

# Information and Communications Security WS 08 Assignment 1

Fachbereich  
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**Exercise 1:** Nowadays, passwords are probably the most widely used form of authentication. Passwords are usually chosen by the user and often saved on the server in encrypted form.

- Name one defense mechanism for password authentication systems that is enacted after the user chooses a password, and one mechanism that is enacted after each login. Describe advantages and potential problems of both mechanisms.
- Classify the following proposed passwords as good choices or poor choices, and justify your reasoning: “Bayern”, “go2work”, “cat&dog“, “3.1piNUMB”

**Exercise 2:** Assume that you are only allowed to use the 26 characters from the alphabet and the 10 number characters to construct passwords.

- How many different passwords are possible if a password is exactly  $n$  characters long (for  $n = 4, 6, 8$ ) and there is no distinction between upper case and lower case characters?
- How many different passwords are possible if a password is exactly  $n$  characters long (for  $n = 4, 6, 8$ ), and passwords are case sensitive?

**Exercise 3:** There are several methods for authenticating users based on different classes of attributes they may supply to the service.

- Name the different forms of authentication.
- It is also possible to combine several authentication methods. Name an authentication method you would not use without combining it with other factors (Why?).

**Exercise 4:** A computer system uses biometrics to authenticate users. Discuss ways in which an attacker might try to spoof the system under each of the following conditions:

- The biometric hardware is directly connected to the system, and the authentication software is loaded onto the system.
- The biometric hardware is on a stand-alone computer connected to the system, and the authentication software on the stand-alone computer sends the raw biometric data read to the system, which decides whether or not the user can be authenticated.

- c. The biometric hardware is on a stand-alone computer connected to the system, and the authentication software on that stand-alone computer sends “yes” or “no” to the system, depending on whether or not the user can be authenticated.