Professional Ethics
Overview

- Introduction
- Is software engineering a profession?
- Software engineering code of ethics
- Ethical analysis of the code
- Case studies
- Whistleblowing
Is Software Engineering a Profession?

- Characteristics of a profession
  - Lawyers
  - Certified Public Accountants
  - Software Engineers
Profession

- Profession (informal)
- High level of education
- Practical experience
- Decisions have impact
- We pay professionals well
- Doctors, Lawyers
- We expect professionals to act for public good
Characteristics of a Profession

- Initial professional education
- Education accreditation
- Skills development, internship
- Certification and Licensing
- Professional development
- Code of ethics
- Professional society
Software Engineers

• Certification and licensing not needed
• Without these, other characteristics are irrelevant
  • No college education needed
  • No apprenticeship needed
  • No membership in professional society needed
  • No continuing education needed
• Software engineers have ability to harm/help public
Code of Ethics

- Statement of principles for guiding behavior within a domain of expertise, profession.

- One motivation is to provide a professional structure for software engineers.
ACM
Software Engineering
Code of Ethics

- Preamble
- Principles
  - Obligations
Preamble

• Software engineers have opportunities to do good or do harm
• Software engineers should be committed to do good
• Eight principles identify key ethical relationships and obligations within these relationships
• Code should be seen as a whole, not a collection of parts
• Concern for the public interest is paramount
Preamble

- No mechanical process for determining if an action is right or wrong
- Should not take an overly legalistic view of the Code
- If Code doesn’t forbid something, that doesn’t mean it is morally acceptable
- Code reflects principles drawn from multiple ethical theories, including virtue ethics
ACM Code
Principle Relationships

- Public, Client/Employer
- Product, Judgment
- Management, Profession
- Colleagues, Self
ACM Clauses

• Under each Principle
  • a series of clauses
• Clauses express ethical directions for that principle area
How to Use the Code

- Decide what are key relations at issue
- Consider principles to find those most related
- Search clauses for those most relevant
- Determine whether proposed action is consistent or inconsistent with clauses
- Weigh countervailing arguments.
Case Studies

- Software recommendation
- Anti-worm
Software Recommendation

- Sam Shaw asks for free advice on LAN security.
- Prof. Smith answers questions and recommends top-ranked package.
Software

• Prof. Smith does not disclose
  • She has financial interest in company producing top-ranked package.
  • Another package was given a “best buy” rating.

• Did Prof. Smith do anything wrong?
Analysis

• Most relevant directives
  • Disclose information others ought to know.
  • Share your knowledge, expertise, and values.

• Relevant ACM Clauses
  • 1.08, 6.02: Prof. Smith freely gave valuable information
  • 4.05, 6.05: Prof. Smith did not reveal conflict of interest
Anti-Worm Scenario

- Internet plagued by new worm that exploits hole in popular operating system.
- Tim Smart creates anti-worm that exploits same security hole.
- Tim’s anti-worm fixes PCs it infects. It also uses these PCs as launch pad to reach new PCs.
- Tim launches anti-worm, taking pains to keep it from being traced back to him.
- The anti-worm quickly spreads through Internet, infecting millions of computers
Ethical Analysis

- Most relevant directives
  - Continually improve your abilities.
  - Share your knowledge, expertise, and values.
  - Respect the rights of others.
  - Take responsibility for your actions and inactions.
Analysis

• Most relevant ACM clauses:
  • 1.08: The worm was free, but cost system administrators time.
  • 2.03: The anti-worm entered computers without permission of their owners.
  • 8.01, 8.02, 8.06: Tim improved his knowledge and skills by creating the anti-worm.
You work for a health system software company creating a nurses assistant that will advise nurses on emergency responses.

There are several types of relatively rare situations that your new system can not handle. It would cost the company a lot of money to hire consultants to complete these.

Your company will release the product soon, claiming it is the first, complete product.
Restating Code Principles

- Be impartial.
- Disclose information that others ought to know.
- Respect the rights of others.
- Treat others justly.
Restating Principles

- Take responsibility for your actions and inactions.
- Take responsibility for the actions of those you supervise.
- Maintain your integrity.
- Continually improve your abilities.
- Share your knowledge, expertise, and values.
International Perspectives

- What can be added to the code to make it reflect concern for international differences and respect?