1.What is Software Development Life Cycle :

- SDLC is a structure imposed on the development of a software product that defines the process of planning , implementation , testing, documentation , deployment & ongoing maintenance & support .

- It ensures the software meets customer expectations ,is delivered on time & within budget.

2.What is Software Testing :

- Software testing is a process used to identify the correctness, completeness & quality of developed computer software .

- It aims to identify error's, defects or missing requirements in the software before it's released to end-user's .

- It is also stated as the **process of validating & verifying** that a software program (or) application .

- Test activities exist before & after test execution .

3.What is Agile Methodology :

- Agile model is a combination of iterative & incremental process models with focus on process adaptability & customer satisfaction by rapid delivery of working software products .

- It breaks the product into small incremental build's & build's are provided in iterations .

- Every iteration involves cross functional teams working simultaneously on various areas like planning, requirement analysis, design, coding, unit testing & acceptance testing .

4.What is SRS:

- An SRS is a complete description of the behaviour of the system to be developed. It serves as a blueprint for the development team and a contract between the development team and the client .

- **Functional Requirements:** The specific features and capabilities the software must have. This includes things like user interfaces, data processing, and how the system should interact with other systems.

- **Non-Functional Requirements:** These requirements define how well the software performs in terms of performance, security, usability, and reliability.

5.What is OOP :

- Identifying object's & assigning responsibilities to these object's .

- Object's of a program interact by sending messages to each other .
  An Object is like a Black box , the internal details are hidden .

- **Ex : Class is a Human , Object is student .**

6.Write Basic Concepts of OOP :

- Object Oriented Programming is a programming paradigm that revolves around the concept of "objects." These objects are essentially self-contained units that encapsulate both data (attributes) and the functions (methods) that operate on that data.

- Everything in the world is an **object** .
  Ex : A flower , A tree , An animal .

7.What is object :

- An object represents an individual identity item , unit (or) entity either real (or) abstract , with a well defined role in the problem domain .

8.What is class :

- A class represents an abstraction of the object & abstracts the properties & behaviour of that object .

9.What is encapsulation :

- Wrapping data into Single Unit .

10.What is Inheritance :

- Two access properties of one class to another class .

11.What is Polymorphism :

- Same function name but having different functies .
  > Overloading
  > Overriding

12.Draw Use Case on Online book shopping:

https://drive.google.com/file/d/18O4YTmjsGZtAjc2VaU3oGuNogs-ba0K-/view?usp=sharing

13.Draw Use Case on online bill payment system (paytm) :

https://drive.google.com/file/d/1njllH1-atS_oBnTofP-rbVlvVfSPNRTs/view?usp=sharing

14.Write SDLC phases with basic introduction :

There a six phases in Software Development Life Cycle :

1.Requirement Gathering :

- Although requirements may be documented in written form , they may be incomplete or even incorrect .
- Requirements will change ! during the project .
- Validation needed throughout the software lifecycle , not only when the "Final system" is delivered .

2.Analysis Phase :

- Analysis defines the requirements of the system, independent of how these requirements will be accomplished .
- Deliverable result at the end of this phase is a requirement document .
- Ideally , this document states it is clear & what to be Built .

3.Design Phase :

- Define the overall structure & components of the software .
- Design the user interface (UI) & user experience (UX) to ensure ease of use .
- Design Architecture Document .
- Performance Analysis , Test Plan .

4.Implementation Phase :

- Team builds the components from scratch .
- Implementation code
- Critical Error Removal

5.Testing Phase :

- Test the entire software system to ensure it meets requirements & performs as expected .
- A customer satisfied with the quality of a product will remain loyal & wait for new functionality in the next version .

6.Maintenance Phase :

- Maintenance is the process of changing a system after it has been deployed .
- M.P is the phase which comes after deployment of the software into the field .
- Address any issues or defects found in the software .

15.Explain Phases of the waterfall model :

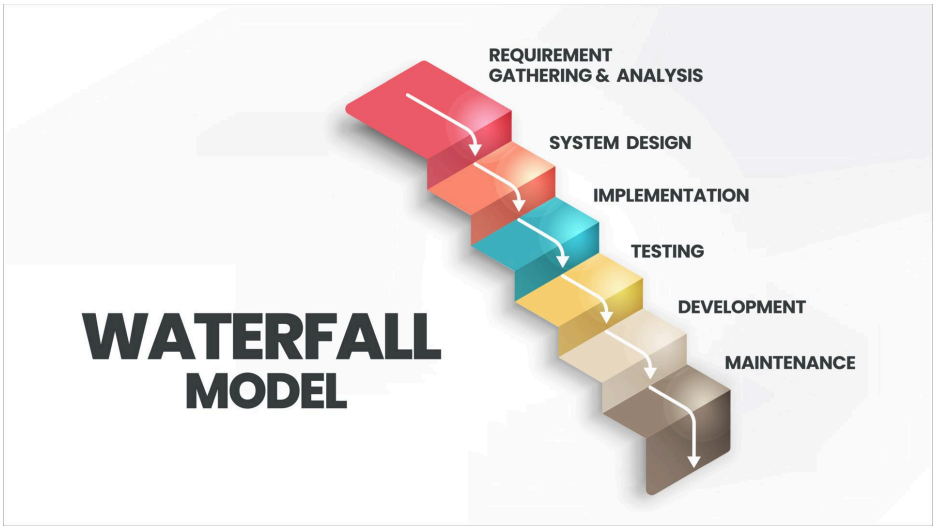
- Waterfall model the software development as a step-by-step “Waterfall” between the various development phases .
- Where each phase is completed before moving to the next .
- Requirements must be “**frozen**” too early in the life cycle .

Application (When to Use ?)

- Requirements are very well documented , clear & fixed .
- Technology is understood & is not dynamic .
- The project is short .

It's a **Step by Step** process in software development :
Requirements collection > Analysis > Design> Implementation >Testing >Maintenance

Simple & easy to understand & use , Clearly defined stages .



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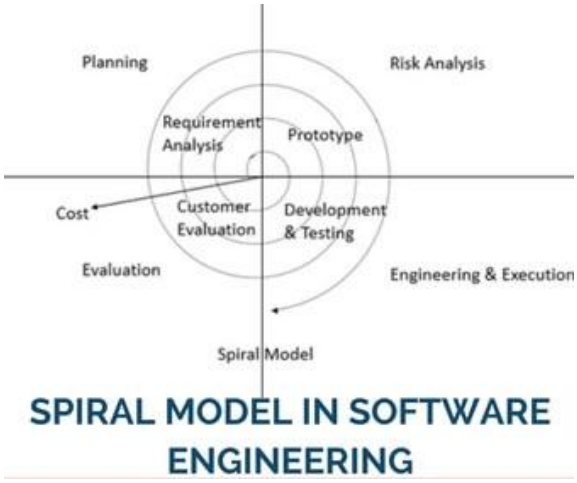
16.<u>Write phases of Spiral model</u> :



Planning : Determination of objectives , alternatives & constraint's initial requirements .

Risk Analysis : Analysis of alternatives & identification of risk's . Something that will delay the project or increase its cost .

Customer Evaluation : Assessment of the results of engineering .

Engineering : Development of the "next level " product .

17.Write agile manifesto principles :

Agile SDLC model is a combination of iterative & incremental process models with focus on process adaptability & customer satisfaction by rapid delivery of working software products .

- Agile methods break the product into small incremental builds .
- These build's are provided in iterations.
- Each iteration typically lasts from about one to three week's.
- Every iteration involves cross functional teams working simultaneously on various areas like planning , requirements analysis , design , coding , unit testing & acceptance testing .
- At the end of the iteration a working product is displayed to the customer & important stakeholders .

18.Draw use case on Online shopping product using COD :

https://drive.google.com/file/d/1ICyMSDO9IZarGFhaBV5KjqZ56sXv4W0Z/view?usp=sharing

19.Draw use case on Online shopping product using payment gateway :

https://drive.google.com/file/d/1_Hmq1n2wgQI2ZgUamfaPqA-ory7I9LWI/view?usp=sharing

20.Explain the working methodology of an agile model and also write pros and cons:

- The Agile model believes that every project needs to be handled differently & the existing methods need to be tailored to best suit the project requirements .
- In Agile the tasks are divided into time boxes (small time frames) to deliver specific features for a release .
- Iterative approach is taken & working software build is delivered after each iteration .
- Each build is incremental in terms of features , the final build holds all the features required by the customer .
- Agile thought process had started early in the software development & started becoming popular with time due to its flexibility & adaptability .

Pron's:

- Promotes teamwork & cross training
- Functionality can be developed rapidly & demonstrated
- Resources requirements are minumun
- Planned content
- Minimum rules , documentation easily employed .
- Gives flexibility to developer's .

Con's:

- Not suitable for handling complex dependencies
- More risk of sustainability, maintainability & extensibility
- An overall plan, an agile leader & agile project manager is a must without which it will not work .
- Depends heavily on customer interaction , so if the customer is not clear, the team can be driven in the wrong direction.
- There is very high individual dependency , since there is minimum documentation generated .
- Transfer of technology to new team members may be quite challenging due to lack of documentation .