Professional Ethics

Outline

• Is software engineering a profession?
• Software engineering code of ethics
• Analysis of the code
• Case studies
• Whistleblowing
Introduction

• Definition of a Profession (informal)
  – High level of education
  – Practical experience
  – Decisions have impact

• Examples
  – Doctors
  – Lawyers

• We expect professionals to act for public good

Formal Characteristics of a Profession

• Initial professional education
• Accreditation
• Skills development
• Certification
• Licensing
• Professional development
• Code of ethics
• Professional society
Certified Public Accountants

• Bachelor’s degree
  – 150+ semester hours
  – 24+ hours of accounting-related classes

• Two years’ experience working under supervision of a CPA

• CPA exam

• To retain certification
  – Continuing education
  – Follow code of ethics

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 ENGINEERING CODE:
PREAMBLE

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

Historical context
Analysis of 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
  - Judgment required

- Code reflects principles drawn from multiple ethical theories
Origin of Virtue Ethics

- Aristotle
  - Happiness results from living a life of virtue
  - Intellectual virtue: developed through education
  - Moral virtue: developed by repeating appropriate acts
  - Deriving pleasure from a virtuous act is a sign that the virtue has been acquired
- Some virtues: Benevolence, courage, fairness, generosity, honesty, loyalty, patience, tolerance
- A person of strong moral character
  - possesses many virtues
  - knows right thing to do in each situation

Virtue Ethics Complements Other Theories

- Virtue ethics may not work as a stand-alone theory
- It may be a good complement to utilitarianism
- Allows rationale for action to be considered
- Solves problem of moral luck that plagued act utilitarianism
Alternative List of Fundamental Principles

• Be impartial.
• Disclose information that others ought to know.
• Respect the rights of others.
• Treat others justly.
• 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.
Case: Child Pornography

• Joe Green a system administrator
• Asked to install new software package on Chuck Dennis’ computer
• Green not authorized to read other people’s emails or personal files
• Green sees suspicious-looking file names
• He opens some of Dennis’ files and discovers child pornography
• What should he do?

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**Analysis (1/2)**

- Most relevant principles
  - Be impartial
  - Respect the rights of others
  - Treat others justly
  - Maintain your integrity

**Analysis (2/2)**

- Most relevant clauses from code of conduct
  - 2.03: Somebody has misused the company PC
  - 2.09: Someone is using the PC for a purpose not in the employer’s interest
  - 3.13: Joe violated the policy against opening files
  - 5.10: Someone else may have planted the files on Chuck’s computer
**Case: Anti-Worm**

- 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
- System administrators around the world combat the anti-worm

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- Share your knowledge, expertise, and values.
Analysis (1/2)

• Most relevant principles
  – Continually improve your abilities.
  – Share your knowledge, expertise, and values.
  – Respect the rights of others.
  – Take responsibility for your actions and inactions.

Analysis (2/2)

• Most relevant clauses:
  – 1.01: Tim did not accept responsibility for his action.
  – 1.08: The worm was free, but cost system administrators a lot of 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.