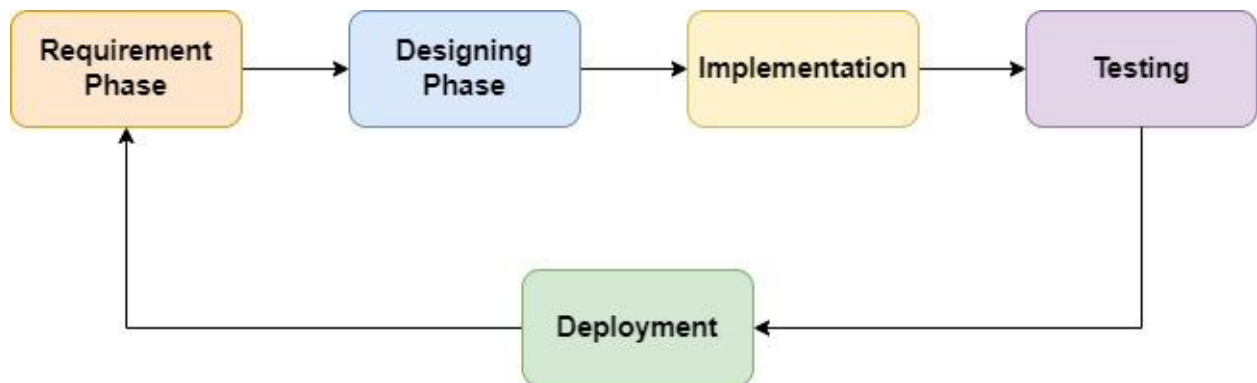


RPS DAY 2 Assignments

Assignment 1

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1: SDLC Overview - Create a one-page infographic that outlines the SDLC phases (Requirements, Design, Implementation, Testing, and Deployment), highlighting the importance of each phase and how they interconnect.



SDLC Phases

1. Requirements
 - Importance: Defines project scope and user needs.
 - Interconnection: Forms the foundation for the design phase.
2. Design
 - Importance: Converts requirements into detailed specifications.
 - Interconnection: Provides a blueprint for the implementation phase.
3. Implementation
 - Importance: Actual coding and development based on design specifications.
 - Interconnection: Follows the design plan to create the software.
4. Testing
 - Importance: Ensures the software meets requirements and is free of bugs.
 - Interconnection: Validates the implementation against the requirements.
5. Deployment
 - Importance: Releases the finished product to users.

- Interconnection: Follows successful testing, making the product available for use.
6. Maintenance
- Importance: Ongoing support and updates after deployment.
 - Interconnection: Ensures the product remains functional and relevant over time.

Infographic Design Tips

- Visual Flow: Use arrows or lines to show the flow between phases.
- Icons and Symbols: Utilize relevant icons for each phase.
- Color Coding: Assign different colors to each phase for clarity.
- Brief Text: Include short, concise descriptions for each phase.
- Interconnection: Depict how each phase leads to the next

Assignment 2

2. Develop a case study analyzing the implementation of SDLC phases in real-world engineering projects. Evaluate how requirement gathering, designing, implementation, testing, deployment, and maintenance contribute to the project Outcomes.

Case Study: Development of an E-Library Platform

In this case study, a real-world project like E-Library is being studied. The study is about the implementation of SDLC in the project.

- Requirement Gathering: The project will begin with a meeting with all the stakeholders which will include the researcher, market research team, investors, etc. Then have their views documented. Identifying potential key features required for the project, recommendation, cost analysis, market input, books digital rights, resources, and some future competency.
- Designing: Based on the feature requirement. Designing a high-level user flow diagram to understand the interaction between the user and the library. To understand more object-entity relationship diagrams will be needed. Then a thorough discussion about the high-level design and low-level design for each team. High-level discussion will be about the type of microservices, cloud systems, etc. Low-level design will include database design for users, and library storage. A demo of a wireframe of features to see how they will interact. Each team will be given a task according to the plan.
- Implementation: There will be a feedback loop after each version of feature

implementation to make sure it meets the goal of the stakeholders. The team will use web technologies like HTML5, CSS3, and Javascript for the front end and the backend team will utilize

server-side technologies like Node.js. They also integrated with third-party APIs for content aggregation, user authentication, and payment processing. Continuous integration and deployment (CI/CD) pipelines were set up to automate testing and deployment processes, ensuring code quality and reliability. Also with each revision a proper brief document will be prepared for better debugging and fixes.

- **Testing:** The testing team will make sure all the features work well and every possible edge case is covered. Features like user registration, content browsing, search functionality, reading experience, and payment system. Tests will be like performance, security breach, server load, etc. If any issue is identified then a proper ticket will be raised and the feature will go back to the implementation stage.

- **Deployment:** After the completion of the final deployable version, the whole system will be hosted on cloud services like Azure to ensure scalability, reliability, and cost-effectiveness. A phased rollout will be done to make sure the system does not overload too quickly and seamless onboarding will occur.

- **Maintenance:** A dedicated support team was responsible for addressing user inquiries, troubleshooting technical issues, and monitoring platform performance. Regular software updates and security patches were released to address emerging threats and improve platform stability.

Assignment 3

3. Research and compare SDLC models suitable for engineering projects. Present findings on Waterfall, Agile, Spiral, and V-Model approach, emphasizing their advantages, disadvantages, and applicability in the different engineering contexts.

- **Waterfall Model:** It is one of the classic and oldest methods. It includes a linear sequential way of doing a job. The processes involved are Requirement Gathering, Designing, Implementation, Testing, Deployment, and Maintenance. All these processes occur one after another.

- **Advantage :**

- Simple method.
- Easy to follow
- Each phase is sequential and does not require rigorous review.

- **Disadvantage :**

- Not flexible.
- Features once implemented cannot be changed in later stages.
- Mismatched during deployment will stop the entire life cycle.

- **Applicability :**

- Projects where the vision is clear.

- Simple projects
- Less maintainability or easy-to-maintain projects
- Sequence of operation is required

● **Spiral Model:** It is derived from Waterfall and Iterative models. Includes the same strategy as the waterfall model but each stage requires prototyping. If any stage fails then it rolls back to its previous stage until the prototype comes to a satisfactory level.

○ **Advantage :**

- Feature can be seen early
 - Feature can be added if needed
 - Stakeholder is involved at each stage
- **Disadvantage :**
- Too much prototyping
 - Complexity increases with each edition
 - Cost increases with each iteration

○ **Applicability:**

- Large Project
 - Feature Loaded
 - Requires more stakeholder input
- **V-Model:** It is also derived from waterfall mode but each phase has its testing and verification stage. After each stage, rigorous testing is done to ensure the quality of the project. It does not have a rollback like the spiral model.

○ **Advantage :**

- Early Detection of defects
- Structured and sequential like a waterfall model.
- High-quality product

○ **Disadvantage :**

- Testing at each stage is resource-intensive
- Small project does not fit well
- High Cost

○ **Applicability :**

- High Risk Project
- Safety is important
- Testing required at each stage

● **Agile Model:** Agile model derived from incremental and iterative models. It has its short development phase and stages can be designed according to the needs of the project.

- **Advantage :**

- Very Flexible
- Fast Delivery
- Feature can be added after the cycle

- **Disadvantage :**

- Less vision in the beginning
- Fast Pace makes it difficult to deliver
- Management Issues

- **Applicability :**

- Customer Oriented
- Cycles Change with each feature