998 clarified some aspects of copyright law about digital objects
  - Digital objects can be copyrighted
  - It is a crime to disable antipiracy measures built into an object
  - It is a crime to make, sell, or provide devices that disable antipiracy measures or copy digital objects
    - Except for educational purposes
  - You can make a backup copy of a digital object to protect against hardware and software failures
  - Libraries can make up to 3 copies of a digital object to lend to other libraries

A mess

- Some things in the DMCA are quite vague
- A lawyer could argue that you can't rip music from a CD and play it on an iPhone
  - Is it a backup or not?
- Courts have ruled that a computer menu design can be copyrighted but its "look and feel" cannot be
- Copyrights probably need a real update for the computer age
- An emerging idea behind music and software copyrights is that you don't buy the music or software itself, you buy the right to use it

Patents

- Patents are another form of legal protection
- They focus on inventions, tangible objects, and ways to make them
  - Unlike copyright protection which applies directly to works of the mind
- Patents apply to a "new and useful process, machine, manufacture, or composition of matter"
- They explicitly do not apply to "newly discovered laws of nature … [and] mental processes"
- Patents protect a way to carry out some idea

Requirements for a patent

- The object patented has to be novel and nonobvious
- Unlike copyrights, two people cannot hold patents for simultaneously inventing something
  - The person who invented it first gets the patent (not the person who files first)
- Copyrights are easy to get, but a patent requires that you convince the U.S. Patent and Trademark Office that your invention deserves a patent
  - Lawyers are usually involved

Patent infringement

- Unlike copyrights, an inventor must oppose all infringement or risk losing patent rights
- However, infringement occurs even in the case of independent invention
- Defenses when charged with patent infringement:
  - My invention is sufficiently different from yours
  - Your patent is invalid
  - Your invention really wasn't novel
  - I invented the object first

Patents for computer objects

- The Patent Office has discouraged patents for computer software
- In 1981 two cases won patents for industrial processes that use computer programs as part of a larger process
- Since then, algorithms have been recognized as processes by the Patent Office and thousands of software patents have been issued
- The time and expense is often not justified for small software developers

Trade secrets

- Copyrights and patents both require that the underlying work or details of an invention are made public
- A trade secret is some information that gives a company an advantage over others
  - The formula for Coca-cola
- Trade secrets must be kept secret
- If a product can be reverse engineered, a trade secret gives no protection
- If an idea or process is independently discovered, there is still no protection
- The only protection is when a trade secret is improperly obtained

Trade secrets and computers

- Trade secret protection is a typical protection for computer software
  - Microsoft does not explain all the details of its software
- Unfortunately, software is not too difficult to reverse engineer
  - Even with only machine code
- Trade secret protection is hard to enforce
  - They try to do it with a lot of Nondisclosure Agreements

Summary of copyrights, patents, and trade secrets

	Copyright	Patent	Trade Secret
Protects	Expression of idea, not idea itself	Invention, the way something works	A secret, a competitive advantage
Protected object made public	Yes, all about promoting publication	Filed at patent office	No
Requirement to distribute	Yes	No	No
Ease of filing	Easy, do it yourself	Complicated, usually needs lawyers	No filing
Duration	Life of author + 70 years, 95 years for corporations	19 years	As long as you can keep it secret
Legal protection	Sue if unauthorized copy sold	Sue if invention copied	Sue if secret improperly obtained

Upcoming

Next time…

- Information and the law
- Rights of employees and employers
- Software failures
- Computer crime
- Ahmed Mohamed presents

Reminders

- Work on Project 3
  - Try to attack the other projects
- Work on Assignment 5
- Read sections 11.2, 11.3, 11.4, and 11.5