Professional Practices

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Week 3, 4,5,6,7, and 8

5th May, 2025

ETHICS
RESPECT
CODE
HONESTY
INTEGRITY

Moral laws and Ethics

1. A term used to describe activities which will help you apply your knowledge to your industry, job role or workplace.
2. Refers to the conduct and work of someone from a particular profession

Ethics in Information Technology

- Public concern about the ethical use of information technology includes:
  1. E-mail and Internet access monitoring
  2. Downloading in violation of copyright laws
  3. Unsolicited e-mail (spam)
  4. Hackers and identify theft
  5. Students and plagiarism
  6. Cookies and spyware

Whistleblowing

IT Workers and Employers

Valuable information

Harassment

Use of social media during work time for non-related work activities

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Ethics in Information Technology

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Ethics in Information Technology

- Public concern about the ethical use of information technology includes:
  5. Students and plagiarism

Avoid Plagiarism

by avoiding copying from others, use citation and references for contents taken.

Why do students plagiarize?

- Lack of interest
- Laziness
- Lack of preparation
- Lack of understanding
- Competition
- Cultural differences
- Pressure / fear
- Excessive demands
- No consequences

http://www.whatthack.com/uploaded_images/big_t urglar-767586-767740.gif

Ethics in Information Technology

- Public concern about the ethical use of information technology includes:
  6. Cookies and spyware

What are cookies?

Cookies are text files stored on one's computer after visiting a website

Used for:

-Storing information such as a unique visitor ID

-Allowing customization of a webpage, such that it can save information for the computer the person is currently using.

Ethics in Information Technology

- Cookies and spyware can track what people do online.
- Many users don’t know their data is being collected.
- The data might be used or sold without permission.
- Some websites don’t ask users before using cookies.
- Spyware can steal personal or private information.
- This can break privacy laws in some countries.

Software Engineering Code of Ethics

simplified and summarized version of ethics in information technology

- **Respect privacy** – Keep people's personal data safe.
- **Be honest** – Share correct and clear information.
- **Protect systems** – Keep computers and data secure.
- **Don’t steal** – Use software and content legally.
- **Be fair** – Help everyone get access to technology.
- **Use tech wisely** – Don’t harm others online.
- **Be clear** – Tell users how their data is used.
- **Take responsibility** – Own your actions and systems.

Any question

Introduction of Code

- Software engineers can help or harm people through their work.
- They must choose to do what is right.
- There are eight main principles that guide their ethical responsibilities.
- Protecting the public should always come first.

Eight Principles Identify Morally Responsible Relationships

1. Public
2. Client and employer
3. Product
4. Judgment
5. Management
6. Profession
7. Colleagues
8. Self

Principle 1: Public

- 1.01 Disclose any software-related dangers
- 1.02 Approve only safe, well tested software
- 1.03 Only sign documents in area of competence
- 1.04 Cooperate on matters of public concern
- 1.05 Produce software that respects diversity
- 1.06 Be fair and truthful in all matters
- 1.07 Always put the public's interests first
- 1.08 Donate professional skills to good causes
- 1.09 Accept responsibility for your own work
- 1.10 Balance competing interests

Principle 2: Client and Employer

- 2.01 Provide services only where competent
- 2.02 Ensure resources are authentically approved
- 2.03 Only use property as authorized by the owner
- 2.04 Do not use illegally obtained software
- 2.05 Honor confidentiality of information
- 2.06 Raise matters of social concern
- 2.07 Inform when a project becomes problematic
- 2.08 Accept no detrimental outside work
- 2.09 Represent no interests adverse to your employer

Principle 3: Products

- 3.01 Ensure adequate software specification
- 3.02 Understand specifications fully
- 3.03 Ensure you are suitably qualified
- 3.04 Ensure all goals are achievable
- 3.05 Ensure proper methodology use
- 3.06 Ensure good project management
- 3.07 Ensure all estimates are realistic
- 3.08 Ensure adequate documentation
- 3.09 Ensure adequate testing and debugging
- 3.10 Promote privacy of individuals
- 3.11 Use data legitimately
- 3.12 Delete outdated and flawed data
- 3.13 Identify and address contentious issues
- 3.14 Promote maximum quality and minimum cost
- 3.15 Follow appropriate industry standards

Principle 4: Judgement

- 4.01 Maintain professional objectivity
- 4.02 Only sign documents within your responsibility
- 4.03 Reject bribery
- 4.04 Do not accept secret payments from the client
- 4.05 Accept payment from only one source for a job
- 4.06 Disclose conflicts of interest
- 4.07 Avoid conflicting financial interests
- 4.08 Temper technology judgments with ethics

Principle 5: Management

- 5.01 Assure standards are known by employees
- 5.02 Assure knowledge of confidentiality protocols
- 5.03 Assign work according to competence
- 5.04 Provide due process for code violations
- 5.05 Develop fair ownership agreements
- 5.06 Accurately describe conditions of employment
- 5.07 Offer only fair and just remuneration
- 5.08 Do not prevent a subordinate’s promotion
- 5.09 Do not ask a person to breach this code

Principle 6: Profession

- 6.01 Associate with reputable people
- 6.02 Promote commitment of this code
- 6.03 Support followers of this code
- 6.04 Help develop an ethical environment
- 6.05 Report suspected violations of this code
- 6.06 Take responsibility for errors
- 6.07 Only accept appropriate remuneration
- 6.08 Be accurate and honest regarding software
- 6.09 Place professional interests before personal
- 6.10 Obey all laws governing your work
- 6.11 Exercise professional responsibility
- 6.12 Promote public knowledge of the subject
- 6.13 Share software knowledge with the profession

Principle 7: Colleagues

- 7.01 Assist colleagues in professional development
- 7.02 Review other’s work only with their consent
- 7.03 Credit fully the work of others
- 7.04 Review others work candidly
- 7.05 Give fair hearing to colleagues
- 7.06 Assist colleagues’ awareness of work practices
- 7.08 Do not hinder a colleague’s career
- 7.09 Do not pursue a job offered to a colleague
- 7.10 Seek help with work outside your competence

Principle 8: Self

- 8.01 Further your own professional knowledge
- 8.02 Improve your ability to produce quality work
- 8.03 Improve your ability to document work
- 8.04 Improve your understanding of work details
- 8.05 Improve your knowledge of relevant legislation
- 8.06 Improve your knowledge of this code
- 8.07 Do not force anyone to violate this code
- 8.08 Consider code violations inconsistent with software engineering

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- 1.10 Balance competing interests

Principle 1: Public

1.01 Disclose actual/potential dangers

Principle 1: Public

Approve Software Only If It Is Safe

1.02 Approve software only if it is safe

Safe Software

Principle 1: Public

- 1.03 Only sign documents in area of competence

Principle 1: Public

1.04 “Cooperate in efforts to address” public concerns

Principle 1: Public

- 1.05 Produce software that respects diversity

Principle 1: Public

- 1.06 Be fair and truthful in all matters

Principle 1: Public

- 1.07 Always put the public's interests first

Principle 1: Public

- 1.08 Donate professional skills to good causes

Principle 1: Public

1.09 “Accept full responsibility for own work”

Principle 1: Public

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Principle 2: Client and Employer

2.01 Provide services only where competent

Act within the area of competency

Principle 2: Client and Employer

2.02 Ensure resources are authentically approved

Documents/resources approved

Principle 2: Client and Employer

- 2.03 Only use property as authorized by the owner

Use of property in authorized way

Principle 2: Client and Employer

- 2.04 Do not use illegally obtained software

Principle 2: Client and Employer

- 2.05 Honor confidentiality of information

Principle 2: Client and Employer

- 2.06 Raise matters of social concern

Principle 2: Client and Employer

- 2.07 Inform when a project becomes problematic

Principle 2: Client and Employer

- 2.08 Accept no detrimental outside work

No harmful work

you **always** have the

RIGHT TO REFUSE

unsafe work

Principle 2: Client and Employer

- 2.09 Represent no interests adverse to your employer

Put employer's/client's interests first, unless overriding moral concern

Write about the Ethics, values you follow, during company job as a software engineer

Source : - Internet

Must include references

Dead line : - Before

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SRS

Software Requirements Specification

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Conflict of Interest

[ˈkän-ˌflikt əv ˈin-t(ə-)rəst]

A situation in which an entity or individual becomes unreliable because of a clash between personal (or self-serving) interests and professional duties or responsibilities.

SOURCE ONE
PAYMENT SOLUTIONS

Principle 4: Judgement

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Guidelines to Assign Tasks To Team Members

- Assign Tasks Positively
- Be Clear of Goals and Objectives
- Right Task to Right Employee
- Get Ideas and Hold Meetings
- Communicate Efficiently
- Mark Deadline with Timeline
- Track Progress and Ask Feedbacks
- Train and Supervise
- Follow up to Stay Connected
- Authority and Control Handover
- Respect and Support
- Learn from Last Project
- Evaluate Project Post-Assigning
- Brain-map to Assign Tasks Again
- Focus and Direction
- Avoid Stressing and Pressure
- Be Answerable to Doubts
- Honest Feedbacks to Employees
- Do Not Assign Same Task to Different People
- Listen to Your Employees

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Computer Ethics, in detail

- 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

Week 6 and 7

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:
  1. An act is ethical if all of society benefits from the act.
  2. An act is ethical if people are treated as an end and not as a means to an end.
  3. 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

Ethics for Computer Professionals

Computer Professionals:

- Are experts in their field,
- Know customers rely on their knowledge, expertise, and honesty,
- Understand their products (and related risks) affect many people,
- Follow good professional standards and practices,
- Maintain an expected level of competence and are up-to-date on current knowledge and technology, and
- Educate the non-computer professional

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

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.

Spyware vs. Virus

Both:

- Install without the user's knowledge or consent
- Cause system instability

A Virus:

- Replicates itself, spreading copies to other computers
- Relies on users with poor security habits in order to spread

Spyware:

- Does not replicate
- Relies on persuading ignorant users to download and install by offering some kind of bait (such as freeware)

General Internet Issues

- Inflammatory interchange of messages via internet (email, chat rooms, etc.)
- Chain mail
- Virus warning hoaxes
- “Spam” – unsolicited, bulk email

“Wow! I’ve got one from someone I know!”

E-Mail etiquette

- 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:
Intangible creations protected by law

TRADE SECRET:
Intellectual work or products belonging to a business, not in public domain

COPYRIGHT:
Statutory grant protecting intellectual property from copying by others for 28 years

PATENT:

Legal document granting owner exclusive monopoly on an invention for 17 years

What is a Patent?

A patent is the exclusive right granted for an invention, process, or product that is new, useful, and non-obvious.

Copyright Laws

- Software developers (or the companies they work for) **own** their programs.
- Software buyers only own the right to <u>use</u> the software according to the license agreement.
- No copying, reselling, lending, renting, leasing, or distributing is legal without the software owner's permission.

Software

DEVELOPER VS ENGINEER

Focus on Programming

emphasizes coding and programming including writing code, debugging, and implementing software features to create software solutions

Specialised on Coding

more specialized skill set specific to a particular programming language or framework

Problem-Solving Focus

concerned with solving immediate programming challenges, such as implementing specific functionalities or resolving bugs

Focus on Engineering

not only on coding but also focuses on the design, architecture, testing, maintenance, and overall engineering aspects

Deeper System Design Thinking

wider understanding of computer science principles, algorithms, data structures, software architectures and system design

Innovation and Research

explore novel solutions, optimize existing processes, and introduce new technologies to improve the overall software engineering practices

Software Licenses

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

Freeware software	Shareware software
Freeware refers to software that anyone can download from the Internet and use for free.	Shareware gives users a chance to try the software before buying it.

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.
- Examples:
  - Eudora Light
  - Netscape

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.

Software Piracy

- SPA (Software Publishers Association) polices software piracy and mainly targets:
  - Illegal duplication
  - Sale of copyrighted software
  - Companies that purchase single copies and load the software on multiple computers or networks
- They rely on whistle-blowers.
- Penalties (for primary user of PC) may include fines up to $250,000 and/or imprisonment up to 5 years in jail

System Quality

- Bug-free software is difficult to produce
- It must be carefully designed, developed, and tested
- Mistakes generated by computers can be far reaching
- Commenting and documenting software is required for effective maintenance throughout the life of the program

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

Computer Security

Computer security involves protecting

1. information, hardware and software
2. from unauthorized use and damage and
3. from sabotage and natural disasters

Measures to Protect Computer Security

- Restricting access both to the hardware locations (physical access) and into the system itself (over the network) using firewalls
- Implementing a plan to prevent break-ins
- Changing passwords frequently
- Making backup copies
- Using anti-virus software
- Encrypting data to frustrate interception
- Anticipating disasters (disaster recovery plan)
- Hiring trustworthy employees

Computer Ethics for Computer Professionals

- **Competence**– Professionals keep up with the latest knowledge in their field and perform services only in their area of competence.
- **Responsibility**– Professionals are loyal to their clients or employees, and they won't disclose confidential information.
- **Integrity**– Professionals express their opinions based on facts, and they are impartial in their judgments.

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**

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An employer may not discourage someone from taking action against discrimination

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