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## CODE OF ETHICS FOR SOFTWARE ENGINEERS

### INTRODUCTION

Computers now have a central and growing role in commerce, industry, government, medicine, entertainment, and ordinary life. Because the utility of computers depends in large part on the instructions written for them, those who design, develop, and test software have enormous opportunities both to do good and to cause harm. To assure, as much as possible, that this power will be used for good, software engineers commit themselves to making the design, development, and testing of software a distinct, beneficial, and respected profession. In accordance with that commitment, software engineers shall adhere to the following standards of conduct. The seven main paragraphs state general rules. Each subsidiary clause is a specific application of its general rule, one experience has shown needs express statement; but no set of subsidiary clauses exhausts its general rule.

Rule 1: PRODUCT. Software engineers shall, insofar as possible, assure that the software on which they work is useful to public, employer, and user, completed on time and at reasonable cost, and free of significant error. In particular, software engineers shall, as appropriate:

- 1.01. Assume that they understand fully the specifications for software on which they work.
- 1.02. Assume that they are qualified for any project on which they work.
- 1.03. Assume proper goals and objectives for any project on which they work.
- 1.04. Assume proper development methodology on any project on which they work, including proper procedures for quality control.
- 1.05. Assume proper management on any project on which they work.
- 1.06. Assume proper estimates of cost, schedule, personnel, and outcome on any project on which they work.
- 1.07. Assume proper testing, debugging, and review of software on which they work.
- 1.08. Assume proper documentation on any project on which they work.
- 1.09. Assume that software on which they work respects the privacy of those who will be subject to it.
- 1.10. Assume ethical, economic, cultural, legal, and environmental issues are properly identified, defined, and addressed.
- 1.11. Promote maximum productivity and minimum cost to employer, user, and public.

*Adequate*

*And risk management.*

*and related documents*

Assure proper privacy, accuracy,  
 property, access, and people. (too  
 many ideas covered elsewhere?) ???  
 Meet changes as they occur. ???  
 Departure from the norm can be justified ???  
 Defining "usual circumstances" should be a  
 matter of professional judgment ???  
 Independence in mental attitude (see Judgment) ???  
 Understand broad fundamentals. ???  
 Show initiative on projects???  
 See through to successful finish???  
 Don't try to do it all yourself???  
 Don't ignore signs of trouble???  
 Don't dodge the issues???  
 View matters from others points of view???  
 ✓ Develop ethical check lists???  
 ✓ Develop review process???  
 ✓ Develop contingency plans??? — *full management*

Rule 2: PUBLIC. Software engineers shall, in their professional role, act only in ways consistent with the public safety, health and welfare. In particular, software engineers shall:

- 2.01. Approve software only if they believe that it is safe, meets specifications, and has passed all appropriate tests.
- 2.02. Disclose to appropriate persons any danger that the software on which they work may pose to the user, a third party, or the environment.
- 2.03. Affix their signature only to documents prepared under their supervision and within their areas of competence.
- 2.04. Present their work fairly.
- 2.05. Recognize problems and properly report them to appropriate persons.
- 2.06. Cooperate in efforts to correct problems in software.
- 2.07. Be objective and truthful in all public statements.
- 2.08. Not put self-interest, the interest of an employer, or the interest of a client ahead of the public's interest.
- 2.09. Accept full responsibility for their work.

Admit their own errors. ??? ✓

Rule 3: JUDGMENT. Software engineers shall, insofar as possible, protect both the independence of their professional judgment and their reputation for such judgment. In particular, software engineers shall, as appropriate:

- 3.01. Maintain professional skepticism with respect to any software they are asked to evaluate.
- 3.02. Avoid conflicts of interest insofar as practical and fully disclose them to all parties concerned when they do exist.
- 3.03. Reject bribery.
- 3.04. Accept no payback, kickback, or other payment from a third party to a contract, except with the consent of all parties to the

- contract.
- 3.05. Accept payment from only one party for any particular project, or for services related to the same project, except when the circumstances are fully disclosed to parties concerned and they have given their informed consent.
  - 3.06. Decline to contract for a service provided by self.(?) ???

Rule 4: CLIENT AND EMPLOYER. Software engineers shall, consistent with the public health, safety, and welfare, always act in professional matters as faithful agents and trustees of their client or employer. In particular, software engineers shall:

- 4.01. Provide service only in areas of competence.
- 4.02. Assure that any document upon which they rely has been approved by someone qualified to approve it.
- 4.03. Use the property of a client or employer only in ways properly authorized.
- 4.04. Use no pirated software on equipment of a client or employer or in work performed for a client or employer.
- 4.05. Keep confidential information gained in their professional work that is not properly in the public domain.
- 4.06. Inform client or employer promptly if, in their opinion, a project is likely to fail, to prove too expensive, to violate copyright laws, or otherwise to turn out badly.
- 4.07. Accept no outside work detrimental to the work they perform for their primary employer.
- 4.08. Represent no interest adverse to their employer's without the employer's consent.

No promotional efforts without consent (???)???

Avoid fads. ???

Assure data is accurate and legitimate authorized use (covered?) ???

Customer fulfillment???

Rule 5: PROFESSION. Software engineers shall, in all professional matters, advance both the integrity and reputation of their profession. In particular, software engineers shall, insofar as possible:

- 5.01. Associate only with reputable businesses.
- 5.02. Assure that clients, employers, and supervisors know of this code of ethics.
- 5.03. Support software engineers who do as this code requires.
- 5.04. Help develop an organizational environment favorable to acting ethically.
- 5.05. Report violations of this code to appropriate authorities.
- 5.06. Take responsibility for detecting errors in software on which they work and reporting them to appropriate authority.
- 5.07. Only accept a salary appropriate to professional qualifications.

- 5.08. Be accurate in stating the characteristics of software on which they work, avoiding not only false claims but claims that might reasonably be supposed deceptive, misleading, or doubtful.
- 5.09. Not promote their own interest at expense of the profession.
- 5.10. Obey all laws governing their work, insofar as consistent with the public health, safety, and welfare.
- 5.11. Serve in civic affairs constructively.
- 5.12. Extend public knowledge of software engineering.
- 5.13. Share useful inventions and discoveries with the profession by reading papers at professional meetings, by publishing articles in the technical press, and by serving on the profession's standard-setting bodies.
- 5.14. Make no political contribution, gift, or commission for award of contract.

Rule 6: COLLEAGUES. Software engineers shall treat all those with whom they work fairly. In particular, software engineers shall, as appropriate:

- 6.01. Assist co-workers in professional development.
- 6.02. Review the work of other professionals only with their knowledge.
- 6.03. Credit fully the work of others.
- 6.04. Criticize the work of others in an objective, candid, and properly-documented way.
- 6.05. Assure that employees are informed of standards before being held to them.
- 6.06. Assure co-workers know employer's policies and procedures for protecting passwords, files, and other confidential information.
- 6.07. Give fair hearings. (to what?)
- 6.08. Make work assignments only upon considerations of professional qualifications.
- 6.09. Develop fair agreement on ownership of any inventions their employees make.
- 6.10. Not supplant another software engineer after steps have been taken for employment.
- 6.11. Attract employees only by full and accurate description of the conditions of employment.
- 6.12. Offer only fair and just compensation.
- 6.13. Not prevent a subordinate taking better job.

Never invade another division's domain without knowledge. (???)  
 to cooperate with proper authorities (see Public) ???  
 to work in competent areas (see Profession) ???  
 to state opinion vs fact (see Profession) ???  
 Assure commitment (???)

Rule 7: SELF. Software engineers shall, throughout their career, try to enhance their own ability to practice their profession as it should be practiced. In particular, software engineers shall continually:

- 7.01. Improve their understanding both of the software on which they work and of the

environment in which it will operate.

- 7.02. Improve their ability to create safe, reliable, and useful software at reasonable cost and within a reasonable time.
- 7.03. Improve their knowledge of this code, its interpretation, and its application to their work.