

**This exercise sheet will be discussed in tutorials
from May 09 to May 13, 2022**

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AI: Internet Computing

Summer 2022

Exercise Sheet 1

Exercise 1: Information Systems

If you think of the examples from book chapter 1.4, "Application Examples of Internet Computing": Why is, for example, the development of an online store with large information systems so challenging?

Exercise 2: Layers and Tiers

- a) What are the common layers in an information system?
- b) Discuss the advantages and disadvantages of the layer model.
- c) What is commonly understood by layers as opposed to tiers?

Exercise 3: N-Tier Architectures

- a) Name some criteria that support a multi-tier information system architecture.
- b) How can cloud architectures be placed in this context?

Exercise 4: Fat vs. Thin Clients

What is the difference between so-called "fat clients" and "thin clients"? What exactly is "fat" or "thin" about them? Please also discuss the trade-offs between fat and thin clients.

Exercise 5: Service-Oriented Architectures

Would an IT company that develops software with service-oriented architectures be able to evolve its organizational structure in the direction of independent organizational units, each with its own responsibilities? Please elaborate.

Exercise 6: Distributed System Architecture

Multi-layer architectures are predominantly used for complex distributed systems.

- a) How many and what layers do you propose for an e-commerce platform that enables purchases by customers over the web?
- b) Sketch out your solution.
- c) Assign an architecture layer to the following system functions:
 - shopping cart
 - input form for changing customer data by the customer
 - discount calculation
 - preparation of the contents of the shopping cart for presentation to the customer
 - checking access permissions
 - storing customer data