# Questions related to Security, Privacy & Integrity

* **Security**: Focus on measures to protect data from unauthorized access or breaches (e.g., encryption, passwords, secure access).
* **Privacy**: Discuss protecting sensitive personal information and complying with data protection laws.
* **Integrity**: Consider ensuring data accuracy, preventing alteration, and implementing auditing mechanisms.

**Case Study 1: EzyCart (Online Shopping Website)**

*EzyCart is an online shopping platform that stores personal and payment information of over 1 million users. Recently, hackers gained access to their customer database due to weak password protection on admin accounts.*

1. **Identify two security weaknesses in EzyCart's system that allowed the data breach to occur. For each, explain how it contributed to the breach and suggest a solution.**  
   *(4 marks)*
2. **Discuss the potential consequences of the data breach for EzyCart's customers. How can the company ensure that their customer data is better protected in the future?**  
   *(4 marks)*
3. **Explain how encryption could help protect both the privacy and integrity of customer data when transmitted over the internet. Include an example of how it works.**  
   *(4 marks)*
4. **EzyCart’s management wants to improve their security measures. Suggest and explain two additional measures they could take to prevent future breaches of customer data.**  
   *(4 marks)*

**Case Study 2: School Management System**

*A secondary school uses a cloud-based system to store student grades, medical records, and parent contact details. Teachers access the system remotely using their personal devices.*

1. **What are the risks associated with teachers accessing the school system from personal devices? Explain how these risks could affect the security and privacy of student data.**  
   *(4 marks)*
2. **Discuss two ways the school can improve security while allowing teachers to use their personal devices to access sensitive data.**  
   *(4 marks)*
3. **The school needs to ensure the integrity of the student data it stores. Suggest two ways the school could do this to avoid accidental or malicious data alteration.**  
   *(4 marks)*
4. **What actions can the school take to ensure the privacy of the students’ medical records, especially when sharing data with other healthcare providers or institutions?**  
   *(4 marks)*

**Case Study 3: HomeTech Smart Home Devices**

*HomeTech produces smart home devices that collect user data to personalize experiences. Some users are concerned about how their data is collected, stored, and shared with third parties.*

1. **Why might users be concerned about the collection of their personal data by smart devices? Discuss the potential privacy risks and how HomeTech could address these concerns.**  
   *(4 marks)*
2. **Explain the concept of data anonymisation and why HomeTech might choose to anonymise the data they collect. How would this help protect user privacy?**  
   *(4 marks)*
3. **What are the legal and ethical considerations HomeTech must take into account when handling and sharing user data? Explain the importance of complying with data protection regulations.**  
   *(4 marks)*
4. **How can HomeTech ensure the integrity of the data collected by its smart devices to prevent tampering or data corruption? Suggest two measures they could implement.**  
   *(4 marks)*

**Case Study 4: University Research Project**

*A university is conducting medical research and collecting sensitive health data from participants. This data is stored on local servers and shared with partner institutions for analysis.*

1. **What measures should the university take to ensure the confidentiality and privacy of participants’ health data during the research project?**  
   *(4 marks)*
2. **Discuss two ways the university could protect the integrity of the health data to ensure it is not altered or corrupted during storage and analysis.**  
   *(4 marks)*
3. **The university needs to share the collected health data with other research institutions. How should the university securely share this data while maintaining privacy and integrity?**  
   *(4 marks)*
4. **Explain the role of data protection regulations (e.g., GDPR) in ensuring that the university handles participants' health data ethically and securely. What consequences might the university face if they do not comply?**  
   *(4 marks)*