

Exam problems 1 from Group F

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Problem 1: Fast approach relation to COTS purchase

Proposition: It's in many cases appropriate to use the fast approach method before making a COTS purchase of a new development tool.

Reason: One of the advantages of the fast approach is that you often make sure you have access to expert users of the area where the software is needed. This makes for very good domain knowledge.

Correct answer: D (Proposition is false, but the reason is a true statement.)

Motivation: The proposition is false since the domain aspects are already solved when you're looking for COTS development tools according to Lauesen. Instead you want to be looking for features, which are more related to product requirements. The reason is regardless a true statement. This is because the "fast approach" focuses a lot on the domain, often with help of expert domain representatives, which naturally results in very good domain knowledge.

Reference: Lau: Chapter 1 pages 9, 24-25, 34-35

Learning objectives: 2, 3, 6

Problem 2: Data requirements

Proposition: Separating the data requirements from the functional requirements can in many cases make the requirements development process more efficient.

Reason: Data requirements are often written later in the elicitation process than the functional requirements. Separating the two types can reduce the confusion generated from this delay between the two.

Correct answer: C (Proposition is true, but the reason false.)

Motivation: The proposition is correct since separation can benefit the structure of the document, which for example makes it easier to do a CRUD check to make sure that there are functional requirements for handling Creating, Reading, Updating and Deleting all the data that are supposed to be in the system according to the data requirements. The reason is false because data requirements and functional requirements usually are developed simultaneously. This is logical since they have a tight connection: There must be functionality for all the (types of) data and there must be (correct) data for all the functionality.

Reference: Lau: Chapter 1 pages 12-15

Learning objectives: 3, 4

Problem 3: Data dictionary

Proposition: When writing a data dictionary it's best to start writing the trivial (easy) parts.

Reason: In a data dictionary it is more important to include the trivial (easy) parts rather than the non-trivial (hard) parts.

Correct answer: E (Proposition and reason are both false statements.)

Motivation: The proposition and reason are both false because it's more important to include the non-trivial parts in a data dictionary. It is more important to include the non-trivial parts since a developer might "guess" the trivial parts correct but it's hard to "guess" the non-trivial parts without any errors.

Reference: Lau: Chapter 2 pages 56-59

Learning objectives: 13, 19

Problem 4: Feature requirements

Proposition: Maintaining focus on what the product's features should be when doing requirements engineering will generally result in faster development of the product.

Reason: Features are usually straightforward to implement. In many cases they can be directly translated to functions in the program.

Correct answer: D (Proposition is false, but the reason is a true statement.)

Motivation: The proposition is false because feature focus requires that the customer has a good understanding of the features, which in many cases is too much to ask. Features are also easily dreamt up and can in many cases become too unrealistic to ever implement. The reason is still true however, because having good feature descriptions makes it much easier to implement them.

Reference: Lau: Chapter 3 pages 84-87.

Learning objectives: 1, 3.

Problem 5: Use cases or task descriptions

Proposition: Use cases are more suitable than task descriptions when specifying requirements before buying a COTS based system.

Reason: Use cases are more design oriented than task descriptions.

Correct answer: D (Proposition is false, but the reason is a true statement.)

Motivation: The proposition is false because use cases are indeed more design oriented than task descriptions and in a COTS system the design is already pretty much set in stone. Therefore you should generally avoid design oriented requirements when buying a COTS system. The reason is correct because use cases describe the communication between the user and the system in detail, while the task description only describes what the user wants to achieve.

Reference: Lau: Chapter 3 pages 126-132.

Learning objectives: 5, 6

Problem 6: Elicitation techniques

Proposition: One of the most important aspects when trying to do a good risk analysis in a requirements engineering project is to have close contact and communication with stakeholders.

Reason: Some stakeholders have to contribute in some way, for example providing a project with good domain knowledge or financial aid. When doing this it's important that they feel like they are getting something back as compensation.

Correct answer: B (Proposition and reason are both true statements, but the reason does not explain the proposition.)

Motivation: The proposition is correct because some stakeholders can give lots of input regarding the risks. For example, stakeholders with good domain knowledge can assess the risks of implementing a new software system in their domain a lot easier than the average requirements engineer. The reason is also true because in many projects it's extremely important to keep stakeholders content. Stakeholders can in this sense be for example the investors financing the project. The reason doesn't, however, explain the proposition, because stating that it's important to have good contact and communication does not have anything to do with keeping the stakeholders happy through giving them something in return for their efforts.

Reference: Lau: Chapter 8 pages 347, 350-351

Learning objectives: 2

Problem 7: Prototyping

Proposition: Prototypes created in early stages of requirements elicitation can be used in later stages of development for verification purposes.

Reason: Stakeholders (and developers) can experiment with a prototype to make sure that all features are desired and that no features are missing.

Correct answer: B (Proposition and reason are both true statements, but the reason does not explain the proposition.)

Motivation: Proposition is correct since verification verify that the product fulfills the requirements. For example if a designer has unintentionally added some design not described in the requirements you can compare with the prototype. There can also be design requirements referring directly to the prototype, in which case the prototype is used for comparison. The reason is correct as well because making sure that all features are desired and that no features are missing has to do with validation. The reason describes the validation which is helped by prototyping, this is a correct statement. But the reason does not explain the proposition because verification and validation is two different activities.

Reference: 1.1, 3.5, 8.2.11

Learning Objectives: 6, 8

Problem 8: CREA

Proposition: When stakeholders have a hard time explaining what they want, the requirements engineers need to take on the role of creative inventors to bring out the competitive edge in the future product.

Reason: In the case where stakeholders don't have a clear view of what they want, requirements engineers can use the transformational creativity model to try to eliminate constraints that the stakeholders found were impossible to remove.

Correct answer: A (Proposition and reason are both true statements. The reason explains the proposition.)

Motivation: The proposition is correct according to reference [18] in the paper. It corresponds to the saying of having to think outside the box in order to be able to differentiate your product on the market. As stakeholders do not always know how to ask for these requirements directly or don't know exactly what they want it is the job of the requirements engineer to produce creative requirements for them. The reason is correct because if transformational creativity is used, requirements engineers can find interesting features that the stakeholders couldn't imagine themselves. Transformational creativity is performed through changing something that previously was considered impossible.

Reference: [CREA] Can requirements Be Creative? Experiences with an enhanced air space management system.

Learning objective: 10, 17.

Problem 9: Market Driven Requirements engineering

Proposition: In market driven product development the cycles include a development phase usually followed by a big release followed by doing maintenance work on the product.

Reason: Market driven product development engineering is about delivering the correct product, to the correct market at the correct time.

Correct Answer: D (Proposition is false, but the reason is still true.)

Motivation: The proposition is false as this is a typical example of bespoke product development. MRDE has instead often a long series of releases and the product is undergoing continuous evolution rather than having a release followed by maintenance. The reason is a true statement. With market driven development you do not have a clearly defined customer that you are developing for. Instead development is done for a market which needs to be defined, the product must be correct for the intended market in order to ensure that the market is willing to buy the product. The product must

also be released at the correct time. That is, it should be released when the market is ready for such a product while there is a demand for such a product.

Reference: [MRDE] 13.2.2, 13.3

Learning Objectives: 6, 7, 17

Problem 10: Pairwise comparison

Proposition: Pairwise comparison is less sensitive to judgmental errors than techniques using absolute assignments.

Reason: The pairwise comparison approach includes much redundancy.

Correct answer: A (Both the proposition and the reason are correct. The reason explains the proposition.)

Motivation: Both the proposition and the reason are correct. The reason is correct because when using pairwise comparison you compare single requirements against many alternatives (one at a time). This results in better consistency compared to doing one big absolute prioritization where you assign each requirement a value. More comparisons mean more redundancy. This explains the proposition because using more comparisons also narrows the result down to a smaller error range.

Reference: [PRIO2] page 68

Learning objective: 13, 17