Free University of Berlin, Institute of Computer Science, Software Engineering Group
Lutz Prechelt, Linus Ververs, Oskar Besler, Tom-Hendrik Lübke, Nina Matthias

Exercise sheet 7 Architecture to 2023-06-05

Task 7-1: Research software architecture

Learning Objectives: To know and be able to distinguish types of different perspectives on sotware architecture.

Research in the book "Software-Architektur" by Vogel and colleagues (accessed from the FU-Netz: htt p : //tink .s p ringe r .com/book/ 1ö . 1öö7/978 - 3 - 8274 - 2267 - 5) the following terms about software architecture (concentrate especially on chapter 4 and 6).

Explain succinctly and precisely: As always, each question is aimed at a core idea, which can often be formulated in one sentence.

- Architectural levels: What are they, what are their characteristics, and what is the purpose of their distinction? What do the authors mean by a "change of level"?

  What is the difference between macroarchitecture and microarchitecture? By what decisive feature is the transition characterized?
- Architectural views: What are they, what distinguishes each, and what is the purpose of distinguishing them?
- Architectural styles: what are they and what distinguishes them?

Task 7-2: Architectural styles

Learning Objectives: Know and be able to recognize architectural styles and evaluate their appropriateness.

a) For each of the architectural styles mentioned in the lecture, name a software system you know that uses that style. How can you tell in each case? (Do not take the examples already mentioned on the slides).

b) Which architectural styles are particularly suitable for which of the following non-functional requirements?

   1. Real-time behavior (i.e., assured response times of the system).
   2. High portability (across multiple operating system platforms)

Task 7-3^: Architecture description of your software project

Learning Objectives: To make own architectural considerations and understand the importance of different views.

a) In Task 7-1 you should have encountered Kruchten's *4-F1 view model*. Familiarize yourself with this model to the extent that you understand the purpose of the individual views. From the FU network you can read the full text of the article "The 4+1 View Model of Architecture": https : // . compute r. o rg/csd1/mags/so/ 1995/ö6/s6ö42. html

b) Design the architecture of your software system. Take the following views and record at least three important aspects in each case. If your system does not have a relevant architecture from one of the views, explain this.

   1. *Use-case view/scenarios*
   2. *Logical view*
   3. *Implementation* view *(implementation view/development view)*
   4. *Process view*
   5. Distribution view *(deployment view/physical view)*

   (Note: depending on the source, different English names for the views can be found).

As always, remember to submit the elaboration for your own software project both digitally via the KVV and to record it on your wiki page.