

Supervision material for Part IB

Economics, Law and Ethics

2023-24

Please write your answers as short essays. You will be marked for style as well as substance. You should be making coherent arguments, explaining your reasoning and demonstrating your understanding of the material.

Supervision 1

1. There are a number of competing video conferencing applications on the market.
 - (a) Explain how this market may develop in the future, defining relevant concepts.
 - (b) Let's assume at present there are three leading video conferencing applications, A, B, and C. Application A is available as part of a suite of services, including a search engine, email, and calendaring, at no cost to users. Application B provides higher quality video conferencing, but the length of meetings and number of participants allowed is limited unless you pay a subscription. Application C is made available open source, so users can install and run the application on their own servers, and modify it however they like. Explain the economic rationales that may have been considered by the providers of applications A, B, and C when deciding on their business models.
2. You work for a consumer electronics company that dominates the market for mobile telephone handsets and operates an 'app store' for the distribution of mobile phone applications.
 - (a) How does the market for mobile phone handsets differ from the market for mobile phone applications?
 - (b) Why might a company providing hardware also start distributing applications?
 - (c) How might the company price the mobile phone handsets and applications? Provide arguments for and against the available options.

3. How does game theory account for the distribution of trolls (accounts that make deliberately offensive and provocative posts) on social media platforms?
4. If a popular social media platform changes its moderation policy, allowing trolls to proliferate, when are users likely to switch to another platform?

Supervision 2

1. You lead the security team for a large webmail provider.
 - (a) You are seeking additional resources to boost your team's capabilities. How might you frame your request for an increased budget to increase the likelihood it will be approved?
 - (b) A crime group is using accounts with the webmail provider to organise the importation of firearms into the UK. The police would like to know more about their operations.
 - i. How might the police discover more about the plans?
 - ii. Apply ethical philosophies to argue for and against your suggested approach.
2. Describe the six branches of philosophy, explaining what insight they might give into technology ethics.
3. Using a consequentialist approach to the philosophy of ethics, outline the ethical implications of facial recognition technology. Your answer should identify the potential benefits and harms of using the technology.
4. Consider the context in the following 'trolley problem':
 - Company A produces a lifesaving wireless implantable medical device. It is the only device of its type ever invented. When a patient receives this device, it will (on average) extend their lifespan by ten years.
 - Company A goes bankrupt and closes due to poor financial practices, including a failure to calculate the market size and the costly manufacture of hundreds of thousands of devices before they were needed.
 - At the time of Company A's bankruptcy, approximately 100 000 people globally use Company A's device.
 - Doctors continue to implant the surplus of (now unsupported) device in new patients.
 - Shortly after Company A closes, you discover a software vulnerability in the device. If exploited, the vulnerability could cause significant harm to the patients. Since Company A no longer exists, the software cannot be updated to address this vulnerability.

- You know that there is zero probability that the vulnerability will ever be exploited even if the vulnerability is disclosed to the public.
- The computer security research field and the healthcare industry have already internalised the importance of computer security for wireless implantable medical devices; there are no field- or industry-wide gains to be made by disclosing the vulnerabilities to the public.

You have the following choices:

- Not disclose the vulnerability to anyone: Patients will have no awareness that their device is vulnerable; patients will keep and / or proceed with obtaining the device and receive significant health benefits.
- Disclose the vulnerability to the healthcare industry, patients, and the public: Patients will have the choice to remove or not receive the device; there is a risk of health harm to patients if patients remove and / or do not receive the device; there is a risk of psychological harm to patients and loved ones if patients know that they have a vulnerable device in their bodies (even if they also are told that the likelihood of compromise is zero); given the psychological harms, most patients would have preferred not to have learned about the vulnerability.

Which choice do you make? Justify your decision using a consequentialist or deontological approach.