Government Polytechnic for Girls, Surat

Department of Information Technology

Subject: Fundamentals of Software Development (4331604)

Assignment-1

1. Define Software and explain types of software with the necessary diagram.
2. Explain Software characteristics in detail.
3. Justify the statement: Software doesn't wear out.
4. Justify the statement: Software is engineered, not manufactured like hardware.
5. Explain the characteristics of web-based applications.
6. Write a short note on Software Myths.
7. Write various definitions of Software Engineering.
8. What are the needs of Software Engineering?
9. Explain the concept of software engineering as a layered technology.
10. Explain Software Process Framework Activities and Umbrella Activities.

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Assignment-2

Note: Drawing a Diagram of every model is compulsory.

1. Explain the key principles and phases of the Waterfall model in software development. Discuss a situation where the Waterfall model might be the most suitable approach and its limitations.
2. Define the Incremental model in software development and outline its advantages and disadvantages. Provide an example of a project where the Incremental model would be preferable, and explain why.
3. Describe the Prototyping model in software development and discuss its main objectives and benefits. Explain the difference between throwaway and evolutionary prototype model.When should we use Prototype Model ?
4. Provide an overview of the Spiral model in software development. Explain the iterative nature of this model and how it addresses risk management. Discuss a project type where the Spiral model is particularly suitable.
5. Explain why Spiral Model is also known as Meta Model.
6. Discuss the principles and characteristics of Rapid Application Development (RAD) in software development. Explain how RAD facilitates faster project delivery and improved customer satisfaction. Provide an example of a situation where RAD would be a valuable choice.
7. Define the core principles of Agile development. Explain how these principles promote adaptability and customer collaboration in software development projects.
8. Compare and contrast Agile development with traditional software development models like the Waterfall model.
9. Explain Extreme Programming (XP) model in Agile development with advantages and disadvantages.
10. Explain Scrum model with advantages and disadvantages.

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Assignment-3

1. Describe the importance of requirement gathering in the software development process. What are the consequences of not effectively collecting requirements from stakeholders?
2. Explain the various methods and techniques that can be used to collect requirements from stakeholders. Provide examples of situations where each method might be most effective.
3. Define the term "requirement analysis" in the context of software development. Why is it a critical phase in the software development life cycle?
4. Discuss the key activities involved in analysing requirements. How does requirement analysis help in refining and clarifying the collected requirements?
5. Explain the significance of Software Requirement Specifications (SRS) in software development. How does an SRS document serve as a communication bridge between stakeholders and development teams?
6. Identify and describe the primary users of an SRS document.
7. List and explain the characteristics of a good SRS document.
8. Differentiate between functional and non-functional requirements of software.

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Assignment-4

1. What are the primary job responsibilities of a software project manager?
2. Explain the essential skills a software project manager needs to manage software projects efficiently.
3. Explain the Gantt Chart with a suitable diagram.
4. Write a short note on the activity network.
5. Explain the work breakdown structure with a suitable diagram.
6. Differentiate PERT and CPM.
7. What are the key elements involved in project monitoring and control?
8. Explain risk management in detail.

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Assignment-5

1. Describe the key design activities involved in the software design process.
2. Explain different design methodologies used in software development.
3. Explain cohesion with its classification.
4. Explain coupling with its classification.
5. Discuss methods to achieve high cohesion and low coupling in software design.
6. Compare and contrast function-oriented design and object-oriented design methodologies.
7. Explain the Data Flow Diagram (DFD) with its symbols. Highlight its shortcomings.
8. Explain the role of a data dictionary in software design.
9. Draw DFD (up to 2 levels) for the library management system.
10. Draw a use case diagram for an online shopping web application.
11. Develop activity diagrams to represent the system's processes and workflows.
12. Enumerate characteristics that contribute to a good user interface (UI).
13. Differentiate between command-based, menu-based, and direct manipulation types of user interfaces, providing examples for each.

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Assignment-6

1. What are coding standards, and why are they important in software development?
2. Explain Code Review. Differentiate Code walkthrough and Code inspection.
3. How to design good test cases? Explain with an example.
4. Explain the Black Box testing method in detail.
5. Explain the White Box testing method in detail.
6. Compare Black box and White box testing.
7. Differentiate between validation and verification.