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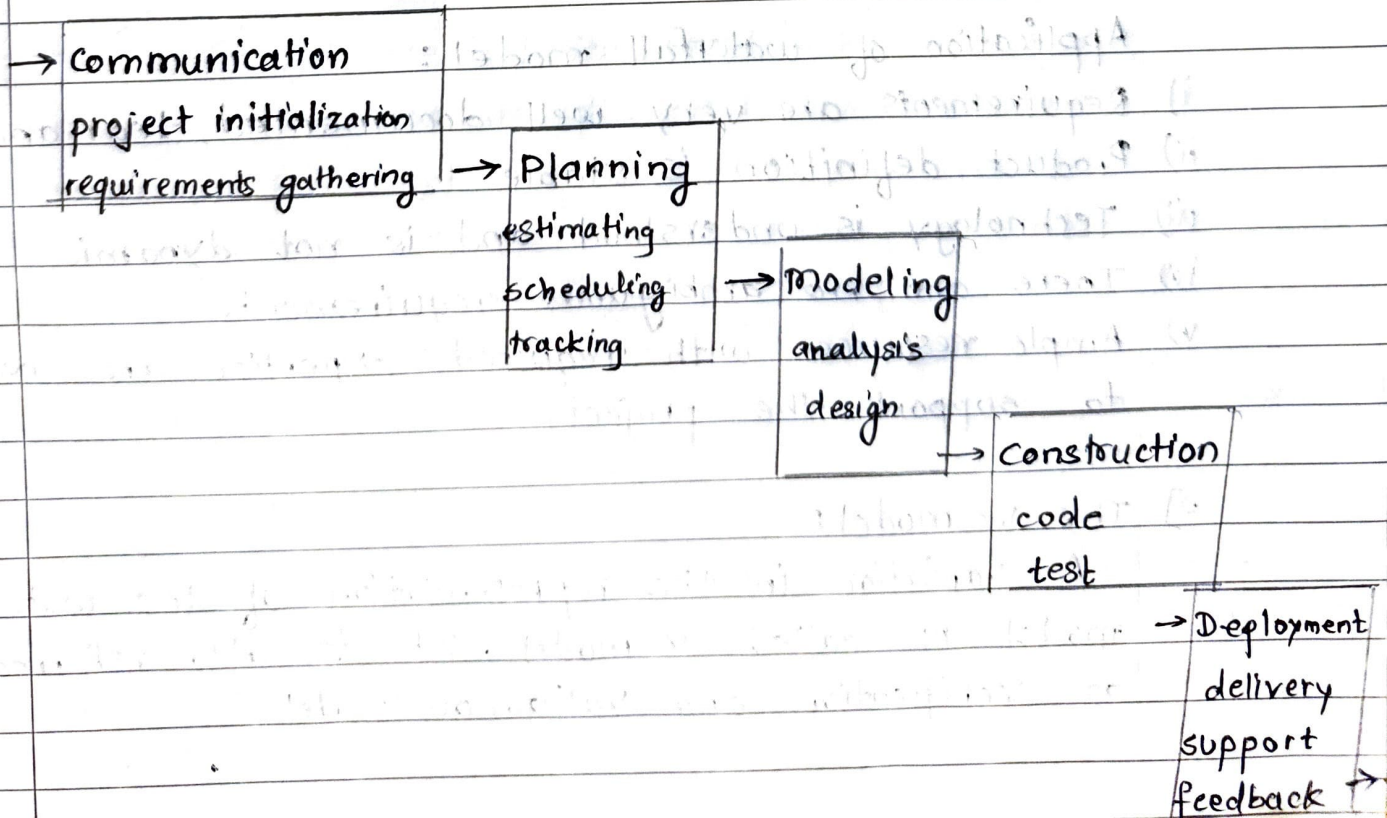
SEPM Assignment 01

Q-01] Process Models:

i) The Waterfall Model

The waterfall model is a classical software development methodology. There are times when the requirement of a problem are well understood. When work flows from communication through deployment in a reasonably linear fashion. It is a linear approach and sequential to software development that consists of several phases. The waterfall model, also called as the classic life cycle begins with customer specification of requirements and progresses through planning, modeling, construction and deployment, culminating in ongoing support of the completed software.



Advantages of waterfall model:

i) Simple and easy to understand
ii) Easy to manage due to rigidity of model
iii) Works well for smaller projects where requirements are very well understood
iv) Clearly defined stages
v) Phases are processed and completed one at a time

Disadvantages of waterfall model:

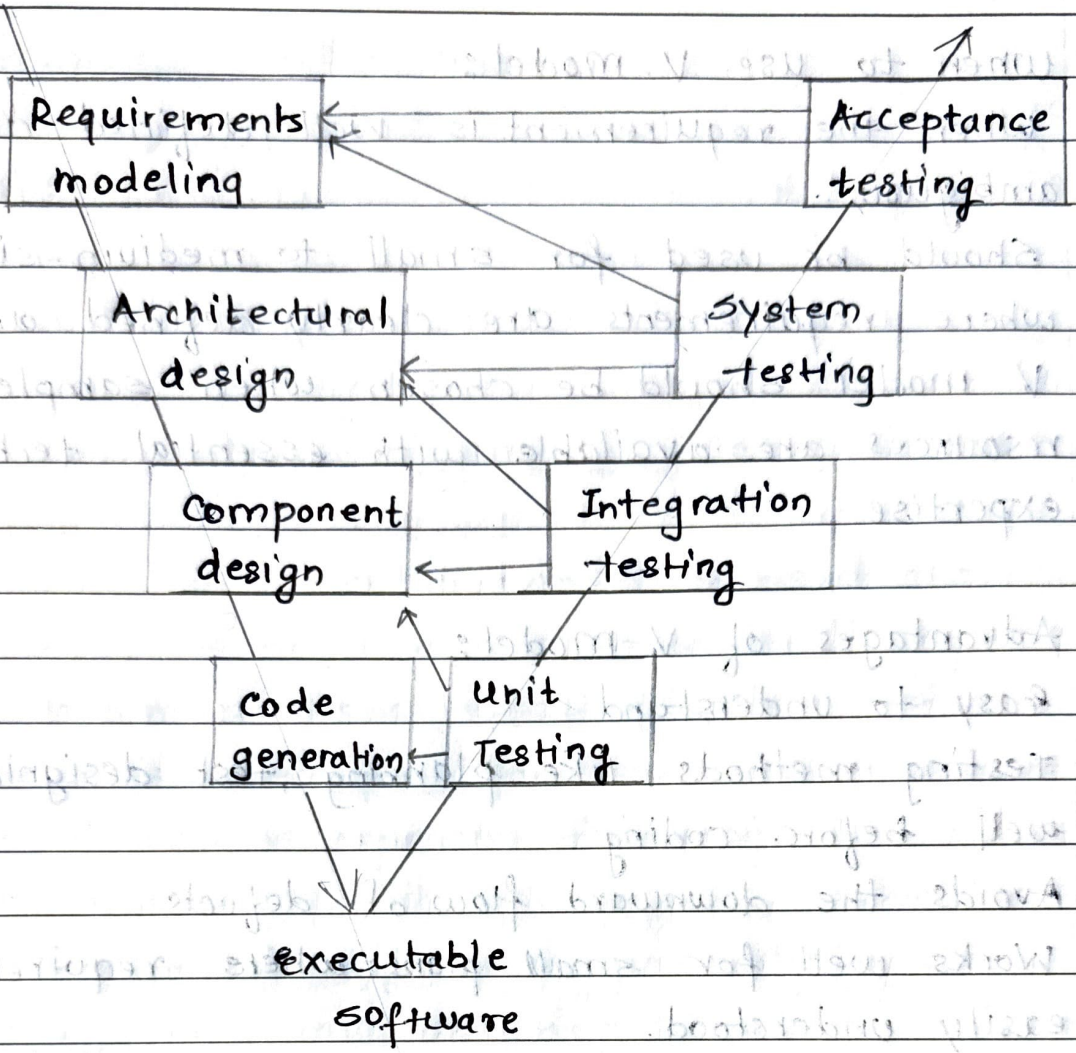
i) No working software is produced until late during the life cycle.
ii) High amounts of risk and uncertainty
iii) Not a good model for complex and object oriented projects
iv) Poor model for long and ongoing projects
v) Difficult to measure progress within stages

Application of waterfall model:

i) Requirements are very well documented, clear and fixed
ii) Product definition is stable
iii) Technology is understood and is not dynamic
iv) There are no ambiguous requirements
v) Ample resources with required expertise are available to support the project.

2] The V-model:

A variation in the representation of the waterfall model is called V-model. It is also referred as Verification and Validation model.



The V-model depicts the relationship of quality assurance actions to the actions associated with communication, modeling, and early construction activities. As a software team moves down the left side of V, basic problem requirements are refined into progressively more detailed representation of the problem and the solution. Once the code has been generated, the team moves up the right side of V, essentially performing a series of tests that validate each of the models created. The V-model provides a way of visualizing how verification and validation actions are applied to earlier engineering work.

When to use V-model:

i) When the requirement is well defined and n ambiguous.
ii) Should be used for small to medium-sized pr where requirements are clearly defined and fixed
iii) V-model should be chosen when sample technic resources are available with essential technical expertise

Advantages of V-model:

i) Easy to understand
ii) Testing methods like planning, test designing happen well before coding
iii) Avoids the downward flow of defects
iv) Works well for small plans where requirements are easily understood.

Disadvantages of V-model:

i) very rigid and least flexible
ii) Not good for complex projects
iii) Software is developed during implementation stage, so no early prototypes of the software are produced.

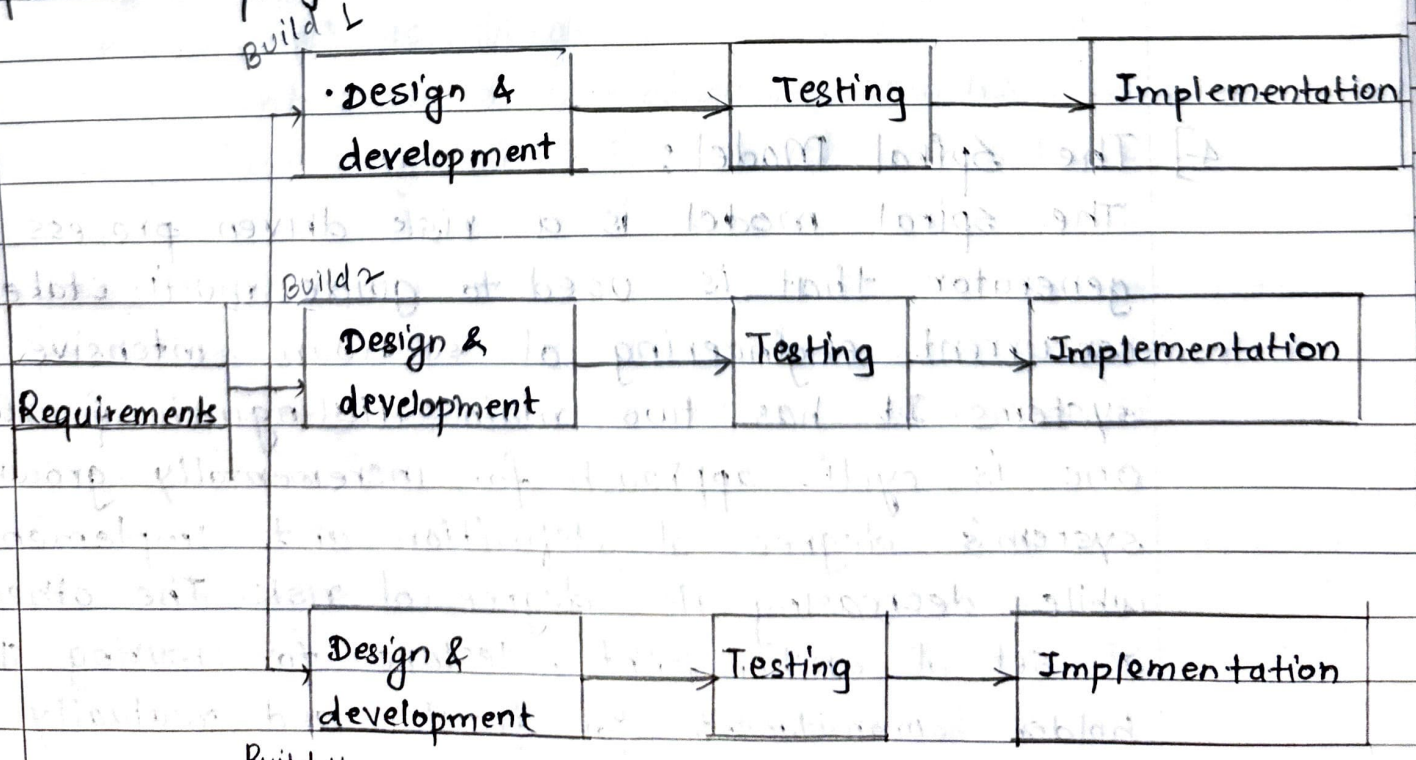
Incremental Process Model:

Incremental model is a process of software development where requirements divided into multiple stand alone modules of the software development cycle. The incremental model combines elements of linear and parallel process flows. Applies linear sequences in a staggered fashion as calender time progresses.

When an incremental model is used, the first increment is often a core product. It is used by the customer. As a result of use and evaluation a plan is developed for the next increment.

The process is repeated following the delivery of each increment, until the complete product is produced.

Incremental development is particularly useful when staffing is unavailable for complete implementation by the business deadline that has been established for the project.



When to use Incremental model

i) When the requirements are superior
ii) A project has a lengthy development schedule
iii) When software team are not skilled or trained
iv) When customer demands a quick release of prod

Advantages of Incremental Model

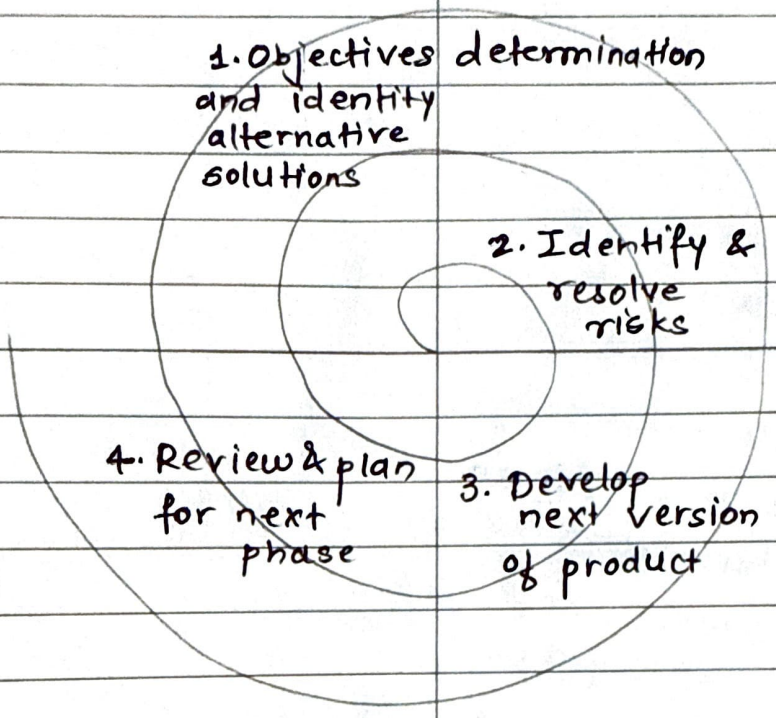
i) Errors are easy to reoognize
ii) Easier to test & debug
iii) More flexible
iv) Simple to manage risk because It handled during its iteration
v) The client gets functionality early

Disadvantages of Incremental model.

i) Need for good planning
ii) Total cost is high
iii) Well defined module interfaces are needed

4] The Spiral Model:

The spiral model is a risk driven process model generator that is used to guide multi-stakeholder concurrent engineering of software intensive systems. It has two main distinguish features one is cyclic approach for incrementally growing a system's degree of definition and implementation while decreasing its degree of risk. The other is a set of anchor point milestones for ensuring stake-holder commitment for feasible and mutually satisfactory system solutions.



When is spiral model used:

i) When delivrance is required to be frequent
ii) When project is large.
iii) Requirements are unclear and complex
iv) Large and high budget projects

Advantages:

i) High amount of risk analysis
ii) Useful for large & mission-critical projects.

Disadvantages:

i) Can be a costly model to use
ii) Risk analysis needed highly particular expertise
iii) Dosen't work well for smaller projects