

Aug 27, 2024

Introduction to Computer and Network Security

Part 1

Question 1 [40 points]

In the context of password based authentication, describe (a) Multi-factor authentication, (b) what is its purpose, (c) the three classes of available factors, along with an example for each one of them and (d) the three NIST-defined levels of assurance.

Question 2 [10 points]

Briefly explain the Zero Trust security model and describe a scenario in which it can be beneficial.

Part 2

Question 3 [40 points]

Explain the notion of Multi-level security by illustrating it with the Bell-La Padula model; in particular discuss the notions of (a) security level, (b) need-to-know, (c) dominance relation, (d) no-read-up rule, and (e) no-write-down rule.

Question 4 [10 points]

Describe a SQL Injection attack and the main mitigations that can be used to prevent it.

Please, remember...

- on each used sheet of paper (possibly, 2 sheets at most), annotate:
 - Name
 - Surname
 - Student ID number
 - Question number
- write either in Italian or English. Acronyms do not need to be translated;
- only pens are allowed. Drafts and text written using pencils will not be considered during the exam revision;
- adequately justify your answer. A phrase and a paragraph-long answer will have a significantly different grade.