Overview of Computer Science

CSC 101 — Summer 2011

Intellectual Property

Lecture 22 — August 4, 2011

Announcements

• WA#8 Due Tomorrow
• Lab #8 Today
• Quiz #3 tomorrow
• Final Exam next Tuesday (8/9/11).
  – This Room – 2pm – 5pm
• Final Review on Monday – 8/8/11

Objectives

• Intellectual property
  – Patents, trademarks, copyright, etc.
• Discussion
Intellectual Property

- Intellectual property
  - Something intangible that can be owned
  - A creative expression of ideas
- Like any property, intellectual property needs protection
- Different types of intellectual property have different legal protections
  - **Trademarks** protect words, names, symbols, colors and smells used to identify goods
  - **Patents** protect inventions – devices or processes – but not ideas
  - Keeping **trade secrets** is a legally sanctioned way to protect information without disclosing it publicly
  - **Copyrights** protect creative expressions of thoughts and ideas

Patent and Copyright Law

- Federal patent and copyright laws authorized by the Constitution
  - (Article I, Section 8)
  - “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”

Patents

- Patents are awarded for discoveries or inventions that “promote the Progress of Science and Useful arts”
  - The discovery or invention must be novel and non-obvious
  - Usually valid for a period of 20 years from date of application
  - Not renewable
- Computer programs were formerly ineligible for patents
  - Were considered to be just a mathematical algorithm or calculation, not an invention, and therefore not patentable
- As of mid-1990’s, some software may now be patented
  - A rather controversial situation
    - GIF images were for a time charged royalties due to a patent on the LZW compression algorithm, which expired in 2003
- Software is more often protected through copyright rather than by patent
Software Patents

- Recent issues over patents on software and algorithms
  - NTP, Inc. vs. Research in Motion Ltd.
    - NTP holds a 1995 patent on accessing email through a wireless device
    - RIM’s BlackBerry device was found to infringe that patent
    - Settled last spring for $612.5 million
  - Acacia Research Corp. vs. any and all digital media
    - ARC holds a 1992 patent on “any type of content (audio, video) that is digitized with some kind of compression, then stored on a server, with retrieval through satellite, phone lines or internet, with playback on a PC”
    - Demanded royalties from members of the adult entertainment industry (presumably an easy target?)
    - Consequences could have been enormous

Copyright Law

- To be covered under copyright, works must be
  - Original (but not necessarily unique)
  - Creative
    - Not just facts and/or ideas
    - Must be a creative expression of ideas
  - Fixed in a tangible medium
    - Printed books and journals, films, sound recordings, computer files, paintings and sculptures are examples of fixed works
    - Live radio and television broadcasts are not fixed; these are transitory (exist only momentarily during transmission) – but, they're usually taped
    - Electronic media (e-mail, the Web) have been considered to be “tangible” for this definition – an example of the fluidity of interpretation of copyright law
  - Copyright protection exists immediately upon creation of the work – registration is not required
  - But, registration is helpful for prosecuting infringements

Copyright Law

- Copyright law covers:
  - Literary works
  - Live and recorded music
  - Drama and dance
  - Pictorial and graphic works
  - Motion pictures and videos
  - Architecture
  - Computer software
  - Any creative expression

- More info at www.wfu.edu/library/copyright, library.albany.edu/digital/copyright.html, and www.copyright.gov
Copyright Protections

- A copyright owner has the exclusive rights to:
  - Reproduce the work
  - To prepare derivative works
  - To distribute copies of the work
  - To perform or display the work publicly
  - For sound recordings, to broadcast the work publicly via digital audio transmission (webcasting or streaming)
- Copyright extends for the life of the author plus 70 years (or for 95 years for corporate authorship)
  - Recently extended by 20 years (after extensive lobbying by Disney, among others)
  - You may be able to find Steamboat Willie on the Web
  - The copyright issues for the movie It’s a Wonderful Life

Principle of Fair Use

- Copyright law allows some uses of copyrighted material without obtaining express permission (the “Fair Use Doctrine”)
  - Personal use (private, non-commercial use)
  - Education (face-to-face)
  - Science
  - Journalism
- “Fair use” is open to interpretation based on four criteria:
  - The purpose and character of the use
  - The nature of the original work
  - The amount of the portion copied
  - The effect of its use on its potential market or value

Downloading of Music Files

- Is downloading MP3 files from the Internet “fair use”?
  - Is it legal?
  - Is it right?
  - Who benefits?
  - Who suffers?
- ‘Hard’ data from the recording industry is here:
  - http://w2.eff.org/legal/cases/betamax/
Computer Crime: Intellectual Property
Rights and Software Piracy

• How do we expect a company to make a reasonable profit if software pirates steal the programs and copy them without paying? Is it possible to support future innovation if program developers are not compensated for their time? If an unknown program is discovered to be a worthless piece of junk, should the consumer be expected to pay just to see if it might be appropriate. Open source software seems to be preferred by many users, but what is the mechanism to support an industry based on that premise.

Intellectual Property: Music Software

• What are some of the ways digital music is being disseminated over the Internet. Are there effective ways to minimize theft? How can we compensate musicians for their talent? Will mergers between major entertainment giants and Internet resource providers likely have an effect on the future of the digital music industry?