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Oppgave 1 (13% av eksamenskarakter)

With reference to paper [1] and ¹ decide which of the following sentences are true and which are false².

1. The main inputs of the Software Architecture Analysis Method (SAAM) are problem description, requirements statement and scenario description. (false, scenarios are output)
2. According to SAAM, quantitative metrics represent the foundation for illuminating the properties of Software architecture (false, scenarios are not necessarily quantitatively. This means that the evaluation of a scenario does not return a value but an assessment of possible risks)
3. An existent taxonomy of each quality attribute is another base for SAAM method (false, this is true for ATAM)

Oppgave 2 (12% av eksamenskarakter)

Refer to paper [2] and decide which of the following sentences are true and which are false:

1. If we compare hardware and software architecture, hardware architecture is characterized by a large number of design elements and these elements have homogeneous type. On the other hand, software architecture is characterized by a smaller number of design elements (true in the paper there is an explicit sentence that discusses this fact that hw consists of myriad of transistors but a software archi is complex in type of elements more than in number.
2. Architecture is concerned with the modularization and the interfaces of the design elements, their algorithms and procedures, and the data types (false, this is design)

Oppgave 3 (10% av eksamenskarakter)

Consider chapter [3]. Decide which of the following sentence are true and which are false:

1. Throughput is a measure of the ability of the system to process work. For example, the average number of sales orders, which can be dealt with by an e-commerce system, in an hour (true).
2. Throughput is a measure of the ability of the system to process work. For example, the average number of sales orders, which can be dealt with by an e-commerce system, in an hour (true).

Oppgave 4 (20% av eksamenskarakter)

Consider a system for document sharing like the one described in paper [4].

1. Which are the stakeholders of this system? (user, registered user, administrator)
2. For each stakeholder, list a set of concerns
3. Define the security attribute for the system
4. Describe the performance attribute for the system

Oppgave 5 (20% av eksamenskarakter)

¹ refer the reference section at the end of this document, here the numbering of papers is not the same as in the syllabus.

² For each false answer, give a motivation which preferably is not longer than one sentence.

Provide the software architecture for the system specified at the point above by giving:

1. logical view (the main one)
2. the process view (one diagram) here the process of the system and their interaction, not a flow chart that describes how the user interacts with the system.
3. physical view (one diagram)

Oppgave 6 (25% av eksamenskarakter)

Consider the software architecture specified above:

1. build an attribute taxonomy tree for performance
2. give five use scenarios and prioritize them
3. give four growth scenarios and prioritize them

- [1] Liliana Dobrica and E. Niemela, "A Survey on Software Architecture Analysis Methods," *IEEE TRANSACTIONS ON SOFTWARE ENGINEERING*, vol. 28, pp. 638-653, 2002.
- [2] D. E. Perry and A. L. Wolf, "Foundations for the Study of Software Architectures," *ACM SIGSOFT Software Engineering Notes*, vol. 17, pp. 40-52, 1992.
- [3] T. Gilb, "Chapter 5 How to Quantify:," in *Competitive Engineering*, 2003.
- [4] L. Jaccheri and M. Torchiano, "Project based Software Architecture Teaching," Department of Computer and Information Science, Norwegian University of Science and Technology, Trondheim 2002.