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.

Software Development Life Cycle (SDLC) overview :

SDLC is a process of designing ,Developing ,Testing, and Deploying Software

1. **Requirements:**
   Explanation of Project Goals , objectives ,Scope ,resources and gathering the needs and expectations of project Documents Functional and Analyze the requirements. It will be thw foundation of the project and getting cilents expections on the project.

2.**Design/Analysis :**

   The is represented by the Architecture of the projects with compents and its requirements detailed by the system Architecture and it is implemented by the using the Data structures , algorithms .

3.**Implementation:**

   The Implementation done by Developing code by the given specifications of the Design of project and Testing the code by the unit testing of the modules individual.
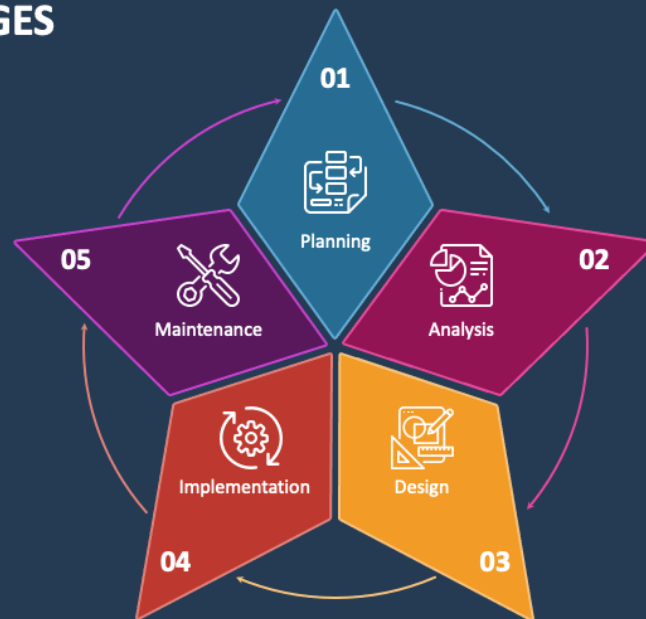
4.**Testing:**

   Testing of code done by Detecting the Errors by quality assurance

Unit,system,Integration and User Acceptance Test performed by software development in the real world.

5.**Deployment / Maintence:**

   It is Final Step or stage of the software development and it is initiated by modifying the code and recoding until finally completed.

SDLC 5 STAGES

01 Planning
02 Analysis
03 Design
04 Implementation
05 Maintenance

Source: www.majkic.net

2: Develop a 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.

Case Study : SDLC phases Implementation on Wipro

Project overview (Duration 18 months):

Wipro, a global IT services company, embarked on a project to develop a bespoke enterprise resource planning (ERP) solution for a large manufacturing client. The objective was to streamline operations, boost efficiency, and enhance decision-making capabilities.

1.Requirements (3 Months):

Wipro conducted extensive workshops and interviews with stakeholders across the client's departments. They meticulously documented business processes, pain points, and goals to ensure a comprehensive understanding of requirements.

2.Design(4Months):
, Wipro's architects crafted a detailed system architecture, database schema, and user interface design.
They focused on scalability and flexibility while incorporating industry best practices.

3.Implementation(7months):

Adopting the Agile methodology by the Wipro's developers broke down the project into manageable sprints. They used cutting-edge technologies to implement the ERP solution's functionalities according to design specifications.

4.Testing(2months):
The testing throughout the development cycle, including unit testing, integration testing, and user acceptance testing (UAT). Client stakeholders participated in UAT to validate functionality and usability.

5.Deployment(1month):
After successful testing and client approval, the team will deployed the ERP solution in phases to minimize disruption. They provided extensive training to ensure a smooth transition and maximum user adoption.

6.Maintence(6 Months):
 The support team to provide ongoing maintenance and support. They monitored system performance, addressed user feedback, and implemented updates to ensure reliability and security.

Conclusion:
The Team used the SDLC phases, Wipro delivered a robust ERP solution within the specified timeframe. The systematic approach ensured the project's success, delivering tangible benefits to the manufacturing client and strengthening their market position.

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.

SDLC models of Engineering Projects:
1.WaterFall Model:

  Advantages:

 Sequential approach:

In a water fall model stages are completed all at one time. It is easy to understandable and managrable.

 WELL DEFINED REQUIREMENTS: Detailed documentation is created at each stage and capable being understood in two or more possible

Sutaible for projects and also for stable equirements and where changes are costly.

ADVANTAGES:

INFLEXIABLE: Difficult to provide changes once the stages is completed
Limited customer interactions: Feedback is solicited only at one stage of the project.
APPLICABILITY: Best suited for projects very clear there are very clearly well understood requirements and where changes are unlikely in stages.

AGILE MODEL:
Advantages : Embraces changes throughtout the development of stages are in process.
Customer involvement : continue involvement of iterations and feedback loops of arrangement with customer needs.
Early delivery of working software :Allows for continues delivery of valueable features.

DISADVANTAGES:

Lack of documentation : Alige emphasizes working software over comprehensive documentation which may leads to change in documentation gaps.

Requirements experienced team members : Interactive and communication are very difficult.Which may lead to challenging for the inexperienced teams.

APPILICABILITY: Innovative for the projects where the requirements are uncertain or likely to change and where early delivery of features are important.

SPIRAL MODEL :

ADVANTAGES:
Risk management: Iterative nature allows for risk identification and allows transportation throughtout the project lifecycle.

Flexibility: Incorporates elements of both waterfall and prototyping models, making it very stuitable and complex projects.

Disadvantages:

Complexity: Requires thorough difficult analysis and management, which can takes time consuming and resources arrangements -intensive
Applicability: It is very well suited for the projects with highly difficult and uncertain and where risk management is very dangerous , such as projects involved newly technologies or ideas and innovatives.

V -MODEL
ADVANTAGES:
Emphasizes testing : Testing activites are involved and interacted throughtout the development lifecycle, ensuring higher qualities.

Clear correlation between requirements and tests : Each development stage has corresponding test stages, ensuring requirements to met together.

Well suited for regularity compliance: It is very suitable for the projects with highly strict regularity requirements.
Disavantages:
Sequential nature: As it is to waterfall model, changes can be costly and difficult to implement once a stage is completed.

Limited flexibility: may not be accommodate changes well, sepecially in later stages of development.
APPLICABILITY: And it is well suited for the projects with well defined requirements and where regularity compliance is very difficult such as projects in the aerospace and medical industries.

Insummary the choice of SDLC dependeson various factors including project requirements level of likely and customer interaction and involvement.Each model has its own characters of advantages and disadavantages and most selecting favour models and requires careful consolidation and consultation of these factors.