LEGAL AND ETHICAL ISSUES IN COMPUTER SECURITY

Protecting Programs and Data

- ■ Copyrights
- ■ Patents
- ■ Trade Secrets

From Charles P. Pfleeger, Security in Computing, 2nd Edition, Prentice Hall 1996

Copyrights

- Designed to protect expression of ideas

- Applies to creative work (music, photograph)

- Gives the originator the exclusive right to make copies of the expression and sell them to the public

- Copyright lasts for a limited period of time

- Copyrighted expression must be in some tangible medium

- Purpose is to promote distribution of work

Copyrights (Continued)

- The work being copyrighted must be original to the author

- Copyrighted object is subject to fair use

- The holder of the copyright must go to court to prove someone has infringed on the copyright

- Copyright must be officially filed

- Each copy distributed must be marked

Patents (Continued)

- In order to obtain a patent, the inventor must convince the patent office that the invention deserves a patent

- The patent holder must oppose all infringement - every infringement must be prosecuted

Applicability of Patents to Computer Objects

- The patent office has not encouraged patents of computer objects, and the patent process is expensive

- Computer programs are seen as representations of algorithms, and algorithms are facts of nature

- In 1981 two cases (Diamond v. Bradely and Diamond v. Diehr) won patents for a process that used computer software (but not for the software alone)

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Trade Secret

- Must be kept secret

- Information that gives one company a competitive edge over others

- If someone obtains a trade secret improperly and profits from it, the owner can recover from it

- If someone else discovers the secret independently, there is no infringement

- Trade secret protection can vanish by reverse engineering

- Applies very well to computer software

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Applicability of Trade Secret to Computer Objects (Continued)

- *Allows the distribution* of the result of the secret (the executable program) while still keeping the program design hidden

- *Does not cover copying a product*

- Makes it *illegal to steal a secret algorithm and use it in another product*

- *No help when someone infers a program's design* by studying its output or, decoding its object code

Guidelines for Protecting Computer Objects

- Hardware : can be patented

- Firmware : most appropriate to be protected as a trade secret

- Object Code : can be copyrighted

- Source Code : can be treated as trade secret and also be copyrighted

- Documentation : copyright protection is most appropriate and effective

Information as an Object

- Not depletable

- Can be replicated

- Has a minimal marginal cost

- Its value is often timely

- Often transferred intangibly

Legal Issues Relating to Information

- Cyberspace vs. The Current Legal System:
- *Information Commerce*
- (including piracy, even if giving away (Good latte bill)
- *Electronic Publishing*
- who owns links, and data, and click streams?
- *Protecting Data in Data Base*
- Gasper, who owns thoughts? Again, click streams!
- *Electronic Commerce*
- Liabilities of online Intelligent Agents, spam, Electronic contracting, death of copyright on the Internet (Property rights vs. Freedom of Information), Cybercrime and Money Laundering, Stock trading on the Web

Rights of Employers and Employees: Ownership of Products (Continued)

- Paten

- *The person who owns a work under patent law is the **inventor***

- *If an employee lets an employer patent an invention, the employer is deemed to own the patent*

- *The employer has right to a patent if the employee's job function included inventing the product*

Rights of Employers and Employees: Ownership of Products (Continued)

- Copyright
- *The author is presumed owner of the work and therefore has all rights to the object*
- *In a work for hire situation the employer is considered the author*
- *Conditions for work for hire*
- the employer has a supervisory relationship
- The employer has the right to fire the employee
- The employer arranges for the work to be done
- A written contract states that the employer hired the employee to do certain work

Rights of Employers and Employees: Ownership of Products (Continued)

- ■ Licenses
  - ■ Programmer develops and retains full ownership of the software
  - ■ In return for a fee, the programmer grants to a company a license to use the program

- ■ Trade Secrets
  - ■ A company owns the trade secrets of its business as confidential data

- ■ Employment Contracts spell out rights of ownership

Why a Separate Category for Computer Crime?

- Rules of Property
  - *software can be taken yet remain*
- Rules of Evidence
  - *what if no paper copy ever existed? Integrity of data?*
- Threats to Integrity and Confidentiality
  - *loss of privacy may have no monetary value*
- Value of Data
  - *cost of paper on which printed is negligible*
- Acceptance of Computer Terminology

Why Computer Crimes Are Hard to Define

- Some people in the legal process do not understand computers and computing

- The deliberate slow process of the legal system is very much out of pace with the computer technology
- *ITU example*

- A computer can play many roles in a crime
- *subject of a crime, object of a crime, medium of a crime*

Why Computer Crimes Are Hard to Prosecute

- Lack of understanding of computers

- Lack of fingerprints or physical clues

- Computers as forms of assets

- *bits <> money*

- *unused computer time a stolen asset?*

- Computer crimes committed by juveniles

Computer Security Ethics

- Ethical principles are different from religious beliefs

- Ethics are not universal

- Ethics do not provide answers

- The law and ethics are not the same

- No Hippocratic oath for computer system designers

- *Good things, and then also*

- *Privacy invasion (vs. data mining -good or bad?)*

- *Information warfare (vs. dropping bombs on people -- good or bad?)*

References

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