

# CSE/ISE 312

## Intellectual Property (part 2)



# Outline

- Responses to copyright infringement
  - Defensive and aggressive responses
  - DMCA
  - Evolving business models
- Search engines and online libraries
- Free software
- Patents for inventions in software

# Responses to copyright infringement

- Software industry
  - Expiration dates within the software
  - Dongles (a device that must be plugged into a computer port)
  - Copy protection that prevents copying
  - Activation or registration codes
  - Obtained court orders to shut down Internet bulletin boards and Web sites

# International Piracy

- Some countries do not recognize or protect intellectual property
- Countries that have high piracy rates often do not have a significant software industry
- Many countries that have a high amount of piracy are exporting the pirated copies to countries with strict copyright laws
- Economic sanctions, however, often penalize legitimate businesses, not those they seek to target

# Defensive responses from content industries

- Banning, suing, and taxing
  - Ban or delay technology via lawsuits
    - CD-recording devices
    - Digital Audio Tapes (DAT) and DAT recorders
    - DVD players
    - Portable MP3 players
  - Require that new technology include copy protection mechanisms
  - Tax digital media and equipment to compensate the IP industry for expected losses

# Defensive responses from content industries

- Digital Rights Management (DRM)
  - Collection of techniques that control uses of intellectual property in digital formats
  - Includes hardware and software schemes using encryption
  - The producer of a file has flexibility to specify what a user may do with it as to content life and use
  - Apple, Microsoft and Sony all use different schemes of DRM

# The Digital Millennium Copyright Act 1998

- Anti-circumvention
  - Prohibit circumventing technological access controls and copy-prevention systems
- Safe harbor
  - Protect Web sites from lawsuits for copyright infringement by users of site

# The DMCA vs. Fair Use, Freedom of Speech, and Innovation

- Lawsuits have been filed to ban new technologies
- U.S. courts have banned technologies such as DeCSS even though it has legitimate uses, while courts in other countries have not
  - CSS: content scrambling system, to protect movies
- Protesters published the code as part of creative works (in [haiku](#), songs, short movies, a computer game and art)
- U.S. courts eventually allowed publishing of DeCSS, but prohibited manufacturers of DVD players from including it in their products



# Safe Harbor

- Industry issues "take down" notices per the DMCA
- As long as sites like YouTube and Facebook comply with take down notices they are not in violation
- Take down notices may violate fair use, some have been issued against small portions of video being used for educational purposes
- In addition, entertainment companies argue YouTube should have the responsibility to filter out copyright-infringement material
  - YouTube said it cannot always tell which are unauthorized

# Evolving Business Models

- Organizations set up to collect and distribute royalty fees (e.g. the Copyright Clearance Center) for nonelectronic media (journals, magazines, ...) users don't have to search out individual copyright holders
- Online, sites such as iTunes and the new Napster provide legal means for obtaining inexpensive music and generate revenue for the industry and artists: music subscription services, etc.

# Constructive solutions

- Revenue sharing allows content-sharing sites to allow the posting of content and share their ad revenues with content owners in compensation
  - Sharing sites use filtering software to examine uploaded files; block them or pay content owners for their appearance

# Evolving Business Models (cont'd)

- Cloud storage raises copyright issues.
  - Is copying legally purchased files to and from the cloud a fair use?
  - Will the companies operating the cloud services have any responsibility for unauthorized content their customers store and share?
  - Since copyright holders do not see what is stored, they do not have the option of sending takedown notices.

# Search Engines and Online Libraries

- Search Engines

- Copying is essential to operation and service of search engines
- Caching and displaying small excerpts is fair use
- Creating and displaying thumbnail images is fair use
- Google negotiated licensing agreements with news services to copy and display headlines, excerpts, and photos.
- Trademarked search terms

# Search Engines and Online Libraries

- Books Online
  - Project Guttenberg digitizes books in the public domain
  - Microsoft scanned millions of public domain books in University of California's library
  - Google has scanned millions of books that are in the public domain and that are not; they display only excerpts from those still copyrighted
- Some court rulings favor search engines and information access; some favor content producers
- Tools for authorized sharing. Creative commons enables an author to specify permissions

# Free Software

- Free software is an idea, an ethic, advocated and supported by large, loose-knit group of computer programmers who allow people to copy, use, and modify their software
- Free means freedom of use, not necessarily lack of cost
- Open source - software distributed or made public in source code (readable and modifiable)
- Proprietary software - commercial, sold in object code, obscure, not modifiable. E.g., Microsoft Office

# GNU project

- Began with a UNIX-like operating system, a sophisticated text editor, and many compilers and utilities
- Now has hundreds of programs freely available and thousands of software packages available as free software (with modifiable source code)
- Developed the concept of *copyleft*



# Should All Software Be Free?

- Would there be sufficient incentives to produce the huge quantity of consumer software available now?
- Would the current funding methods for free software be sufficient to support all software development?
- Should software be covered under copyright law?
- Concepts such as copyleft and the GNU Public License (GPL) provide alternatives to proprietary software within today's current legal framework

# Patents for Inventions in Software

Patent decisions, confusion, and consequences

- Patents protect inventions by giving the inventor a monopoly for a specified time period.
- Laws of nature and mathematical formulas cannot be patented.
- Obvious inventions or methods cannot be patented.

# Patents for Inventions in Software

## A few cases

- Paul Allen, co-founder of Microsoft, and e-commerce and Web-viewing
- Apple, Android, and tap-touch screens
- IBM , Amazon, and electronic catalogues

## Patent trolls

- Some companies accumulate thousands of technology patents but do not make any products.
- They license the patents to others and collect fees.

# To Patent or Not?

- In favor of software patents
  - Reward inventors for their creative work
  - Encourage inventors to disclose their inventions so others can build upon them
  - Encourage innovation

# Against Software Patents

- Patents can stifle innovation, rather than encourage it
- Cost of lawyers to research patents and risk of being sued discourage small companies from attempting to develop and market new innovations
- It is difficult to determine what is truly original and distinguish a patentable innovation from one that is not