Software Engineer

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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 (more than 250 words per page).
      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.
Company, position, and requirements

After my graduation, I am seeking to work at Tesla, an electric vehicle and clean energy company, as a software engineer. According to Tesla’s job posting at glassdoor, a software engineer position at Tesla requires their candidate to have a bachelor’s degree in Computer Science. Candidates can also get a software engineer position at Tesla without a degree if they demonstrate exceptional skills in related fields. Lastly, candidates are also expected to have at least 4 years of experience with front and back end web development.

According to Tesla’s Code of Business Conduct and Ethics, there are a few codes of ethics that employees at Tesla are required to adhere to. One of the main codes is that employees are required to follow is to keep the company’s information confidential. Employees are required to sign a Non-Disclosure Agreement to ensure that they do not disclose any trade secrets (e.g. research information, inventions, manufacturing process, etc.) or confidential business information (e.g. undisclosed financial data, product launches, etc.) to any third-party individuals. In addition to that, employees may not use Tesla’s property for personal gain such as taking Tesla’s business plan to start a business. Tesla also values the diversity of its employees heavily. All forms of discrimination are prohibited at Tesla. Employees at Tesla are required to treat each other equally and with respect. Lastly, employees are also expected to report any illegal or unethical behavior that they had witnessed or encountered by others to their supervisors, managers, or the Legal Department.
As a software engineer, I have to do code reviews regularly to ensure that the code is free of bugs before merging into the main system. One day, when I was doing a code review, I noticed that one of my coworkers wrote a piece of malicious code that would cause all nearby autonomous driving cars to crash into each other. He wrote the code intentionally and tried to hide the malicious code in a large program in hope that it passes the review process. This problem will potentially cost the company billions of dollars and potential lawsuits that could cause the company to cease operation. If its program gets updated into the cars, it would cause a worldwide car crash, leading to the death of tens of thousands of people. The ACM’s Code of Ethics Section 1.2 Avoid Harm would apply to this because this action will bring tremendous negative consequences to the parties involved. This action would cause massive damage and harm to not only the company but the customers as well.

The first action I would take to solve this problem is to immediately flag the code to prevent the code from getting into the main system and to allow me to buy time to gather information. The second action requires me immediately contact the human resource department so that they can inform the upper management and to seek advice on the matter before contacting the associated legal department. The third action will be to prevent the problem from happening again is to have an internal investigation of the matter and educate all employees in the related fields so that they are aware of this matter.
Hardware Dilemma

I am attending a general meeting to discuss ways to save cost when manufacturing lithium-ion batteries. The current challenge with lithium-ion batteries right now is its high manufacturing cost. This is mainly due to raw materials such as lithium and cobalt that are needed during the manufacturing process. The mining process of these required raw materials is an arduous task and requires manual labors. To solve this problem, the company’s executives decided to outsource its cobalt mining to companies in China that use slaves and child labor to mine cobalt in the Democratic Republic of Congo. However, in order to prevent this news from spreading the company decided to have everyone who attended the meeting to sign a non-disclosure agreement (NDA) in the next few days. The ACM’s Code of Ethics Section 1.2 Avoid Harm would apply to this because the company’s decision will cause direct harm to the miners and the uses of child labor and slaves are not ethically justifiable.

The first action I would do is to immediately resign from the company and do whatever I can to avoid signing the NDA. This is because if an NDA is signed, I could not report or tell anyone about the issue. The second action I would take is to report to the U.S Department of Labor about the company’s plan so that they can investigate the matter. Lastly, the third action I would do to prevent this from happening is to hold a press conference or expose the company on social media about their actions to allow more people to be aware of this issue.
I am working on a piece of code that aims to collect images from self-driving cars using the car’s built-in exterior cameras. When I was looking at the source code, I noticed that the company has instructed the employees to write code to utilize the internal camera and microphone of the car to record the driver, passengers, and their conversations. They did this to collect new data to train their new machine learning model that allows them to check if the passenger is paying attention or not when the self-driving mode is engaged. They are recording the drivers and passengers without their consent as they did not state it in their Privacy Policy, they will be recording the passengers. The ACM’s Code of Ethics Section 1.3 Be honest and trustworthy and 1.6 Respect Privacy would apply to this because the company is dishonest to their customers by falsely advertising their products and collecting consumers’ data without their consent.

My first action would be to contact other coworkers that are not involved to talk to them to discuss the appropriate method to handle this situation. The Federal Trade Commission (FTC) is the entity that is responsible for enforcing consumer protection laws that prevent fraud, deceptive, and unfair business practices. So, my second action is to contact FTC to report this issue to them so that they can investigate and prevent this decision from solidifying. Lastly, the third action I would do is advise the legal department of the company to rewrite its Privacy Policy. This is to ensure that their customers receive the correct information when making purchases. In addition, I would also advise the legal team to permit recording if and only if they receive consent from the customer.
My team is working on a piece of software that handles new job applications to the company. Later, I noticed my manager instructed my co-workers to implement an algorithm that ranks job applicants based on their race and ethnicity. The idea of this algorithm comes directly from the manager himself. The algorithm will filter and give high priority to the whites and low priority to the underrepresented minorities (e.g. Black, Lebanese, etc.). The job application of the whites will be reviewed first and ranked higher than the minorities, giving them an unfair advantage as they will have a higher chance of securing a spot in the company when compared to the others. The ACM’s Code of Ethics Section 1.4 Be fair and take action not to discriminate would apply to this is a serious discrimination issue that will jeopardize workforce equality between different ethnic groups.

The issue mentioned above is closely related to what the U.S Equal Employment Opportunity Commission (EEOC) deals with--discrimination against at work because of ethnicity and race. So, the first action I would take is to first reach out to the EEOC to report this issue to them and seek advice on what are the appropriate steps to approach his matter. The second action I would take is to contact my coworkers or teammates to advise them to stop working on the project to stop the creation of this unethical software. Lastly, the third step is to contact the human resource department to report on the manager’s action. This essential as it would help let our voice be heard by the upper management team.
I am in a team that is developing top-secret software that could increase the performance and efficiency of electric cars tremendously. However, the project fails as two of my teammates who were working on the project quits as we hit a roadblock. A few months later, I found out that the two guys were now working for our company’s competitors. They are infiltrating our company to try and steal our technology so that they can receive more compensation and benefits from their new employer. In addition to that, our competitor had just released a new product that closely resembles what we were working on. Turns out that, they had figured out the solution to the problem, but they left and took the solution with them to our competitor. The ACM’s Code of Ethics Section 1.7 Honor confidentiality applies to this because the two coworkers mention above did not protect the confidentiality as they are stealing the company’s trade secrets and research data from the company.

The first action that I would take to solve this issue is to gather information of employees involved and identify the trade secrets or research data that are at risk. The next action is to report the information I gathered to the human resource department of the company so that they can assist me by providing more information about the employees and potentially seek legal charges against them. The last action is to prevent this from happening again. To do that, the company should ensure that everyone who is working on a confidential project is trustworthy and ensure that they are tied to a contract stating that they are not allowed to work for their competitor after their departure.
Whistleblowing

The previously mentioned Advertising, Search, or News Dilemma requires me to blow the whistle on the company. As a recap, the company instructed its employees to implement a system to record the drivers and passengers without their consent. This action is a clear example of false advertising and privacy breach. The agency that is responsible to handle this is the Federal Trade Commission (FTC) under the Data Protection Laws and Regulation 2020. The FTC regulates laws that protect consumers from fraud and unfair business practices by companies. It requires companies to be transparent about their data collection practices in their Privacy Policy and state that data collection is only allowed with the consent of their customers. According to the Data Protection Laws and Regulation page, whistleblowers can choose to either report to the FTC anonymously or identifiably (2020). This allows whistleblowers to prevent retaliation by those who are involved.

The FTC only states that monetary fines that are adjusted for inflation will be imposed on the offenders and they did not disclose the exact amount of fines that offenders will receive (2020). However, in 2019 the FTC noted in FTC impose $5 Billion Penalty and Sweeping New Privacy Restrictions on Facebook that Facebook received five billion dollars in penalties for deceptive business practice. They lied to their users about having the ability to decide what personal information can be collected by Facebook. Not only that, but the FTC also ordered Facebook to restructure its privacy structure and implement new tools for the FTC to monitor them directly to stop Facebook from lying to its users again in the future.
Based on most of the moral decisions making for the five dilemmas, I had concluded that my decision making is leaning towards the utilitarianism approach. According to the *Ethics Unwrapped*, the utilitarian approach to ethics is the ethical theory that determines right from wrong that focuses on outcomes that leads to maximum happiness. Similarly, most of my approach to solving each dilemma aims to produce an outcome that leads to the greatest for the greatest number of people.

The first evidence that shows utilitarianism in my decision making is the Software Dilemma section. The fact that I choose to turn my coworker in shows that the decision I made is to maximize the happiness of society. By turning my coworker in, I was able to potentially save millions of lives, thus maximizing happiness. The second evidence that shows utilitarianism can be seen through the Hardware Dilemma section. In this section, I chose to sacrifice my job in order to report to the company so that I can prevent other people from suffering because of the company’s unethical decision. Moreover, my decision to let the media and public know about this issue can also be beneficial in the long run. This because by letting the public be aware of this, consumers will boycott the company and these companies must change to win them back. Lastly, in the Access, Equity, or Infrastructure Dilemma, I once again showed utilitarianism. I showed utilitarianism through my initiative to report the elements of discrimination in job application software to the EEOC. This can produce the maximum good by ensuring that everyone gets equal opportunities in the job application process while minimizing the damage.
Bibliography