General Instructions

1. For each page, synthesize the reading and research by writing in complete sentences in essay format.
   a. Use the green instructions in the notes below each page to focus your research and writing.
   b. Write about each question, prompt, or process provided in those notes.
   c. Write a full page of text with lots of detail (about 250 words).
      i. Don’t generalize so much that your writing is devoid of detail.
      ii. Don’t repeat yourself.
   d. Cite each source by adding a hyperlink in the Title of the Article or law.
   e. Do not change the template:
      i. Text must be 14 point Lato left-justified type.
      ii. Refrain from adding extra margins or double spacing.
      iii. Do not bullet the paragraphs. Write in essay format only.
   f. Add additional pages if you need more room.

2. Add all sources to the Bibliography page.
   a. Include author, year, title, publisher, and URL.
   b. Number or bullet them using the list button.

When in doubt, write to the instructor for clarification using the Canvas Inbox.
A good post college job for me would be as an Electrical Engineer I, Entry level at LafargeHolcim, a material company focusing in cement, aggregates, concrete, and asphalt. The job entails maintenance of power and process control systems while also learning about new equipment to aid in its proper setup. The job is entry level and requires a Bachelor’s/Undergraduate Degree in Electrical Engineering in addition to knowledge of PLC which I don’t have and will give me something to study on the job. A 10% travel requirement is ideal for me because I prefer to stay in one place and live in one area. The job allows me to make equipment purchases on the company’s behalf which necessitates a good code of ethics and competence to prevent misuse or waste of company funds. Because the job has 0-2 year for its required work experience internships and previous experience are not necessary, only knowledge about programming, communication networks, and various pieces of hardware and equipment. The required knowledge of programming is geared towards electrical engineers and includes PLC-5 and SLC 500 as opposed to programming languages like C or Java. No exams or certifications beyond a degree are listed on the job position and even the degree of electrical engineering is listed as a preferred field of study, so the job is more entry level than its engineer title would suggest. The job requires no union membership and makes no reference to any associated unions anywhere, so the only unions applicable are the ones that protect all engineers and electrical engineers.
Software Dilemma

I'm working on maintenance for the software of the plants process control system and I notice a piece of malware hidden in the code. I don't know what the piece of malware does exactly because I haven't examined it fully but I know it's a malicious program designed to give access to the plant control system to an outside party. This problem is severe because not only can company data and workings be spied on, but the outside party would likely be capable of sending more malware and crippling the entire plant, or subtly disrupting processes and causing a long term buildup of damage to company profits. The ACM’s code of ethics section 2.5 Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis of possible risks, applies because this malware is a significant risk to the company and as an analyst I must report it to those in charge.

The first step I would take in this situation is to call in more maintenance engineers to figure out how to safely quarantine the malware or cut off its network connection. The second step I would take would be to inform the plants management and ideally call in a dedicated computer scientist who can properly remove the malware. The third step in the process would be to check each piece of software and networked devices in the plant to ensure malware hasn't been planted beyond the process control system, such as the power system, or various local pieces of equipment. If I find the malware on a non-networked device then it mean the malware was planted by a employee or ex-employee, this will require informing multiple members of management in case there is a corporate spy or sabotour in the company.
Hardware Dilemma

During the course of my job constantly must decide when devices are irreparable as well as decide who we buy new devices from, effectively making me a manager of electronic waste. As time goes on I will constantly have to keep the potential for waste in mind as I make calls on how to perform maintenance, including what options give a longer device lifespan despite the cost. The more waste my decisions cause to be produced, the bigger the company’s environmental impact and subsequent damage to its reputation. As one of the people making recommendations to management, the environmental impact of the company and how often machines are gotten rid of will largely depend on how strongly I recommend certain options. The ACM’s code of ethics section 1.1 Contribute to society and to human well-being, acknowledging that all people are stakeholders in computing, applies because reducing environmental impact of the company is imperative to human well-being and society.

The first action I could take to prevent the problem is ensuring the company buys modular electronics so individual parts can be replaced as they break, thus preventing scraping of still viable electronics. The second action I could take would be to get the company associated with an electronics recycling company or group. An important third action I could take is advocating reuse of machinery or resale to smaller companies for cheap as the devices become obsolete.
I'm shopping for a new piece of plant equipment and instead of buying from the same supplier/brand my company normally does I see that a new product has been endorsed by a certification group and has several testimonials from various users. I consider the choice of buying from this new supplier given their new reputation, but changing the brand of a piece of plant equipment means staff will have to be retrained. This is a problem because I must ask if endorsement and testimonials are enough grounds to recommend switching device brands and retraining staff or the company should stick with the less reliable devices it knows. The ACM’s code of ethics section 3.6 use care when modifying or retiring systems applies here because if the old brand of devices are retired for the endorsed ones then several closely linked systems will need to be modified or updated.

The first action I can do to solve this dilemma is to reach out to the people in the testimonials and the supplier for more information so I can make a proper recommendation to management. The second action is to devise a staff retraining program to go along with the proposals on what device to buy. The third action is to compile a cost benefit portfolio for if the company decides to choose the new device or the old one. This report will contain information such as reduced production during retraining period, affected systems, cost of the device replacement, and potential losses that will result from using the old device continuing on.
While on the job a maintenance engineer gets disabled in an accident. Rather than accommodate my disabled friend the company finds a creative loophole to fire him, causing an uproar among my fellow electrical engineers in the company. A new engineer is hired to take the disabled one's place but he receives an unwarm welcome from several engineers due to his position. This is a problem because it is both causing a hostile working environment and the company has violated equal opportunity employer and disabilities act laws. The ACM’s code of ethics section 1.4 be fair and take action not to discriminate applies doubly here because the company has discriminated against the disabled engineer and the staff are discriminating against the new engineer.

The first action I can take is reporting the company to the appropriate parties for its discrimination against the disabled engineer, as well as any relevant unions. Any discriminating engineers harassing the new one will need to be reported to human resources or management. The second action I can take to prevent this problem in the future is to rally the other engineers and petition the company to change its policies. If the petition fails a court case case might be in the future. The third action I can take is to befriend and help the new engineer as he gets use to the workplace as well as helping him associate with other electrical engineers and maintenance engineers in the company. A potential fourth action is to have all the company engineers donate to or help the disabled engineer find a new job at a company that complies with equal opportunity employment.
An overseas company that we sell cement and aggregates to has been revealed to be funding terrorists. Although the money is not directly coming from our company, the profits generated by projects using our products is being used in terrorism. This a problem because in addition to helping terrorism, from the department of justice website’s PATRIOT Act page, our company can be charged under the PATRIOT Act for assisting terrorists or we could have our business records confiscated to help in the investigation. The ACM’s Code of Ethics section 1.2Avoiding Harm applies because not only will the company be harmed by seizure of business records, but many innocent people will be harmed by the terrorists we are (indirectly) helping.

The first action I could take to solve this problem is petitioning the company’s management to stop selling to the overseas company. Stopping sales would still make our company investigatable under the PATRIOT Act but we would no longer be engaged in unethical or immoral practice. The second course of action I could take is to leave the company, therefore absolving myself of any moral liability, but this only fixes the problem for me. The third course of action I can take is to take not action. Being a maintenance engineer I have little power over business direction decisions, but it’s logical to assume our company will cut ties with the one overseas because being linked with terrorism is bad for business. Because it is so likely the management will make the ethical decision in this scenario it is actually better to do no action rather than bog down their decision and action process with petitions and reassigning staff due to quitting.
The dilemma of an on the job disabled engineer being fired through creative loopholes rather than accommodating him under Equal Opportunity Employer rights and the Americans with Disabilities Act. The new engineer hired to take his place was being discriminated against by the other engineers so I will likely have to blow the whistle on them as well. The biggest whistleblowing factor of all is that safety precautions were likely ignored and resulted in injury severe enough to disable a fellow engineer.

The first agency I would contact would be the Occupational Safety and Health Administration (OSHA) because proper safety precautions were clearly not taken and resulted in the engineer becoming disabled. I would use OSHA’s “How to File a Safety and Health Complaint” to report my company for failure to implement proper safety and ignoring the Americans with Disabilities Act. The next logical action would be for me to research and be prepared to file for the Whistleblower Protection Program so that I won’t be endangering myself by staying at the company. After the company is dealt with I would talk with my fellow staff engineers to try to reduce the discrimination against the new engineer, but if they refused to stop I would have to report them to human resources, or management, citing ACM’s Code of Ethics section 1.4 be fair and take action not to discriminate. There is potential that the OSHA investigation will result in the disabled engineer getting his job back or a settlement, which would likely reduce the discrimination against the engineer hired to replace him, and therefore eliminate the need for my third action.
Most of my moral decisions are governed by Utilitarianism or consequentialism. McComb’s School of Business’ YouTube video “Ethics Defined: Utilitarianism” explains this ethical framework as one that considers any action that does the most good for the most people as the good one. Utilitarianism looks at the consequences of actions and judges them based on the potential outcomes, therefore businesses use it frequently when making decisions. In the first dilemma where I discovered malware in the plant’s process control systems, I chose to disable it for the good of the company and all its employees. During the second dilemma of reducing electronic waste, I chose to value the environment over company convenience because environmental health affects everyone on earth. Advocating for an endorsed device over another of what the company already uses was because the device will be more efficient in the long run and do the company and its employees more good in the form of profits. The dilemma of the disabled engineer was the one case where I didn’t act using Utilitarianism, at least mostly. By reporting the company I am harming it and all its employees, but by reporting to get better safety precautions I am aiding every engineer working at the company, so only the management gets a net loss. In the scenario of the company selling to a company funding terrorists my choice to petition the company to ban that buyer was done to help every American by reducing funding available to the terrorists. In the event the petition failed and I decided to leave the company, I would still be acting according to Utilitarianism because I would no longer be aiding the company that is (indirectly) aiding terrorism.
Bibliography


