

# Project 5: Ethics

## CS 2334

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Due at 11:59pm, December 10, 2020

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### Introduction

- The choices that we make as professionals and as citizens can have important implications for individual people, for our communities and for our society. Technology is being utilized in many new ways, and many fundamental ethical dilemmas are approaching. Should personal data be used to contain a pandemic? What about without the person's consent? If a self-driving vehicle encounters a situation where it must choose between its driver and a group of innocent people, should it sacrifice its driver to save more lives?
- The introduction of these new questions means Computer ethics is more important now than ever, and software developers must be more disciplined than ever in their ethical practices. We will discuss this at length with several topics in this assignment.
- *Ethical principles are difficult to quantify, and are subject to change, which is part of what makes acting ethically so difficult. Therefore, it is critical that all software developers are aware of ongoing ethical issues, and that we are passively critical of our employers and our duties, even if only to ensure that our own actions are ethical.*

# Learning Objectives

By the end of this project, you should be able to:

1. Read and analyze ethical principles from a range of sources
2. Apply ethical principles to making decisions in specific scenarios.

# Proper Academic Conduct

This project is to be done individually. While general discussion among students is allowed, take extra care to make your submission unique and do not allow others to copy your assignment.

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# Preparation

1. Read all of the below listed chapters from ethics book *Gift of Fire* that are marked for studying.
  - (a) Chapter 2
  - (b) Sections 4.1, 4.4, 4.5
2. The ACM code of ethics:  
<https://www.acm.org/code-of-ethics>
3. Related Articles (Listed again in their respective questions)
  - (a) <https://www.apple.com/newsroom/2020/04/apple-and-google-partner-on-covid-19-contact-tracing-technology/>
  - (b) <https://www.theguardian.com/world/2020/mar/06/more-scary-than-coronavirus-south-koreas-health-alerts-expose-private-lives>
  - (c) <https://www.theverge.com/2020/1/10/21060456/23andme-licensed-drug-developed-genetic-database-autoimmune-psoriasis-almirall>

## How to Approach this Assignment

- This assignment is divided into 4 cases. Before each case there will be a short reading for you, containing articles as well as sections of our ethics textbook *Gift of Fire*. Your submission should contain a header for each section (in Word, you can use the default header styles for this or manually resize your fonts).
- Your answers should be submitted to Canvas as a PDF file. You can create a PDF from a Word document using the "Export" feature. If for some reason this does not work, in Windows you can convert any printable document to a PDF using the "Microsoft Print-to-PDF" option when printing.
- Your answers must be concise and on topic; you should not need more than a standard paragraph (approx. 8 sentences) for any of these questions. **Note that submissions that are too verbose or that fail to stay on topic will not be graded. I will be reasonable about this, but clear violations of the rules will receive a grade of 0, either for that question or the whole assignment.**

## Case 1: Privacy in a Global Pandemic (35 pts)

Before starting these questions, review the following:

- Gift of Fire - Chapter 2
- <https://www.acm.org/code-of-ethics>
- <https://www.apple.com/newsroom/2020/04/apple-and-google-partner-on-covid-19-contact-tracing-technology/>

Once you have finished the reading, answer the following questions:

1. **(5 pts)** Imagine you are a programmer working on this system. According to the ACM code of ethics, what are your responsibilities, other than honoring privacy and confidentiality? List three.
2. **(5 pts)** There are other forms of data available on mobile phones that would be more useful for solving this problem. What is an example of this data? Why aren't we using it instead?

3. **(5 pts)** Consider if Bluetooth didn't exist, and less private data was the only information available. Assume also that use of this system would significantly slow the pandemic, saving many lives in the process. Should the algorithm be implemented anyway? List at least two ACM ethical principles that are relevant to your position.
4. **(20 pts)** Review the following additional article:  
<https://www.theguardian.com/world/2020/mar/06/more-scary-than-coronavirus-south-koreas-health-alerts-expose-private-lives>

According to reports, South Korea was successful in containing the first wave of COVID-19. This saved many lives, since it caused many preventive measures to be taken by the public as well as the government before the virus could settle. However, the government also clearly prioritized public welfare over individual freedom, and the people had no say in it.

This begs several questions: which of these two approaches is more ethically correct? Should individual privacy be absolute, or should we forego individual freedom(s) to protect society as a whole? Is there a compromise that can be met between these two schools of thought? Summarize your opinion on this in a paragraph.

## Case 2: 23andme (25 pts)

Before starting the questions, review the following:

- Review: Gift of Fire - Chapter 2
- Read: <https://www.theverge.com/2020/1/10/21060456/23andme-licensed-drug-developed-genetic-database-autoimmune-psoriasis-almirall>

Once you have finished the readings, answer the following questions:

1. **(5 pts)** How is this different from the Bluetooth contact tracing? Give at least one ACM principle that wasn't represented in this company's actions.
2. **(5 pts)** 23andme has encoded DNA information in such a way that they can readily create a very accurate fingerprint of a person, and they control how that data is used. What are two ways this data could be used to advance society? In contrast, what are two ways this data could be abused to control society?
3. **(5 pts)** In both of the above cases, user data is being employed to advance humanity. What is the difference between the two? Did 23andme act ethically? Give at least one example of actions that would have made 23andme act more ethically. Why do you think they didn't do it this way?
4. **(10 pts)** Considering all of the information we have seen so far, who owns user data? As a software developer, you likely will have access to customer information, and you are obligated to protect that user data from unethical use; how can you help ensure that your team is acting ethically? How can you help ensure that your company is acting ethically?

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## Case 3: Ethics in the Workplace (20 pts)

Before beginning this scenario, review the following:

- Gift of Fire - 4.1, 4.4, 4.5

Alice has just graduated college and is excited for her first software development position at Gaggle. Gaggle is working on a new social app that will allow friends stay connected throughout the day. Alice's job is to work on the part of the app that

allows friends to share their location to one another to make meeting up with each other easier.

One day, Alice is working with her more experienced coworker Bob. Bob is reviewing Alice's code. Bob then asks Alice why she makes a call in her code to turn off location services when users exit out of the application. Alice, confused, responds that it preserves battery for the users. Bob explains to Alice that Gaggle's new application will keep location services running all the time. Alice does not see how that is efficient to the user and asks Bob why that would be a feature the of application.

Bob replies that he is not sure why, but he guesses that Gaggle's business model isn't to simply provide a social app to the general public for goodwill, but to collect customer location data and information to sell to major companies. He's heard that another group working on the application chat system mines user chats.

Alice isn't sure how to feel about this, but she removes the code turning off location services when users exit out of the application and moves on to her other tasks.

1. **(5 pts)** Give two ethical principles from the ACM Code of Ethics that are relevant to this scenario. Explain why you think they are relevant.
2. **(5 pts)** For each principle chosen for the previous question, say whether you think Alice abided by the principle. How did you come to that conclusion?
3. **(5 pts)** What person or group of people would likely benefit from Alice's actions and why? What person or group of people would likely be harmed from Alice's actions?
4. **(5 pts)** What is a likely motivation for Alice's actions?

## Case 4: Open Discussion (20 pts)

- Now that you have seen a few examples, hopefully you have an idea of how important ethical behavior is in our society, and how right now is a critical moment for ethical actions (and therefore, also unethical actions).
- For the following questions, please choose an interesting article of your own. While the topic is up to you, your article should contain an ethical situation that you can see both sides of. **Please include a link to your chosen article, otherwise I will not be able to grade this.**

- **Inspiration:** hacking, gambling in video games, blockchains and anonymity, Orwellian surveillance systems (see facial recognition in China).

Once you have chosen a strong article, continue to the following questions:

1. **(5 pts)** Summarize your ethical problem in a paragraph.
2. **(5 pts)** List at least two ACM principles that are relevant to this dilemma. Are these principles being followed? Why or why not?
3. **(10 pts)** You are given the opportunity to interview someone closely involved in this situation, but you can only ask 3 questions. What questions would you choose? Why are these the most important?