Ethics – Intellectual Property Rights:

Computer Ethics, Deborah Johnson: Chapter 6 & Supplementary Material

CS 3053 – University of Oklahoma – Mark Woehrer
Intellectual Property (IP)

- Allows certain intangible products to be handled in a similar fashion to physical products
- Society wants, and needs, individuals to invest time and energy in creating new products and services
- Allowing individuals to receive financial rewards is one way to do this
Three basic types of protection:

- Copyright – Provides limited protection to safeguard against the copying and selling of IP
- Trade Secrecy – Provides protection through the lack of public knowledge
- Patent – Provides a monopolistic protection over certain limited categories of IP
Patents (I)

- **Definition**
  - Application of an idea to create something novel, useful, and non-obvious (prior art)
  - Machines, processes, new forms of matter
  - Covers only the claims(innovations) specified
  - Provides Right to exclude others from making, selling, using
  - Requires adequate disclosure
  - Offers 17+5 years of protection

- **Requirements:**
  - Permissible subject matter
  - Utility and novelty
  - Non-obvious
Patents (II)

- Limits on Protection:
  - 17 + 5 years from date of filing
- Obtained by:
  - Application to US PTO; expensive, claims examined
  - Can be challenged later
- Abridged by: Any use of application
- Avoided by: Careful search
- The patent holder can decide who can use, copy, sell, or create the IP covered by the patent
  - Often the patent holder will license such use to those who want to use the IP
  - But, the patent holder can also choose who to allow and deny use to
Permissive Subject Matter

- The following materials cannot be patented
  - Mathematical algorithms (is this what a computer program is?)
  - Scientific principles
  - Laws of nature
  - Mental processes
- The supreme court has ruled that some computer algorithms can be patented
- Some governments (such as the European Union) are debating whether software should be patentable or not.
Trade Secrecy (I)

- **Definition**
  - Any information that
    - provides a competitive advantage
    - is kept secret

- **Requirements:**
  - Novel
  - Represent economic investment
  - Involved effort for development
  - Effort must be made to retain secrecy

- **Limits**
  - Essentially none; unlimited lifetime
Trade Secrecy (II)

• Abridged by
  • Stealing the information
  • Unauthorized passing on
• Legally avoided by
  • Independent discovery
  • Emergence into the public domain
  • Reverse engineering
• Trade secrecy laws are not uniform throughout the US
  • The laws differ by jurisdiction
Trade Secrecy and Software

• Not generally useful for computer programs
  • Typically in order to sell or license software, you must give away the secret
    • Many companies attempt to circumvent this through disclosure agreements and performing in house customization/maintenance/repair of their software for their customers
    • They also put special wording in license agreements
  • This is one reason why software is typically licensed and not sold
Copyright (I)

- **Definition**
  - Original work of authorship, fixed in a tangible medium
  - Covers entire work
- **Limits**
  - Life of author + 70 yrs, or 95 yrs from publication (for corp)
  - Covers expression, not underlying idea
  - Excludes: “...any idea, procedure, process, system, method of operation, concept, principle ...”
Copyright (II)

- Obtained by: automatic (since 1988)
- Abridged by: copying (literal and non-literal)
- Legally avoided by: independent creation
  - Access + similarity => Infringement
- Most common way to protect intellectual property rights in Computer Science
- To be protected by copyright, the object must be fixed in form and content
- Copyright does not protect the algorithms themselves
Fair Use

- Sometimes it is legal to make copies of things even when they are copyrighted.
- Photocopying of publications, books, articles, etc. (Which ever comes first)
  - Only two chapters per book or two articles per journal issue (some journals have several issues bound together, the rule is two articles per issue)
  - Only twenty percent of the book or journal.
  - Only 50 pages of the book or journal.
Four Elements of Fair Use

I. Purpose and nature of the use (for profit, not for profit, educational, etc.)

II. Nature of the work (factual versus fiction)

III. Amount and significance of the work used

IV. Effect of the use on potential market for the copyrighted work (this has the most weight)
# The Increasing Duration of Copyright

<table>
<thead>
<tr>
<th>Year Enacted</th>
<th>Max. Copyright Term</th>
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<tbody>
<tr>
<td>1790</td>
<td>28</td>
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<tr>
<td>1831</td>
<td>42</td>
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<td>1909</td>
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<td>1972</td>
<td>68</td>
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<tr>
<td>1974</td>
<td>70</td>
</tr>
<tr>
<td>1976</td>
<td>Life+70 or 75(Corp)</td>
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<tr>
<td>1998</td>
<td>Life+70 or 95(Corp)</td>
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How to Protect Your Copyright

• Elements
  • Copyright symbol (circled c: ©)
  • Year
  • Name of owner
• There is no charge
• Legal defense of copyrights can be expensive – burden of proof is on the holder of the copyright
<table>
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<th>DMCA</th>
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<tr>
<td><strong>The Digital Millennium Copyright Act</strong></td>
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<td><strong>Signed into law in 1998</strong></td>
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<td><strong>Major effect</strong></td>
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<tr>
<td>• Made it illegal to make or sell circumvention devices</td>
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<tr>
<td>• These devices allow someone to overcome anti-copying/access protection technologies</td>
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DMCA and Fair Use

• Does not make circumventing anti-copying measures illegal if the copying would be fair-use
• Somewhat unclear how this would factor into someone giving away or selling a circumvention device
• Many companies have pursued legal action against individuals in cases like this
Fair Use

• The problem is that we do have the right to make copies without the copyright owners permission (in some circumstances)

• However, no one can make a tool to help us exercise that right without considerable legal danger
Anti-Copying Technology Use on the Rise

• More than 11 million copy-restricted CDs are on the market
  • You do have the right to make that mix CD
  • But anyone who helps you overcome the protection is in trouble
  • You do not have the right to give/sell copies of CD/DVDs or mix CDs to others
• Is it wrong to copy proprietary software?
  • Examples:
    • Microsoft Windows
    • Microsoft Word
    • Run OS X on a unlicensed computer
Arguments Against Software Ownership

- Natural right to freedom of thought
  - Patents have been denied in the past due to the fear that patenting software is akin to patenting a mental process. This would hinder one's ability to perform certain mental processes
  - The Supreme Court has since ruled that some software is patentable
  - Ownership of SW could interfere with freedom of thought and therefore should not be allowed
- There are good reasons to not allow ownership of thought processes
  - There are machines (AI) that can think (in some sense)
  - Concerns about ownership of mental processes should not be considered trivial
Good Consequences from Ownership

- Software should be protected
  - Otherwise we will limit the willingness of entrepreneurs to invest in the development of new software
  - It should not be protected at the cost of giving away the building blocks of science and technology
- Society needs to be careful
  - It is important to have an environment that is good for future development
Tough Questions…

• How can we differentiate between what can and cannot be owned, in the terms of software, such that the developer owns and controls what is important in terms of the economic marketplace?

• And how do we still ensure that this will not interfere with future development in the software industry?
Is it wrong to copy software?

- U.S. law currently provides protection for software
- Software is proprietary
  - Individuals & companies can obtain copyrights & patents
  - They can also keep it as a trade secret
- Software can be bought, sold, and licensed
- A person who makes a copy of proprietary (non-free) software without permission is breaking the law
The effects of our intuition...

- Copying software often intuitively feels to not be wrong (or seriously wrong)
- When you buy software, you often only buy the right to possess and use it, not the right to distribute it – EULA
- This act is illegal and harms the owner of the software by depriving them of their legal right to control
Is copying software an immoral act?

• The intuitive feeling is not wrong and can be understood from certain perspectives
• However, in a world where there are property rights for SW, such as the U.S., copying SW is wrong
• SW copying is not immoral independent of being illegal
  • The immorality derives from it's illegality
    • If we have a system of property laws, individuals have rights provided by those laws
    • Those who break the laws violate the rights of property holders