

**Problem 1: Special interfaces – combined styles: Platform requirements**

*Proposition:* Quality requirements may involve future plans in the IT strategy.

*Reason:* Quality requirements can be related to the platform where the software will run.

*Correct answer:* A: Both the proposition and the reason are correct statements, AND the reason explains the proposition in a correct way.

*Motivation:* Platform requirements are quality and management requirements, and some of them might be related to changes the IT staff wants to do in the future, like new hardware, OS, or database. The software shall support the current and the future platforms.

*Reference:* LAU: Chapter 5.2 pages 200-202

*Learning objective:* 3, 4

**Problem 2: Quality Factors**

*Proposition:* There exists all-embracing checklists with quality factors that everyone should use to improve their software quality.

*Reason:* Quality factors regarding software systems are well defined and therefore fixed checklists exist and should be used.

*Correct answer:* E: Both the proposition and the reason are false

*Motivation:* There exist many different checklists with quality factors throughout literature and none of them is all-embracing and claims to be so. It is up to everyone himself to use such lists as a sort of checklist of what to consider regarding a special project and make adaptations towards the special needs of every project and in light of project experience.

*Reference:* LAU: Chapter 6.1

*Learning objective:* 4, 12

**Problem 3: Quality Grid**

*Proposition:* A quality grid is used to give an assess the state of quality of a project at a given point of time.

*Reason:* Therefore a quality grid has a row for each quality factor and columns for the actual state of this quality factor, rating its actual state in the project for example from 1 to 5 or from good to bad.

*Correct answer:* E: Both the proposition and the reason are false.

*Motivation:* A quality grid is used to assess the importance of different quality factors for a special project and not their actual state in the project. Therefore both the proposition and the reason are false. However, that a quality grid has a row for each quality factor is correct, but the different columns rate the importance of this specific quality factor for the project.

*Reference:* LAU: Chapter 6.5

*Learning objective:* 4, 14, 15

#### **Problem 4: Security**

*Proposition:* Security Requirements aim at ensuring CIA+A.

*Reason:* A different view on security requirements instead of preventing abuse cases is to ensure something. This something is CIA+A, which stands for Confidentiality, Integrity, Availability and Authority.

*Correct answer:* C: The proposition is true, but the reason is false.

*Motivation:* It is a different view on security requirements instead of looking to prevent abuse cases to ensure CIA+A. Therefore the proposition is true. However, CIA+A stands for Confidentiality, Integrity, Availability and Authentication. Therefore the reason is a false statement.

*Reference:* LAU: Chapter 6.8

*Learning objective:* 11, 16

#### **Problem 5: Requirements in the product life cycle: Requirements management**

*Proposition:* When an issue in the system is reported, according to the CCB it has to be solved by the developer as soon as possible.

*Reason:* Issues in the system can involve dissatisfaction of the customer and consequent monetary losses.

*Correct answer:* D: The proposition is false, but the reason is a true statement.

*Motivation:* When an issue is reported in the system, the CCB (Changes Control Board) shall analyse risks, costs and consequences of changes that can affect also other parts of the system, so although issues in the system can involve losses, sometimes, the solution can be postponed to new releases of the software.

*Reference:* LAU: Chapter 7.8 pages 322-323

*Learning objective:* 6, 21

#### **Problem 6: Quality Criteria for a Specification**

*Proposition:* One quality criteria for a specification is unambiguity. Although many researchers emphasize this criteria a lot and suggest very formal specifications, in practice ambiguity only causes few problems.

*Reason:* If a developer for example finds a requirement ambiguous he will just ask the customer what is meant. Bigger problems only arise when the developer thinks he understands the requirement, but something different was meant by the customer.

*Correct answer:* A: Both the proposition and the reason are correct statements, AND the reason explains the proposition in a correct way.

*Motivation:* One quality criteria for a requirement is truly that it is unambiguous and this criteria is stressed by many researchers which try to avoid ambiguities by formalizing the specifications sometimes in math notation. However, it is also true that these ambiguities can easily be solved by talking to the responsible for the requirement. It only gets dangerous when the developer thinks he understands a requirement, but it was meant totally different than he understood it by the writer of the requirement.

*Reference:* LAU: Chapter 9.1

*Learning objective:* 11, 12, 19

### **Problem 7: Checking and Validation - Checks against surroundings**

*Proposition:* While reviewing the requirements, customers and developers probably will find similar risks for each requirement.

*Reason:* Mostly of potential problems found by specialists in the requirements will cause real problems to users.

*Correct answer:* E: Both the proposition and the reason are false

*Motivation:* In most of the cases, requirements that are risky to the customer are low-risk to the developer and vice-versa. Approximately only half of the potential problems found by the experts will cause problems to users, and about half of the problems that the users will have are not predicted by the experts.

*Reference:* LAU: Chapter 9.3.1 pages 390-392

*Learning objective:* 9, 12, 18

### **Problem 8: Quper**

*Proposition:* Quper adds quality as a third dimension to a model for specification, quantification and prioritization of quality requirements.

*Reason:* Quality requirements are often discovered late in the development process, but are a driving force for architectural design.

*Correct answer:* A: Both the proposition and the reason are correct statements, AND the reason explains the proposition in a correct way.

*Motivation:* Quper's main objective is to add quality as a third dimension to a model for specification, quantification and prioritization. Hence the proposition is correct. It is also true that quality requirements are often discovered late in the development process, which can be a problem since quality requirements can be a driving force for architectural design and therefore should be considered and specified as early as possible. *This is the reason why quper tries to add a quality aspect to the steps of specification, quantification and prioritization.*

*Reference:* [Quper]

*Learning objective:* 9, 11, 17, 19

### **Problem 9: Test-driven Development**

*Proposition:* Although the test-driven development approach has a lot of benefits, it's not largely used in the industry.

*Reason:* The test-driven development make changes in the system easy.

*Correct answer:* B: Both the proposition and the reason are correct statements, BUT the reason does not explain the proposition.

*Motivation:* TDD isn't largely used in the industry because the developers aren't accustomed to writing tests before coding, and it demands a lot of discipline. The reason is true because tests allow the developer to design documentation linked to production code, and this traceability makes incorporating changes easy.

*Reference:* AGRE pages 66-67

*Learning objective:* 9, 11, 12, 17

### **Problem 10: Requirements Interdependencies**

*Proposition:* There are two main types of interdependencies between requirements, value-related and functionality-related. Their frequency of occurrence strongly depends on the type of project.

*Reason:* The interdependencies between requirements for a market driven project are mostly of type value-related and the interdependencies between requirements for a contract development are mostly of the type functionality-related.

*Correct answer:* B: Both the proposition and the reason are correct statements, BUT the reason does not explain the proposition.

*Motivation:* It is true that there are two main types of interdependencies between requirements, namely the value-related and the functionality-related requirements. It is also true that their frequency of occurrence strongly varies between the main types of projects, namely market driven development and bespoke development. Therefore the proposition is correct. Also the statement that the interdependencies in a market driven project are mostly of type value-related and the interdependencies in a contract development are mostly of type functionality-related is correct. However, the reason is just the effect described in the proposition, but not the reason for it.

*Reference:* [INTDEP]

*Learning objective:* 6, 9, 17