Essay #2: Ethics

ABET Goals

- **An understanding of professional, ethical, legal, security and social issues and responsibilities**

Dear student. Consider your project for this quarter. The problem you have worked on almost certainly has multiple professional, ethical, legal, security and social implications. For example, suppose you had written a compression algorithm that allows you to add a password requirement to unzip the file.

We could imagine:

- The FBI finds a suspicious document, compressed and password-protected with your software. They will not tell you where it came from, but they want your help to crack it. Should you help them?
- You want to give your code away as shareware. But you imagine "*Suppose my software has a bug, and in rare cases it cause hard drives to be wiped!*". Is there anything you could do to protect yourself from lawsuits? Would you do anything different if you were selling your code, as opposed to giving it away?
- When doing the project you hit upon a new compression algorithm that might be worth millions of dollars. Does the university or the instructor deserve a share of the royalties? Do your teammates deserve any of the royalties?
- How could you stop someone stealing your idea(s) and profiting from them?
- Because of a bug in your code, even when password-protected, hackers can tell the language (English/Spanish etc) of the compressed file(s). Could you imagine scenario in which that could ever be a problem that might expose you to lawsuits?
- Two companies want to buy the rights to use your compression algorithm in an MP3 player. Company **A** will manufacture the devices in California, and they will pay you $20,000. Company **B** will manufacture the devices in Sri Lanka, and they will pay you $25,000. Which company do you sell the rights to?
- While your algorithm can compress the files to a smaller size (on average) than the current state-of-the-art compressor, it requires more CPU time. You work out that if your algorithm became as ubiquitous as MP3, it would cause humankind to consume an extra 10,000 megawatts of energy per day (that is about what NY City consumes each day). On the other hand, people would have the convenience on putting at least 100 more songs on their MP3 player...
- After you sell the rights to your algorithm, you realize that you used someone else's code in a minor subroutine, do you have any obligations to that person?

Given the above text to spur your imagination: Please do any **two** of the following (750 words each):

- Write an essay describing how your project *does* or *might* have given rise to an ethical issue.
- Write an essay describing how your project *does* or *might* have given rise to a legal issue.
- Write an essay describing how your project *does* or *might* have given rise to a security issue.
- Write an essay describing how your project *does* or *might* have given rise to a social issue.
- Write an essay describing how your project *does* or *might* have given rise to a professional issue.

If you prefer, you may write a single 1,500 word essay that addresses a combination of two or more of the above issues. In addition to describing the potential or actual problem, you can discuss potential solutions.

Hand In: An essay, with five or more cited sources, on the topic(s) discussed above.

Due Date: Feb. 15, 2016 at 3:10pm

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Awareness of personal responsibility, or responsibility of a group (taxpayers, engineers)	Little or no understanding of (or interest in?) in personal responsibility, or responsibility of a group (taxpayers, engineers) to which the student belongs or may belong to in the future.	Some awareness or understanding of personal responsibility, or responsibility of a group.	Good understanding of personal responsibility, or responsibility of a group (taxpayers, engineers) to which the student belongs or may belong to in the future.	Deep understanding of personal responsibility, or responsibility of a group (taxpayers, engineers) to which the student belongs or may belong to in the future. Concrete examples provided;
Awareness of implications to society at large	Little or no understanding of (or interest in?) implications to society involved in the creation and use of the student's project;	Moderate understanding of the implications to society in the creation and use of the student's project;	Good understanding of the implications to society in the creation and use of the student's project;	Deep understanding of the immediate and longterm implications to society in the creation and use of the student's project;
Awareness of legal, security implications	Little or no understanding of (or interest in?) legal, security issues directly related to the creation and use of the student's project;	Moderate understanding of the main relevant legal, security issues directly related to the creation and use of the student's project;	Good understanding of all the relevant legal, security issues directly related to the creation and use of the student's project;	Deep understanding of all the relevant legal, security issues related to the creation and use of the student's project;
Understanding of ethical and professional issues	Little or no understanding of professional/ethical issues even where there are serious questions involved;	Some consideration of professional, ethical issues raised directly by the p/p/e;	Good understanding of all the essential issues related to the p/p/e; reasonable analysis of the relevant issues;	Deep understanding of the professional issues involved and the ethical implications of the p/p/e; careful, convincing analysis of all relevant factors.
Presentation of ideas and organization of the paper	Bland presentation; sequencing and pace of topics seems random; doesn't lead up to any clear conclusions;	Some of the ideas are presented well; others are lacking; offers plausible conclusion(s);	Ideas are well organized and help the reader move along; the key points are presented but does not demonstrate in-depth understanding; leads up to convincing conclusion(s);	The paper is clear and focused; relevant, quality details give the reader important information; helps the reader develop *insight* into the topic. Concrete examples provided;
Style	Occasional problems with word choices and sentence structure, leaving the reader unsure of the meaning; often resorts to jargon/ cliches;	Words and sentences are adequate in general but lack energy; reader has to struggle to keep reading to the end;	Good writing style; sentences flow smoothly and evenly;	Compelling writing style; connects strongly with the reader and keeps him or her engaged right to the end.