yz709-ELE-sup2

Question 1(y2021p7q3(a)(c)(d))

(a) You incorporate existing open source code into a program you are writing. What intellectual property aspects will you need to consider? [4 marks]

- Copyright is the main protection for the software you write; it can protect against copying but not fair use and fair dealing. We need to consider the type of software license for such software, one of the most common ones is the BSD license.
- Also need to consider digital rights management, which uses technology to control and manage access to copyrighted material. In addition, what kind of regulations or actions if someone infringes the copyrights.

(c) You are approached by someone who claims to have identified a vulnerability in your popular software application. They demand you make them a payment, otherwise they will release the vulnerability publicly. The vulnerability is fixable and has not (yet) been exploited, however it would likely generate adverse publicity. What is the ethical approach to take? [5 marks]

- Adverse publicity means the publication of unfavourable content to the company.
- Enforce responsible disclosure process inside the company, a process in which vulnerabilities or issues are only disclosed after some time allows programmers to patch or mend the system.
- If a vulnerability is found during this period, then the hacker needs to disclose it to the company. However, if a vulnerability is found outside this period, the company could pay for the hacker to disclose the details of the vulnerability and fix it.

(d) You are approached by someone who claims to have identified a vulnerability in your corporate servers and breached your customer database. They demand you make them a payment, otherwise they will release the personal information. Your logs confirm the database has been breached. What is the lawful approach to take? [5 marks]

- Releasing customers' personal information infringes the data protection act, so we would be sued by customers for not protecting their privacy. Our liability is to ensure the corporate server is safe and the customer database is protected on the server.
- You can pay but need to sign a contract with the ethical hacker to tell you the bug and the solution; you can even pay for them to fix the bug. Hence, some vulnerability details must be disclosed; if the hacker refuses to tell you, the vulnerability might be worthless and easy to spot with automated tools.
- For complex vulnerabilities, hackers are not afraid of spotting those. After all, additional work needs to be done to fix the bug; in that case, it is worth paying them to fix the bug.

💡 Comments:

Question 2(y2017p4q7)

You are commissioned by a customer to design a toy robot that children will be able to control using a smartphone app. This app will also enable them to program the robot using a simple scripting language. To simplify the networking, all communications between the app and the robot flow over wifi via your server.

(a) Discuss the ethical and legal implications. [4 marks]

- When naming the robot, you need to take care of racism, e.g., you cannot call a black-skinned robot a nigger.
- The robot is designed for children, so they need to take care of the material used as kids might bite it.
- The edges of the robot need to be smooth and safe for a child to play with.

(*b*) Your customer decides to incorporate a microphone so that the robot can also recognise spoken commands. To save battery life, the speech recognition will be done in the server. What effect does this have on the ethical and legal situation? [4 marks]

- A microphone can record all conversions happening around it; this may infringe privacy. Sending those private data to a public server is not legal under the data protection law.
- Speech recognition needs to consider all kinds of languages and standard dialects; otherwise, it is biased towards particular accents.

(*c*) What practical advice can you give your customer about mitigating the legal risks? [4 marks]

- Similar to Siri, we can ask customers to say "Hi Robot" to start the conversation.
- The sensitive data need to be deleted after every conversation session so that we do not hold any of the data on our server, protect ourselves from the data protection law.
- Train the robot with various languages and dialect inputs to ensure no bias towards a particular accent.

(*d*) Your customer now wants to include a camera so that the robot can recognise gestures as well. Does this create any further ethical or legal risks, and if so, what might be done about them? [4 marks]

- Yes, the camera can record any images of the things around it, which may take some indecent pictures.
- Likewise, we can ask the customers to say "Hi Robot, My Gesture" to open the robot's camera. The camera would turn off after taking one picture; in that way, it is the customer's liability issue if the robot takes an indecent image.

(*e*) How might the situation be affected by Brexit? [4 marks]

- After Brexit, if customers from Europe bought the robot, then in the contract, we need to specify and make clear which law to apply to in which area in Europe.

- Any data from the robot would probably need to be stored in a local server in a European country, which means we have to get permissions to manage data on that server.

> 💡 Comments:

Question 3(y2014p4q7)

(a) Describe the provisions of the Data Protection Act. [8 marks]

- Fairly and lawfully processed:
  - Organisations use language that is clear, plain and accurate to ensure users understand what it is there they are signing up, thus helping to ensure the data rights and legal protections
- Processed for limited purposes:
  - Data collected cannot be used for other purposes rather than specified
- Adequate, relevant and not excessive:
  - Ensuring the extent of data collected or processed is adequate, relevant and limited to the intended purposes
- Accurate and up-to-date:
  - The organisation is responsible for either updating inaccurate information or getting rid of it
- Not kept in a form that identifies people for longer than necessary:
  - Storage limitation restricts organisations from keeping hold of data for indefinite periods or beyond that of its intended purpose
- Processed securely and protected against loss or damages:
  - Used a risk-based approach in determining what measures are appropriate, management and organisational measures are as important as technical ones
  - Pay attention to data over its entire lifetime

(*b*) You are designing and are about to launch a mobile phone app which will seek to understand the emotional condition of the user, using multiple inputs such as motion sensing, facial expression recognition, voice stress measurement and the analysis of entered text. Its declared purpose is to enable services to interact more empathically with users. You propose to monetize it by serving ads at times when the user is more likely to buy. Your "backers" have raised a concern that this app will be able to diagnose depression, and that in consequence you may be storing substantial amounts of sensitive personal information.

Discuss this problem from the viewpoints of both data protection law and ethics. [12 marks]

- From the data protection law:
  - Since designing a personalised recommendation system involves analysing data, the data collected from the app include a lot of sensitive information, such as the user's mental health. So we have to get consent from users before collecting data; otherwise, we infringed the principle of fairly and lawfully processing data under the data protection law.
  - Since all of the information from motion sensing, facial expression recognition, voice stress measurement and analysis of entered text could distinguish a user from another, we have to tokenise the username and ensure the private data is stored securely. If we have to keep those data remotely on the cloud, we have to determine the appropriate measures that need to be taken to protect data against loss or damages.
- From ethics:
  - From consequentialism, having a personalised recommendation system could help users adjust their emotional condition; for instance, a user in depression may encounter an ad of a comedy movie, and after watching that movie, the user feels much better.
  - A personalised recommendation system would become something that understands users better than themselves. Hence, users might feel vulnerable as the algorithm could see their internal ideas.

Comments:

Question 4(y2020p7q2)(Optional)

You have an idea for an innovative new type of application for self-directed teaching and learning. The *eTeacher* uses state-of-the-art natural language processing approaches to allow for text and speech interaction. Over time, it builds a profile of the user's most effective means of learning, and tailors the teaching style accordingly. The intended users are secondary school students and adults who wish to refresh their understanding of Mathematics, English, Geography, or History. You plan to monetise the application by way of advertisements and in-app purchases.

(a) You are seeking investors. Discuss the economic and legal considerations that might inform your business plan and persuade investors to fund your startup. For a convincing pitch, you should define the necessary terms and explain your reasoning. [7 marks]

(b) Explain how things might change if the economy goes into recession. [3 marks]

(c) Outline the principles of the General Data Protection Regulation (GDPR). How might you comply with the GDPR and allow individuals to exercise their rights? [10 marks]