Computer Ethics

King Fahd University of Petroleum & Minerals

Computer Engineering Department

COE 390 – Seminar

Term 071

Outline

- **What are ethics?**

- **Professional ethics**

- **Engineering ethics**

- **Computer ethics**

- **Categories of computer ethics issues**

- **Moral and ethical problems**
  - Hacking, cracking and virus creation
  - Software piracy

- **Computer ethics awareness and educational issues**

- **Computer ethics - Case studies**

- **Conclusions**

What are Ethics?

- **Derived from the Greek word "ethos", which means "custom", "habit", and "way of living"**

- **Ethics is concerned with human conduct, i.e., behavior of individuals in society**

- **Ethics is a system of morals of a particular person, religion or a group**

- ***Moral:* means dealing with, or capable of, distinguishing between right and wrong, and between just and unjust**

- ***Ethical Theory:* a system of ethics guides towards actions good for all**

- ***Applied Ethics:***
  - The practice of ethics
  - Rules for ethical behavior for everyday life
  - Impossible for all people to share same applied ethics in all details

What are Ethics?

- *Professional Ethics:* concerns one's conduct of behavior and practice when carrying out professional work, e.g., consulting, researching, teaching and writing

- Professional Ethics must take into accounts:
  - Relations between professionals and clients
  - Relation between profession and society
  - Relations among professionals
  - Relations between employee and employer
  - Specialized technical details of the profession

- A computing professional must understand
  - Cultural, social, legal, and ethical issues in computing
  - Responsibility and possible consequences of failure

Professional Ethics

- **Professional organizations dealing with computing have code of ethics (e.g. IEEE, ACM, and NSPE)**

- **Professional code of ethics:**
  - Symbolize professionalism
  - Protect group interests
  - Specify membership etiquette
  - Inspire good conduct
  - Educate and discipline members
  - Foster external relations
  - Enumerate principles, express ideals
  - Put forth rules, offer guidelines
  - Codify rights

Engineering Ethics

- **Engineering is an important and learned profession**
- **Engineers are expected to exhibit the highest standards of honesty and integrity**
- **Engineering has a direct and vital impact on the quality of life for all people**
- **Services provided by engineers require:**
  - Honesty
  - Impartiality
  - Fairness
  - Equity
  - Must be dedicated to the protection of the public health, safety, and welfare

IEEE - Code of Ethics

- **In recognition of importance of our technology in affecting the quality of life we commit ourselves to conduct of the highest ethical and professional manner and agree to:**
  - accept responsibility in making decisions consistent with safety, health, and welfare of the public
  - avoid real or perceived conflicts of interest
  - be honest and realistic in stating claims or estimates
  - reject bribery in all forms
  - improve understanding of technology, its application, and potential consequences
  - maintain and improve our technical competence and undertake technological tasks for others only if qualified

IEEE - Code of Ethics

- seek, accept, and offer honest criticism of technical work
- acknowledge and correct errors
- credit properly the contributions of others
- treat all persons fairly regardless of race, religion, gender, disability, age, or national origin
- avoid injuring others, their property, reputation, or employment by false or malicious action
- assist colleagues and co-workers in their professional development and to support them in following this code of ethics

NSPE - Code of Ethics for Engineers

Engineers, in the fulfillment of their professional duties, shall:

- **Hold paramount the safety, health, and welfare of the public**

- **Perform services only in areas of their competence**

- **Issue public statements only in an objective and truthful manner**

- **Act for each employer or client as faithful agents or trustees**

- **Avoid deceptive acts**

- **Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession**

Computer Ethics

- **Computer ethics defined as the application of classical ethical principles to the use of computer technology**

- **Ethical problems related to computers are not unique but they tend to occur on a much larger scale and scope**
  - Scope: communications networks bring the world together
  - Anonymity: beneficial but creates problems of integrity
  - Reproducibility

- **Aspects of computer ethics:**
  - Analysis of the nature of problems related to the social impact of computers
  - Formulation and justification of policies needed to manage computer technology

Categories of Computer Ethics Issues

- **Privacy**
  - Computers create a false sense of security
  - People do not realize how vulnerable information stored on computers are

- **Property**
  - Physical property
  - Intellectual property (in both copyright and patent)
  - Data as property

- **Access**
  - Access to computing technology
  - Access to data

- **Accuracy**
  - Accuracy of information stored

Moral and Ethical Problems

- **Hacking, cracking and virus creation**
  - Serious crimes that cannot be justified
  - Attempts at justifying such actions
    - Electrons are free- they do not belong to anybody
    - Companies have weak protection
    - Point out flaws and vulnerabilities in information systems
    - Hacking or virus creation is right in a particular country or culture

- **Software piracy**
  - Unauthorized copying of software is stealing
  - It is morally wrong as it constitutes a violation of someone else's rights

Problems with Codes of Ethics

- A legal system is not a complete and correct guide to moral behavior

- Codes of ethics are mostly voluntary

- May encounter situations for which the code makes no explicit recommendations

- Goodness cannot be defined through a list of Dos and Don'ts

- You must use your internal sense of ethics

Computer Ethics
Awareness and Educational Issues

- **How to raise the moral consciousness and ethical level**

- **Possibilities of developing global computer ethics codes**

- **Computer ethics education should include:**
  - Explanation of disruptive potential of even a single user
  - Understanding of importance of ethics and lack of laws in computer/information technology
  - Explanation of information security & related problems
  - Making people aware of ethical impact of their actions
  - Training and education by professionals

Computing Ethics and Guidelines - Example

- **Respect privacy of other users and do not share your account with others**

- **Respect appropriate laws and copyrights**

- **Obey established guidelines for any network or system used**

- **Do not use computer resources for unauthorized purposes**

- **Do not use computer resources for commercial endeavors**

- **Do not use computer resources in ways detrimental to normal operation**

Computer Ethics - Case Studies Administrator Dilemma

- **The problem here is that every file on the system is accessible by the administrator and they have no tracks when they change a file**

- **If administrator is always believed, he is given the ability to take advantage of anybody at any time**

- **If user is always believed, he is given the ability to get away with anything he does**

- **Anything on the system can be faked without evidence**

Computer Ethics - Case Studies
Software Licensing: Stuck in the Middle

- **You are contracted to install Netscape Navigator software on all the PCs of company X**

- **After doing half the work, you found that company X is not paying Netscape for the copies you are installing**

- **You notified company X's contact that they are out of compliance with Netscape licensing requirement, but got no response**

- **What do you do?**

Computer Ethics - Case Studies

- **You are asked to write a program to print tags for a sale. Your boss asks you to put tags that have a price 10% higher, with a 10% discount marking it back to original price. Do you do this?**

- **You wrote a software that matches the requirement your company was given. But, requirements are so bad that you know the software will not match the actual needs**
  - Should you say anything?
  - Should your company say anything? Even if it would mean loss of future contracts?

Conclusions

- **Must understand cultural, social, legal and ethical issues related to computing**

- **Expect to face variety of ethically difficult situations**

- **Hold to highest possible ethical standards**

- **Use your internal sense of ethics**

- **Making the wrong ethical choice begins with focusing on short-term self-interest**

- **Ethical behavior is a way of life, best learned through experience**

- **Living ethically requires strong and sincere motivation**