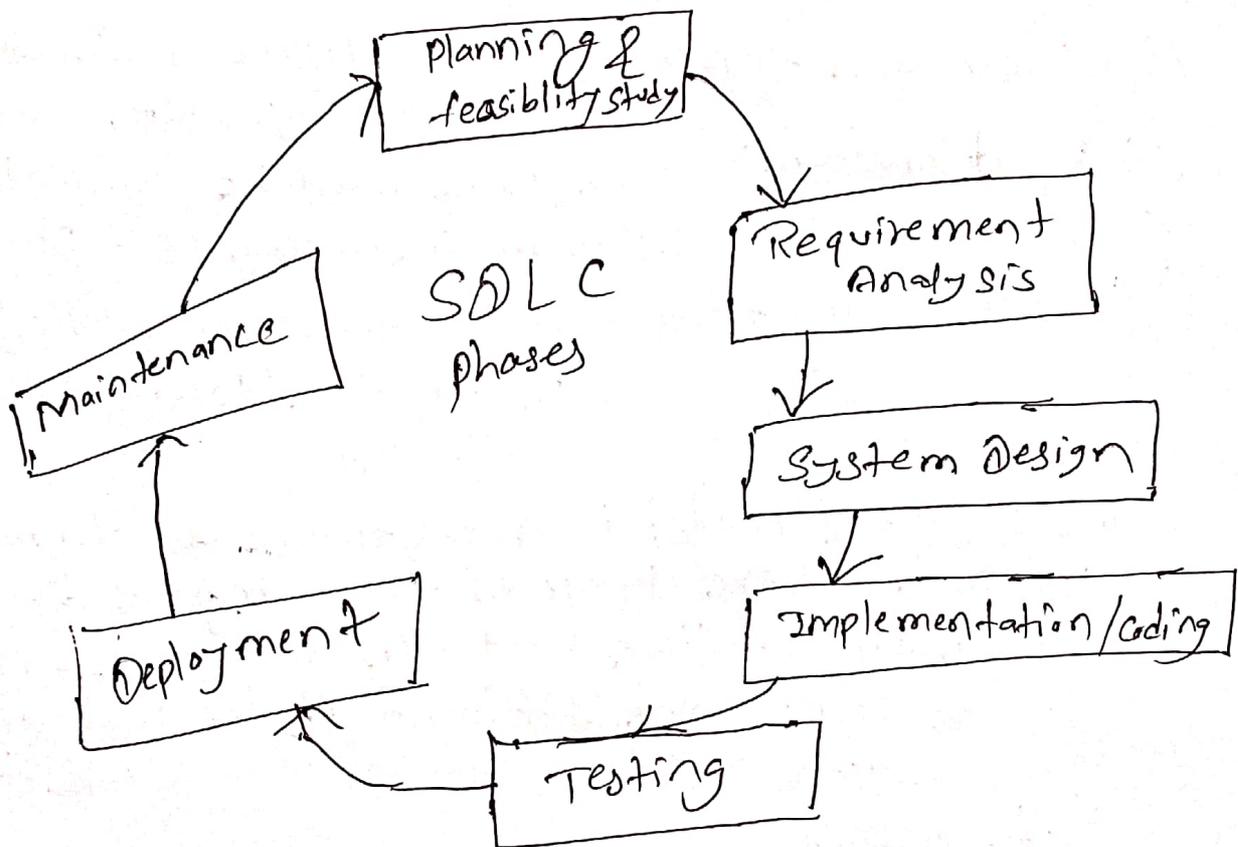


SDLC Models

SDLC stands for Software Development Life Cycle. The process of developing a quality software is known as SDLC model. It has several phases:-



- ① Planning:- Think before doing.
- ② feasibility study:- study technical, economical, operational, legal factors whether the system is practical or not.
- ③ Requirement analysis:- collects user's need for the system.
- ④ System Design:- Before implementation, design some layout using system design tools like:- ER diagram, DFD, flowchart.
- ⑤ implementation:- Developers start coding.
- ⑥ Testing:- Test the system (a) Black Box testing (b) white Box testing
- ⑦ Deployment:- Delivers the software to the users.
- ⑧ maintenance:- according to user's feedback maintain the software.

Software Development models:-

Software Development models are used to produce a effective, efficient, reliable, and quality software. There are several models, some of the important model

- are:-
- (i) waterfall model
 - (ii) prototype model
 - (iii) Agile model
 - (iv) spiral model

1) waterfall model

- (i) Linear and sequential :- Development flows step by step.
- (ii) Rigid structure :- Each phase must be completed before moving to the next phase.
- (iii) Clear documentation :- Strong focus on detailed information/documentation at every stage.

The waterfall model is a software development approach where progress flows in one direction (downward) - like water in a stream - moving step by step through different phases without going back to previous stages. It is suitable for small projects

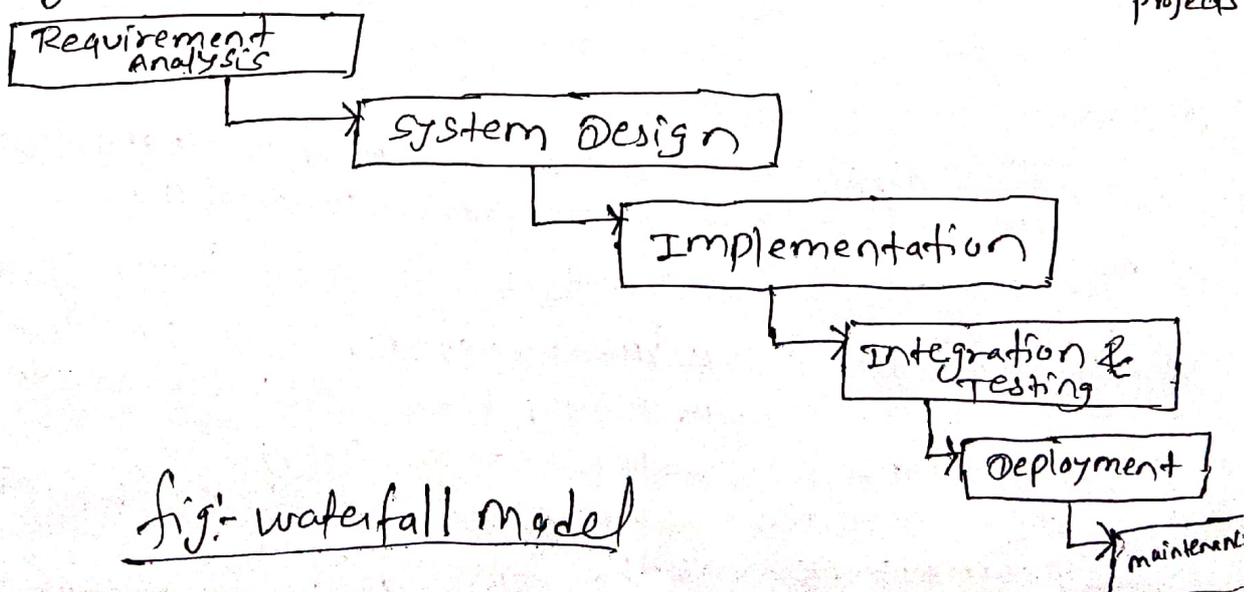
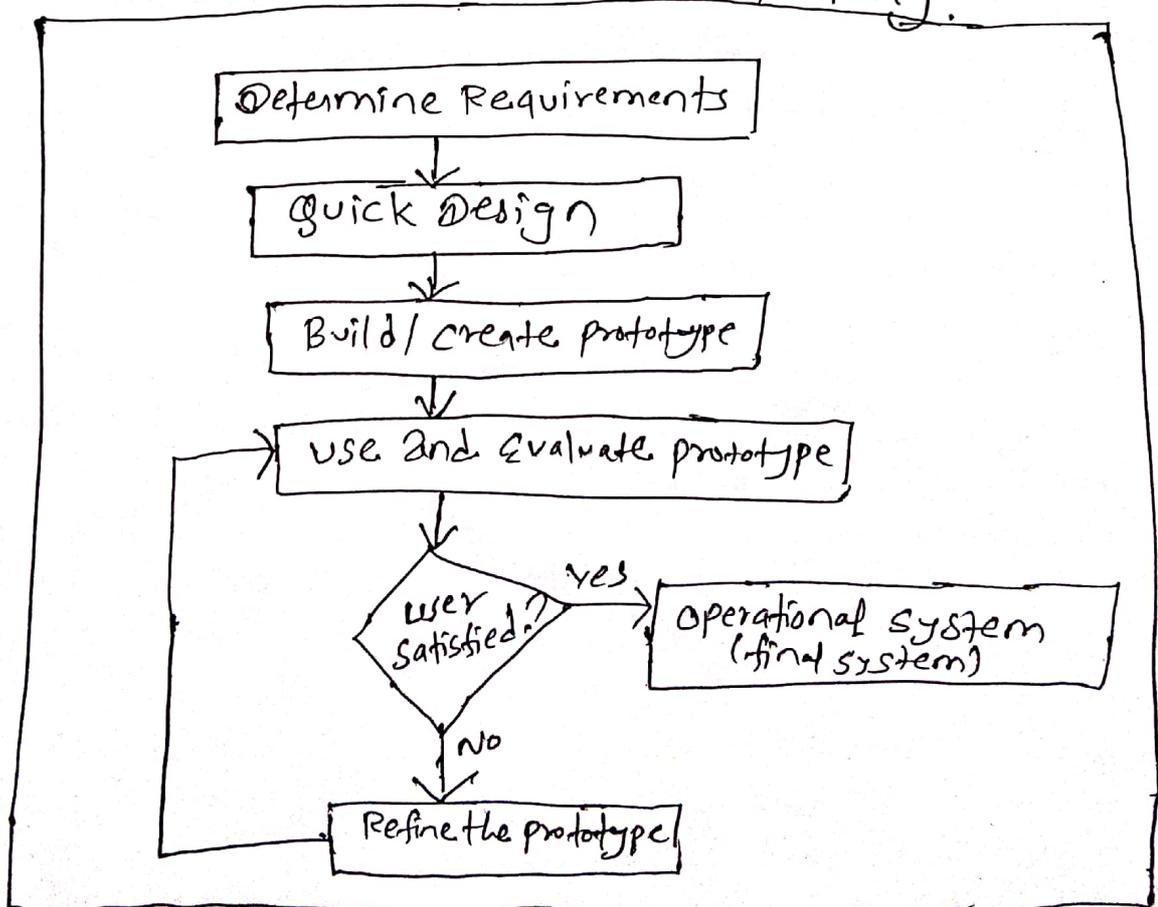


fig:- waterfall model

Prototype Model :- It is traditional model/software development approach where an early version of the system is built to understand requirements better.

1. Early version development :- A basic working model is created quickly.
2. User Involvement :- Users test the prototype and give feedback.
3. Iterative process :- The prototype is refined repeatedly based on feedback.
4. Clarifies requirements :- Helps understand and finalize unclear requirements
5. Final system development :- After refinement, the actual system is built properly.



Advantages of prototype model

- ① It helps users understand the system clearly.
- ② It allows users to give feedback early.
- ③ It helps find errors quickly.
- ④ It improves the quality of the final product/system.
- ⑤ It reduces the risk of failure.

Disadvantages of prototype model

- i) It can take more time to develop.
- ii) It may increase the overall cost.
- iii) It may lead to poor system design.
- iv) users may get confused with the prototype.

Agile Model

Agile model is a combination of the iterative and incremental model. It focuses on the flexibility of a product. Agile model divides the product into small incremental builds called iterations or sprints, allowing continuous feedback and improvement.

- Agile prioritizes collaboration, customer feedback, and quick delivery of functional products.
- In agile iterations are termed as sprints (2-4 weeks). At the end of each sprint, the product owner verifies the product and after customer approval, it is delivered.
- Testing is done in each sprint to reduce the risk of any failures.

Advantages

- ① Adaptability: Handles changing requirements easily.
- ② Fast Delivery: Delivers usable product increments quickly.
- ③ Customer-centric: Involves customers regularly for feedback.
- ④ Improved Quality: Testing happens in every iteration.
- ⑤ Risk Reduction: Issues are identified and resolved early.
- ⑥ Team Collaboration: Encourages teamwork and communication.

Disadvantages

- ① Resource intensive: Agile needs experienced and highly skilled team.
- ② Uncertain costs and Time: Difficult to predict exact budget and timeline.
- ③ Less Documentation: Lack of necessary documentation may lead to confusion.

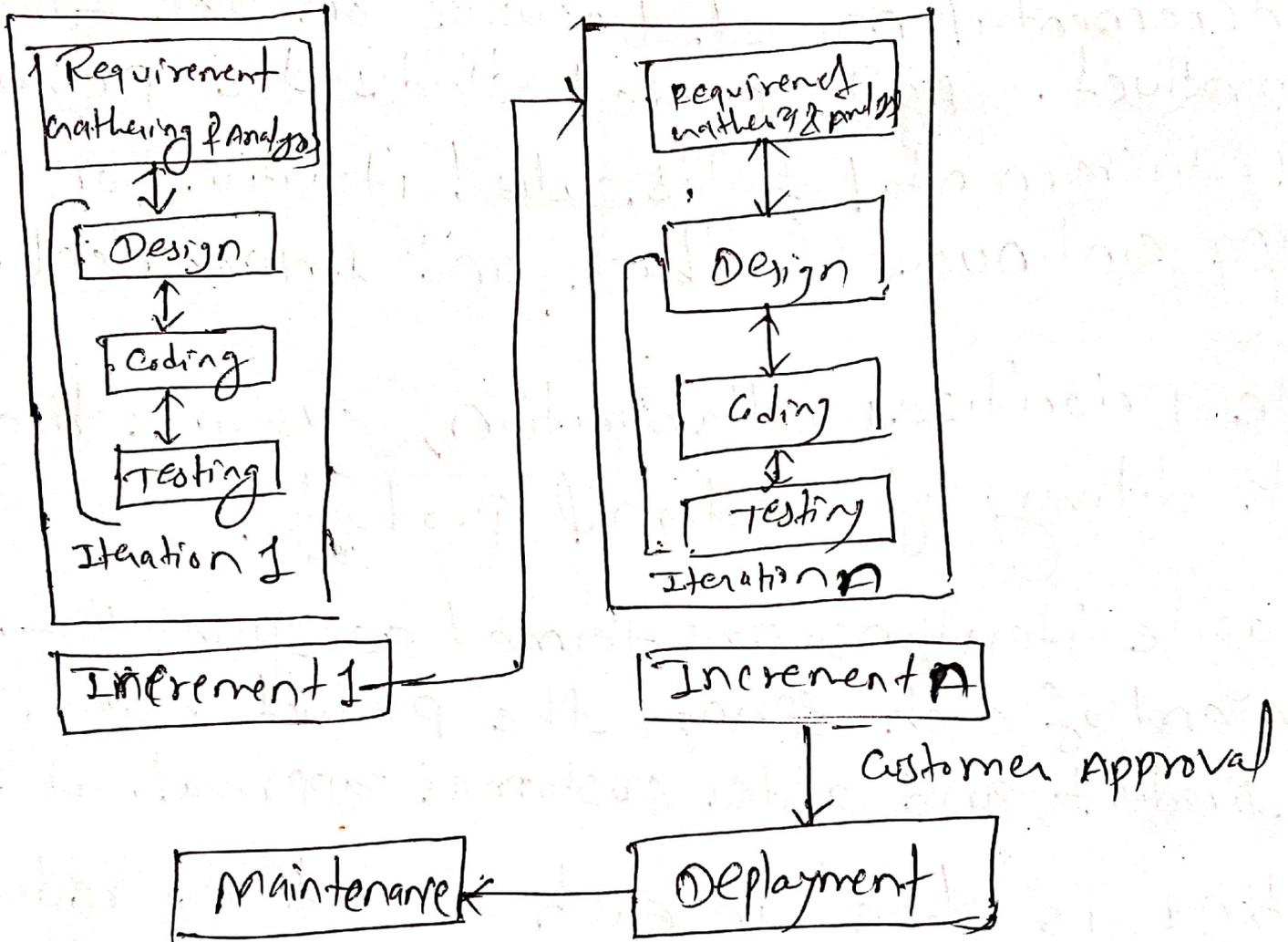


Figure: Agile model