Aufgabe 7

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Chapter 1

Task 1

- Architectural levels provide an abstraction method for Software Architectures, they are organised in an hierarchical order. Starting from the fundamental building block of the architecture the level of abstraction increases. The distinction from one level to another allows software architects to address different problems at different levels, and to avoid mixing these different aspects. Creating this structure of building blocks with abstraction facilitate the creation of a more uniform, consistent and therefore reliable system.

- The "change of level" is used in the context in which the system building block decomposition it's not a building block but a sub-system instead. So changing level means changing from the building block level to the system level.

- Macro-architecture covers the spectrum of the "large scale" (high level of abstraction)architecture, whereas the micro-architecture covers the spectrum of the building blocks so a lower level of abstraction.

- The transition between micro and macro architecture can be seen when recursively decomposing the building block of the system we encounter non-fundamental system-building blocks with a low level of abstraction.

- Architectural views are a mean that enable to focus on a specific problem at an appropriate time or to separate different aspects of the architecture of a system from one another. Architectural views differ from one another in a way that each of them depict a specific abstraction of the architecture of a system. The purpose of distinguishing them is that stakeholders that are interested on a specific view, don't have the need to understand all the parts of the architecture but they can laser focus their attention on that particular aspect.

- An architectural styles are a pattern of a structural organisation of a family of systems. They primarily reflect the fundamental structure of a software

system and its properties. Architectural styles differentiate themselves
from architectural patterns for the fact that they have different forms of
description.

Chapter 2

Task 2

(a) The architectural styles are the following:

- Client/Server architecture: Spotify(Any streaming software), it can be seen in the way that there is one copy of a song/album on a server that can be streamed to different clients via the app.

- Multi-layer architecture: ChatGPT, we can observe the layer architecture by the fact that a GUI appears to the user and the text inputed into the GUI prompt a calculation done and stored by a server.

- Event-based systems: Strava (Any sport tracking system), the system has to output different statistics to the user in correspondence of the event that happen (user does a km of running).

- Data flow networks: The Tor browser, uses the network routing to rout through an onion like layer of connections, the flowing of this connection is solely based on the input of the previous one thus ignoring the other connection traversed.

- Web architecture: Microsoft Azure(any web based cloud computing server) is clear how the cloud and therefore the web provides services for for computing pourposes.

(b) 1. Real-time behaviour: Event based system

  2. High portability: Data-flow networks

Chapter 3

Task 3