Capstone Projects
SE 490

ACM Code of Ethics

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To do list

1. In Progress: Work on "Project Problem Statement"
2. In Progress: Work on "Teamwork Statement"

3. NEW: Schedule weekly meeting time with faculty advisor
   - I need your confirmation on Friday in class time

Review: ACM/IEEE-CS Joint Task Force on Software Engineering Ethics

https://www.computer.org/education/code-of-ethics

- 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.

ACM code for computing professionals: General

https://www.acm.org/code-of-ethics

	ACM Code	How easily can this be violated in Capstone Projects?
1.1	**Contribute to society and to human well-being** • to promote fundamental human rights, to respect diversity • to minimize negative consequences of computing, including threats to health, safety, personal security, and privacy.	
1.2	**Avoid harm** • Examples of harm include unjustified physical or mental injury, unjustified destruction or disclosure of information, and unjustified damage to property, reputation, and the environment. • To carefully consider the potential impacts on all those affected by decisions. • To "blow the whistle" to reduce potential harm.	

ACM code for computing professionals: General

https://www.acm.org/code-of-ethics

	ACM Code	How easily can this be violated in Capstone Projects?
1.3	**Be honest and trustworthy** • Provide full disclosure of all pertinent system capabilities, limitations, and potential problems to the appropriate parties. • Do not make deliberately false or misleading claims, fabricate or falsify data, offer or accept bribes	
1.4	**Be fair and take action not to discriminate** • foster fair participation of all people, including those of underrepresented groups. • creating systems or technologies that respect inclusiveness and accessibility	
1.5	**Respect the work required to produce new ideas, inventions, creative works, and computing artifacts** • credit the creators of ideas, inventions, work, and artifacts, and respect copyrights, patents, trade secrets, license agreements,	

Discussion

- Privacy vs. Confidentiality: What is the Difference?

Privacy vs. Confidentiality: What is the Difference?

- **Privacy Applies to a Person** **Without consent**
- **Privacy refers to an individual's desire to control access to him/herself.**
  - The methods used to identify a **person**. [do not use my SSN!]
  - The methods used to obtain info about a **person**. [do not steal from my smartphone]
  - The methods used to contact a **person**. [do not call me, text me!]
  - Personal information gathered for a specific purpose not be used for other purposes **without consent** of the individual(s). [parent cannot access my transcript]
  - How much information a **person** may release to another party.
- **Confidentiality Applies to Data** (management) **With consent**
- **Confidentiality refers to maintenance: how sensitive information** (e.g. a person's identifiable private information) **will be handled, managed, and disseminated.**
  - how will sensitive data be stored and used,
  - who will have access to it,
  - what procedures will be put in place to ensure that only authorized individuals will have access to the information, and the limitations (if any) to these procedures

ACM code for computing professionals: General

https://www.acm.org/code-of-ethics

	ACM Code	How easily can this be violated in Capstone Projects?
1.6	**Respect privacy** • To protect personal information from unauthorized access and accidental disclosure. • to prevent re-identification of anonymized data, • To obtain informed consent for automatic data collection • Personal information gathered for a specific purpose should not be used for other purposes without the person's consent	
1.7	**Honor confidentiality** confidential information includes trade secrets, client data, nonpublic business strategies, financial information, research data, pre-publication scholarly articles, and patent applications	

ACM code for computing professionals: Specific

https://www.acm.org/code-of-ethics

	ACM Code	How to violate?
2.1	Strive to achieve high quality in both the processes and products of professional work	
2.2	Maintain high standards of professional competence, conduct, and ethical practice	
2.3	Know and respect existing rules pertaining to professional work	
2.4	Accept and provide appropriate professional review	
2.5	Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis of possible risks	
2.6	Perform work only in areas of competence	
2.7	Foster public awareness and understanding of computing, related technologies, and their consequences	
2.8	Access computing and communication resources only when authorized or when compelled by the public good	
2.9	Design and implement systems that are robustly and usably secure	

ACM code for computing professionals: Leadership

https://www.acm.org/code-of-ethics

	ACM Code	How to violate?
3.1	Ensure that the public good is the central concern during all professional computing work	
3.2	Articulate, encourage acceptance of, and evaluate fulfillment of social responsibilities by members of the organization or group	
3.3	Manage personnel and resources to enhance the quality of working life	
3.4	Articulate, apply, and support policies and processes that reflect the principles of the Code	
3.5	Create opportunities for members of the organization or group to grow as professionals	
3.6	Use care when modifying or retiring systems	
3.7	Recognize and take special care of systems that become integrated into the infrastructure of society	

As
IT Manager

Case Studies

In SE 370 we have used some case studies to understand the IEEE code of ethics for Software Engineering. We now use similar cases to reflect on ACM code of ethics

Case 1

- Jean, a statistical database programmer, is trying to write a large statistical program needed by her company. Programmers in this company are encouraged to write about their work and to publish their algorithms in professional journals.
- After months of tedious programming, Jean has found herself stuck on several parts of the program. Her manager, not recognizing the complexity of the problem, wants the job completed within the next few days.
- Not knowing how to solve the problems, Jean remembers that a coworker had given her source listings from his current work and from an early version of a commercial software package developed at another company. On studying these programs, she sees two areas of code which could be directly incorporated into her own program. She uses segments of code from both her coworker and the commercial software, but does not tell anyone or mention it in the documentation. She completes the project and turns it in a day ahead of time.

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1.6	Respect privacy
1.7	Honor confidentiality
2.1	High quality of work
2.2	High standards of conduct
2.3	Respect existing rules
2.4	Provide appropriate professional review
2.5	Thorough evaluation of systems
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2.7	Foster public awareness of computing
2.8	Access resources only when authorized
2.9	Develop robust and secure systems

Case 2

- Max works in a large state department of alcoholism and drug abuse. The agency administers programs for individuals with alcohol and drug problems, and maintains a huge database of information on the clients who use their services. Some of the data files contain the names and current addresses of clients.
- Max has been asked to take a look at the track records of the treatment programs. He is to put together a report that contains the number of clients seen in each program each month for the past five years, length of each client's treatment, number of clients who return after completion of a program, criminal histories of clients, and so on.
- In order to put together this report, Max has been given access to all files in the agency's mainframe computer. After assembling the data into a new file that includes the client names, he downloads it to the computer in his office. Under pressure to get the report finished by the deadline, Max decides he will have to work at home over the weekend in order to finish on time. He copies the information onto several disks and takes them home. After finishing the report he leaves the disks at home and forgets about them.
- which code has Max violated?

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Case 3

- Three years ago Diane started her consulting business. She has been so successful that she now has several people working for her and many clients. Their consulting work included advising on how to network microcomputers, designing database management systems, and advising about security.
- Presently she is designing an information management system for the personnel office of a medium-sized company. Diane has involved the client in the design process, informing the CEO, the director of computing, and the director of personnel about the progress of the system. It is now time to make decisions about the kind and degree of security to build into the system.
- Diane has described **several options** to the client. Because the system is going to cost more than they planned, the client has decided to opt for a less secure system. She believes the information they will be storing is extremely sensitive. It will include performance evaluations, medical records for filing insurance claims, salaries, and so forth.
- If Diane chooses to go with a less secure system, which code(s) would she violate?

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Case 4

- A computer company is writing the first stage of a more efficient accounting system that will be used by the government. This system will save taxpayers a considerable amount of money every year.
- A computer professional, who is asked to design the accounting system, assigns different parts of the system to her staff. One person is responsible for developing the reports; another is responsible for the internal processing; and a third for the user interface.
- The manager is shown the system and agrees that it can do everything in the requirements. [meet functional requirements]
- The system is installed, but the staff finds the interface so difficult to use that their complaints are heard by upper-level management.
- Because of these complaints, upper-level management will not invest any more money in the development of the new accounting system and they go back to their original, more expensive system.
- Which professional responsibility might be neglected by the development team?

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Case 5

- George and his team start to work on a project to develop an information system to be used in an employment agency.
- In determining requirements for the system, the client explains to George that, when displaying applicants whose qualifications appear to match those required for a particular job,
  - the names of young applicants are to be displayed ahead of those older applicants, and
  - names of the male applicants are to be displayed ahead of those of female applicants.
- If George does what is asked, which codes will he violate?
- How should George respond to the request?

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Case 6

- A software development company has just produced a new software package that incorporates the new tax laws in the calculation of taxes for both individuals and small businesses.
- The president of the company knows that the program has a number of bugs. He also believes the first firm to put this kind of software on the market is likely to capture the largest market share. The company widely advertises the program. When the company actually ships a disk, it includes a disclaimer of responsibility for errors resulting from the use of the program.
- The company expects it will receive a number of complains, queries, and suggestions for modification. The company plans to use these to make changes and eventually issue updated, improved, and debugged versions. The president argues in his company that anyone who buys version 1.0 of a program knows this and will take proper precautions.
- Because of bugs, a number of users filed incorrect tax returns and were penalized by the IRS.
- Which codes have been violated by the president (software company)?

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Case 7

- A small software company is working on an integrated inventory control system for a national shoe manufacturer. The system will gather sales information daily from shoe stores nationwide. This information will be used by the accounting, shipping, and ordering departments to control all of the functions of this large corporation. The inventory functions are critical to the operation of the whole system.
- Jane, a quality assurance engineer with the software company, suspects that the inventory functions of the system are not sufficiently tested, although they have passed all their contracted tests (which had been agreed to in the original contract). She is being pressured by her employers to sign off on the software.
- Legally she is only required to perform those contracted tests. However, her considerable experience in software testing has led her to be concerned over risks of the system.
  - Her employers say they will go out of business if they do not deliver the software on time.
  - Jane contends if the inventory subsystem fails, it will significantly harm their client and its employees.
- If the potential failure were to threaten lives, it would be clear to Jane that she should refuse to sign off. But since the degree of threatened harm is less, Jane is faced by a difficult moral decision. What should she do?

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Case 8

- A software consultant is negotiating a contract with a local community to design their traffic control system. He recommends they select the TCS system out of several available systems on the market.
- The consultant fails to mention that he is a major stockholder of the company producing TCS software.
- Which code has been violated by the consultant?

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Case 9

- Joe is working on a project for his computer science course. The instructor has allotted a fixed amount of computer time for this project. Joe has run out of time, but he has not yet finished the project.
- Last year Joe worked as a student programmer for the campus computer center and is quite familiar with procedures to increase time allocations to accounts. Using what he learned last year, he is able to access the master account. Then he gives himself additional time and finishes his project.
- Which codes has Joe violated?

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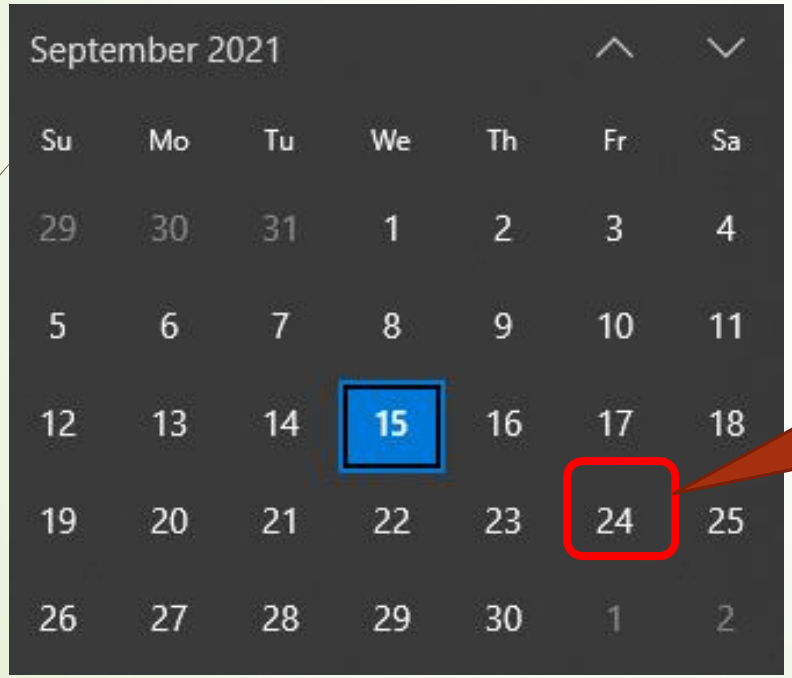
Specific guidelines for Capstone Projects

1. Not knowingly use software that is obtained or retained either illegally or unethically.
2. Use the property of a client or employer only in ways properly authorized, and with the client's or employer's knowledge and consent.
3. Strive for high quality, acceptable cost and a reasonable schedule.
4. Ensure proper and achievable goals and objectives for any project on which they work or propose.
5. Ensure that specifications for software on which they work have been well documented, satisfy the users' requirements and have the appropriate approvals.
6. Ensure adequate testing, debugging, and review of software and related documents on which they work. [Agile process]
7. Ensure to know the employer's policies and procedures for protecting passwords, files and information that is confidential to the employer or confidential to others.
8. Assist colleagues in professional development. [Teamwork]
9. Credit fully the work of others and refrain from taking undue credit.
10. Review the work of others in an objective, candid, and properly-documented way.
11. Further your knowledge of developments in the analysis, specification, design, development, maintenance and testing of software and related documents.
12. Improve your ability to produce accurate, informative, and well-written documentation.

Friday

- Quiz on ethics
- Complete Team Commitment Form



By 9/24, talk to industrial mentor at least twice

Review collected requirements