

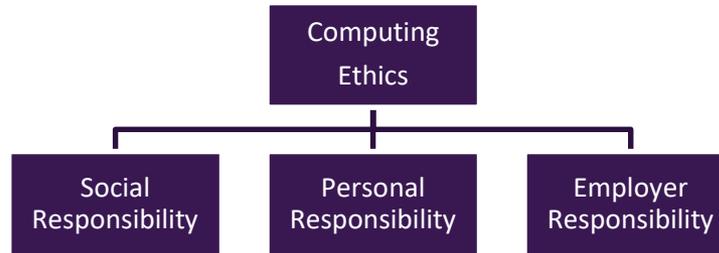
# Professional Ethics

- What is a profession? Barger gives one possible definition:
  - Practitioners must have expert knowledge – "special technical knowledge that is certified by some authority and not possessed by the layperson"
  - Practitioner must have autonomy with respect to "independence in conducting one's professional practice"

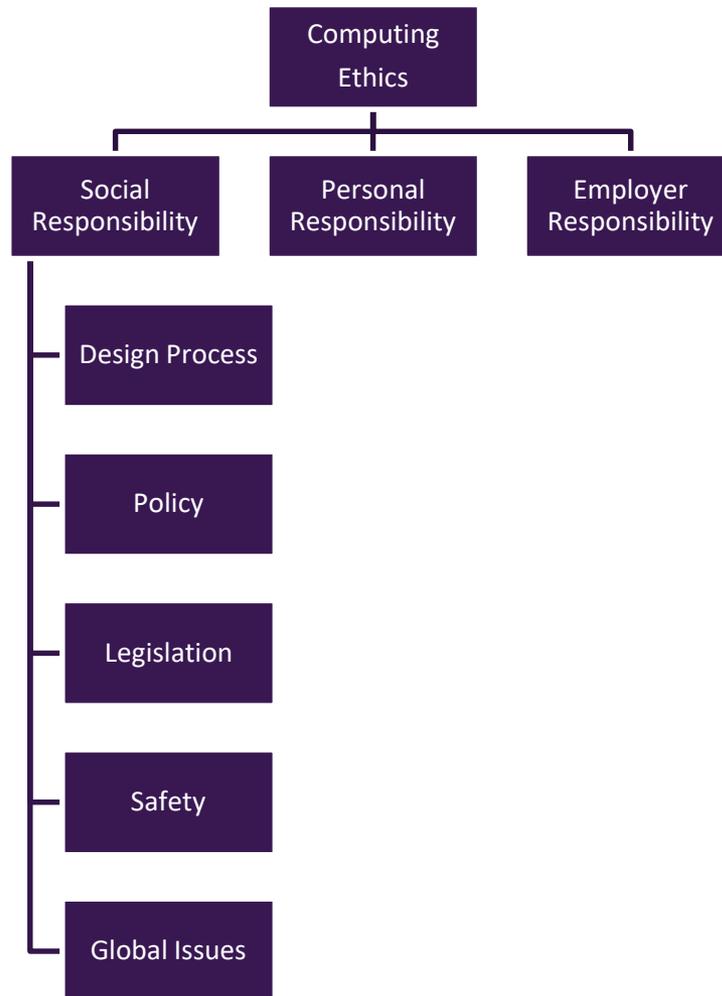
# Professional Ethics

- Who is a professional? Buchanan suggests
  - An expert in a field, which provides an advantage over laypersons
  - Work has the potential to impact, either positively or negatively, the general public at large
- This is especially true for developers of safety-critical software
  - Not just directly used software like air traffic control
  - Also software used to design or analyze, e.g. buildings or for medical treatment

# Scope of Professional Computing Ethics



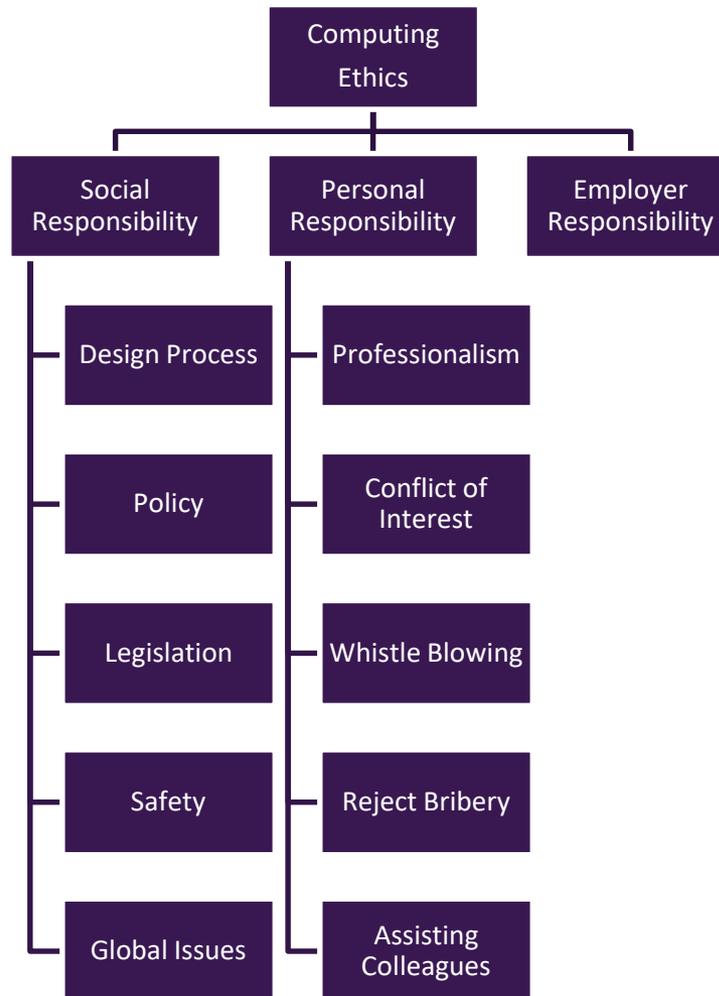
# Scope of Professional Computing Ethics



# Social Responsibility

- Design process – is it environmentally friendly?  
Can we do it better to protect our resources?
- Policy – does this conform to public policy?
- Legislation – is it lawful?
- Safety – am I putting the public in danger?
- Global issues – how does this affect the world,  
not just my small part of it?

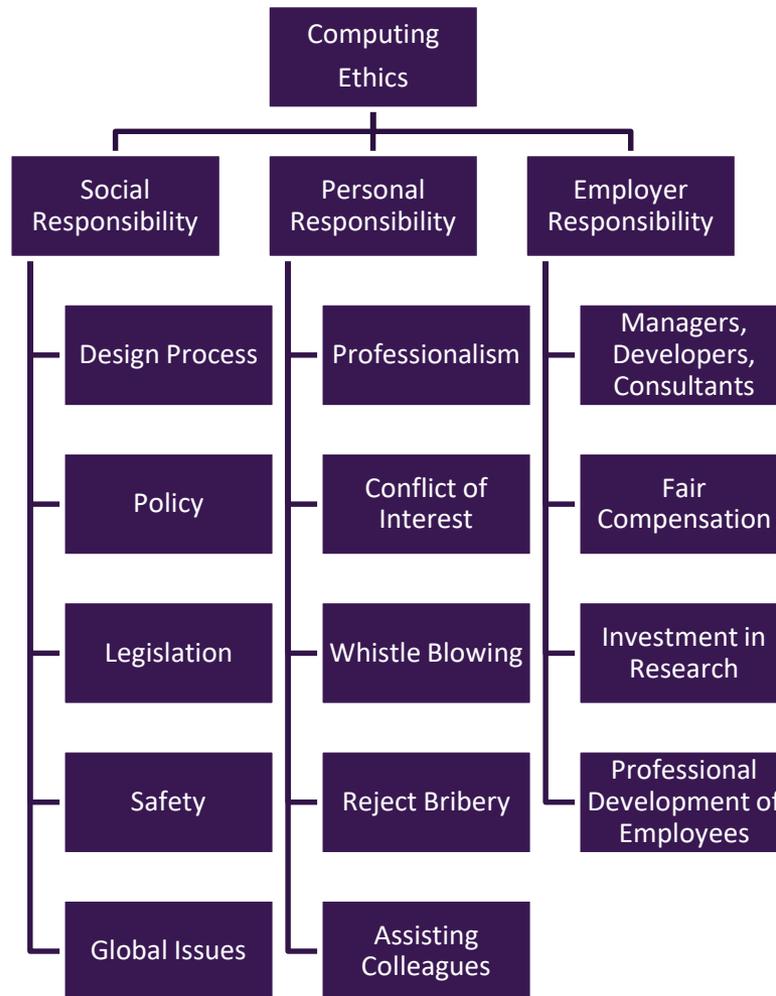
# Scope of Professional Computing Ethics



# Personal Responsibility

- Professionalism – am I conducting myself in a professional manner?
- Conflict of Interest – does this involve multiple interests, one of which could possibly corrupt motivation for an act in the other?
- Whistle blowing – should I inform the authorities of a harmful, dangerous, or illegal activity? How does this conflict with my obligations to employer?
- Reject bribery –
- Assisting colleagues – in professional development and support in upholding the code of ethics

# Scope of Professional Computing Ethics



# Employer Responsibility

- Managers, developers, consultants – Define roles and hierarchy of responsibilities.
- Fair compensation – Pay people for their work.
- Investment in research – Research the better way to do things (relates back to social responsibility).
- Professional development of employees – Help develop professional, ethical developers/engineers.

# Codes of Ethics for Computing

- Provides a framework for ethical decisions
- Some governing agencies
  - ACM: Association for Computing Machinery
    - <http://www.acm.org/>
  - IEEE-CS: Institute of Electrical and Electronics Engineers Computer Society
    - <http://www.computer.org/>
  - NSPE: National Society of Professional Engineers
    - <http://www.nspe.org/>

# Codes of Ethics for Computing

- Web Resources (just some of many)
  - ACM Special Interest Group on Computers and Society (SIGCAS): <http://www.sigcas.org>
  - NSF Workshops, Teaching Ethics and Computing, K. Bowyer, Univ. Notre Dame: <http://www.cse.nd.edu/~kwb/nsf-ufe/index.html>
  - Computer Professionals for Social Responsibility: <http://cpsr.org/>
  - Software Engineering Ethics Research Institute: <http://seeri.etsu.edu/>
  - The Research Center on Computing & Society: <http://ares.southernct.edu/organizations/rccs/>
  - The Online Ethics Center for Engineering and Science: <http://onlineethics.org/>
  - Center for the Study of Ethics in the Professions at IIT: <http://ethics.iit.edu/>
  - Association for Practical and Professional Ethics at IU: <http://www.indiana.edu/~appe/>
  - IEEE document of professional aspects of employment, click [here](#).
  - IEEE document on education/professionalism, click [here](#).
  - Texas A&M Univ. engineering ethics: <http://ethics.tamu.edu/>
  - National Institute for Engineering Ethics: <http://www.niee.org/>
  - NSPE Board of Ethical Review: <http://www.nspe.org/Ethics/BoardofEthicalReview/> (e.g., see Board of Ethical Review case analyses at <http://www.nspe.org/Ethics/EthicsResources/BER/> ).

# Codes of Ethics for Computing

- Summaries of the ACM Code of Ethics and the IEEE-CS/ACM Software Engineering Code of Ethics provided on the next slides.
- Look for similarities and differences, especially in emphasis. Are there any contradictions?

# ACM Code of Ethics: General Moral Imperatives

As an ACM member, I will:

1. Contribute to society and human well-being.
2. Avoid harm to others.
3. Be honest and trustworthy.
4. Be fair and take action not to discriminate.
5. Honor property rights including copyrights and patent.
6. Give proper credit for intellectual property.
7. Respect the privacy of others.
8. Honor confidentiality.

# ACM Code of Ethics: More Specific Professional Responsibilities

As an ACM computing professional, I will:

1. Strive to achieve the highest quality, effectiveness and dignity in both the process and products of professional work.
2. Acquire and maintain professional competence.
3. Know and respect existing laws pertaining to professional work.
4. Accept and provide appropriate professional review.
5. Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis of possible risks.
6. Honor contracts, agreements, and assigned responsibilities.
7. Improve public understanding of computing and its consequences.
8. Access computing and communication resources only when authorized to do so.

# ACM Code of Ethics: Organizational Leadership Imperatives

As an ACM member and an organizational leader, I will:

1. Articulate social responsibilities of members of an organizational unit and encourage full acceptance of those responsibilities.
2. Manage personnel and resources to design and build information systems that enhance the quality of working life.
3. Acknowledge and support proper and authorized uses of an organization's computing and communication resources.
4. Ensure that users and those who will be affected by a system have their needs clearly articulated during the assessment and design of requirements; later the system must be validated to meet requirements.
5. Articulate and support policies that protect the dignity of users and others affected by a computing system.
6. Create opportunities for members of the organization to learn the principles and limitations of computer systems.

# ACM Code of Ethics: Compliance with the Code

As an ACM member, I will:

1. Uphold and promote the principles of this Code.
2. Treat violations of this code as inconsistent with membership in the ACM.

# IEEE-CS/ACM Software Engineering Code of Ethics

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.

# IEEE-CS/ACM Software Engineering Code of Ethics

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

# Conflict

- Solving an ethical problem is similar to a design problem
- Sometimes the correct answer to an ethical issue is not obvious, so apply a process
  - Example: Inappropriate material is found by a technician on a work computer
  - Determine the technician has competing responsibilities
    - To keep personal information seen confidential
    - To report a violation of the computer use policy
  - Apply any guidelines, e.g. codes of ethics, laws, etc.
  - Conclude the technician should report what was seen, since the employee has no legal right to privacy on a company computer

# Assignment 4

- Complete the quiz on BlackBoard.
- Be sure you read the case study first, before you start the quiz. The quiz is 10 questions. You will have 5 minutes to answer the questions. You get only one try.
- **You must complete this quiz no later than 11:59pm CST next Monday, February 6**

# Assignment 5

- Choose one of the following recent events involving software used in a potentially unethical manner:
  - Software that allowed VW automobiles to pass EPA emissions test incorrectly
  - US government suing Apple to provide a backdoor to the iOS operating
  - Software used in driver-less cars that have caused accidents (e.g., Tesla car, Google car)
  - Creators of Pokemon Go allowing the game to be played in arguably inappropriate places.

# Assignment 5

- Read the articles linked on the course webpage related to your choice. Look up other articles if you like
- Write a 2-3 page (12pt font, double-spaced, 1in margins) essay discussing the ethical dilemma faced by the **developers of the software** (not the company) in question.

# Assignment 5

- Apply the strategy from the last class
  - Describe what happened
  - The identify the ethical issues for the **developers**, explain the conflict
  - Conclude whether or not the **developers** acted in an ethical manner and/or what persons should do in their situation, and justify your analysis. This must include, but is not limited to, using professional codes of ethics.
- Be sure to properly cite the sources of your information, including any codes of ethics.

# Assignment 5

- **Bring a draft of the essay to class on Tuesday, February 7.** We will discuss your findings.
- The final version must be **submitted to LiveText** no later than 11:30pm CST on **Thursday, February 9.**