Date – 15-05-2024

SOFTWARE ENGINEERING

Assignment – 4

UNIT – 4, SEM- 2 **(DEP – IT)**

Short Answer type questions:

1. **What is Requirements Analysis Specification (RAS) in software development?**

Ans - Requirements Analysis Specification (RAS) in software development refers to the process of gathering, documenting, and analysing the requirements for a software system. It is a crucial early phase in the software development lifecycle where the needs and expectations of stakeholders are identified and translated into a formal document.

2. **What are the key components typically included in a Requirements Analysis Specification?**

Ans -

- Functional Requirements
- Non-Functional Requirements
- User Requirements
- System Requirements
- Constraints and Assumptions
- Traceability Matrix

3. **Why is requirement gathering and analysis important in software engineering projects?**

Ans - Requirement gathering and analysis are important in software engineering projects because they ensure alignment with stakeholder needs, provide a basis for design and development, help in risk mitigation, promote cost, and time efficiency, and facilitate effective communication among stakeholders.

4. **Name three methods commonly used for requirement gathering.**

Ans - Three methods commonly used for requirement gathering are:

- **Interviews**
- **Surveys and Questionnaires**
- **Workshops and Focus Groups**

5. **What are the challenges associated with requirement gathering and analysis?**

Ans - The challenges associated with requirement gathering and analysis include incomplete or inconsistent requirements, changing requirements, ambiguity and misinterpretation, stakeholder dynamics, and scope creep.

Long Answer type questions:

6. **Explain the importance of Requirements Analysis Specification (RAS) in guiding the software development lifecycle.**

Ans - Importance of Requirements Analysis Specification (RAS):

- Facilitates early detection of potential issues, saving time and resources.
- Enhances communication and collaboration among stakeholders.
- Provides a basis for estimating project timelines, costs, and resources.
- Supports decision-making throughout the software development lifecycle.
- Helps manage project scope by defining boundaries and priorities.
- Enables validation of software against user needs and expectations.

7. **Describe three methods of requirement gathering and their respective advantages and limitations.**

Ans - Methods of Requirement Gathering:

- **Interviews:** Direct interaction yields detailed insights but can be time-consuming.
- **Surveys and Questionnaires:** Efficient for gathering input from many stakeholders but lack depth.
- **Workshops and Focus Groups:** Foster collaboration but may not represent all perspectives.
- **Document Analysis**: Extracts requirements from existing documents, ensuring alignment with organizational standards.
- **Use Cases:** Describes interactions between users and the system, aiding in requirement identification.
- **Ethnographic Studies:** Observes users in their natural environment, providing deep insights into their behaviours and needs.

8. **Discuss the challenges faced in requirement gathering and analysis, and propose strategies to address them.**

Ans - Challenges in Requirement Gathering and Analysis

- **Incomplete or Inconsistent Requirements:** Conflicting priorities lead to ambiguities.

- **Changing Requirements:** Evolution necessitates robust change management.

- **Ambiguity and Misinterpretation:** Unclear requirements cause misunderstandings.

- **Stakeholder Dynamics:** Balancing diverse needs proves challenging.

- **Scope Creep:** Uncontrolled expansion disrupts project management.

- **Resource Constraints:** Limited time and budget impact the thoroughness of requirement gathering.

- **Legacy Systems Integration:** Compatibility with existing systems poses challenges.

9. **Compare and contrast the Software Requirements Specification (SRS) document with the Business Requirements Document (BRD), highlighting their purposes, scopes, and audiences.**

Ans –

Aspect	Software Requirements Specification (SRS)	Business Requirements Document (BRD)
Purpose	Focuses on technical details	Emphasizes business objectives
Scope	Delves into specific requirements	Encompasses broader business context
Audience	Targeted at the development team	Intended for wider stakeholders
Level of Detail	Provides technical specifications	Emphasizes high-level goals

10. **Outline the characteristics of a good Software Requirements Specification (SRS) document and explain why each characteristic is important in the software development process**

Ans - 1. Clear and Brief: The document should be easy to understand and concise, avoiding unnecessary complexity or ambiguity.

2. Complete: It should cover all necessary requirements comprehensively, leaving no gaps or oversights.

3. Consistent: There should be uniformity and harmony in the requirements, avoiding contradictions or conflicts.

4. Measurable: Requirements should be specific and quantifiable, enabling clear criteria for validation and progress tracking.

5. Traceable: Each requirement should be identifiable and linked throughout the development process, facilitating accountability and change management.

6. Feasible and Realistic: Requirements should be achievable within project constraints, such as time, budget, and resources.

7. Modular: The document should be organized into logical sections, allowing for easy updates and maintenance.

8. Prioritized: Requirements should be ranked based on importance, ensuring that critical features are addressed first.

9. Verifiable: Requirements should be testable, allowing for validation through testing procedures to ensure compliance.

10. Maintainable: The document should be designed for easy updates and revisions as project needs evolve.

11. Accessible to Stakeholders: The document should be readily available and understandable to all relevant parties involved in the project.

12. Reviewed and Approved: Thorough review and approval processes validate the accuracy and completeness of the requirements, ensuring alignment with project objectives.

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