Chapter 14
Computer Ethics

Presentation Overview

• The Role of Ethics
• Privacy Protection Issues
• Property Protection Issues
• Personal and Social Issues
• Defining Software Companies’ Responsibilities

The Role of Ethics

What are ethics?
The Role of Ethics

What are ethics?
- Ethics are rules used to determine the right and wrong things to do in our lives.

- Normative ethics is determining a standard or “norm” of ethical rule that affects ethical behavior.

- Applied ethics is determining how normative ethics are applied to controversial real-life situations.
The Role of Ethics

What are ethics?
- Ethics are rules used to determine the right and wrong things to do in our lives.
- Normative ethics is determining a standard or “norm” of ethical rule that affects ethical behavior.
- Applied ethics is determining how normative ethics are applied to controversial real-life situations.
- Computer ethics deal with new ethical situations raised by computer technology.

The Role of Ethics

The Source of Ethics

- Moral realism – believes ethics are not based on subjective human reasoning but on objective foundations.
The Role of Ethics

The Source of Ethics

– Moral realism – believes ethics are not based on subjective human reasoning but on objective foundations
– Moral relativism (situational ethics) – believes that ethics differ from society to society, from person to person, and from situation to situation

Privacy Protection Issues

Public Information Availability

– Database companies comb personal information such as birth records and marriage licenses and provide this information to anyone with a credit card and access to the Web.
Privacy Protection Issues

Public Information Availability

- Database companies comb personal information such as birth records and marriage licenses and provide this information to anyone with a credit card and access to the Web.
- Other personal information such as salaries, and controversial information such as criminal records and sex offender information, has and does appear on Web sites.

Privacy Protection Issues

Threats to Privacy of Wireless Communications

- Wireless communications devices such as cell phones and PDAs are extremely vulnerable to interception by others.
Privacy Protection Issues

Threats to Privacy of Wireless Communications
- Wireless communications devices such as cell phones and PDAs are extremely vulnerable to interception by others.
- Traditional methods of computer security don’t work well for wireless devices.
  - Wireless devices often don’t require authentication to ensure the identity of the user and the device.
  - Encryption technology places an undue burden on the already limited battery power and memory of wireless devices.

Privacy Protection Issues

Commercial Threats to Privacy
Cookies
- small program created and placed on a computer’s hard drive by Web sites
Privacy Protection Issues

Commercial Threats to Privacy

Cookies
– small program created and placed on a computer's hard drive by Web sites
– can remember passwords and User IDs

Global Unique Identifiers (GUID)
Privacy Protection Issues

Commercial Threats to Privacy

Global Unique Identifiers (GUID)
– identification number that can be coded into both hardware and software

– makes it possible to track down the originators of messages or ideas on the Internet, especially those that are controversial or unpopular

Privacy Protection Issues

Commercial Threats to Privacy

Location Tracking
Privacy Protection Issues

Commercial Threats to Privacy

Location Tracking
- can track cell phones and handheld computers

Global Positioning Chips (GPS) can pinpoint the location of a cell phone within a few dozen feet
- useful as navigational aids, monitoring devices, or dispatching of services to closest unit
Privacy Protection Issues

Commercial Threats to Privacy

Location Tracking
- can track cell phones and handheld computers
- Global Positioning Chips (GPS) can pinpoint the location of a cell phone within a few dozen feet
- useful as navigational aids, monitoring devices, or dispatching of services to closest unit
- anyone could track you down or figure where you are at any given time

Privacy Protection Issues

Protection from Commercial Threats to Privacy

Industry Self-regulation
- privacy statement promises an e-tailer will protect the confidentiality of customer information
Privacy Protection Issues

Protection from Commercial Threats to Privacy

Industry Self-regulation
– privacy statement promises an e-tailer will protect the confidentiality of customer information
– third-party organizations (BBBOnLine, TRUSTe) lend greater credibility to privacy statement
– new software lets users designate that files sent to others have one-time-only viewing rights, cannot be copied, and can be viewed for a specific time period

Privacy Protection Issues

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Privacy Protection Issues

<table>
<thead>
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<th>Bill Title</th>
<th>Year</th>
<th>Description</th>
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<tr>
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<td>-----------------------------------------------</td>
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<tr>
<td>Financial Services Modernization Act</td>
<td>1999</td>
<td>Contains privacy provisions to require financial institutions to protect customer information from unauthorized access and theft.</td>
</tr>
<tr>
<td>Children’s Online Privacy Protection Act (COPPA)</td>
<td>1993</td>
<td>Requires the online collection of personal information from children under the age of 13. It provides for fines of up to $100,000 for violations and unprecedented FTC authority to prevent violations.</td>
</tr>
<tr>
<td>No Electronic Traffic (SET) Act</td>
<td>1997</td>
<td>Extends copyright protection to include traffic over the Internet when it uses the same data as similar non-Internet use. It provides remedies for copyright violations.</td>
</tr>
<tr>
<td>Health Insurance Portability and Accountability Act (HIPAA)</td>
<td>1996</td>
<td>Requires standards for electronic transactions and security of personal health information.</td>
</tr>
<tr>
<td>Telephone Consumer Protection Act (TCPA)</td>
<td>1991</td>
<td>Prohibits the use of autodialers and boots calls for telemarketing purposes.</td>
</tr>
</tbody>
</table>

**Major privacy protection laws (continued)**
Privacy Protection Issues

Government Threats to Privacy

Eavesdropping

- FBI developed Internet wiretap programs (Omnivore, Carnivore, DCS1000) to intercept communications while ignoring other messages it is not authorized to intercept.

- USA PATRIOT Act allows law enforcement agencies to eavesdrop on private telephone messages and to intercept and read e-mail messages.
Privacy Protection Issues

Protection from Government Threats to Privacy

– Main concern is that innocent messages may be misinterpreted and senders and recipients may face criminal charges.

– NSA restricts use of encryption programs but, due to rapid advances in technology, government control will no doubt fail to be effective.
Privacy Protection Issues

Workplace Threats to Privacy
Software programs allow employers to monitor employees by
- tracking the number and type of keystrokes employees enter on their keyboards
- reading messages sent and received
Privacy Protection Issues

Workplace Threats to Privacy
Software programs allow employers to monitor employees by
- tracking the number and type of keystrokes employees enter on their keyboards
- reading messages sent and received
- capturing what is on an employee’s computer screen at any given time

Privacy Protection Issues

Protection from Workplace Threats to Privacy

If a company has pledged to respect any aspect of employee privacy, it must by law keep that pledge.
Privacy Protection Issues

Protection from Workplace Threats to Privacy

- If a company has pledged to respect any aspect of employee privacy, it must by law keep that pledge.
- Privacy advocates and the American Civil Liberties Union question the need to monitor employees without warning and without limit.

Privacy Protection Issues

- Notice to employees of the company’s electronic monitoring practices
- Use of a signal to let an employee know if he or she is being monitored
- Expiration terms for all personal electronic data collected through monitoring
- Re-monitoring of areas designed for the health or comfort of employees
- The right to dispute and delete inaccurate data
- A ban on the collection of data unrelated to work performance
- Restrictions on the disclosure of personal data to others without the employee’s consent

An electronic monitoring policy for employers

Property Protection Issues

Intellectual Property
Property Protection Issues

Intellectual Property
– includes anything that can be created by the agency of the human mind
– patent awards ownership of an idea or invention to its creator for a fixed number of years
– copyright protects artistic and literary endeavors
Property Protection Issues

Intellectual Property
- includes anything that can be created by the agency of the human mind
- **patent** awards ownership of an idea or invention to its creator for a fixed number of years
- **copyright** protects artistic and literary endeavors
- World Intellectual Property Organization (WIPO) administers international treaties dealing with intellectual property

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Property Protection Issues

<table>
<thead>
<tr>
<th>Industrial Property</th>
<th>Copyright</th>
</tr>
</thead>
<tbody>
<tr>
<td>inventions (patents)</td>
<td>novels, poems, plays</td>
</tr>
<tr>
<td>trademarks</td>
<td></td>
</tr>
<tr>
<td>industrial designs</td>
<td>musical works</td>
</tr>
<tr>
<td>geographic indications of source</td>
<td>drawing, painting, photographs, sculptures, architectural designs</td>
</tr>
</tbody>
</table>

WIPO intellectual property classifications

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Property Protection Issues

**Fair Use**
allows use of another person’s material without permission if
Property Protection Issues

Fair Use
allows use of another person’s material without permission if
– originator is acknowledged
– use is for noncommercial purposes
– involves only limited excerpts of protected material
Property Protection Issues

Digital Millennium Copyright Act (DMCA)

- brings U.S. copyright law in line with WIPO treaties
- prohibits circumvention of copyright protection systems
Property Protection Issues

Digital Millennium Copyright Act (DMCA)
- brings U.S. copyright law in line with WIPO treaties
- prohibits circumvention of copyright protection systems
- clarifies concept of Fair Use as it applies to digital works

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Property Protection Issues

Digital Millennium Copyright Act (DMCA)
- brings U.S. copyright law in line with WIPO treaties
- prohibits circumvention of copyright protection systems
- clarifies concept of Fair Use as it applies to digital works
- deals with issue of an ISP’s liability for hosting copyrighted materials

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Property Protection Issues

Damage Due to Hacking and Viruses and Phishing

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Property Protection Issues

Damage Due to Hacking and Viruses and Phishing

- **Identity theft** is theft of personal credit card information and other private data
- **Phishing** uses sophisticated tricks to “fish” for user’s financial information and passwords
- **Virus** creates various sorts of damage to the user’s computer or to software running on it
Property Protection Issues

Protection from Hacking and Viruses and Phishing

- deal only with merchants who encrypt credit card numbers and other private data
- never open e-mail from an unknown source
Property Protection Issues

Protection from Hacking and Viruses and Phishing
– deal only with merchants who encrypt credit card numbers and other private data
– never open e-mail from an unknown source
– install an antivirus program to destroy viruses found on a computer

Personal and Social Issues

Gambling Online
Personal and Social Issues

Gambling Online
- attracts growing number of gamblers, including adults and teenagers who are prohibited by law from visiting brick and mortar casinos
- U.S. House of Representatives passed legislation allowing authorities to work with Internet providers to block access to gambling Web sites and prevent gamblers from using credit cards

Protecting Freedom of Speech
Personal and Social Issues

Protecting Freedom of Speech

- hate speech sites incite hatred against people of certain races, religions, or beliefs; they may also post dangerous material such as information for making drugs or bombs.

- pornography sites provide pornography on the Internet with few if any restrictions.
Personal and Social Issues

Protecting against Unwanted Material

- **Child Pornography Prevention Act of 1996**
  enacts harsh penalties for those distributing or possessing child pornography

- **Children’s Internet Protection Act (CIPA)**
  requires public schools and libraries install Internet filtering software on their computers

- **Consortium for School Networking**
  recommends school districts adopt an acceptable use policy to guide users and administrators about Internet use
Personal and Social Issues

Demographics of U.S. Internet Users

– Age 65+ – 26%

– African Americans – 57%
Personal and Social Issues

Demographics of U.S. Internet Users
- Age 65+ – 26%
- African Americans – 57%
- Caucasians – 70%

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Personal and Social Issues

Demographics of U.S. Internet Users
- Age 65+ – 26%
- African Americans – 57%
- Caucasians – 70%
- Did not finish high school – 29%

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Personal and Social Issues

Demographics of U.S. Internet Users
- Age 65+ – 26%
- African Americans – 57%
- Caucasians – 70%
- Did not finish high school – 29%
- College graduates – 89%

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Personal and Social Issues

1. Personal integrity and competence
2. Personal responsibility for one’s work
3. Responsibility to one’s employer or client
4. Responsibility to the profession
5. Maintaining confidentiality of information
6. Dealing with conflict of interest
7. Ensuring the dignity and worth of people
8. Promoting public safety, health, and welfare
9. Participating in professional societies
10. Increasing public knowledge about technology

Top ten themes found in effective codes of ethics

Defining Software Companies’ Responsibilities

Software engineering code of ethics and professional practice

<table>
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<th>Relationship</th>
<th>Obligation</th>
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<tr>
<td>Public</td>
<td>Software engineers shall act consistently with the public interest.</td>
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<tr>
<td>Client and User</td>
<td>Software engineers shall act in a manner that is in the best interests of their clients and employers and their clients.</td>
</tr>
<tr>
<td>Product</td>
<td>Software engineers shall ensure that their products are usable and reliable.</td>
</tr>
<tr>
<td>Judgment</td>
<td>Software engineers shall maintain integrity and independence in their professional judgments.</td>
</tr>
<tr>
<td>Management</td>
<td>Software engineering managers and leaders shall maintain a positive and ethical environment in the management of software development and maintenance.</td>
</tr>
<tr>
<td>Profession</td>
<td>Software engineers shall maintain the integrity and reputation of the profession consistent with the public interest.</td>
</tr>
<tr>
<td>Colleagues</td>
<td>Software engineers shall be fair to and supportive of their colleagues.</td>
</tr>
<tr>
<td>Self</td>
<td>Software engineers shall participate in lifelong learning regarding the ethics of their profession and provide an ethical approach to the practice of their profession.</td>
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On the Horizon

Based on the information presented in this chapter and your own experience, what do you think is on the horizon?