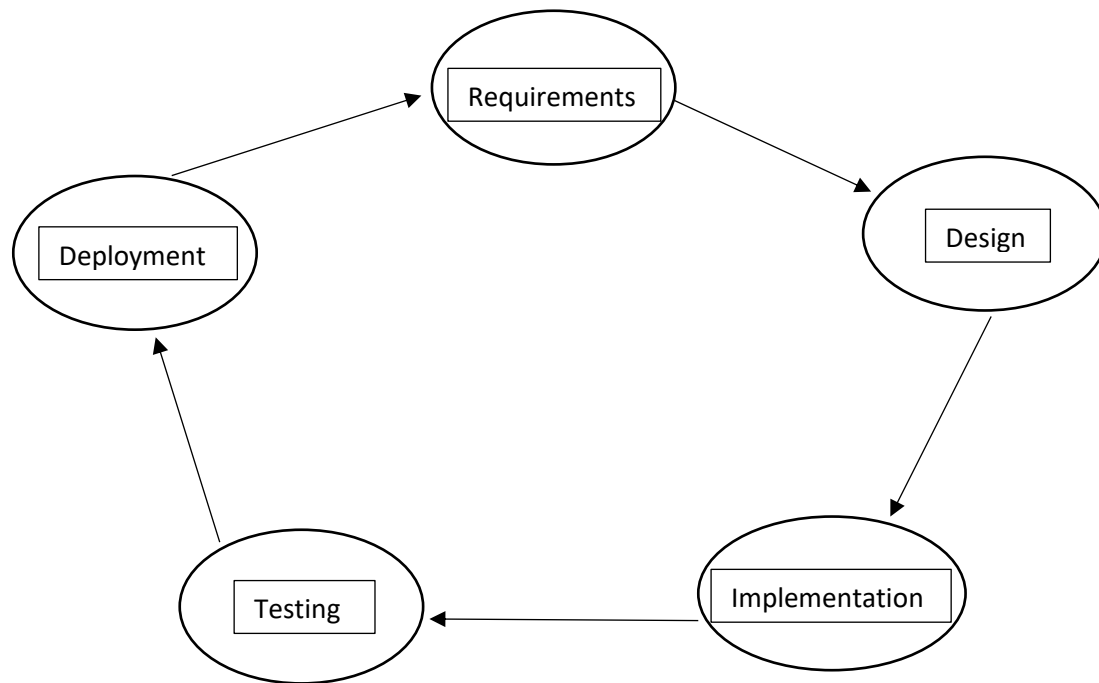1. SDLC Overview Create a one-page infographic that outlines the SDLC phases (Requirements, Design, Implementation, Testing, Deployment), highlighting the importance of each phase and how they interconnect.

2.Develop case study analyzing the implementation of SDLC phases in a real-world engineering project. Evaluate how Requirement Gathering, Design, Implementation, Testing, Deployment, and Maintenance contribute to project outcomes.

E-Commerce Website Development

1. Requirement Gathering:

   - Conducted surveys and interviews with stakeholders, including customers, employees, and management.

   - Identified key features needed for the e-commerce site, such as product search, shopping cart, and secure payment methods.

   - Gathered functional and non-functional requirements, such as scalability and performance expectations.

- Prioritized features based on customer needs and business goals.

2. Design:

   - Created wireframes and mockups for the user interface.

   - Developed the architecture and database schema to handle large product catalogs.

    -Develop diagram like ER diagram,UML diagram

   - Designed the system for security, including secure login and payment gateways.

3. Implementation:

   - Developers coded the website based on design specifications.

   - Integrated third-party APIs for payment and shipping functionalities.

   - Used version control to manage code changes and collaboration among team members.

4. Testing:

   - Conducted various testing types: unit, integration, system, and user acceptance testing (UAT).

   - Fixed bugs found during testing and improved performance.

   - Collaborated with stakeholders to ensure the website met their expectations.

5. Deployment:

   - Launched the e-commerce website to the public.

   - Conducted user training for employees managing the website.

   - Monitored the website closely for any post-deployment issues.

6. Maintenance:

   - Monitored website performance and user feedback.

   - Enhanced the website with new features based on evolving customer needs and market trends.

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

1. Waterfall Model:

   Advantages:

   - Simple and easy to understand.

   - Well-structured and documented.

   - Suitable for projects with stable requirements.

   Disadvantages:

   - Limited flexibility for changes.

   - Testing occurs late in the process, which can lead to costly fixes.

   - Not suitable for projects with evolving requirements.

2. Agile Model:

   Advantages:

   - Highly flexible and adaptable to changes.

   - Continuous delivery of working software.

   - Customer involvement throughout the development process.

   Disadvantages:

   - Requires active customer involvement, which might not always be feasible.

   - Lack of documentation can lead to difficulties in knowledge transfer.

   - Not suitable for large-scale projects with complex dependencies.

3. Spiral Model:

   Advantages:

   - Incorporates risk management at every phase.

- Flexibility to accommodate changes during the development process.

- Suitable for large-scale projects with high-risk elements.

Disadvantages:

- Complex and resource-intensive.

- Requires significant expertise in risk management.

- Can be difficult to estimate time and cost accurately.

4. V-Model:

Advantages:

- Emphasizes testing from the early stages of development.

- Clear correlation between development stages and testing phases.

- Suitable for projects with strict regulatory requirements.

Disadvantages:

- Can be rigid and less adaptable to changes.

- Testing activities can become bottlenecked.

- Requires thorough upfront planning and documentation.

The Waterfall model is best suited for projects with stable requirements, while Agile is ideal for projects with evolving requirements and a need for flexibility. The Spiral model is suitable for large-scale projects with high risks, and the V-Model is recommended for projects with strict regulatory requirements. Ultimately, the choice depends on the specific needs and constraints of the engineering project.