COMPUTER ETHICS, PRIVACY AND SECURITY
Computer Ethics

• Computers are involved to some extent in almost every aspect of our lives
  • They often perform life-critical tasks

• Computer science is not regulated to the extent of medicine, air travel, or construction zoning

• Therefore, we need to carefully consider the issues of ethics
Ethics

- Ethics are standards of moral conduct
  - Standards of right and wrong behavior
  - A gauge of personal integrity
  - The basis of trust and cooperation in relationships with others
Ethical Principals

- Ethical principals are tools which are used to think through difficult situations.
- Three useful ethical principals:
  - An act is ethical if all of society benefits from the act.
  - An act is ethical if people are treated as an end and not as a means to an end.
  - An act is ethical if it is fair to all parties involved.
Computer Ethics

- Computer ethics are morally acceptable use of computers
  - i.e. using computers appropriately
- Standards or guidelines are important in this industry, because technology changes are outstripping the legal system’s ability to keep up
Computer Ethics

• Four primary issues
  • Privacy – responsibility to protect data about individuals
  • Accuracy - responsibility of data collectors to authenticate information and ensure its accuracy
  • Property - who owns information and software and how can they be sold and exchanged
  • Access - responsibility of data collectors to control access and determine what information a person has the right to obtain about others and how the information can be used
Problems with Large Databases

• Spreading information **without consent**
  • Some large companies use medical records and credit records as a factor in important personnel decisions

• Spreading **inaccurate** information
  • Mistakes in one computer file can easily migrate to others
  • Inaccurate data may linger for years
Private Networks

- Employers may legally monitor electronic mail
  - In 2001, 63% of US companies monitored employee Internet connections including about two-thirds of the 60 billion electronic messages sent by 40 million e-mail users.

- Most online services reserve the right to censor content
  - These rights lead to contentious issues over property rights versus free speech and privacy
The Internet and the Web

• Most people don’t worry about email privacy on the Web due to *illusion of anonymity*
  
  • Each e-mail you send results in at least 3 or 4 copies being stored on different computers.

• Web sites often load files on your computer called *cookies* to record times and pages visited and other personal information

• **Spyware** - software that tracks your online movements, mines the information stored on your computer, or uses your computer for some task you know nothing about.
E-Mail Netiquette

• Promptly respond to messages.
• Delete messages after you read them if you don’t need to save the information.
• Don’t send messages you wouldn’t want others to read.
• Keep the message short and to the point.
• Don’t type in all capital letters.
• Be careful with sarcasm and humor in your message.
Internet Content & Free Speech Issues

• Information on internet includes hate, violence, and information that is harmful for children
  • How much of this should be regulated?
  • Do filters solve problems or create more?
• Is web site information used for course work and research reliable?
Information Ownership Issues

• Illegal software copying (pirating)

• Infringement of copyrights by copying of pictures or text from web pages

• Plagiarism by copying text from other sources when original work is expected
Terms

- **INTELLECTUAL PROPERTY:**
  - Creations protected by law

- **TRADE SECRET:**
  - Work or products belonging to a business, not in public domain

- **COPYRIGHT:**
  - Protecting intellectual property from copying by others for 28 years

- **PATENT:**
  - Legal document granting owner exclusive monopoly on an invention for 17 years
Copyright Laws

- Software developers (or the companies they work for) own their programs.

- Software buyers only own the right to use the software according to the license agreement.

- No copying, reselling, lending, renting, leasing, or distributing is legal without the software owner’s permission.
Software Licenses

- There are four types of software licenses:
  - Public Domain
  - Freeware
  - Shareware
  - All Rights Reserved
Public Domain License

- Public domain software has no owner and is not protected by copyright law.
- It was either created with public funds, or the ownership was forfeited by the creator.
- Can be copied, sold, and/or modified
- Often is of poor quality/unreliable
Freeware License

- Freeware is copyrighted software that is licensed to be copied and distributed without charge.
- Freeware is free, but it’s still under the owner’s control.
Shareware License

• A shareware software license allows you to use the software for a trial period, but you must pay a registration fee to the owner for permanent use.
  • Some shareware trials expire on a certain date
  • Payment depends on the honor system
• Purchasing (the right to use) the software may also get you a version with more powerful features and published documentation.
All Rights Reserved License

- May be used by the purchaser according the exact details spelled out in the license agreement.

- You can’t legally use it--or even possess it--without the owner’s permission.
Open Source

• **What is Open Source?**
  • Source code is free to look at.
  • Compiled application is (typically) free to use.
  • Licensed under one of many OSS licenses.
  • Licenses are typically GPL compatible.

• **GPL**
  • GNU General Public License v3
  • Created by Richard Stallman
  • Fundamental example of an open-source license.
  • Highly restrictive.
    ```
    if( use_gpl_code ) {
        distribute_changes_as_gpl();
        distribute_linked_apps_as_gpl_compatible();
    }
    ```
Open Source

• LGPL
  • GNU Lesser General Public License
  • Can be linked to by non-GPL compatible software.
  • Can be distributed with your software…
    
    ```c
    if( modify_lgpl_program ) {
        distribute_changes_as_lgpl();
    } else {
        distribute_however_you_like();
    }
    ```
Open Source

• MIT License
  • Only 20 lines!
  • Liberal terms.
  • Use this code however you like...

```cpp
if( modify_mit_program ) {
    sublicense_however();
    give_attribution();
} else {
    distribute_with_mit_license();
}
```
Computer Crime

- Computer criminals - using a computer to commit an illegal act
- Who are computer criminals?
  - Employees – disgruntled or dishonest --the largest category
  - Outside users - customers or suppliers
  - “Hackers” and “crackers” - hackers do it “for fun” but crackers have malicious intent
  - Organized crime - tracking illegal enterprises, forgery, counterfeiting
Types of Computer Crime

- Damage to computers, programs or files
  - Viruses - migrate through systems attached to files and programs
  - Worms - continuously self-replicate
- Theft
  - Of hardware, software, data, computer time
  - Software piracy - unauthorized copies of copyrighted material
- View/Manipulation
  - “Unauthorized entry” and “harmless message” still illegal
The ACM Code of Conduct

- According to the Association for Computing Machinery (ACM) code, a computing professional:
  - Contributes to society and human well-being
  - Avoids harm to others
  - Is honest and trustworthy
  - Is fair and takes action not to discriminate
  - Honors property rights, including copyrights and patents
  - Gives proper credit when using the intellectual property of others
  - Respects other individuals’ rights to privacy
  - Honors confidentiality
Personal Responsibility of Users

- **Conserve**
  - Turn computers off at end of work day
  - Use screen savers

- **Recycle**
  - Most of the paper we use is eligible
  - Dispose of old parts via recycling programs – most computer parts are dangerous in landfills

- **Educate**
  - Know the facts about ecological issues