Written Exam for Introsec

2021-03-31   9:00-13:00 (4 hours)

Problem 1
Outline and discuss five (5) advantages that organizations gain from implementing the General Data Protection Regulation (GDPR).

Problem 2
Saltzer and Schroeder have documented some design principles for secure software and systems, which includes:
- Least privilege.
- Economy of mechanism.
- Open design.
- Complete mediation.
- Permission based.
- Separation of privilege.
- Least common mechanism.
- Ease of use or psychological acceptance.

a) Think of a software or a system that you are familiar with (for example Thunderbird, an email program; or Linux, an operating system). Analyze how the Saltzer and Schroeder's design principles are used in this software or system. Please focus on at least one of the principles.

b) Suppose you are the designer or programmer of the software or system, explain how and why you would design the software or the system (or new functions to the software or system) based on Saltzer and Schroeder's design principles. Please focus on at least one of the principles.

Note:
1) **For a) and b), the same software or system should be discussed.**
2) **For a) and b) together, at least four (4) of the principles should be discussed.**

Problem 3

Define each of the following IT security related terms. Also, for each of these terms further illustrate the concept by choosing a closely connected IT security concept and explaining the relationship between the concepts. Furthermore, give an example of an application of these tools/threats/concepts. Give concrete examples wherever possible. Structure each of your answers with headings definition, relationship to [your chosen related concept], and example. Your answers to each part should contribute to evidence of your deep understanding of the concept. Related concepts and examples should be chosen and explained with care to maximise the depth of your answers.

Please note that in general a 50% complete answer will be required to obtain a pass mark for this problem

- Access control list
- Privacy by design
- RSA
- Reference monitor

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If it helps you, you may like to paste the following into your editor to help you structure your answer:

o Definition
o Relationship to [replace this with your chosen related concept]
o Example

Problem 4
Consider the use of web systems in DSV for education (e.g., we use iLearn for examination). Enumerate and explain 3 types of possible web attacks. Explain the harms they might cause and the corresponding principles/reasons. Analyze what measures can be used to counter the threats.

Problem 5
Discuss if your mobile phone number can be used to authenticate your mobile phone in the telecommunication network. Suggest diverse possible ways in which a mobile phone might be authenticated within a telecommunication's network, and discuss your methods' relative strengths and weaknesses. Good answers will cover a breadth of possible methods by using examples.