

CS 4001: Computing, Society & Professionalism

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Week 4: Professional Ethics
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Do computer professional need to worry about ethics like lawyers or physicians?



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Therac-25

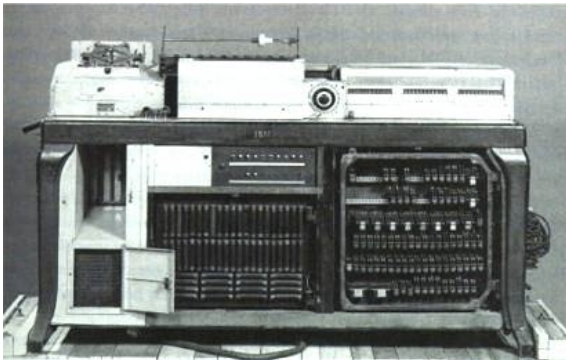
Privacy and security

Financial decisions (e.g., tax software)

A Computer Professional's Story



- Jacobus Lentz, Dutch inspector of population registries before World War II
- Partnership with the Nazi Government
- Role in Hitler's Final Solution



The need...



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History

- Computer profession was not a fully developed profession (e.g., license, certification, formal training and/or apprenticeship not required to be a programmer or a system analyst)
- IEEE Board of Governors established steering committee (May, 1993).
- ACM Council endorsed Commission on Software Engineering (Late 1993).
- Joint steering committee established by both societies (January, 1994).

Joint Commission Steering Committee


- 4 goals:
 - Adopt standard definitions.
 - Define required body of knowledge and recommended practices.
 - Define ethical standards.
 - Define educational curricula for undergraduate, graduate (Masters), and continuing education (for retraining and migration).

Joint Commission Steering Committee

- 3 initial task forces:
 - Software engineering body of knowledge and recommended practices.
 - Software engineering ethics and professional practices.
 - Software engineering curriculum.

Software Engineering Code of Ethics: 8 Key Principles:

- Product
- Public
- Judgment
- Client and Employer
- Management
- Profession
- Colleagues
- Self



PRODUCT - Software engineers shall ensure that their products and related modifications meet the highest professional standards possible

Principle 1: Products


- 1.01 Ensure adequate software specification
- 1.05 Ensure proper methodology use
- 1.06 Ensure good project management
- 1.07 Ensure all estimates are realistic
- 1.08 Ensure adequate documentation
- 1.09 Ensure adequate testing and debugging
- 1.10 Promote privacy of individuals
- 1.12 Delete outdated and flawed data
- 1.13 Identify and address contentious issues
- 1.15 Follow appropriate industry standards



PUBLIC - Software engineers shall act consistently with the public interest

Principle 2: Public


- 2.01 Disclose any software-related dangers
- 2.02 Approve only safe, well tested software
- 2.03 Only sign documents in area of competence
- 2.04 Cooperate on matters of public concern
- 2.05 Produce software that respects diversity
- 2.06 Be fair and truthful in all matters
- 2.07 Always put the public's interests first
- 2.08 Donate professional skills to good causes
- 2.10 Accept responsibility for your own work



JUDGMENT - Software engineers shall maintain integrity and independence in their professional judgment

Principle 3: Judgment


- 3.01 Maintain professional objectivity
- 3.02 Only sign documents within your responsibility
- 3.03 Reject bribery
- 3.04 Do not accept secret payments from the client
- 3.05 Accept payment from only one source for a job
- 3.06 Disclose conflicts of interest
- 3.07 Avoid conflicting financial interests
- 3.08 Temper technology judgments with ethics



CLIENT AND EMPLOYER - Software engineers shall act in a manner that is in the best interests of their client and employer, consistent with the public interest

Principle 4: Client and Employer


- 4.02 Ensure resources are authentically approved
- 4.03 Only use property as authorized by the owner
- 4.04 Do not use illegally obtained software
- 4.05 Honor confidentiality of information
- 4.06 Raise matters of social concern
- 4.07 Inform when a project becomes problematic
- 4.08 Accept no detrimental outside work
- 4.09 Represent no interests adverse to your employer



MANAGEMENT - Software engineering managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance

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
- 5.06 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



PROFESSION - Software engineers shall advance the integrity and reputation of the profession consistent with the public interest

Principle 6: Profession


- 6.01 Associate with reputable people
- 6.02 Promote commitment of this code
- 6.03 Support followers of this code
- 6.05 Report suspected violations of this code
- 6.06 Take responsibility for errors
- 6.07 Only accept appropriate remuneration
- 6.09 Place professional interests before personal
- 6.10 Obey all laws governing your work
- 6.13 Share software knowledge with the profession



COLLEAGUES - Software engineers shall be fair to
and supportive of their colleagues

Principle 7: Colleagues

- 7.01 Assist colleagues in professional development
- 7.02 Review others' 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



SELF - Software engineers shall participate in lifelong learning regarding the practice of their profession and shall promote an ethical approach to the practice of the profession

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

Analysis of the Code

- The code is expressed as a collection of rules
- The rules in turn are based on principles grounded in different ethical theories
- When we encounter a situation when two rules conflict, the preamble urges us to ask questions that will help us consider the principles underlying the rules

Analysis of the Code

- Questions demonstrating the multi-faceted grounding of the code:
 - Who is affected? (utilitarianism – collective goodness)
 - Am I treating other humans with respect? (Kantianism – mentally reversing roles)
 - Would my decision hold up to public scrutiny? (Virtue ethics – reflection on moral character)
 - How will those who are least empowered be affected? (Social contract theory)
 - Are my acts worthy of the ideal professional? (Virtue ethics – imitation of morally superior role models or exemplars)

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



Class Activity – Analyze the Software Engineering Code of Ethics

Class Activity – Software Recommendation

- Relevant fundamental principles:
 - Be impartial
 - Disclose information that others ought to know
 - Share your knowledge, expertise, and values

Class Activity – Software Recommendation

- List of clauses associated with these fundamental principles:
 - (Public) 2.06 Be fair and truthful in all matters
 - (Public) 2.08 Donate professional skills to good causes
 - (Judgment) 3.06 Disclose conflicts of interest
 - (Judgment) 3.07 Avoid conflicting financial interests
 - (Profession) 6.09 Place professional interests before personal
 - (Profession) 6.13 Share software knowledge

Class Activity – Software Recommendation

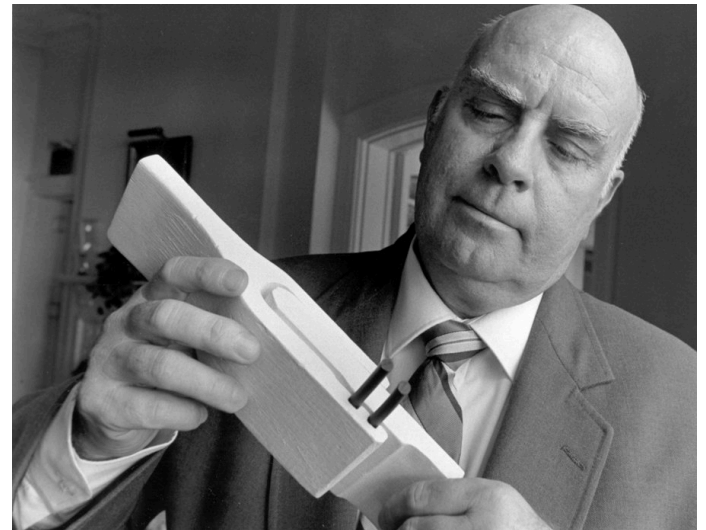
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Whistle-Blowing

- A whistle blower is someone who breaks ranks with an organization in order to make an unauthorized disclosure of information about a harmful situation after attempts to report the concerns through authorized organizations channels have been ignored or rebuffed.
- Examples situations:
 - Actions/products of employer can potentially harm the public
 - Fraudulent use of tax dollars

Roger Boisjoly/NASA

- Engineer at Morton Thiokol – NASA contractor for the Challenger Space Shuttle
 - Met with accident 73 seconds after launch; gas leak from a booster rocket



Morality of Whistle-Blowing

- In most cases whistle-blowers are punished
- Are they heroes or traitors?
 - Analyze their motives (virtue ethics theory)
- Do whistle-blowers cause harm?
 - Disruption of an organization's social and professional fabric
 - Generate bad publicity
 - Cause emotional distress and financial hardship to family
 - Assess the net public good – utilitarian perspective

Whistle-Blowing as a Moral Duty

- Richard De George's five questions:
 - Do you believe the problem may result in "serious and considerable harm to the public"?
 - Have you told your manager your concerns about the potential harm?
 - Have you tried every possible channel within the organization to resolve the problem?
 - Have you documented evidence that would persuade a neutral outsider that your view is correct?
 - Are you reasonably sure that if you do bring this matter to public attention, something can be done to prevent the anticipated harm?
- Whistle-blow is your right if you answer "yes" to the first three questions. If you answer "yes" to all five, then it is your moral duty.