

Databases Illuminated

Chapter 14

Social and Ethical Issues

Computerization and Ethical Issues

- New temptations due to computer technology-factors (according to Richard Rubin)
 - Speed
 - Privacy
 - Anonymity
 - Ease of copying
 - Aesthetic attraction
 - Availability of potential victims
 - International scope
 - The power to destroy

Ethical Challenges and the Internet

- The Internet largely unregulated
 - Not subject to the rules of any single country
 - Its culture resists regulation
 - Forum for free speech, but can lead to abuses such as pornography and hate rhetoric
 - Disagreements about intellectual property rights
- Need to understand intellectual property protection both for Internet and database content and for software-both sides of issues
- Need to understand privacy rights and their protection

Intellectual Property

- Sir William Blackstone: “Blackstonian bundle” of property rights
 - Right to use as owner sees fit
 - To receive income from it
 - To transfer ownership
 - To exclude others from it
- **Intellectual property** refers to products of the mind, such as literature, music, art, architecture, inventions, formulas for products, and software
- One definition: “the legal rights which result from intellectual activity in the industrial, scientific, literary and artistic fields” (WIPO)
- The foundation is that the creator of an original work has invested time and resources, and is entitled to a just return, which in turn encourages creative people to develop new works

Legal Protections

- Copyright
- Patent
- Trade secret
- Trademarks and service marks.

Nature of Copyright

- Given by the government of the country of origin for a limited period
- Author has exclusive rights to make copies, publish, distribute, publicly display, or publicly perform the work or to use it as the basis of a derivative work during that period
- Work must be original, have a tangible form, and be fixed in a medium
- Facts, ideas, and formulas are always in the public domain, but a specific arrangement and expression of them, such as that found in a database, can be copyrighted
- Creator automatically owns the copyright, even without publication, copyright symbol, or formal registration
- Except for personal use, anyone who wants to use the copyrighted work must obtain permission from the owner, unless the use is “fair use”

Fair Use

- Limited non-personal use of copyrighted materials, including using a small amount for educational purposes, and similar uses
- Four factors to be considered
 - Character of the use
 - Nature of the work
 - Amount of the work to be used
 - Effect on the market for the original work

Copyright Law

- Each country makes its own laws concerning copyright; most based on the Berne Convention
- Copyrights are recognized internationally
- In the US
 - Works created before 1978 copyrighted for 95 years
 - Post-1978 works are copyrighted for the lifetime of the author plus 70 years; but works for hire 95 or 120 years.
 - Copyright law covers software, both source code and object code
 - 1998 The Digital Millennium Copyright Act
 - Controversial provisions on tools designed to circumvent protection or encryption systems; a crime to use, manufacture or offer such a tool
 - Exceptions
 - for libraries, archives, and educational institutions, only for evaluating the work
 - for law enforcement agencies
 - for reverse engineering to allow interoperability of products
 - for encryption research
 - for computer repairs, and similar uses.
 - Limits the liability of Internet service providers for online copyright infringement by subscribers

Patents

- Grant of a property right to an inventor
- Issued by governments of individual countries, but Paris Convention allows inventor to patent in other countries, using same date as original
- Gives inventor the right to prevent others from making, using, offering to sell, selling, or importing the invention
- Term generally 20 years, to recover costs of creating invention
- Invention must be “useful”, new, and non-obvious
- Inventor must file an application with a specification, describing the invention in detail
- US Patent office sends details to a technology center for examination
- Patent number, “Patent pending” and “patent applied for” warn others of patent

Trade Secrets

- Any information that is used in the operation of a business that is kept secret and that gives it a competitive edge
- In US, trade secrets are protected by states, but there is a Uniform Trade Secrets Act among states
- Laws protect the company from misappropriation of the secret
- Protection remains as long as the information is kept secret
- Factors that courts use in determining a trade secret
 - How widely the information is known both outside and inside
 - Extent of measures taken to guard its secrecy
 - Value of the information to the owner and the competitors
 - Amount of time, effort and money spent in developing it
 - How difficult it would be for others to duplicate it properly

Trademarks and Service Marks

- Marks also eligible for protection under intellectual protection laws
- Can include letters, numbers, words, drawings, symbols, colors, sounds, fragrances, or shape or packaging of goods that are distinctive
- In US, protected by federal law under Lanham Act
- In US, register marks with US Patent Office and Trademark Office
- Madrid Protocol-international registration-also WIPO

Software Protection

- Software and its packaging can be protected by copyright, by patent or trade secret laws, by trademark, or by some combination of these
- Customer who buys software is actually buying a license to use the software, not the software itself, which remains the property of the owner
- Open source software is free and available for copying.
See
 - Free Software Foundation-Richard Stallman, President
 - “The Cathedral and the Bazaar”-Eric Raymond
- Shareware which allows people to download and use the software for an evaluation period, after which they should pay for its continued use

Database Protection

- Commercial DBMS usually protected with same intellectual property protections as other software
- Custom applications written for a database also qualify for software protections
- Databases qualified for different kinds of protection
 - Database can be copyrighted, because it is an expression
 - Facts contained in the database cannot be copyrighted
 - Information in a database can also be treated as a trade secret, since it can be used to provide a competitive advantage

Privacy Issues

- Databases make it possible to store massive amounts of data about individuals
- Data matching and communication technologies can compile and share information about individuals without their knowledge or consent
- Whether it is ethical to collect certain data about an individual, to use it without the consent of the individual, and to share it with third parties are the subject of much debate
- US and EU practices differ significantly
- Conflict between the individual's right to privacy and the desire of governments and businesses to have information that would be useful to them

Privacy Rights

- Privacy recognized as a fundamental human right
 - Enshrined in the constitutions of many countries
 - Declaration of Human Rights by the United Nations
 - Conventions adopted by the European Council
 - Laws enacted in the US and other countries
- US laws generally based on Fair Information Practices, from 1972 HEW report

US Privacy Laws Concerning Government Activities

- The Freedom of Information Act, 1966
- The Privacy Act of 1974
 - Banned use of social security numbers as universal identifiers
 - Four policies for government agencies
 - Restrict disclosure of personally identifiable records
 - Grant people right to access their records
 - Grant right to seek amendment of their records
 - Conform to Fair Information Practices
- The Computer Matching and Privacy Protection Act, 1990
- The Patriot Act of 2002 weakened the provisions of some of these privacy laws, in the interests of national security

US Privacy Laws Concerning Business Activities

- Individual laws were passed to deal with practices in various business sectors
- Some examples
 - Fair Credit Reporting Act of 1970
 - Right to Financial Privacy Act of 1978
 - Cable Privacy Protection Act of 1984
 - Electronic Communication Privacy Act of 1986
 - Video Privacy Protection Act of 1988
 - Telephone Consumer Protection Act of 1991
 - Health Insurance Portability and Accountability Act of 1996
 - Gramm Leach Bliley Financial Services Modernization Act of 1999
- Generally they require that consumers have to **opt-out** to prevent their information from being shared

Privacy Protection in EU Countries

- European laws are more restrictive of business activities.
- Require “opt-in” rather than “opt-out” as the mechanism for obtaining customer approval of data sharing
- Based on principles developed by the Organization of Economic Cooperation and Development (OECD)
- Principles of
 - Collection limitation
 - Data quality
 - Purpose specification
 - Use limitation
 - Security safeguards
 - Openness
 - Individual participation
 - Accountability.

EU Privacy Principles-1

- **Collection Limitation Principle.**
 - Limits to the collection of personal data
 - Be obtained by lawful and fair means
 - Be collected with the knowledge or consent of the subject
- **Data Quality Principle.** Personal data should be
 - Relevant to the purposes
 - Collected only to the extent necessary
 - Accurate, complete and up-to-date.
- **Purpose Specification Principle.**
 - Purposes should be specified in advance of data collection
 - Not used again except for fulfilling those purposes
- **Use Limitation Principle.** Personal data should not be shared or used for purposes other than those stated in the Purpose Specification principle except with the consent of the subject or by the authority of law.

EU Privacy Principles-2

- **Security Safeguards Principle.** Reasonable security measures to protect personal data against unauthorized access, use, disclosure, modification, destruction, and loss.
- **Openness Principle.** There should be a general policy of openness -should be easily possible to know about its existence, nature, purpose of use, and the name and contact information of the person who controls it (called the **data controller**).
- **Individual Participation Principle.** An individual should be able to
 - Find out whether the data controller has data relating to him or her
 - Find out what that data is within a reasonable time, at a reasonable charge (if any), and in a form that is understandable.
 - Challenge the denial of any such request and to challenge data related to him or her. If the challenge is successful, the individual has the right to have the data corrected or erased.
- **Accountability Principle.** A data controller should be accountable for complying with the principles

US vs. EU Rules

- Data about EU citizens must be afforded the same level of protection when it leaves the country.
- US companies doing business in EU countries had problems obtaining the data needed for their business, since they could not legally obtain customer information from those countries
- US companies can certify that they follow the rules of the **Safe Harbor** agreement, which means that they comply with the EU rules in the way they treat data, and can receive such data

Human Factors

- Refer to physical and psychological factors that promote or facilitate optimal performance on the part of the user
- User-centered design increases user comfort, safety, productivity, and satisfaction, and reduces training costs and errors
- includes consideration of the user at every stage of the system project
- Five components of usability are
 - Learnability
 - Efficiency
 - Memorability
 - Error reduction
 - Satisfaction
- Repeated testing at each stage improves usability

Professional Standards

- ACM Code of Ethics and Professional Conduct

www.acm.org/constitution/code.html

- ACM/IEEE Software Engineering Code of Ethics and Professional Practices

www.computer.org/tab/seprof/code.htm