

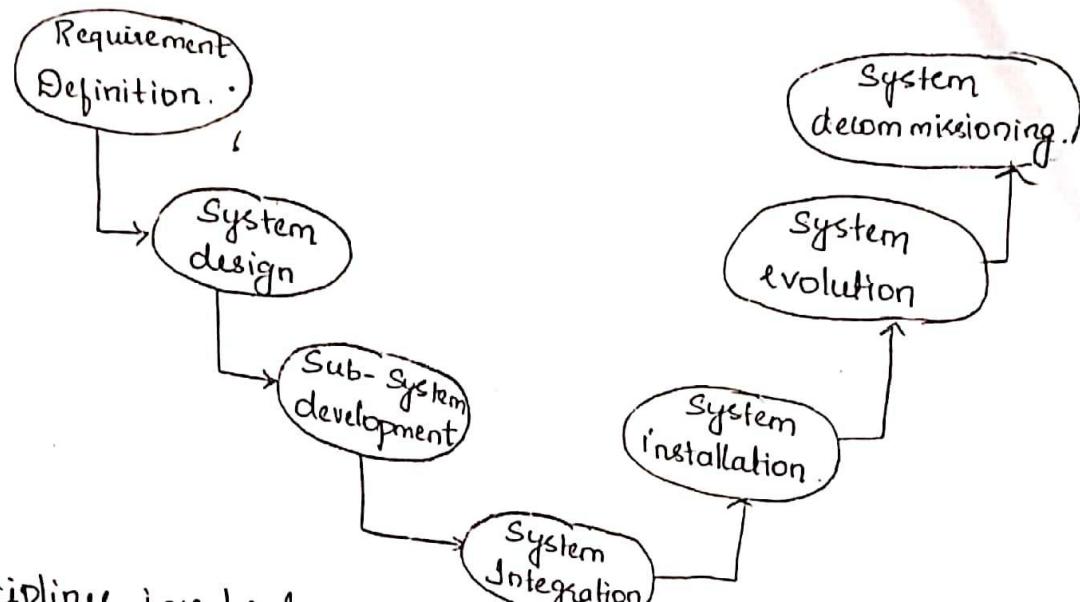
# Software Engineering and Testing.

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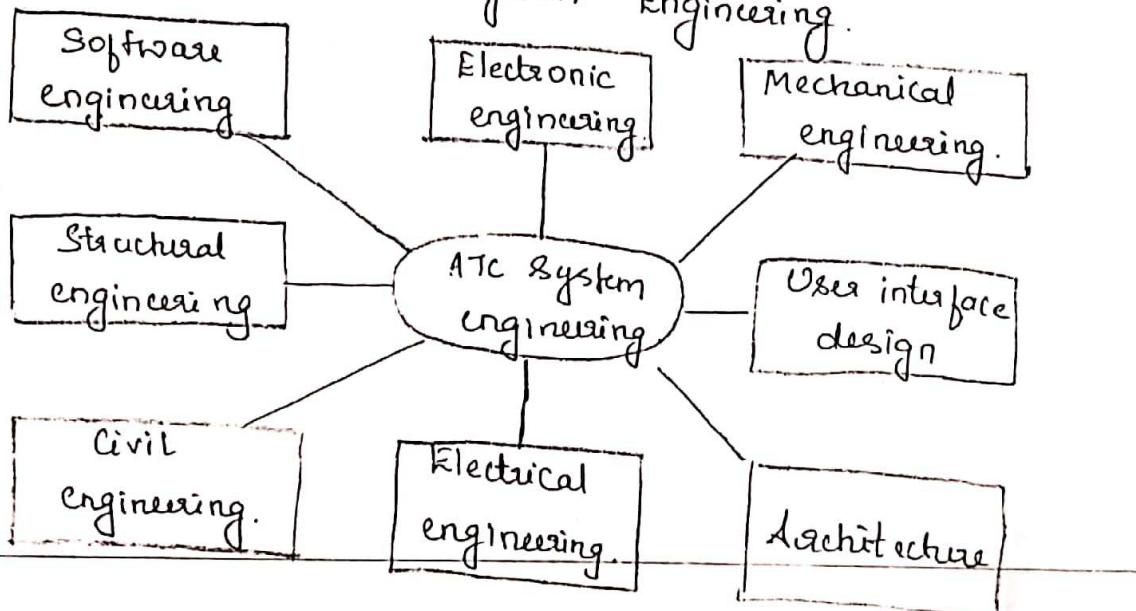
## Unit - 1.

### Critical Systems and Software Processes.

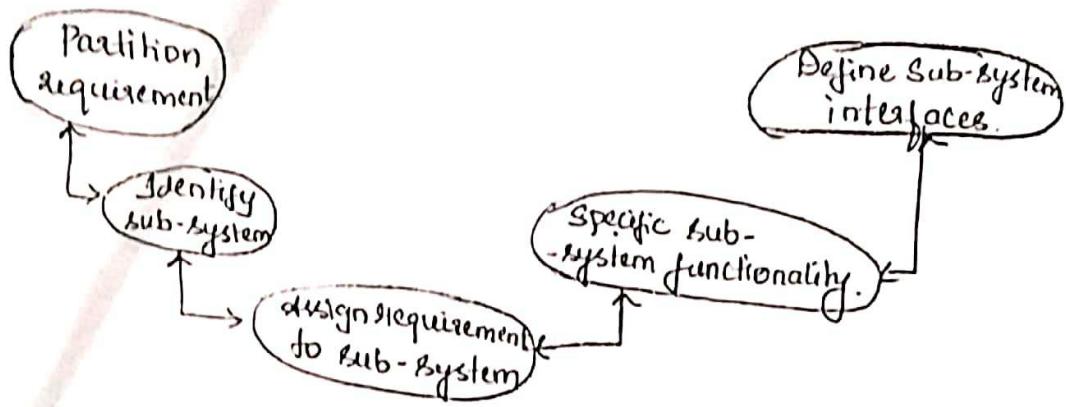
- The System Engineering Process.



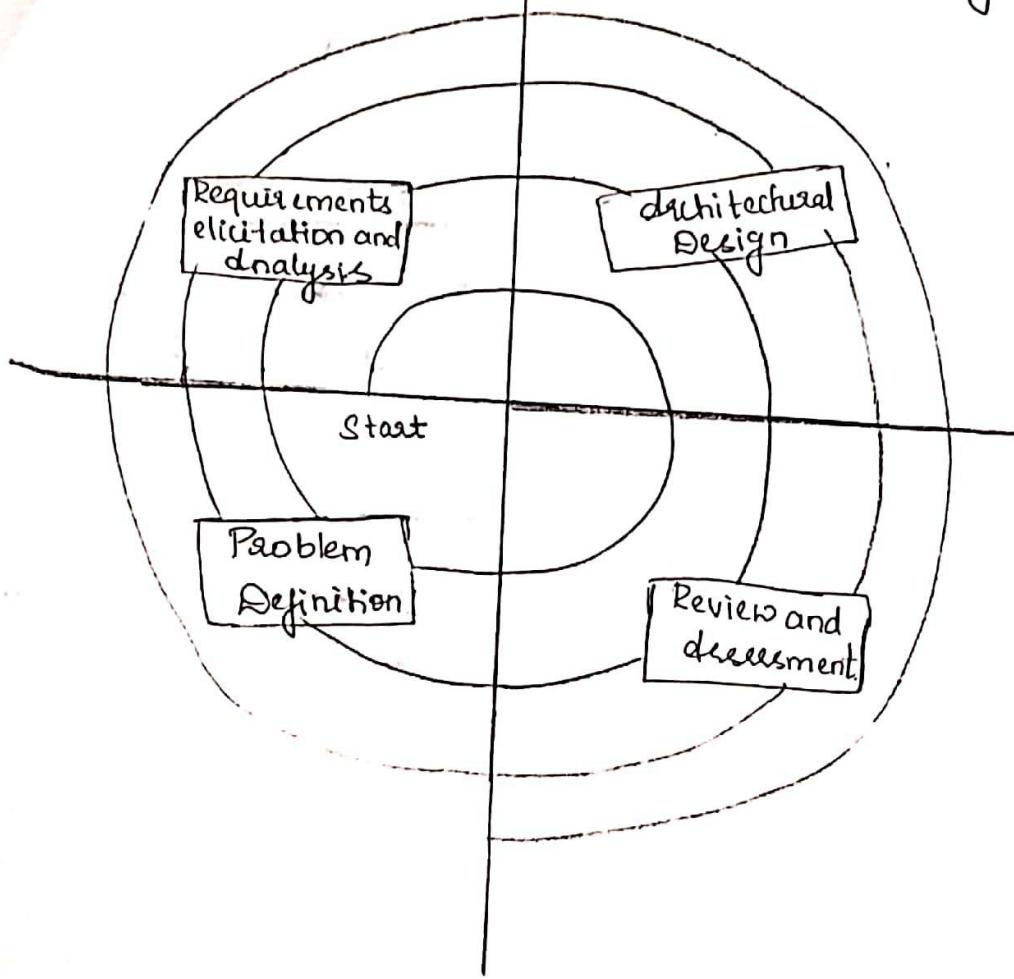
- Disciplines involved in System Engineering.



- System Design.

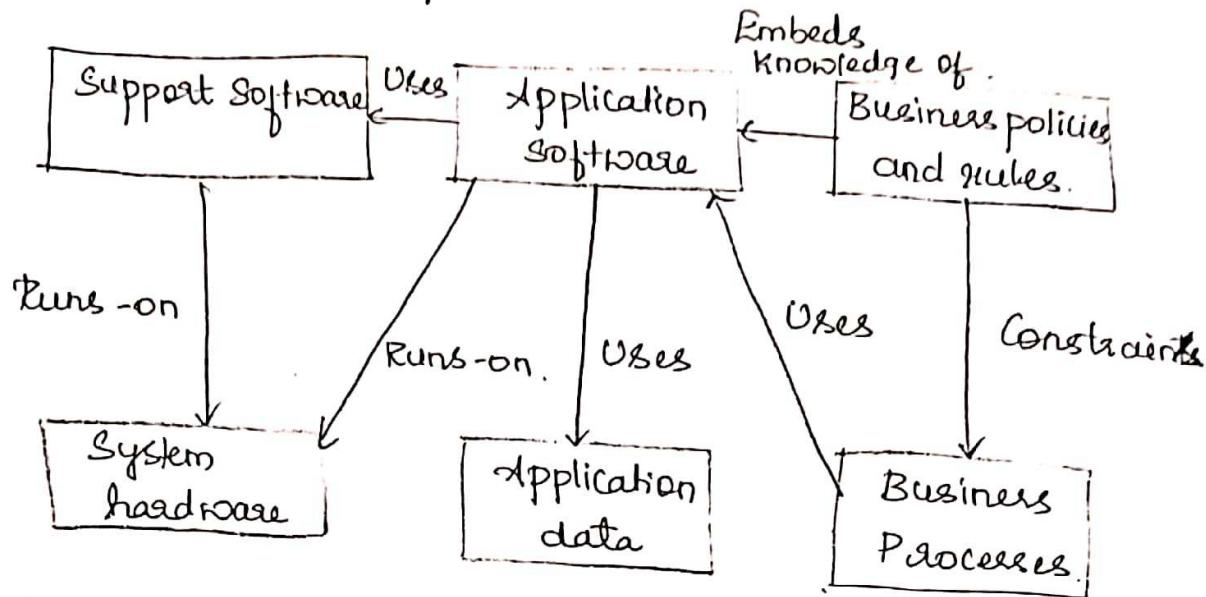


- Spiral model of requirements and Design.

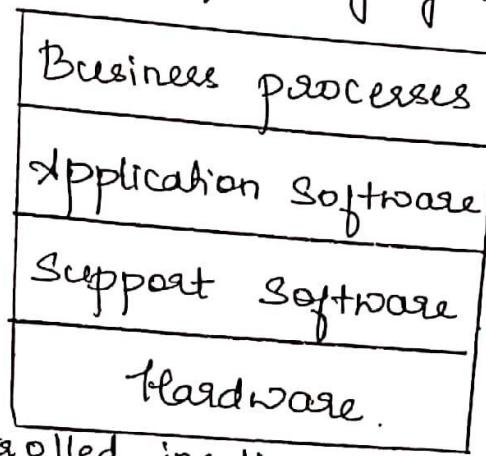


- Legacy system components.

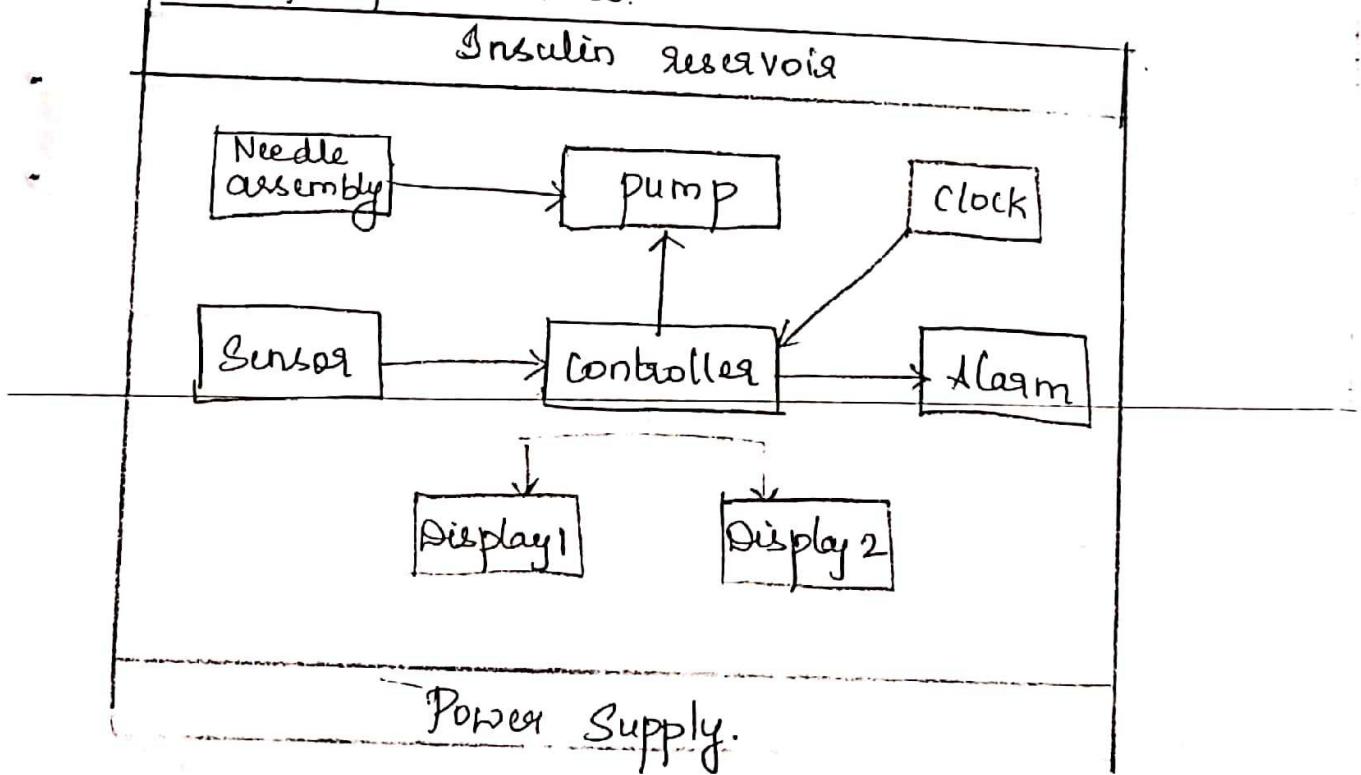
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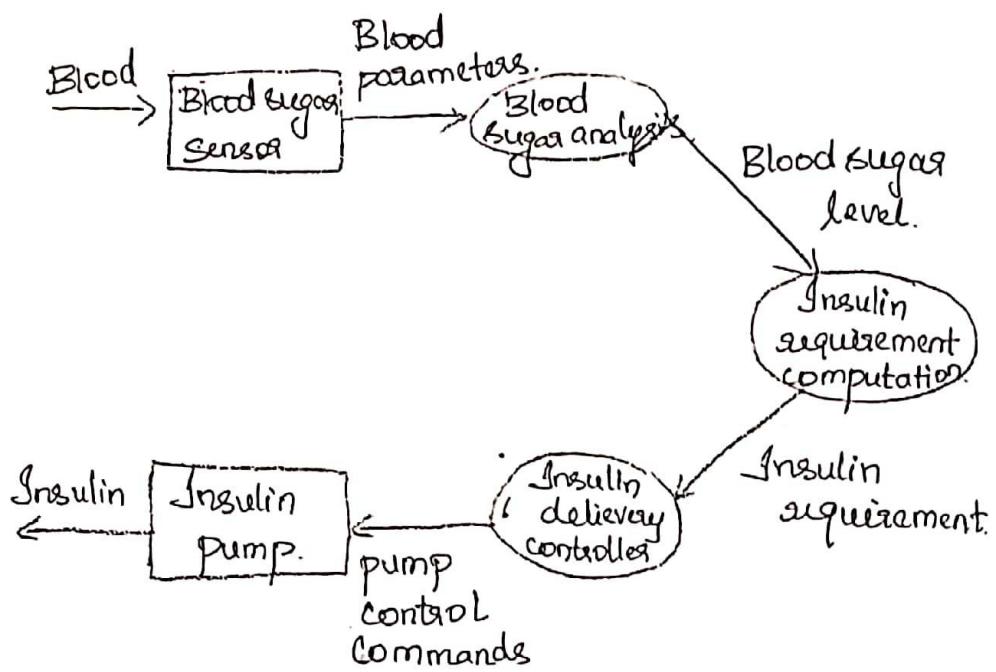
- Layered model of a legacy system.



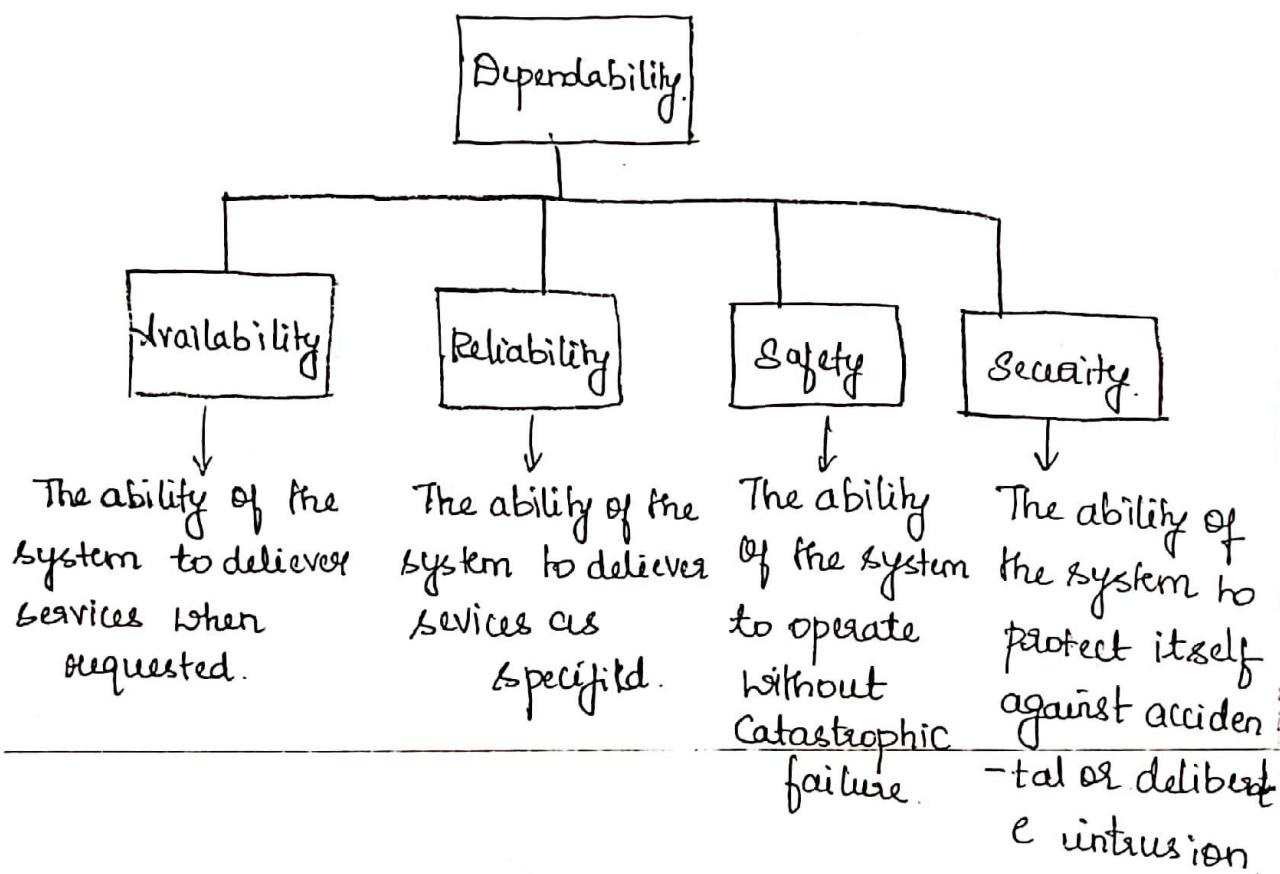
- Software controlled insulin pump.
- Insulin Pump Structure.



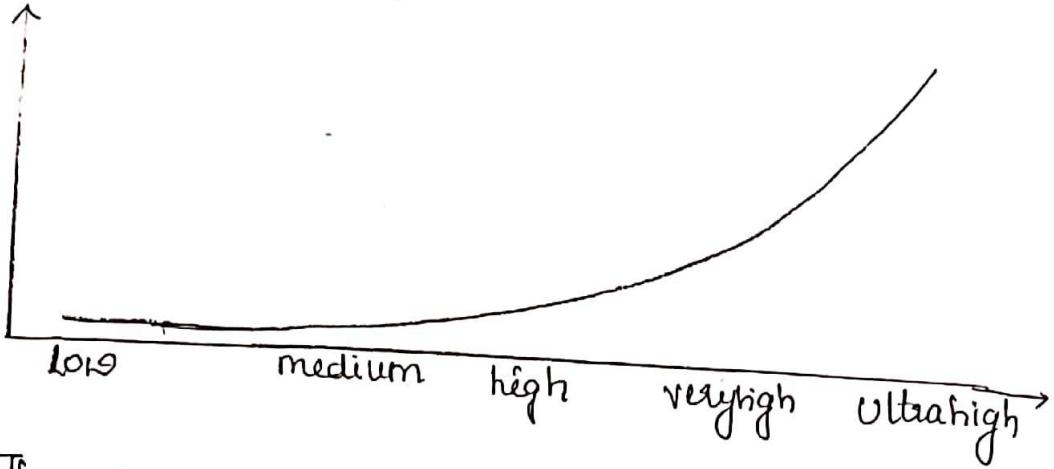
- Data-flow model of the Insulin pump.



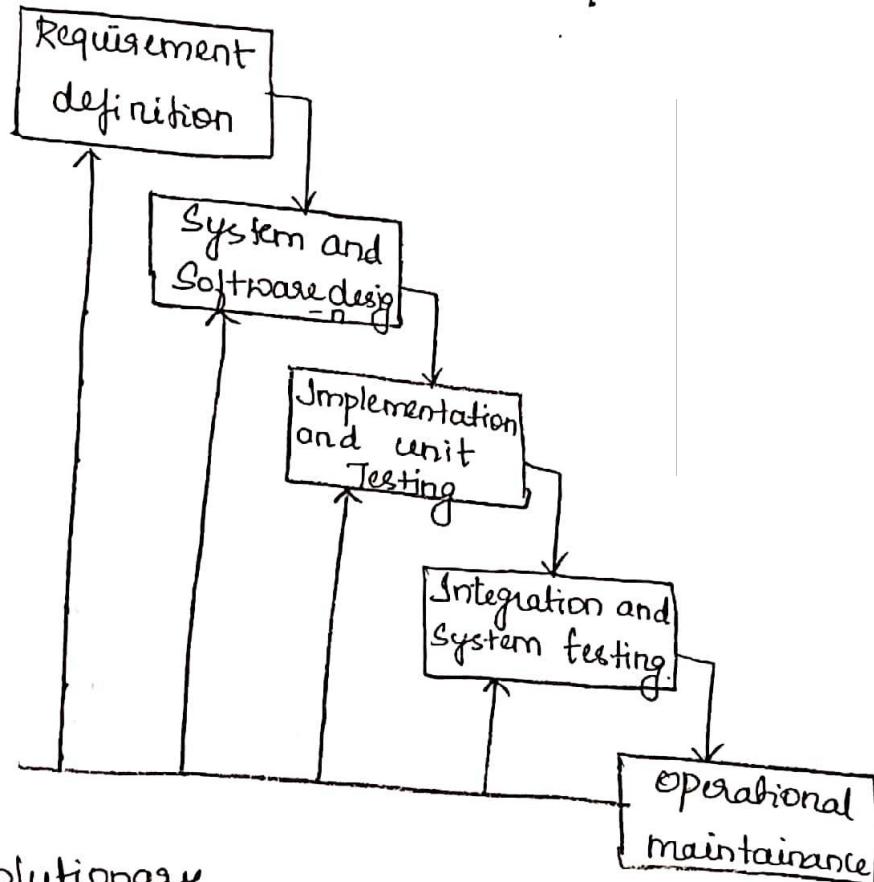
- Dimensions of Dependability.



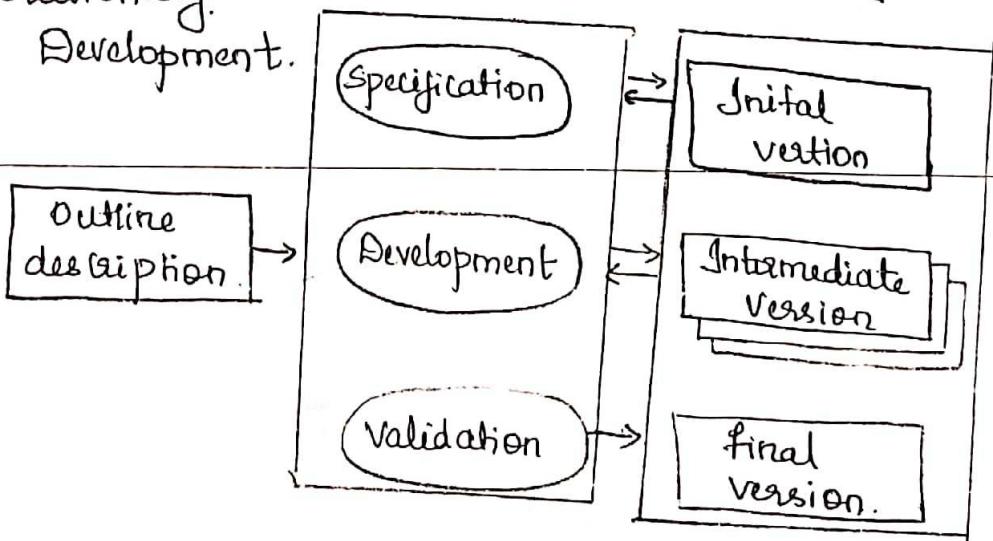
- Cost dependency curve.



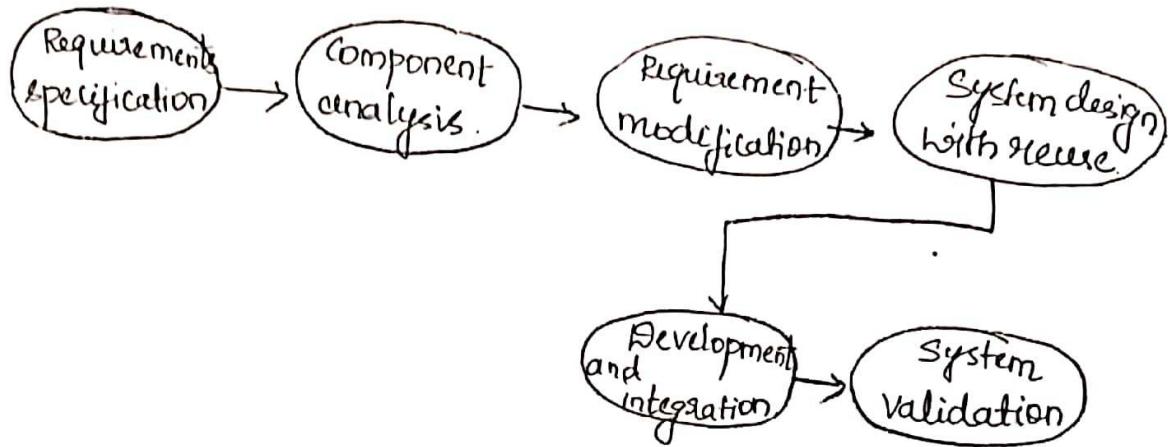
- The Software life cycle.



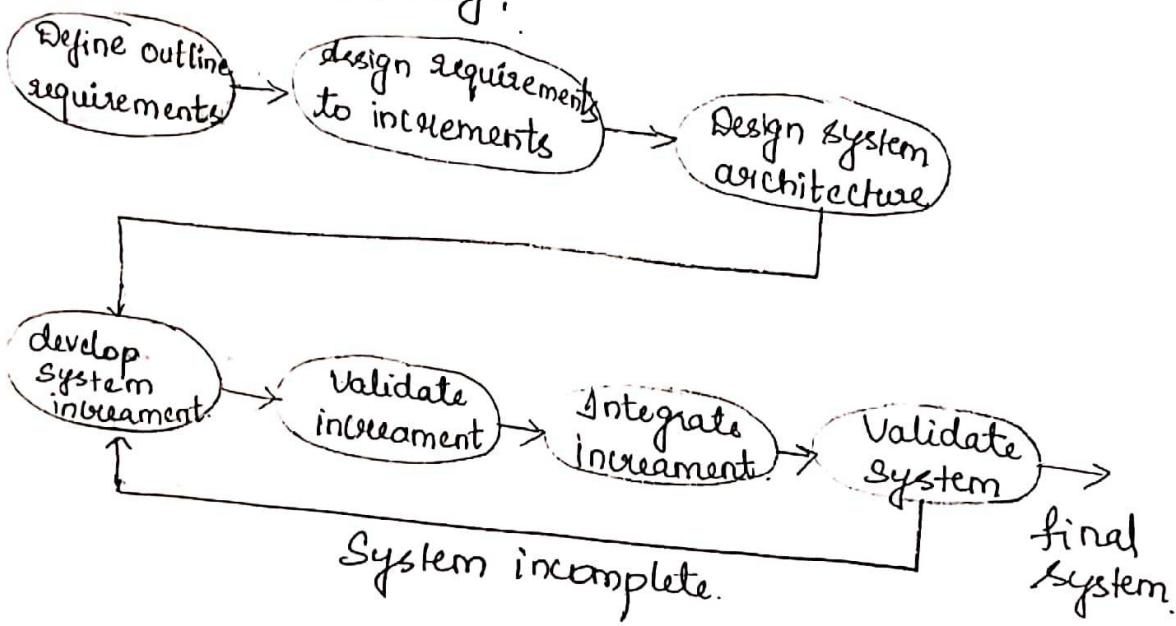
- Evolutionary Development.



- Component - based software engineering.



- Incremental delivery:



- Boehm's Spiral model of the software process.

Determine objectives  
alternatives and  
constraints

Risk analysis

Risk analysis

Risk analysis

Review.

Requirements plan  
Life-cycle plan

Development plan

Plan next phase.  
and test plan.

operation  
- al  
Proto - type

Prototype 3

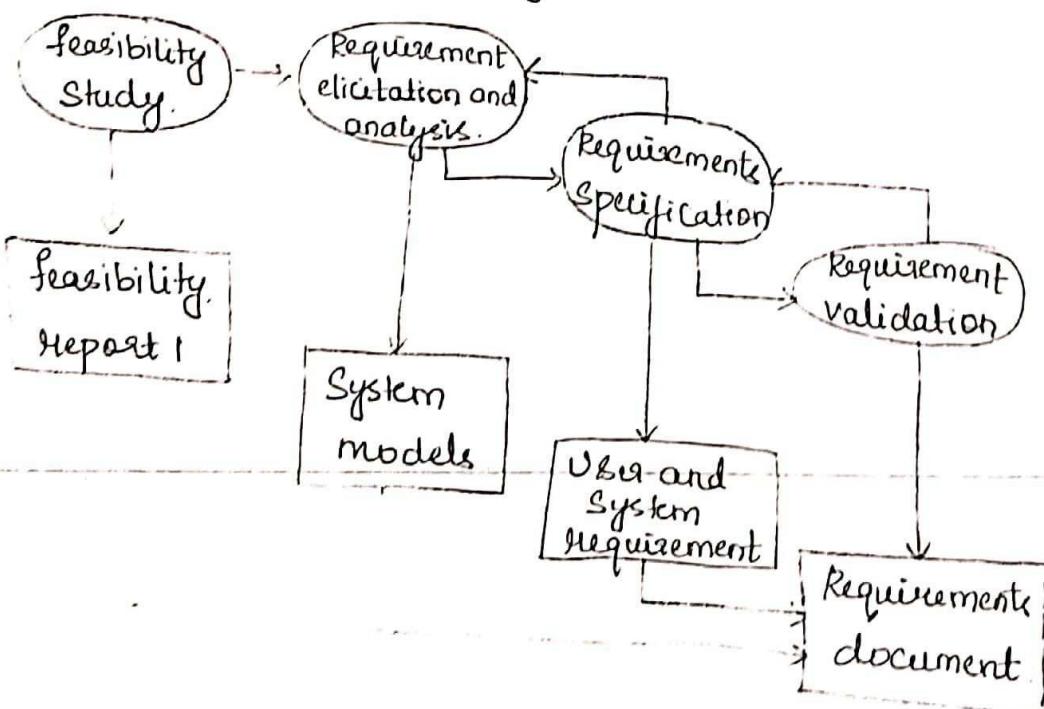
Prototype 2

Risk analysis  
Proto type

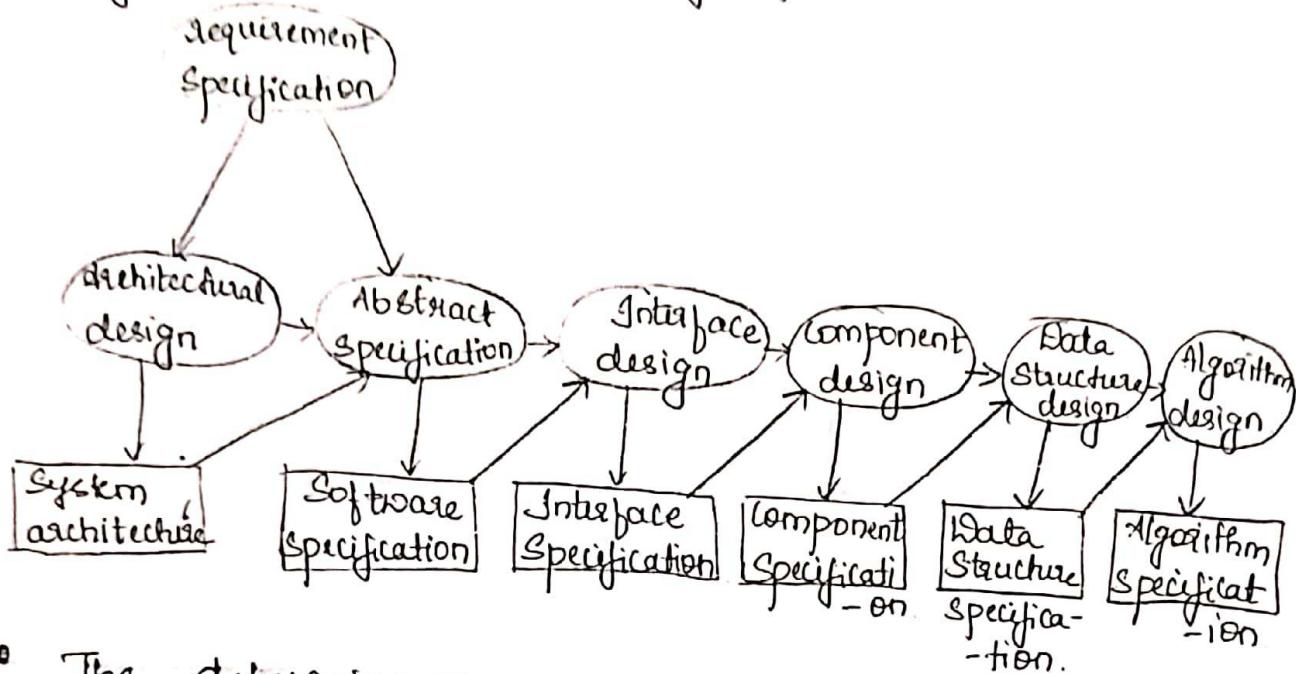
Concept of  
operation. S/I/O  
Simulations, models,  
benchmarks.

Requirement Product Detailed  
Validation design design  
Design V & V Acceptance Test  
Service Test. Integration  
Unit Test Develop, verify  
next level product

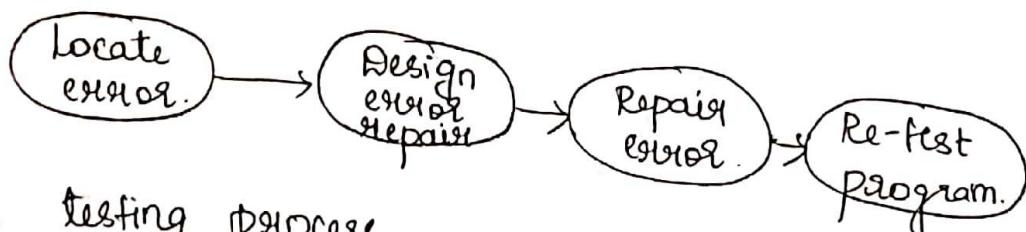
- The requirements engineering process:-



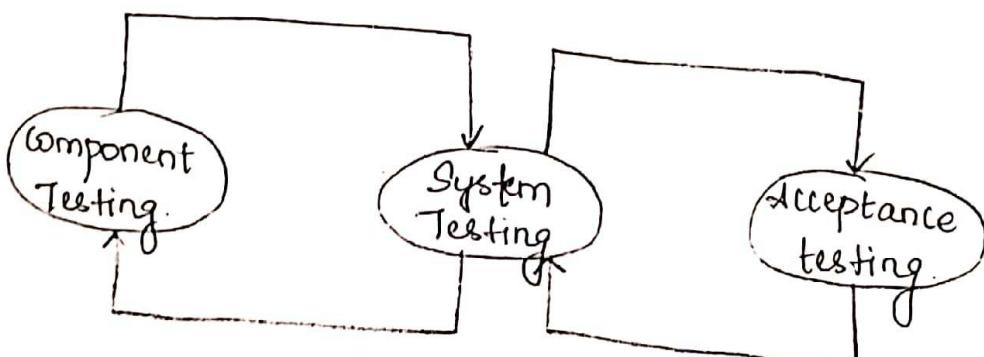
- A general model of the design process.



- The debugging process.

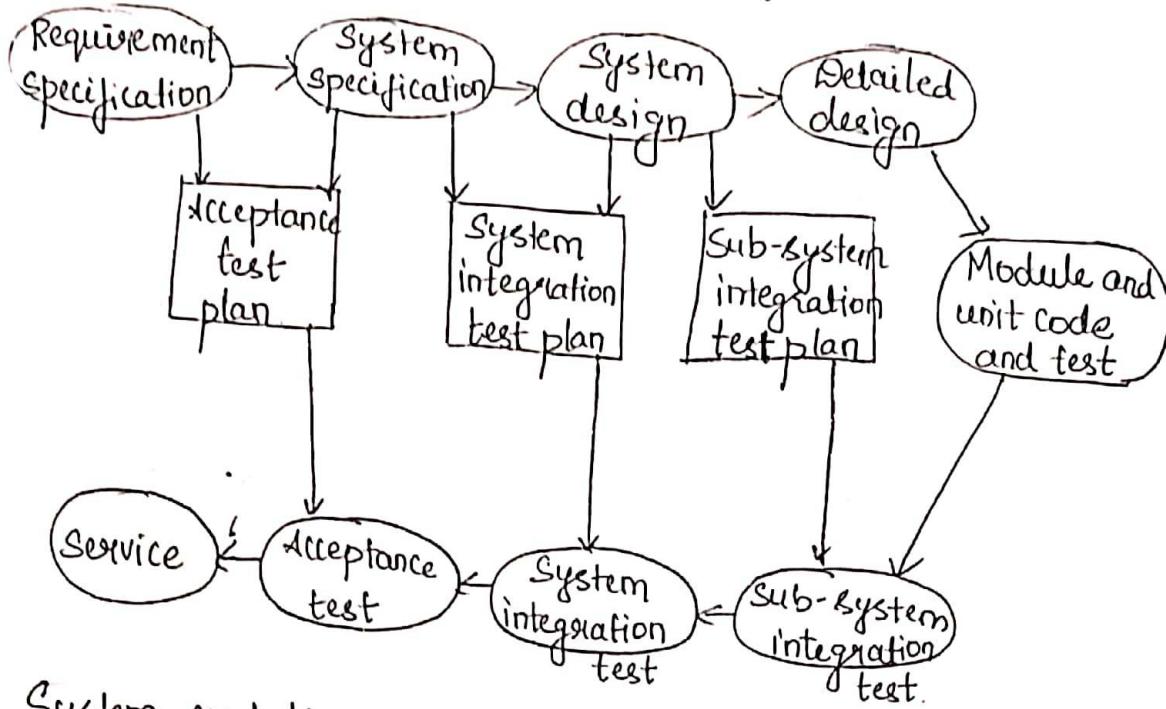


- The testing process.

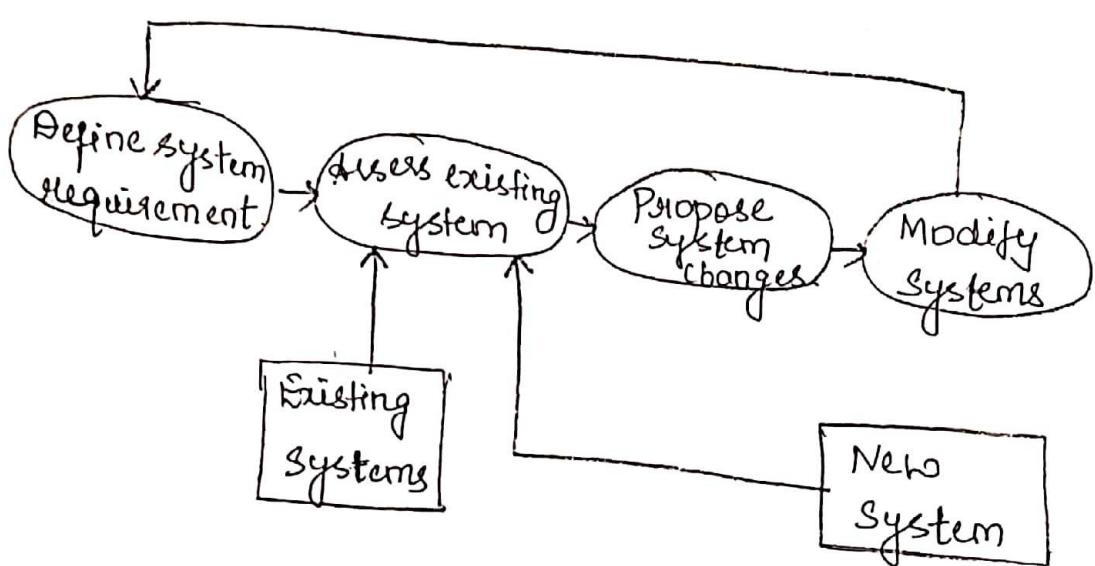


- Testing phases in the software process.

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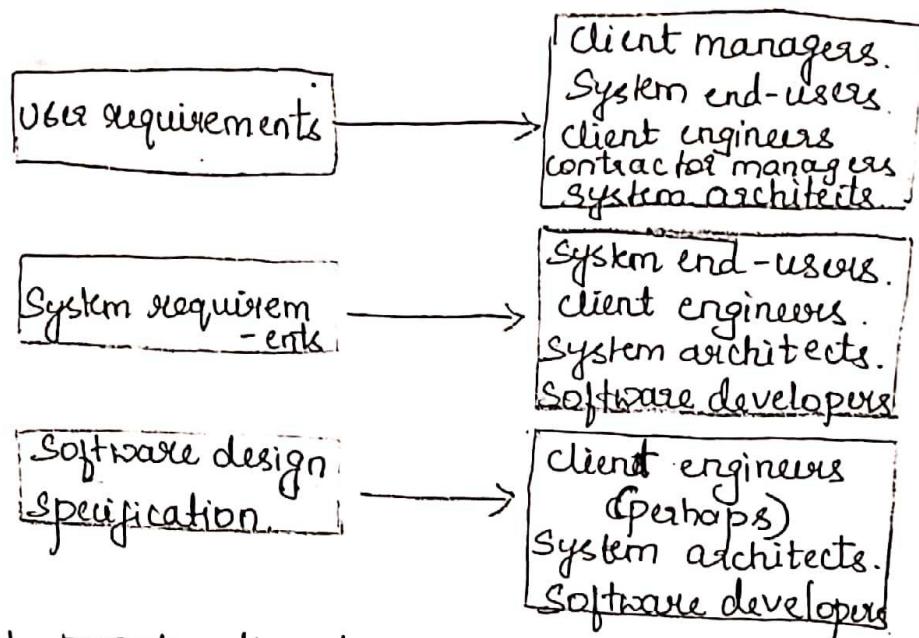
- System evolution.



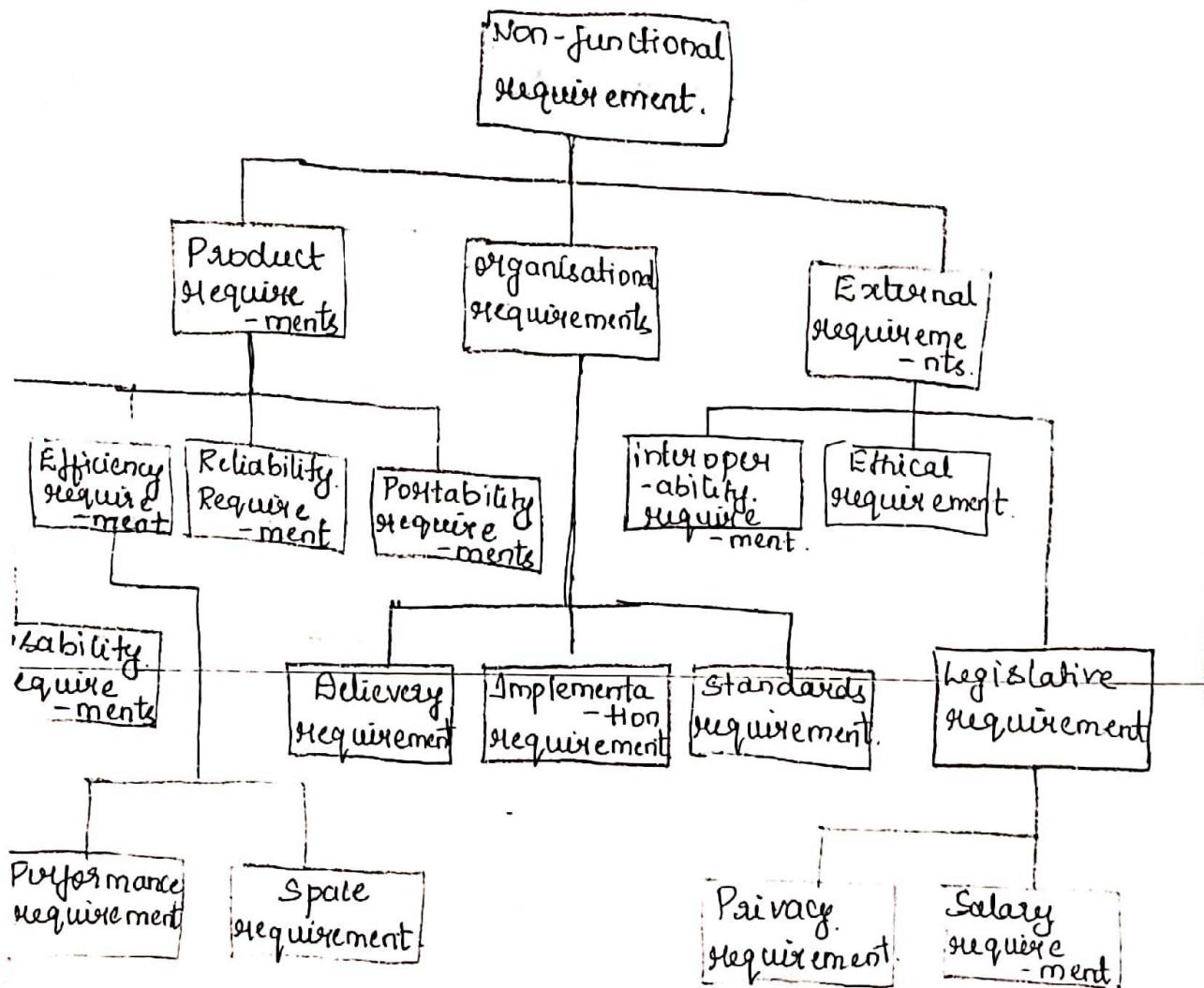
## Module - 2

### Requirement and Development Process.

- Readers of different types of specification.

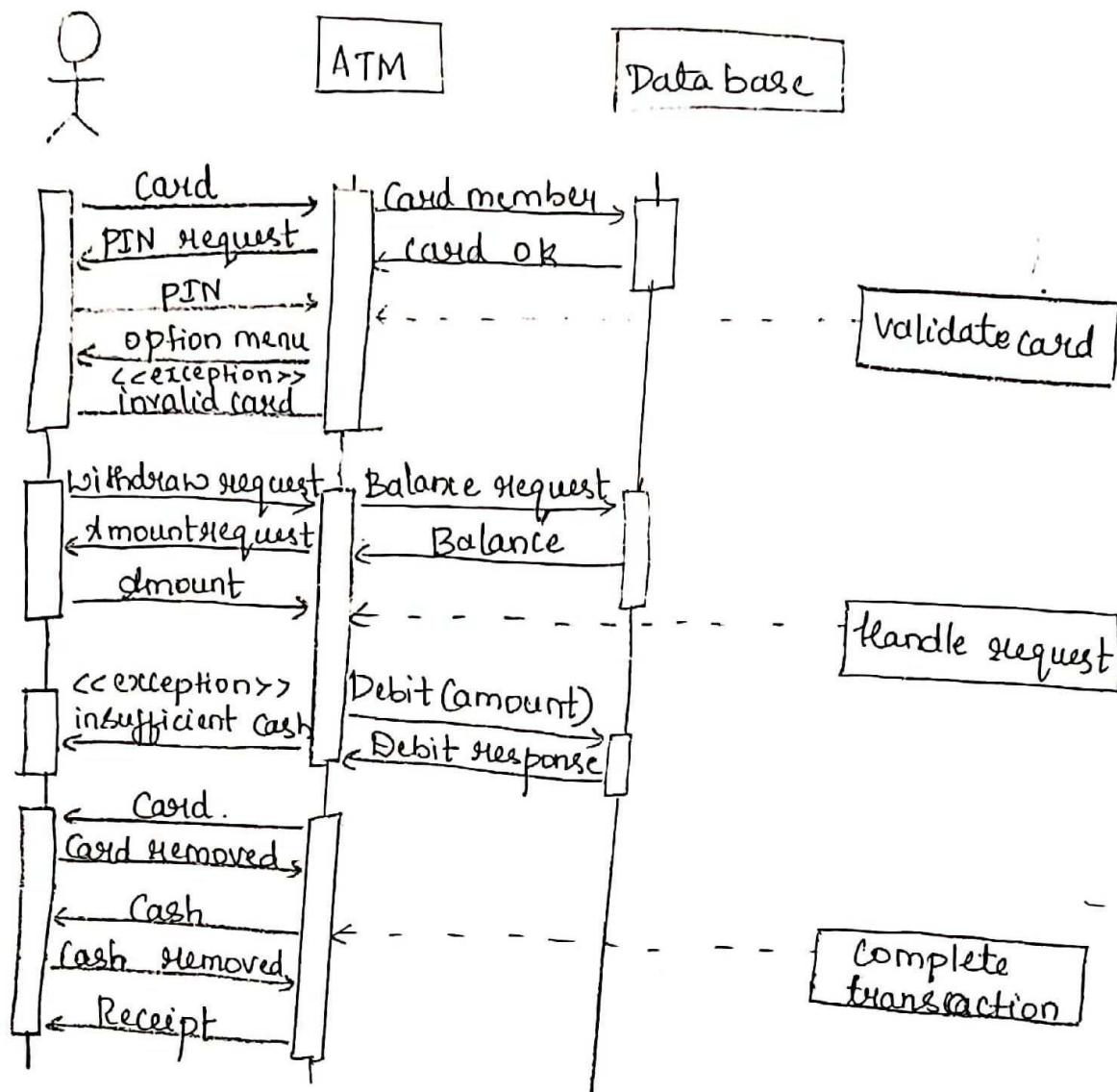


- Types of non-functional requirement.

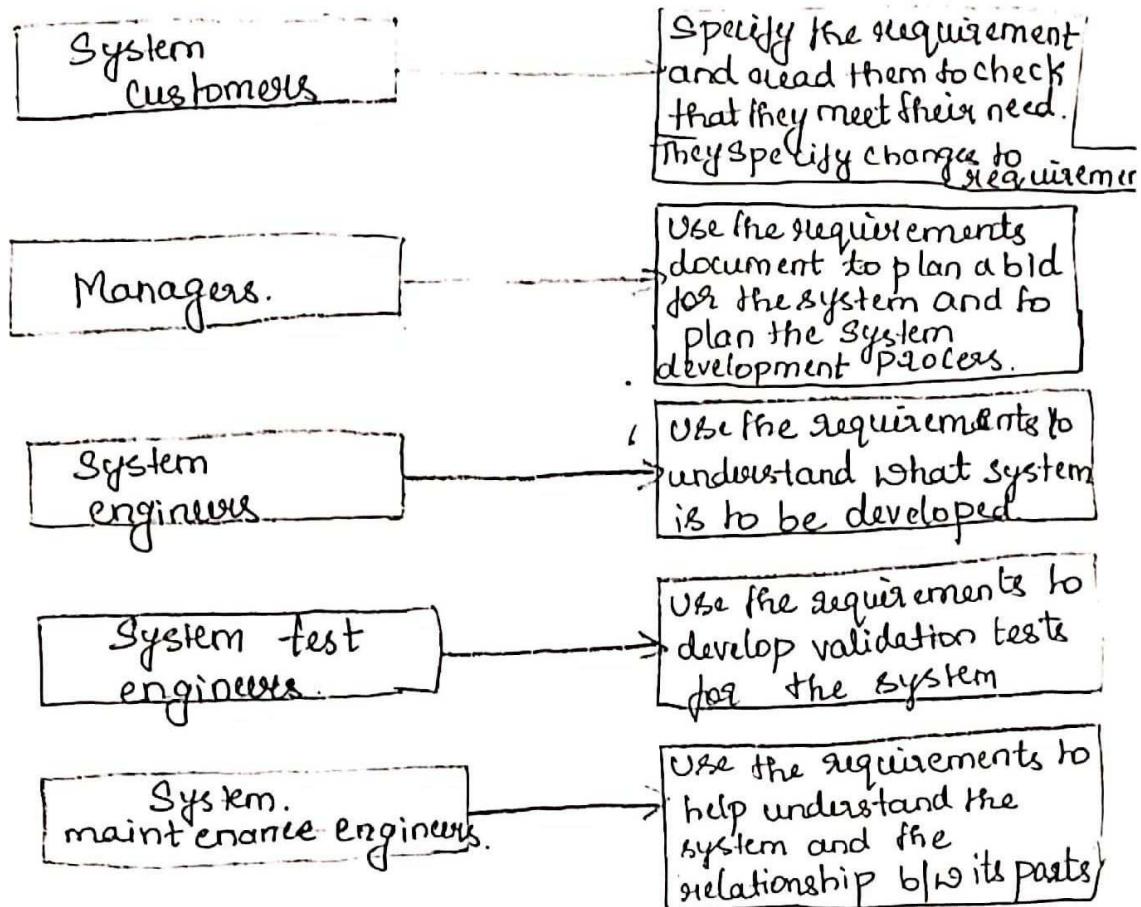


• Sequence diagram of ATM Withdrawal.

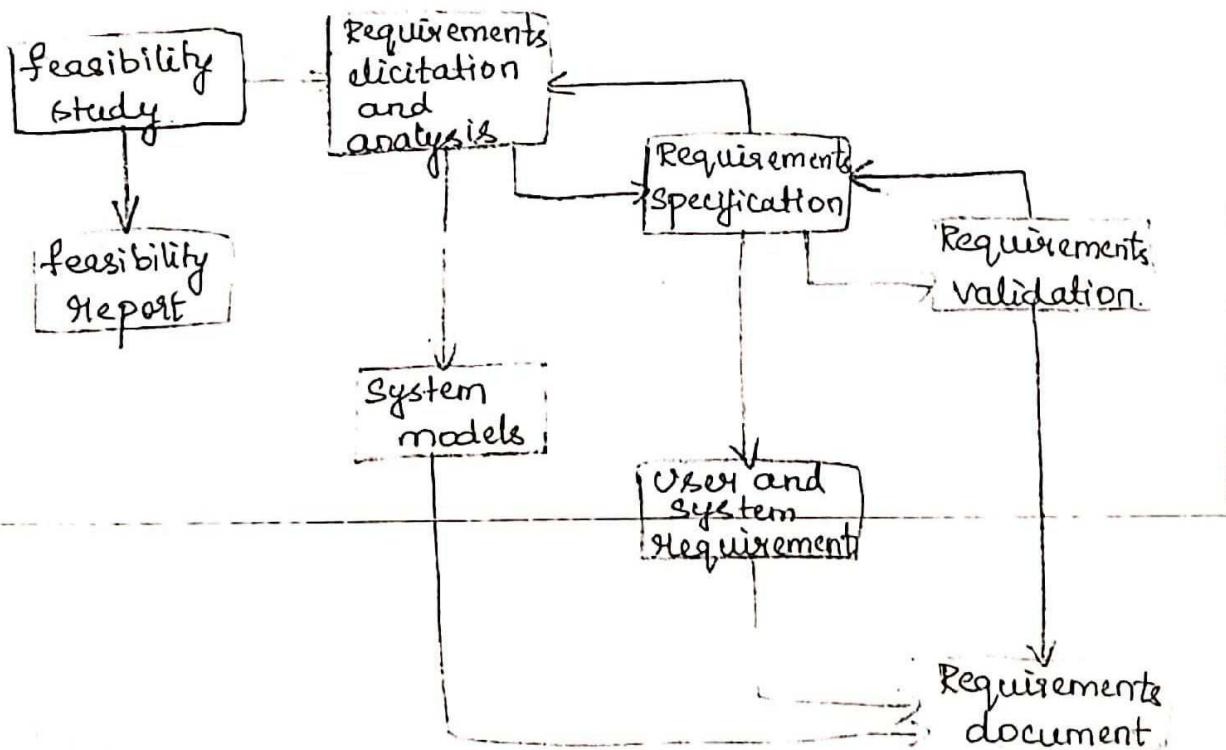
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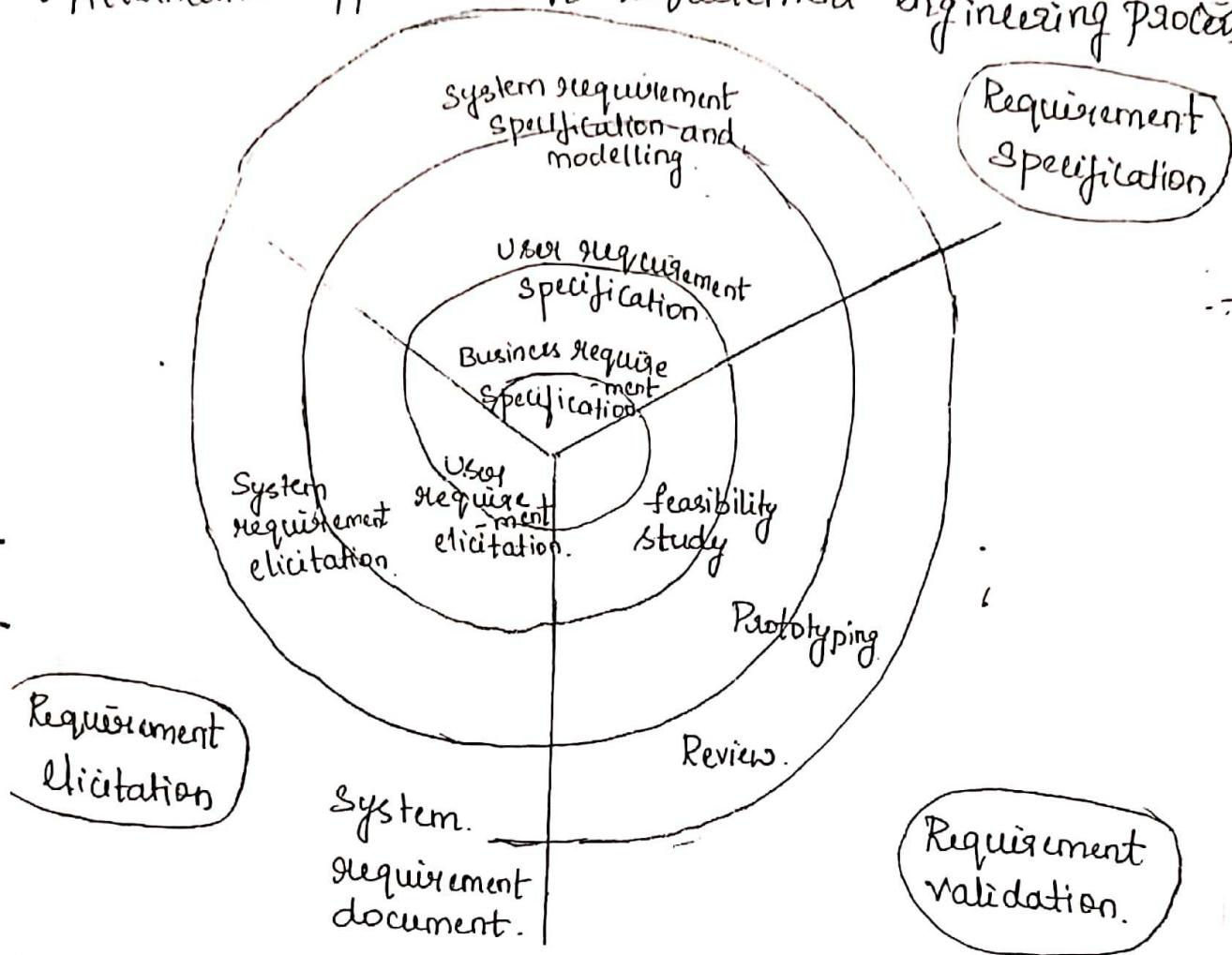
- Users of a requirements document.



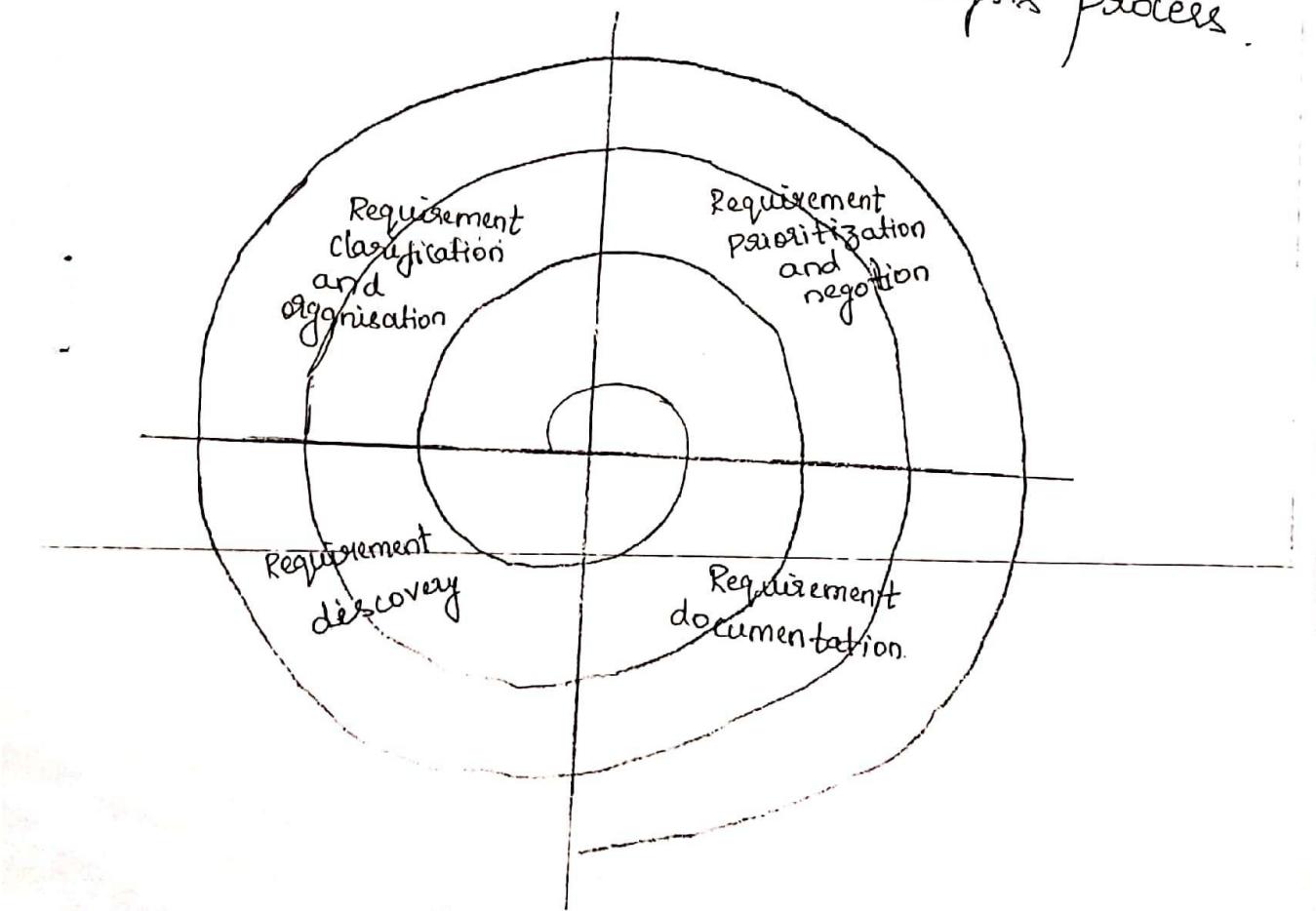
- The requirements engineering Process.



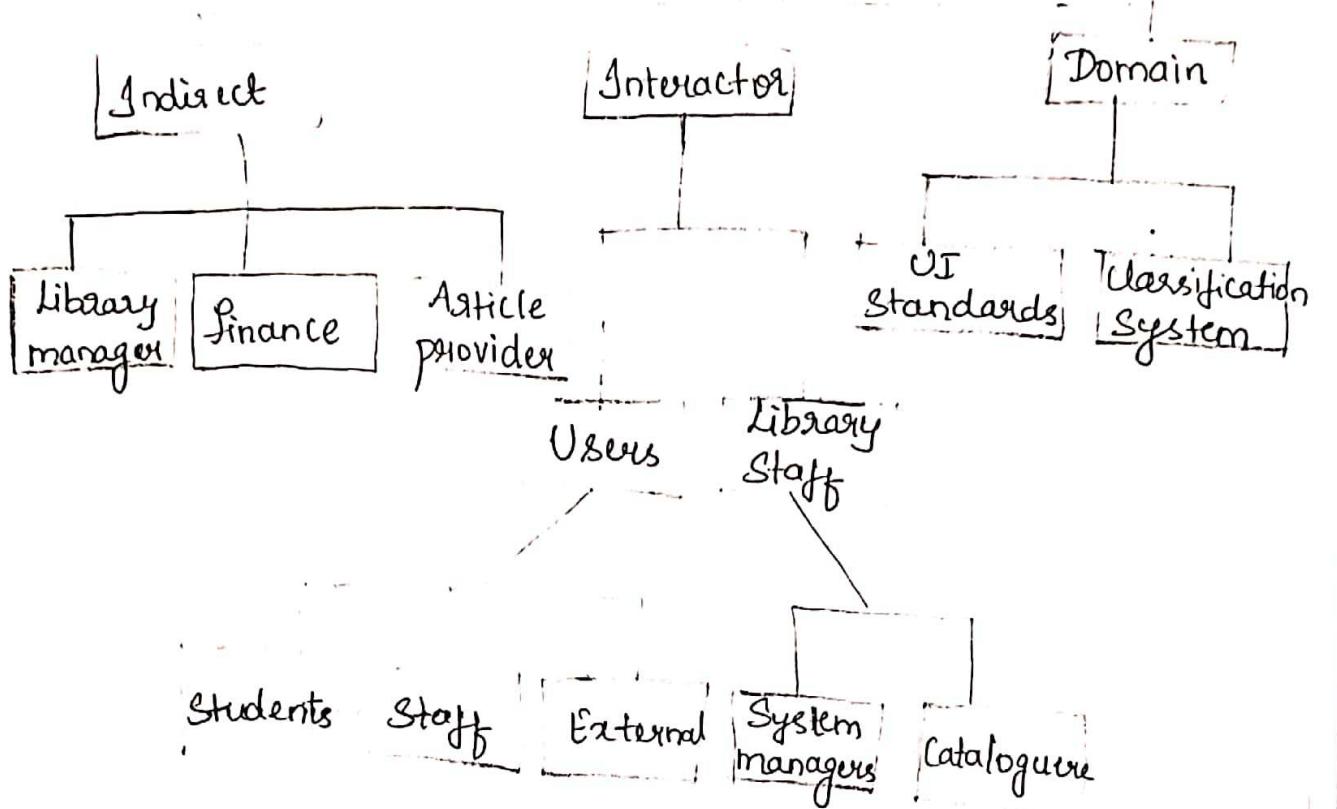
- Hierarchical approach to requirement engineering process



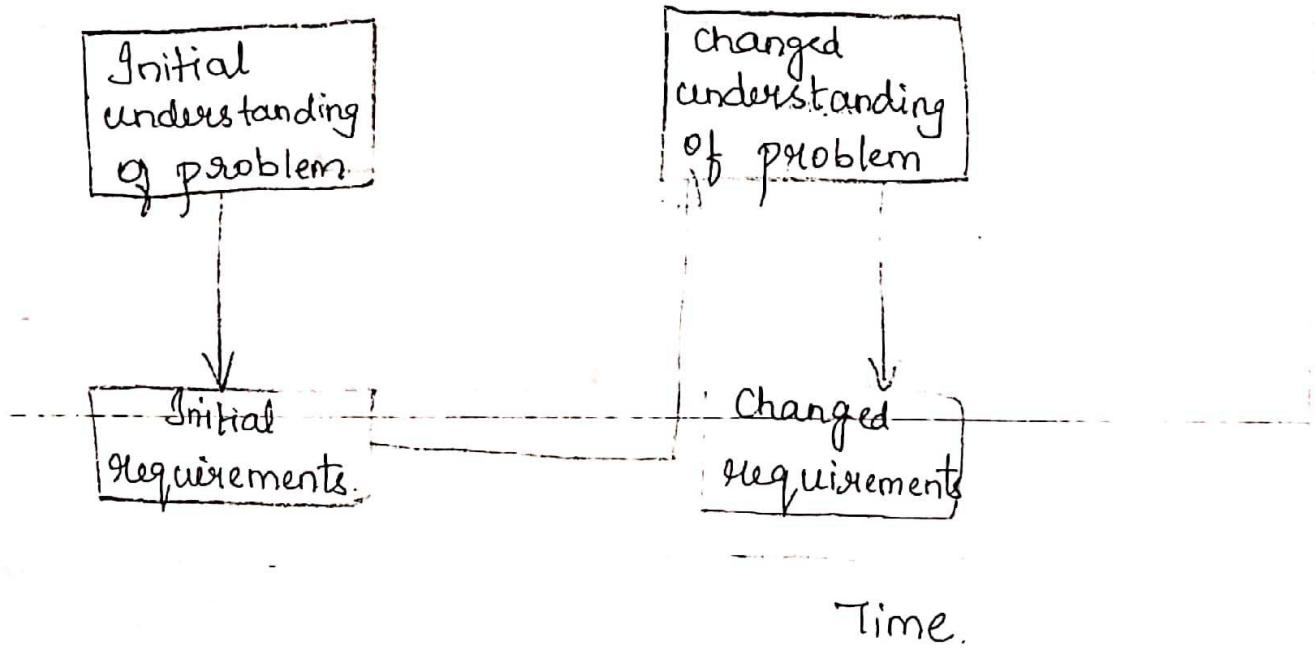
- The requirements elicitation and analysis process



- Viewpoints in LIBSYS.



- Requirement evolution of a process.



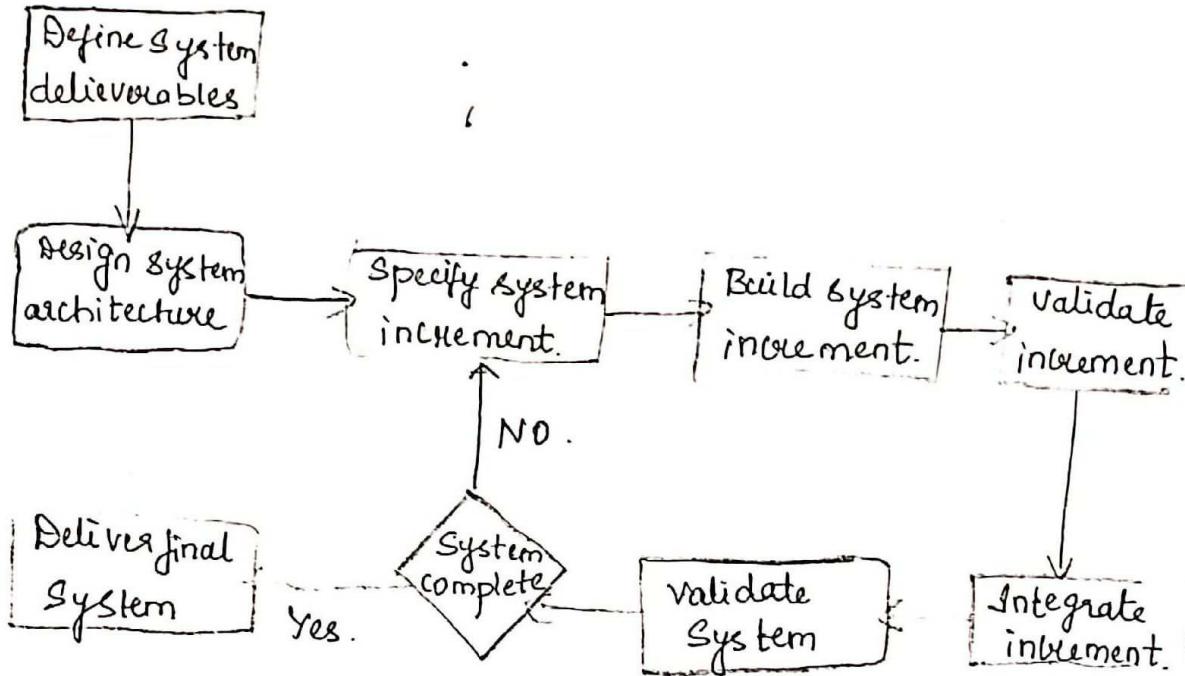
## • Requirements change management.



Identified Problem analysis  
Problem and change  
Specification ...

Change analysis and -  
costing -  
Revised requirement  
Change implementation

## • An interactive development process.



## • Incremental development and Prototyping.

outline requirements.

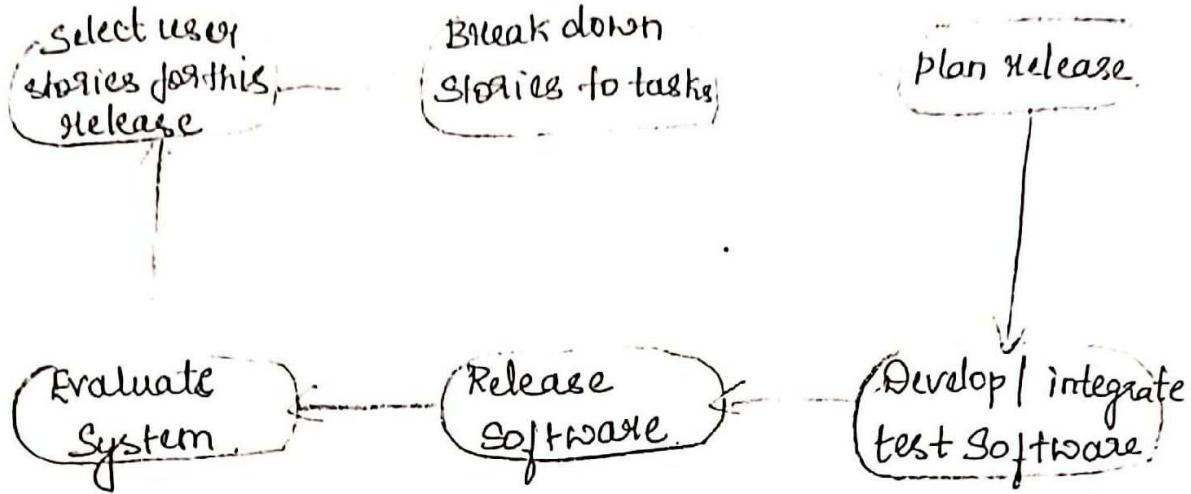
Evolutionary development

Delivered System

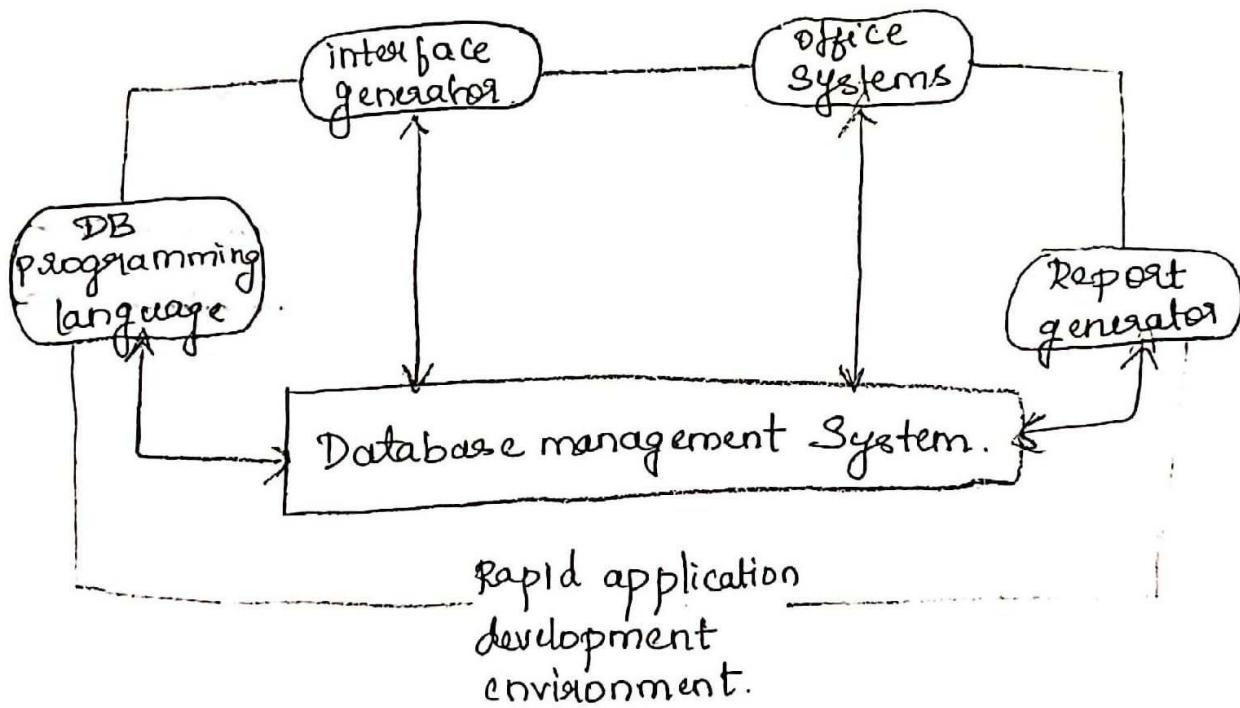
throws-away prototyping

Executable prototype + System Specification

- The extreme programming release cycle

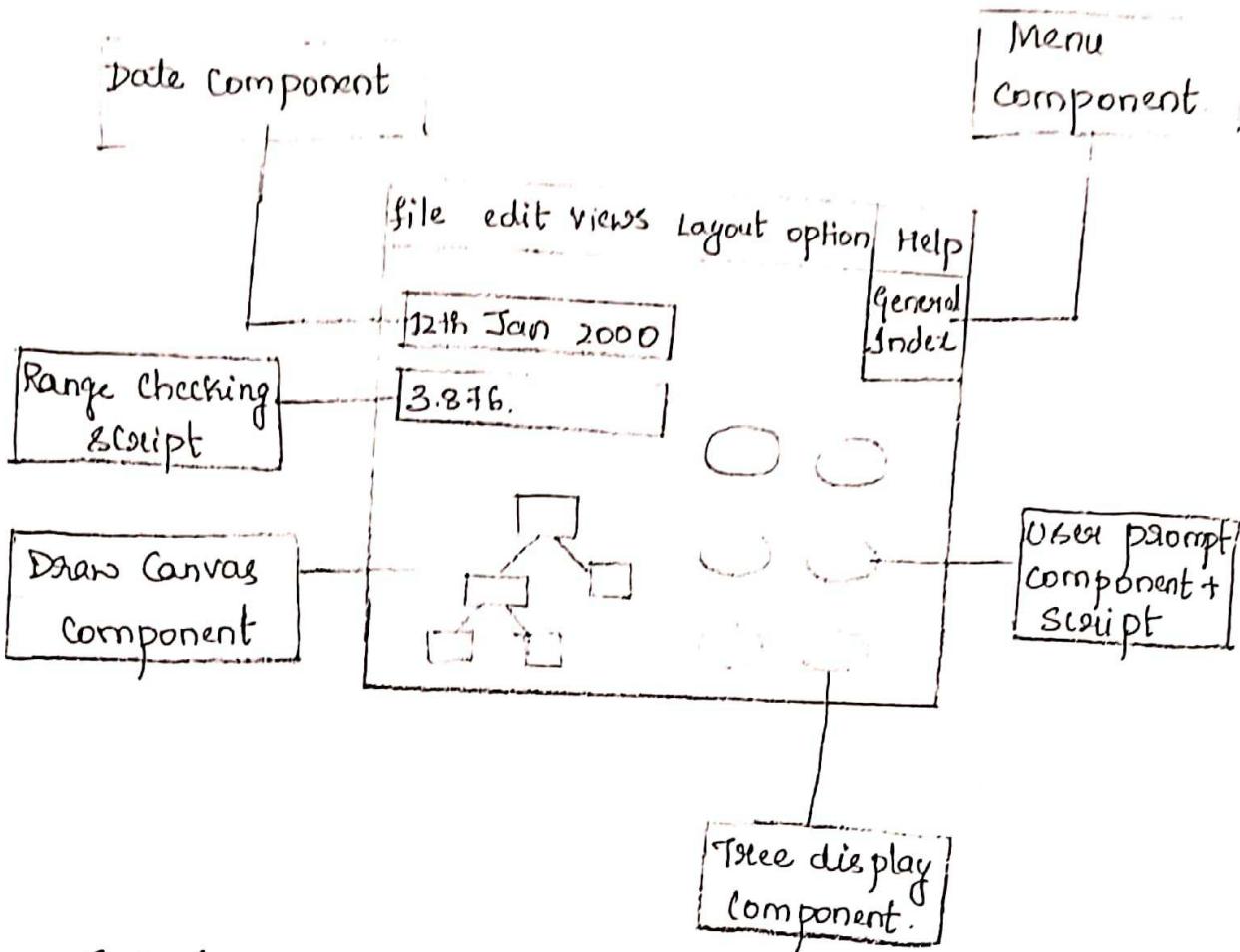


- A rapid application development environment.

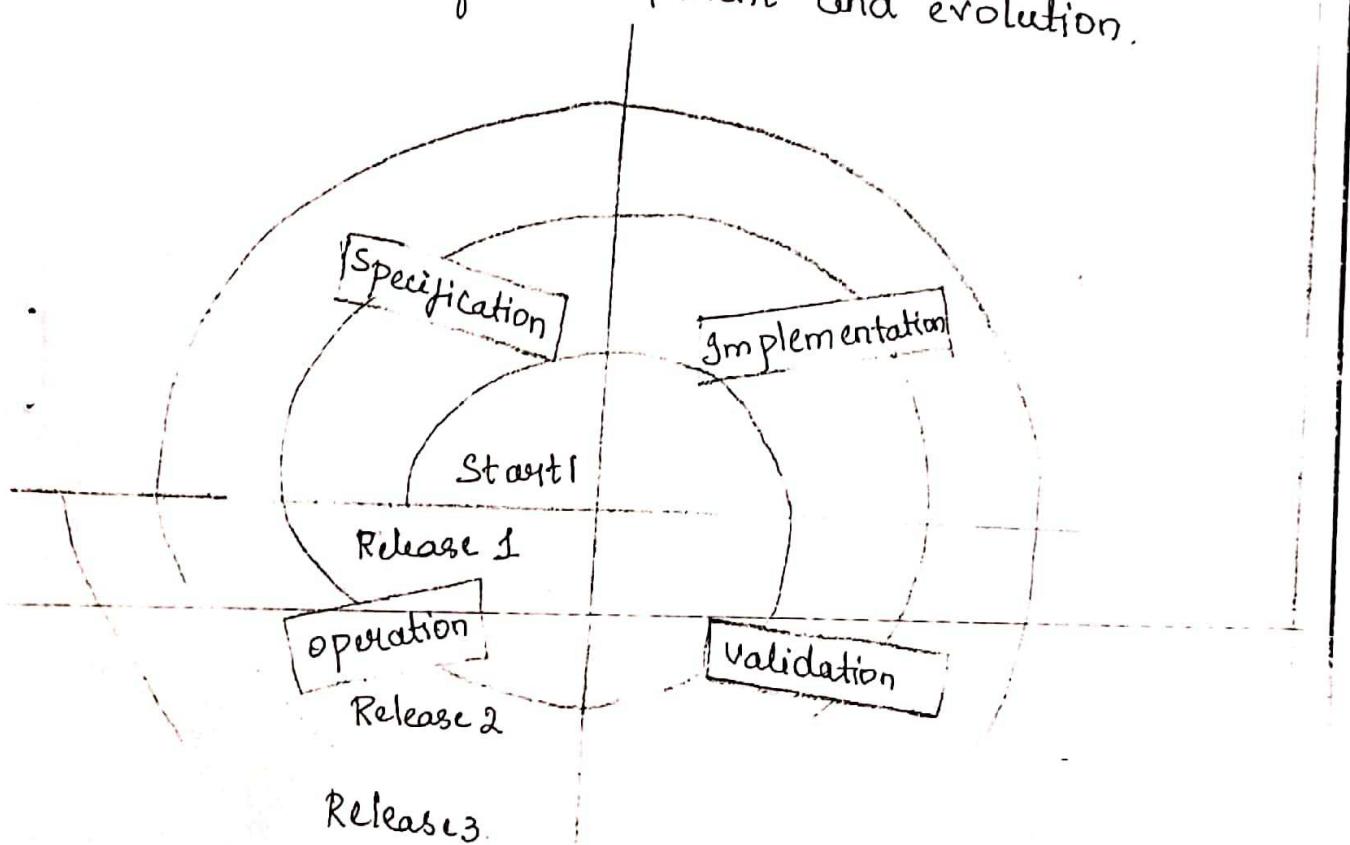


- Tools included in RAD environment.

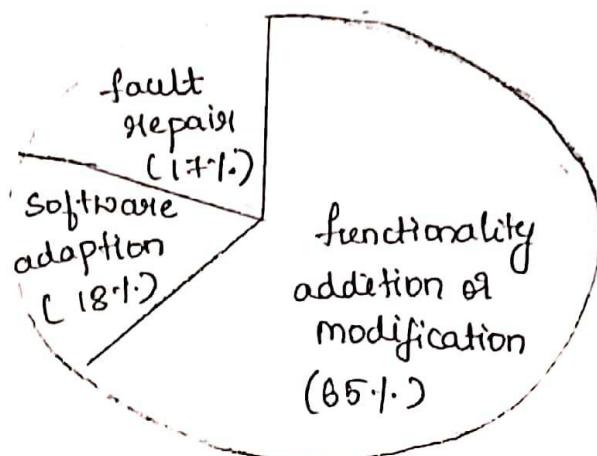
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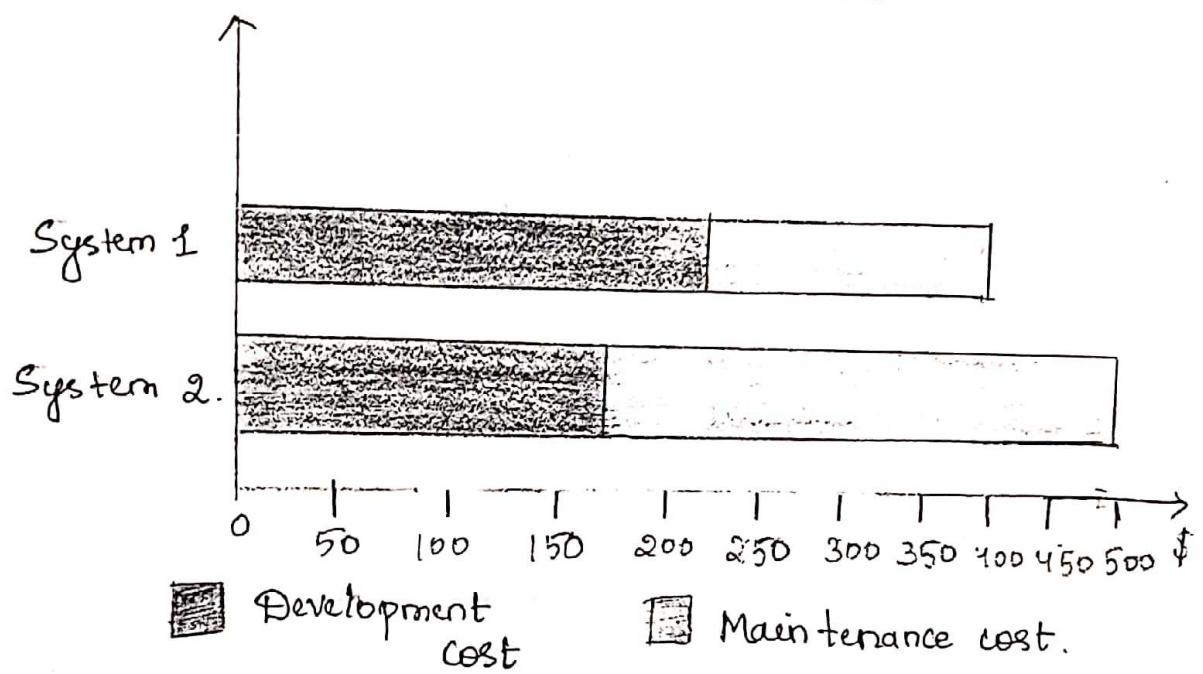
- Spiral model of development and evolution.



- Distribution of maintenance effect

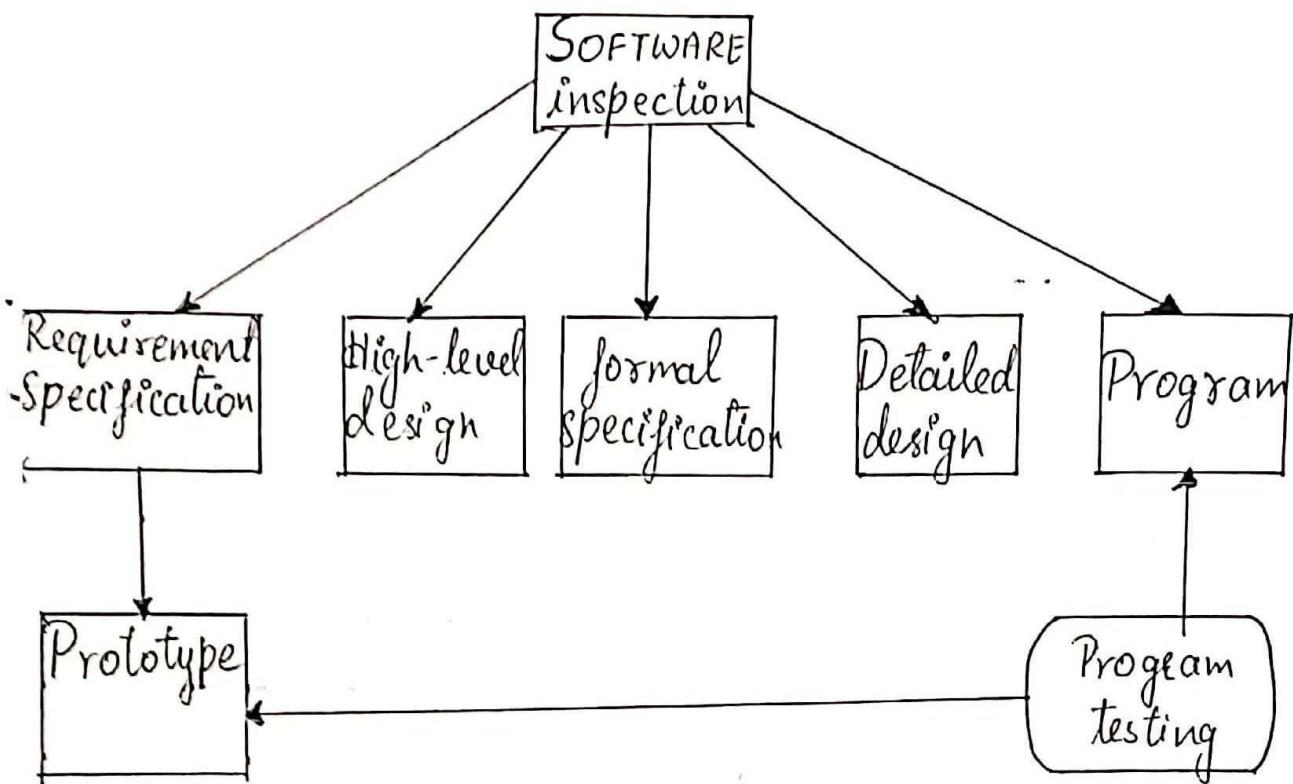


- Development and maintenance costs.

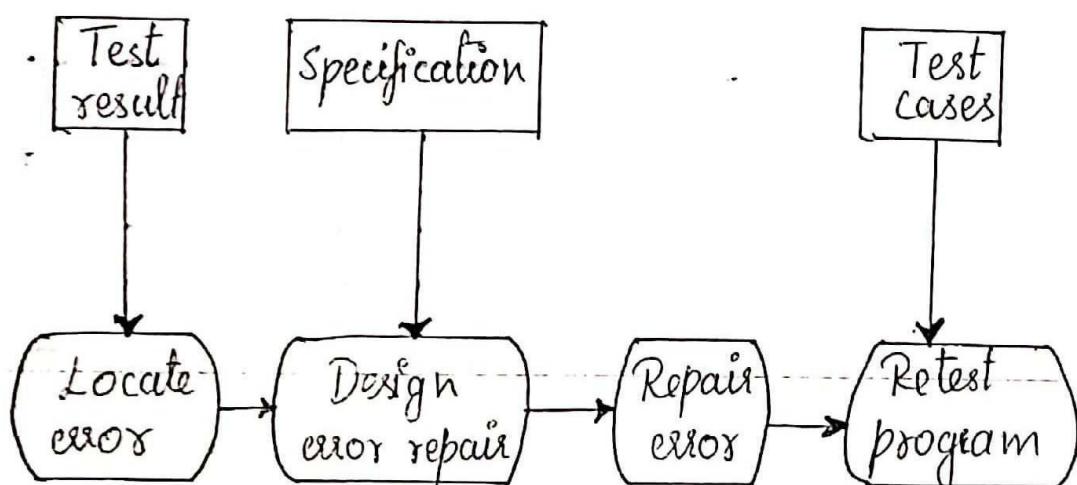


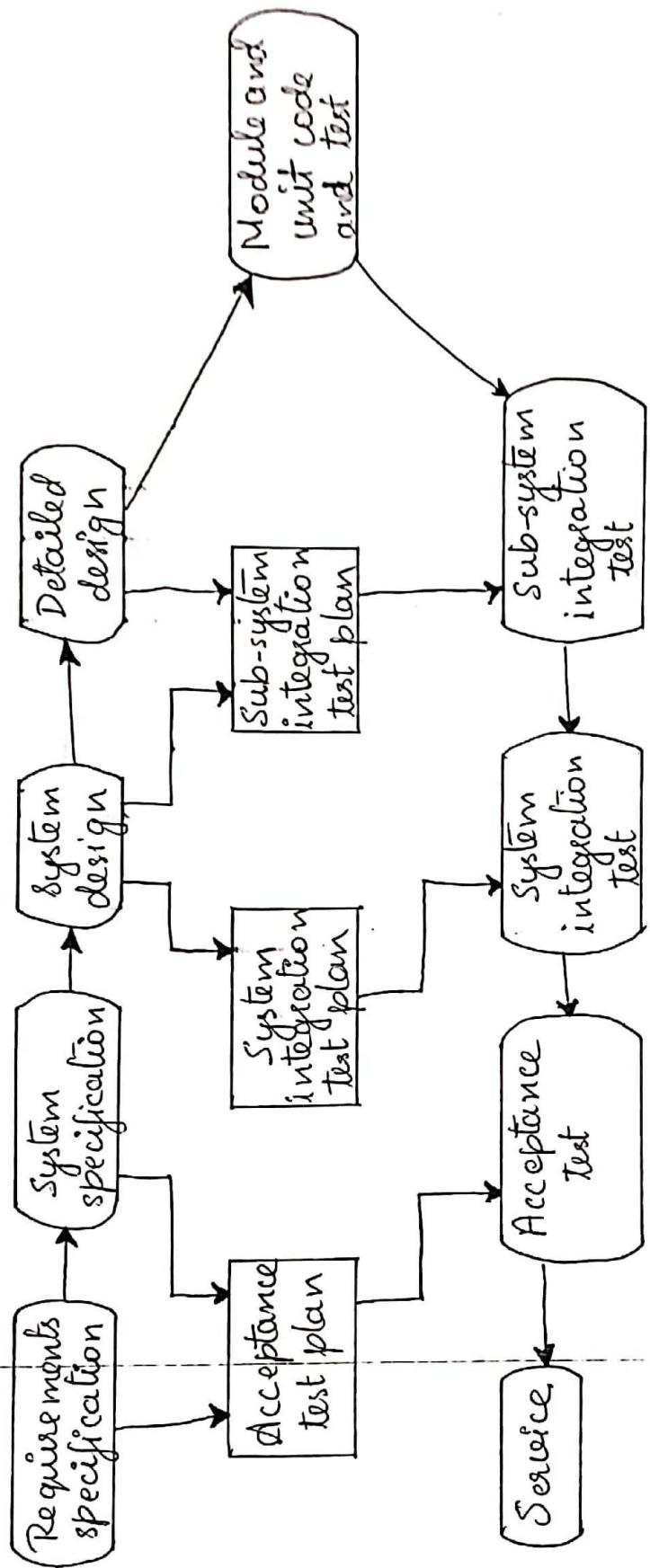
Verification & validation

Static and dynamic verification and validation



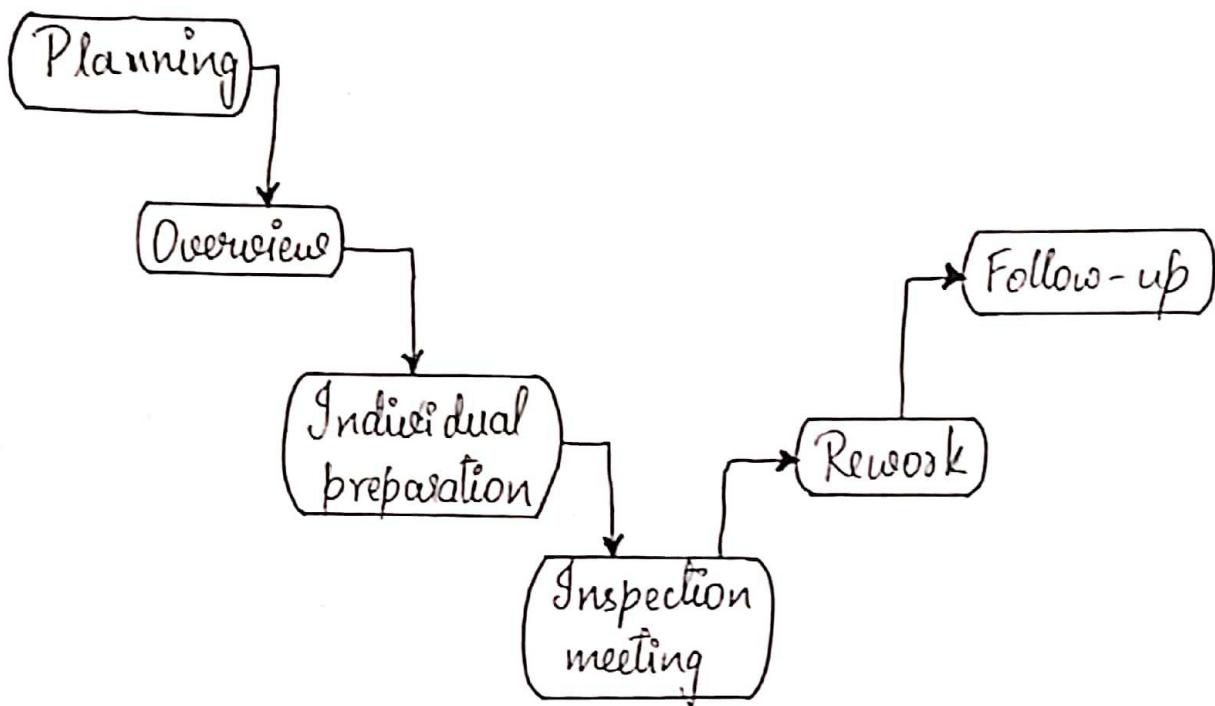
The debugging process



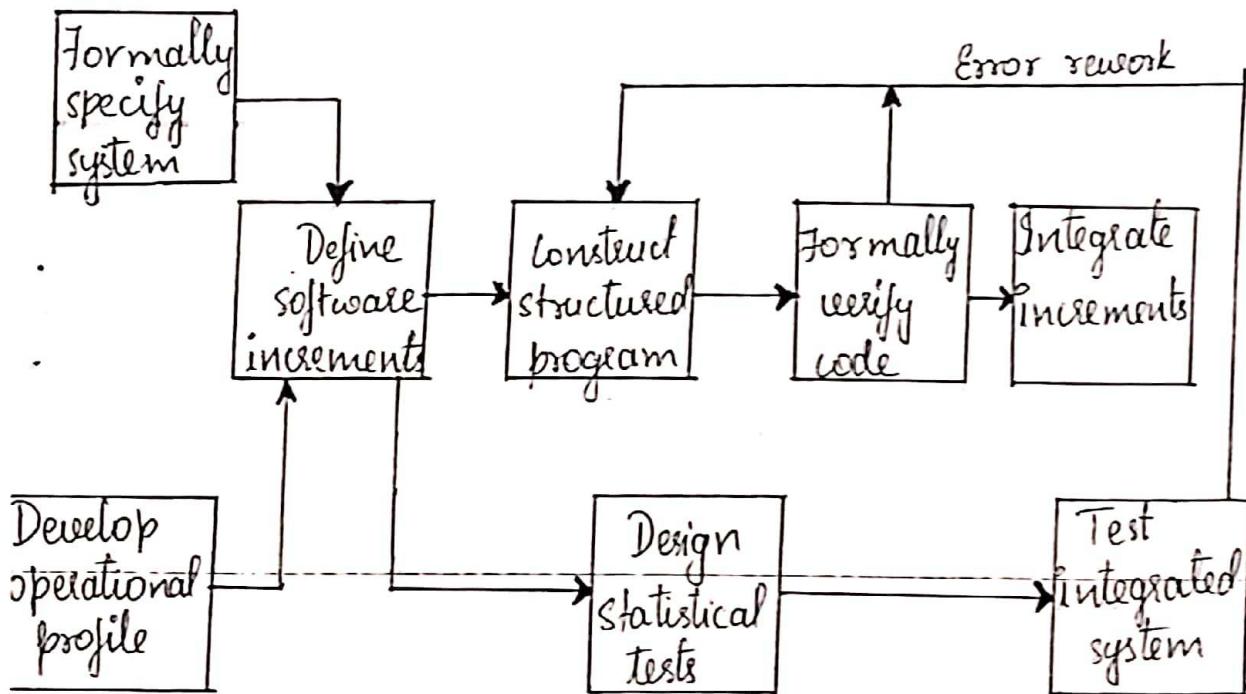


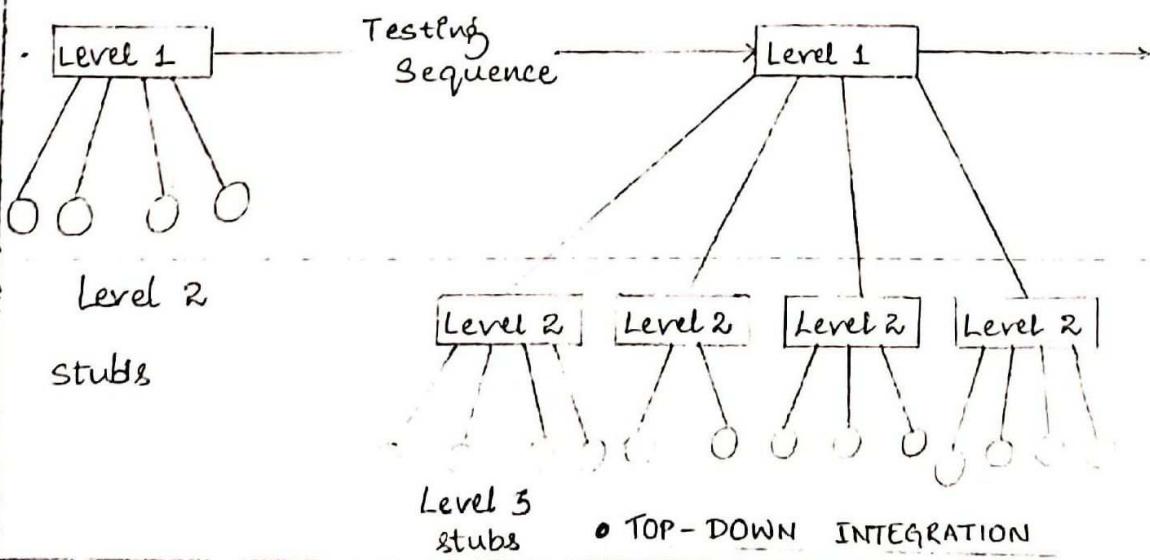
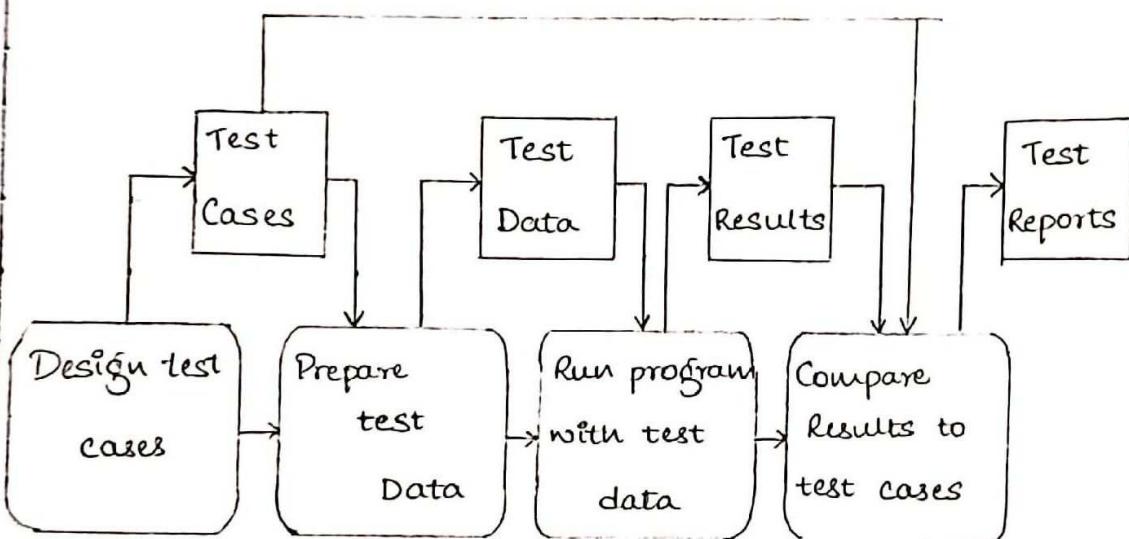
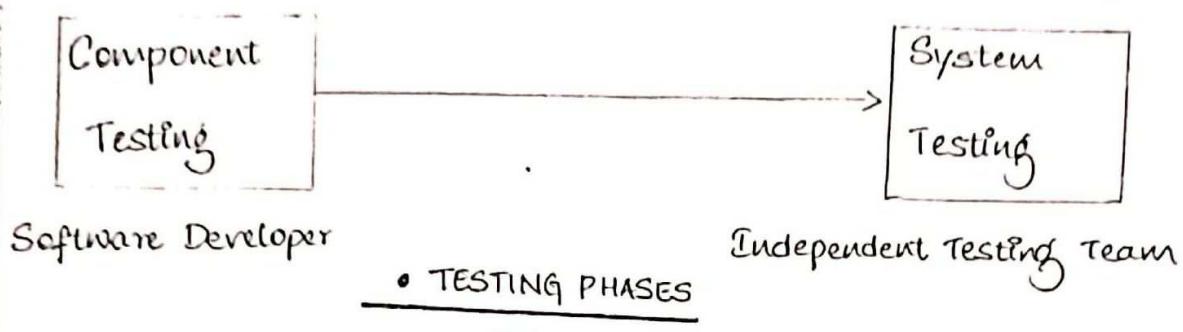
Test plans as a link between development and testing

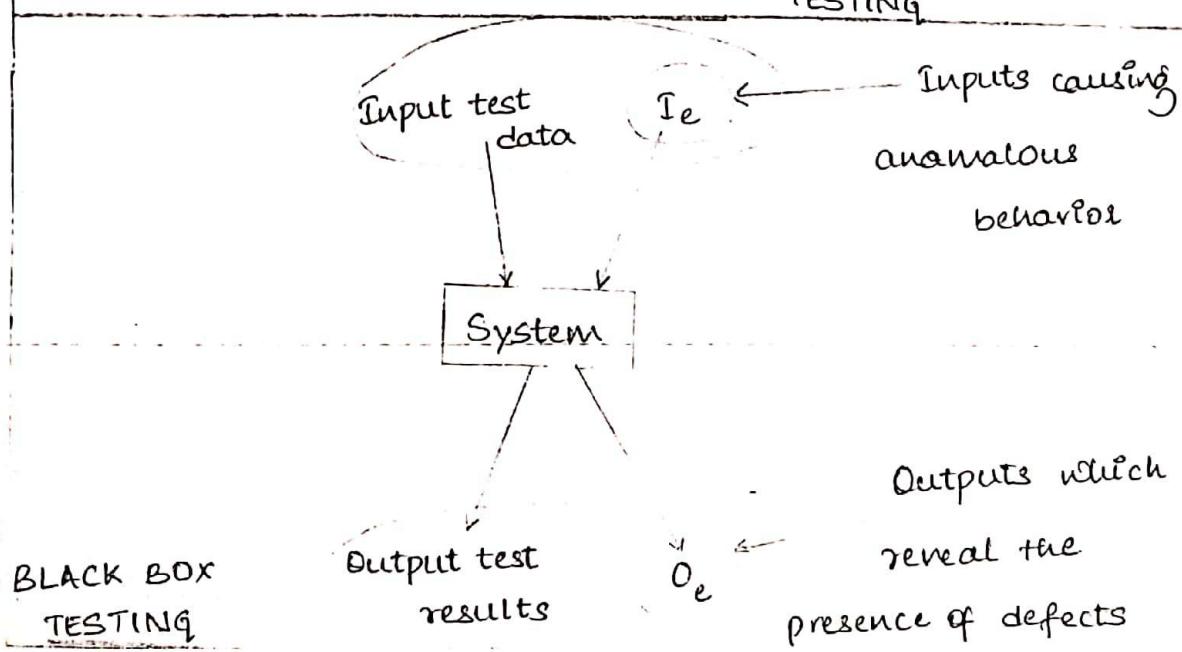
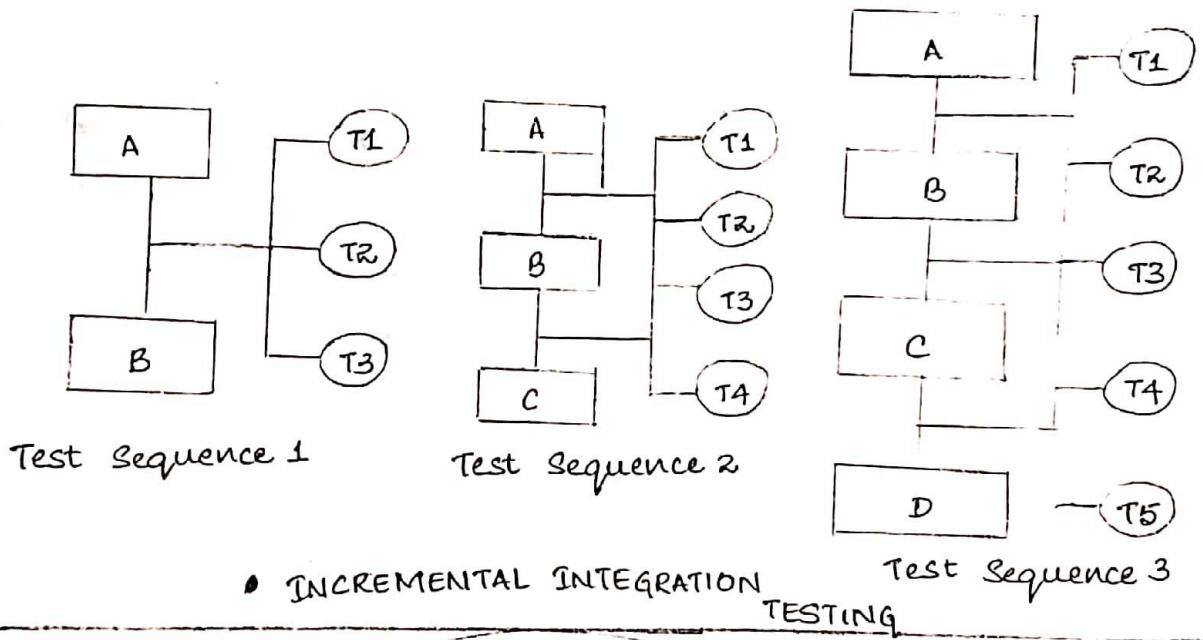
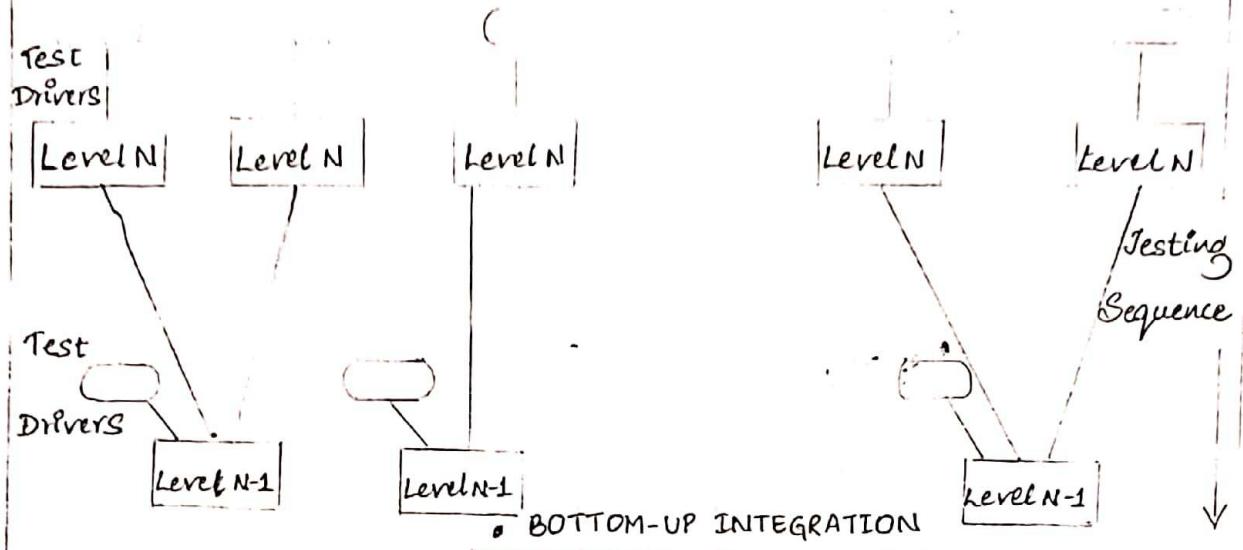
## Inspection process



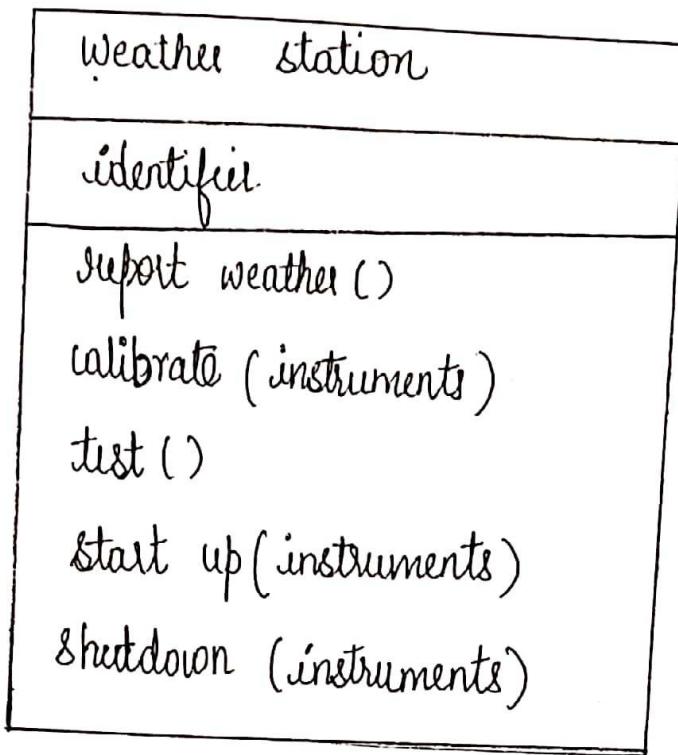
## The cleanroom development process



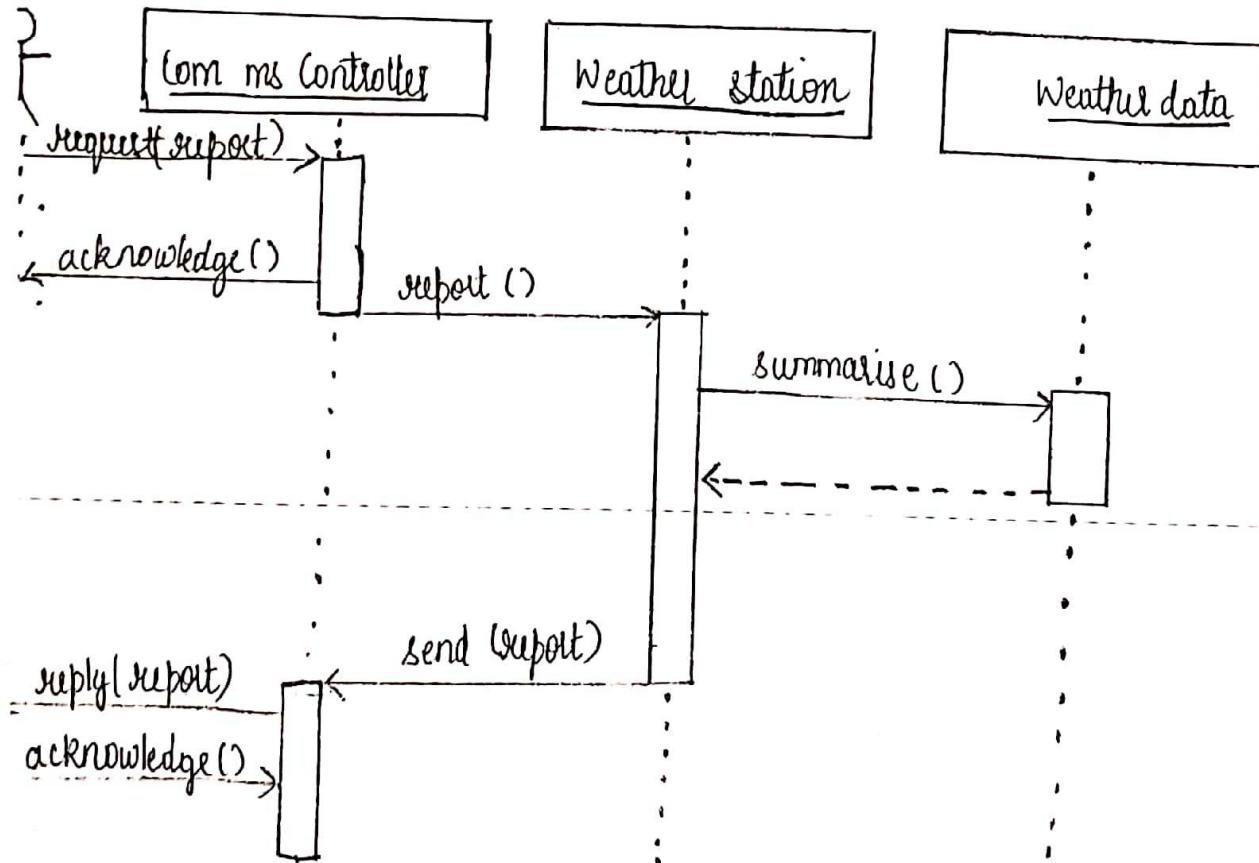




- Weather station object interface



- Figure collect weather data sequence chart



• Figure Interface testing

