Lecture 4-3
Intellectual Property
Participation Quiz

Let $X$ denote the set of all sets that do not contain themselves. Is it the case that $X \in X$?

A. yes
B. no
C. none of the above
Legitimacy of IP Protection for Software

• Software licenses typically prohibit you from making copies of software to sell or give away
  – Our focus is not on whether it’s ethical to violate such a legal agreement after having agreed to it.

• Instead, we will think about:
  – whether society *should* give IP protection to software
  – if so, how this protection ought to be limited
  – what ethical argument can be used to justify this protection.

*Break into groups; discuss and debate:*

“The producers of software should have the right to prevent others from copying the software they produce.”
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Rights-based Analysis

• “Just deserts” argument
  – Programming is hard work that only a few can do
  – Programmers should be rewarded for their labor
    • Mixing my labor with something implies ownership

• Criticism of “just deserts” argument
  – Why does labor imply ownership?
    • Maybe mixing my labor with something means I lose my labor
    • Pour a can of tomato juice into the ocean: I don’t own the ocean.
  – A society in which all labor went to common good could be just
  – Intellectual property not like physical property
    • I cut logs: I own the logs
    • I write a book: I get to restrict other people from copying the book

• What do you think about this argument?
Utilitarian Analysis

• Argument against copying
  – Copying software reduces software purchases...
  – Leading to fewer software producers...
  – Leading to lower production of new software...
  – Leading to fewer benefits to society

• Each of these claims can be debated
  – Not all who get free copies can afford to buy software
  – Open-source movement demonstrates many people are willing to donate their software-writing skills
  – Hardware industry wants to stimulate software industry; many apps are supported via ads
  – Difficult to quantify how much society would be harmed if certain software packages weren’t released

What do you think about this argument?
Sony v. Universal City Studios

- Sony introduces Betamax VCR (1975)
- People start time shifting TV shows
- Movie studios sue Sony for copyright infringements
- U.S. Supreme Court rules (5-4) time shifting is fair use
RIAA v. Diamond Multimedia Systems

- MP3 compression allows songs to be stored in 10% of the space, with little degradation
- Diamond introduces Rio MP3 player (1998)
- People start space shifting their music
- RIAA starts legal action against Diamond
- U.S. Court of Appeals: space shifting is a fair use
Kelly v. Arriba Soft Corporation

- Kelly: Photographer maintaining Web site with copyrighted photos
- Arriba Soft: Creates search engine that returned thumbnail images
- Kelly sues Arriba Soft for copyright infringement
- U.S. Court of Appeals: use of images is a fair use
Google Books

• Google announced plan to scan millions of books held by several huge libraries, creating searchable database
  – If public domain book, system returns PDF
  – If under copyright, user can see a few sentences; system provides links to libraries and online booksellers

• Authors Guild and publishers sued Google
  – They settled, but the settlement was thrown out by a judge
  – Publishers settled again in 2012
    http://www.nytimes.com/2012/10/05/technology/google-and-publishers-settle-over-digital-books.html
  – Authors Guild lawsuit still outstanding
Napster

- Peer-to-peer music exchange network
- Began operation in 1999
- Sued by RIAA for copyright violations
- Courts ruled in favor of RIAA
- Went off-line in July 2001
- Re-emerged in 2003 as a subscription music service
FastTrack (Kazaa, Grokster)

• Second-generation peer-to-peer network technology
• Used by Kazaa and Grokster
• Distributes index among large number of “supernodes”
• Cannot be shut down as easily as Napster
BitTorrent

- Broadband connections: download much faster than upload
- BitTorrent speeds downloading
  - Files broken into pieces
  - Different pieces downloaded from different computers
- Used for downloading large files
  - Computer programs
  - Television shows
  - Movies

![Diagram of BitTorrent network](image-url)
Legal Action Against P2P

• RIAA Lawsuits (2003)
  – Sued 100s of high-volume sharers

• Universities hotbed for sharing
  – Responses: banning, signing site licenses

• MGM vs. Grokster
  – Grokster won at lower levels, eventually lost at Supreme Court
  – Ruling: the technology existed primarily for infringement

• More recently: Pirate Bay...
Legal Action Against The Pirate Bay

• The Pirate Bay located in Stockholm, Sweden
  – One of world’s biggest BitTorrent file-sharing sites
  – People download songs, movies, TV shows, etc.
• After 2006 raid by police, popularity increased
• In 2008 the International Federation of the Phonographic Industry sued four individuals connected with site
  – Defendants said The Pirate Bay just a search engine
  – Swedish court sentenced all four to prison time and fined them a total of $3.5 million
• Meanwhile, The Pirate Bay still operational
  – Shifted to hosting only “magnet links” (Feb 2012)
  – All servers just moved to the cloud (Oct 2012)
Open Source

- A variety of licenses. Some typical ingredients:
  - No restrictions preventing others from selling or giving away software
  - Source code included in distribution
  - No restrictions preventing others from modifying source code
  - No restrictions regarding how people can use software
  - Same rights apply to everyone receiving redistributions of the software (copyleft)

- GNU Project (Richard Stallman, 1984-)
  - Goal: Develop open-source, Unix-like operating system
  - Most components developed in late 1980s

- Linux
  - Linus Torvalds wrote Unix-like kernel in 1991
  - Combined with GNU components to make an OS
  - Putting pressure on Microsoft, Apple, and companies selling proprietary versions of Unix
Benefits and Drawbacks of Open Source

**Benefits**
- Gives everyone opportunity to improve program
- New versions of programs appear more frequently
- Eliminates tension between obeying law and helping others
- Programs belong to entire community
- Shifts focus from manufacturing to service

**Drawbacks**
- Without critical mass of developers, quality can be poor
- Without an “owner,” incompatible versions can arise
- Relatively weak graphical user interfaces
- Poor mechanism for stimulating innovation (no companies will spend billions on new programs)
Safe Software Development

• Reverse engineering okay
• Companies must protect against unconscious copying
• Solution: “clean room” software development strategy
  – Team 1 analyzes competitor’s program and writes specification
  – Team 2 uses specification to develop software
• Interestingly, same development strategies also used to ensure that open source licenses don’t “infect” commercial software
Creative Commons

- Under current copyright law, eligible works are copyrighted the moment they are created
- No copyright notice does not mean it’s ok to copy
- Must contact people before using work
- That slows down creative reuse
- Free Creative Commons license indicates
  - Which kinds of copying are ok
  - Which rights are being retained
- Flickr and Magnatune two well-known sites using Creative Commons licenses