CPT203 Software Engineering 1

Tutorial: Requirement Engineering

Suggested answers

1. What is software specification in the context of software engineering? How is software specification different from requirements engineering?

   Suggested answer:

   Software specification is the process of finding out, analyzing, documenting, and checking these needs and constraints. Software specification and requirements engineering can be used interchangeably.

2. In a normal circumstance, system requirements could be part of a software contract. Explain why system requirements are better candidate compared to user requirements to be expressed in the contract.

   Suggested Answer:

   A software contract is a legally bind document stating the expectation and responsibility among others. Compared to user requirements, system requirements included more specific information that spelled out the exact requirements. Therefore, system requirements are more suitable to be used in a software contract.

3. List the differences between functional requirements and non-functional requirements.

   Suggested Answer

   Functional requirements describe the specific behaviors and functions that a system must perform. They detail what the system should do to meet the needs of its users.

   Non-functional requirements describe the system's operational qualities and constraints. They detail how the system should perform rather than what it should do.

4. Re-write the following non-functional requirement into a testable requirement.
   - The patient registration system in the hospital must be reliable.

     Suggested Answer

Every patient registration terminal in the hospital must have an additional terminal to act as the backup. The down time for a terminal must not exceed 20 minutes in the peak hours (7AM to 11AM); not exceed 30 minutes in the non-peak hours (11AM to 5PM)

- The self-service ticketing system in the cinema must be fast and responsive.

  Suggested Answer

  The barcode/QR scanner must respond in 0.5 second. The system must retrieve the ticket information within 1 second after the code is scanned. The ticket must be completely printed within 3 seconds after the user confirm to print the tickets.

5. What would happen if the Software Requirements Document (SRS) for a mission critical system is missing out important details?

   Suggested Answer

   If the missing information is in the early stage before the project officially started, the project schedule would be affected by the missing information. If the project is to be outsourced to a third-party software company, the contract of the software will not include the missing requirements.

   If the missing information is discovered in the later stage of the development, the project may be delayed because engineers must revisit the requirements engineering stage to fix the missing pieces. If the project is outsourced to a third-party company, contract need to be re-negotiated.

   If the missing information is not being discovered, after the system being used for many years, the maintenance would become difficult because of the missing information.

6. Express the iterative process of the requirements engineering in the form of spiral view.

   Please read:

   Lecture note slide 10, and the E book ‘Software Engineering (9th Edition) by Ian Sommerville’’s chapter 2.3 or page 49.

7. What is requirements validation?

   Suggested answer:

It is the process to check if the requirements correctly define the system, which the customer really wants

8. What are the aspects that the requirements validation checks?

   Suggested answer:

   Validity checks, Consistency checks, Completeness checks, Realism checks, Verifiability