



ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF SCIENCE, TECHNOLOGY, AGRICULTURE AND
FOOD SYSTEMS DEVELOPMENT

INFORMATION SYSTEMS DEPARTMENT

EXAMINATION PAPER

COURSE CODE : BIS414
COURSE TITLE : **Information Security**
SPECIAL REQUIREMENTS : None
DURATION : 3 Hours
LEVEL : 4.1
DATE : 2024

14 JUN 2024

INSTRUCTIONS TO CANDIDATES:

1. Answer any 4 Questions from the whole paper.
2. The total Marks for the examination is 100.
3. The marks allocation for each question are indicated in square brackets []

Question 1

Explain what you understand by the following terms in Computer security

- i. Confidentiality
- ii. Integrity
- iii. Availability
- iv. Authentication
- v. Authorisation

[25 Marks]

Question 2

What security measures can be implemented on a database of an organisation [25 Marks]

Question 3

When developing systems, we follow principles of secure design. Explain what is meant by the following terms in cyber security. [25 Marks]

- i. Least of Privilege
- ii. Fail safe Defaults.
- iii. Economy of Mechanism
- iv. Défense in Depth
- v. Open Design
- vi. Separation of Privilege
- vii. Psychological Acceptability

Question 4

The UK's information commissioner is working with European data authorities with a view to acting against eBay over its recent data breach.

Three US states are also investigating the theft of names, email addresses and other personal data, which affected up to 145 million eBay customers.

The online marketplace has begun the process of notifying its customers about the need to reset passwords.

However, some customers reported problems when attempting to do so.

eBay told the BBC that it was not aware of any technical problems with the password reset function on the site.

"The site is busy, but our secure password reset tool is working," a spokesman said.

The firm has been criticised for its slow reaction in informing customers about the theft of personal data.

"We are sending out millions of emails, and it will take some time. The process is certainly well under way," the firm told the BBC.

It warned though that its official password reset email contained no links and that customer should be wary of messages that did.

"Any email with links is a phishing attempt," it said.

Serious breach

Meanwhile the fallout from the data breach was beginning to kick in.

In the US, Connecticut, Florida and Illinois said they were conducting a joint investigation.

Speaking on BBC Radio 5 live, the UK's information commissioner said that the eBay breach was "very serious" but that outdated and complex data protection laws meant the ICO could not begin an immediate investigation.

He said the watchdog would have to first liaise with the Luxembourg data protection, where eBay has its European headquarters.

"There's millions of UK citizens affected by this, and we've been clear that we're monitoring it, but by taking the wrong action under the law now we risk invalidating any investigation," an ICO spokesman told the BBC when pressed on why the watchdog had not yet launched any action.

Identity theft

Questions are starting to be asked about how well eBay safeguarded its customers' data.

Hugh Boyes from the Institution of Engineering and Technology questioned why eBay stored so much data in the first place.

"The Information Commissioner makes the point that organisations should keep the minimum information necessary so why do eBay need to hold and store dates of birth and addresses?"

"As an occasional eBay user, I am concerned that not only have they lost my email, username, and password, but according to their website the loss includes home address, phone number and date of birth.

0/4 (pm)

"This is serious from an identity theft perspective. The only item they are missing is the mother's maiden name and they have sufficient information to impersonate an individual when dealing with many financial organisations."

Reports that large numbers of eBay customer details have begun appearing for sale in Pastebin - a site where hackers publicise their attacks - have been denied by eBay.

Lysa Myers, a security research at ESET agreed that the data was unlikely to have originated from the auction site.

"The users that are shown in the sample would represent an odd subset of users for an international company like eBay. And the price asked (1.45 Bitcoin) would seem to be astonishingly low for the data of 145 million users," she said.

"Even if the sample is not in fact from the eBay breach, it could potentially be data from another company's leak." Source <https://www.bbc.com/news/technology-27539799>

- i. Examine the notorious cases of security breaches in the Ebay System [10 Marks]
- ii. From the above case study what countermeasures should be applied immediately to Ebay Systems [15 Marks]

Question 5

- a. Define the concept of a control [2 marks]
- b. Briefly explain the control types of security and giving examples on each category [8 marks]
- c. The different functionalities of security controls are preventative, detective, corrective, deterrent, recovery and compensating. By having a better understanding of the different functionalities, you will be able to make more informed decisions about what controls will be best used in specific situations. Describe and show specific situations applicabl to each of the six functionalities [15 marks]