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Characteristics of a professional (Including IT)

- They are an expert in the tools and skills needed to do their job.
- They adhere to high ethical and moral standards.
- They produce high quality results.
- They meet their commitments.
- They communicate effectively.
- They train and develop others who are less skilled or experienced.

How to Improve the profession's reputation?

1. Subscribing to a professional code of ethics
2. Joining and participating in professional organizations
3. Obtaining appropriate certifications
4. Supporting government licensing where available.

The Ethical Behavior of IT Professionals

Corporations are taking actions to ensure good business ethics among employees

Professional Codes of Ethics

- A professional code of ethics states the **principles** and **core values** that are essential to the work of a particular occupational group
- Main parts:
  1. Outlines what the professional organization aspires to become
  2. Lists rules and principles by which members of the organization are expected to abide

Professional Codes of Ethics (continued)

- Benefits for individual, profession, and society
  - Improves ethical decision making
  - Promotes high standards of practice and ethical behavior
  - Enhances trust and respect from the general public
  - Provides an evaluation benchmark

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Professional Organizations

- No universal code of ethics for IT professionals
- No single, formal organization of IT professionals has emerged as preeminent
- Most prominent organizations include:
  1. Association for Computing Machinery (**ACM**)
  2. Association of Information Technology Professionals (**AITP**)
  3. Computer Society of the Institute of Electrical and Electronics Engineers (**IEEE-CS**)
  4. Project Management Institute (**PMI**)
  5. SysAdmin, Audit, Network, Security (**SANS**) Institute

Association for Computing Machinery (ACM)

- Computing society founded in 1947
- 97,000 student and professional members in more than 100 countries.
- Publications and electronic forums to the public from computers and related systems
- Sponsors 34 **special-interest groups** (SIGs), representing major areas of computing
- ACM code of ethics and professional
  - 8 general moral imperatives
  - 8 specific professional responsibilities
  - 6 organizational leadership imperatives
  - 2 elements of compliance.

Association of Information Technology Professionals (AITP)

- Founded in Chicago (1951), by a group of machine accountants (members of a local group called the Machine Accountants Association)
- Provides IT-related seminars and conferences, information on IT issues, and forums for networking with other IT workers for about 6,000 members.
- Provides superior leadership and education in information technology
- Has AITP code of ethics and standards of conduct

aitp Association of Information Technology Professionals

Institute of Electrical and Electronics Engineers-Computer Society (IEEE-CS)

- IEEE-CS (1946) is one of the oldest and largest IT professional associations, with about 85,000 members.

- Technical journals, magazines, conferences, books, conference publications, and online courses.

- Certified Software Development Professional (CSDP)
- Certified Software Development Associate (CSDA)

- In 1993, the IEEE-CS and the ACM formed a Joint Steering Committee for the Establishment of Software Engineering as a Profession.

IEEE computer society

آیین‌نامه‌ی اخلاقی انستیتوی مهندسان برق و الکترونیک (IEEE)

مقدمه

ما اعضای IEEE، با دانستن اهمیت تکنولوژی خود در تأثیرگذاری بر کیفیت زندگی درسراسر جهان، و با قبول تعهد شخصی نسبت به حرفهٔ خود، اعضای آن و جوامعی که به آنها خدمت می‌کنیم، بدین وسیله خود را به عالیترین رفتار اخلاقی و حرفه‌ای ملزم می‌دانیم و می‌پذیریم که:

۱ در اتخاذ تصمیمهای مهندسی مطابق با ایمنی، سلامت، و رفاه عموم مسئولیت قبول کنیم و عواملی را که ممکن است جامعه یا محیط را به خطر بیفکند فوراً مرتفع کنیم.

۲ هرجا که ممکن باشد از تعارض واقعی یا فرضی منافع اجتناب کنیم و در صورت وجود چنین تعارضی مانع تأثیر آن بر طرفهای ذی‌ربط شویم.

۳ در بیان ادعاها یا برآوردها، بر اساس داده‌های موجود، صادق و واقع‌بین باشیم.

۴ ارتشاء را در تمام شکلهایش نفی کنیم.

۵ دانش فنی، کاربرد ضروری آن و پیامدهای بالقوه‌اش را بهبود بخشیم.

۶ صلاحیت فنی خود را پاس داریم و ارتقاء دهیم و صرفاً در صورت احراز تعلیمات یا تجارب، یا پس از رفع محدودیتهای مقتضی، وظایف تکنولوژیکی را بر عهده بگیریم.

۷ جویا، پذیرا و ارائه‌کنندهٔ نقد صادقانه از کار فنی باشیم، خطاها را بپذیریم و اصلاح کنیم، و برای نقش دیگران اعتبار شایسته قایل شویم.

۸ با همه، صرف‌نظر از عواملی چون نژاد، مذهب، جنسیت، معلولیت، سن و سال، یا ملیت، با عدالت رفتار کنیم.

۹ از لطمه زدن به دیگران، اموال، شهرت و آبرو، یا اشتغال آنها با اقدامهای کاذب یا بدخواهانه خودداری کنیم.

۱۰ به همتایان و همکاران در رشد حرفه‌ای آنها یاری برسانیم و از آنها در پیروی از این آیین‌نامهٔ اخلاقی حمایت کنیم.

جدول (۵-٤) آیین‌نامه‌ی اخلاقی انستیتوی مهندسان برق و الکترونیک (IEEE)، ۱۹۹۰[1]

Project Management Institute (PMI)

- Established in 1969
- 420,000 members and people who have passed the PMI certification process in more than 170 countries.
- Its members include project managers from such diverse fields as construction, sales, finance, and production, as well as information systems.
- Has the PMI Member **Code of Ethics** and Professional Conduct

SysAdmin, Audit, Network, Security (SANS) Institute

- Provides information security **training** and **certification** for a wide range of individuals, such as auditors, network administrators, and security managers.

- Train some 12,000 people, and a total of more than 165,000 security professionals around the world have taken one or more of its courses.

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Certification

- Indicates a professional possesses a particular set of skills, knowledge, or abilities in the opinion of a certifying organization
- Can also apply to products
- Generally voluntary
- Carries no requirement to adhere to a code of ethics

Certification (continued)

- **Vendor certifications**
  - Some certifications substantially improve IT workers' salaries and career prospects
  - Relevant for narrowly defined roles
    - Or certain aspects of broader roles
  - Require passing a written exam
  - Workers are commonly recertified as newer technologies become available

Common Vendor-Specific Certifications for IT Workers

Category	Certification
MAC OS X	Apple Certified Technical Coordinator
Cisco Hardware	Cisco Certified Design Associate
Cisco Networking	Cisco Certified Network Professionals
Cisco Networking	Cisco Certified Internetwork Expert
Microsoft Products	Microsoft Certified Professional
Citrix Products	Citrix Certified Administrator (CCA)
Oracle Database	Oracle Database 12c: Certified Expert Performance Management and Tuning
Salesforce software	Salesforce.com Certified Administrator

Certification (continued)

- **Industry association certifications**
  - Require a certain level of experience and a broader perspective than vendor certifications
  - Pay annual certification fee
  - However lag in developing tests that cover new technologies

IT Subject-Area Certifications (Industry)

Subject area	Organization providing certification	Primary certification(s)
Auditing	Information Systems Audit and Control Association (ISACA)	Certified Information Systems Auditor (CISA)
General	Institute for Certification of Computing Professionals (ICCP)	Certified Computing Professional (CCP)
Security	International Information Systems Security Certification Consortium, Inc. $(ISC)^2$ SysAdmin, Audit, Network, Security (SANS) Institute	Certified Information Systems Security Professional (CISSP) Global Information Assurance Certification (GIAC)
Computer service technician	Computing Technology Industry Association (CompTIA)	CompTIA

Available PMI Certifications

Certificate	Intended for	Primary eligibility requirement
Project Management Professional (PMP)	Individuals who lead and direct projects	3–5 years of project management experience, depending on level of college education
Certified Associate of Project Management (CAPM)	Individuals who contribute to project teams	1,500 hours of experience or 23 hours of project management education
Program Management Professional (PgMP)	Individuals who achieve organizational objectives through defining and overseeing projects and resources	4–7 years of both project management and program management experience, depending on level of college education
PMI Scheduling Professional (PMI-SP)	Individuals who develop and maintain project schedules	3,500–5,000 hours of project scheduling experience and 30–40 hours of project scheduling education, depending on level of college education
PMI Risk Management Professional (PMI-RMP)	Individuals who assess and identify risks, mitigate threats, and identify and take advantage of unique project opportunities	3,000–4,500 hours of project risk management experience and 30–40 hours of project risk management education, depending on level of college education

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Government Licensing

- Generally administered at the state level in the United States
- **Case for licensing IT professionals**
  - Encourage IT professionals to follow the highest standards of the profession
  - Practice a code of ethics
  - Violators would be punished

Government Licensing (continued)

- **Issues associated with government licensing of IT professionals**
  - There are ~~few international~~ or national licensing programs for IT professionals
  - ~~No universally accepted core body of knowledge~~
  - ~~Unclear who should manage content and administration of licensing exams~~
  - ~~No administrative body to accredit professional education programs~~
  - No administrative body to assess and ensure competence of individual professionals

Who is Software Engineer?
ACM IEEE-CS Definition

A software engineer is defined as one who applies engineering principles and practices to the design, develop- ment, implementation, testing, and maintenance of software.

Software Engineering Code of Ethics

Software engineers shall commit themselves to making the analysis, specification, design, development, testing and maintenance of software a beneficial and respected profession. In accordance with their commitment to the health, safety and welfare of the public, software engineers shall adhere to the following Eight Principles:

1. Public - Software engineers shall act consistently with the public interest.
2. 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.
3. Product - Software engineers shall ensure that their products and related modifications meet the highest professional standards possible.
4. Judgment - Software engineers shall maintain integrity and independence in their professional judgment.
5. Management - Software engineering managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance.
6. Profession - Software engineers shall advance the integrity and reputation of the profession consistent with the public interest.
7. Colleagues - Software engineers shall be fair to and supportive of their colleagues.
8. 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.

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IT Professional Malpractice

- **Negligence** has been defined as not doing something that a reasonable man would do, or doing something that a reasonable man would not do
- **Duty of care** refers to the obligation to protect people against any unreasonable harm or risk
- Courts consistently reject attempts to sue individual parties for computer-related malpractice

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IT Users

Employees' ethical use of IT is an area of growing concern

Common Ethical Issues for IT Users

- Software piracy
- Inappropriate use of computing resources
- Inappropriate sharing of information
  - Private data
    - Credit Cards, Home address, SSN
  - Confidential information
    - sales and promotion plans, staffing projections, manufacturing processes, product formulas, tactical and strategic plans, and research and development

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Supporting the Ethical Practices of IT Users

- Policies that protect against abuses:
  - Establish boundaries of acceptable and unacceptable behavior
  - Enable management to punish violators
- Policy components include:
  - Establishing guidelines for use of company software
  - Defining and limiting the appropriate use of IT resources
  - Structuring information systems to protect data and information
  - Installing and maintaining a corporate firewall

Manager's Checklist of Items to Consider when Establishing an IT Usage Policy

Question	Yes	No
Is there a statement that explains the need for an IT usage policy?		
Does the policy provide a clear set of guiding principles for ethical decision making?		
Is it clear how the policy applies to the following types of workers? • Employees • Part-time workers • Temps • Contractors		

Manager's Checklist of Items to Consider when Establishing an IT Usage Policy

Question	Yes	No
Does the policy address the following issues? • Protection of the data privacy rights of employees, customers, suppliers, and others • Limits and control of access to proprietary company data and information • Use of unauthorized or pirated software • Employee monitoring, including e-mail, wiretapping and eaves-dropping on phone conversations, computer monitoring, and surveillance by video • Respect of the intellectual rights of others, including trade secrets, copyrights, patents, and trademarks • Inappropriate use of IT resources, such as Web surfing, personal e-mailing, and other use of computers for purposes other than business • The need to protect the security of IT resources through adher-ence to good security practices, such as not sharing user IDs and passwords, use of "hard-to-guess" passwords, and frequent chang-ing of passwords • The use of the computer to intimidate, harass, or insult others through abusive language in e-mails and by other means		
Are disciplinary actions defined for IT-related abuses?		
Is there a process for communicating the policy to employees?		
Is there a plan to provide effective, ongoing training relative to the policy?		
Has a corporate firewall been implemented?		
Is the corporate firewall maintained?		

Summary

- A professional from a legal standpoint
  - Has passed the state licensing requirements
  - Has earned the right to practice there
- IT professionals have many different relationships
  - Each with its own set of ethical issues and potential problems
- Professional code of ethics
  - States the principles and core values essential to the work of an occupational group