\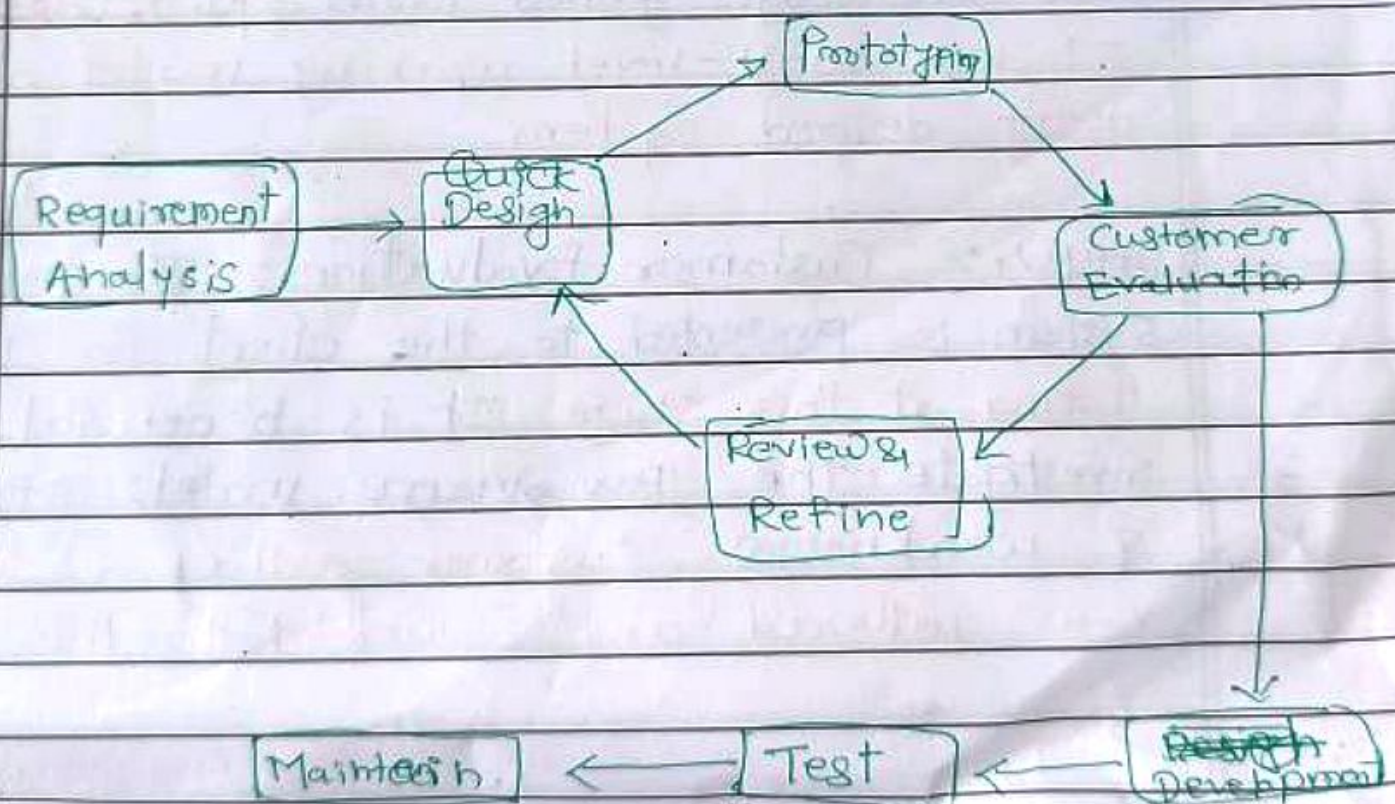* Prototyping Model :- often customer defines a set of general objectives for software, but does not identify detailed requirements for functions and features. In this situation prototyping paradigm may offer the best approach.

Prototyping model assist you and other stakeholders to better understand what is to be built when the requirements are fuzzy.

Requirement Analysis → Quick Design → Prototyping → Customer Evaluation → Review & Refine → (back to Quick Design) and Customer Evaluation → Design Development → Test → Maintain

Prototyping begins with Requirement Gathering You meet with other stakeholders to define the overall objectives for the software identify Whatever requirements are known, and outline areas where further definition is mandatory.

* Prototyping Model phases:-

Step 1 :- Requirements Gathering and Analysis :- Requirement Gathering is first Step in probtyping model. during this phase, users are interviewed to determine what they expect from the System.

Step 2 : Quick Design :- In this phase consist of a preliminary design or quick design. In this phase Systems basic design is formed. However, it is not a complete design It provides the user with a quick overview of the system

Step 3 :- Build a prototype :- In this phase actual prototype is created to support the knowledge gained from quick design. It is small-level working model of the desig desired system.

Step 4 :- Customer Evaluation :- The proposed system is presented to the client for preliminary testing at this stage. It is beneficial to investigate the performance model's strengths & weaknesses. Customer feedback & suggestions are gathered and forwarded to the developer.

Step 5 :- Refining Prototype : If the user is dissatisfied with the current model, you may want to improve the type that responds to user feedback & suggestion. When the user is satisfied with upgraded model, a final system based on the approved final type is created.

Step 6 :- Implement Product & Maintain :-
The final system was fully Tested and distributed to production after it was developed to support the original version.
To reduce downtime and prevent major failures,

* RUP

* Inception phase :- The inception phase of the unified ~~phase~~ process encompasses both customer communication & planning activities

By communicating with stakeholders,
- Business requirement for the s/w are identified
- rough architecture for the system is proposed
- Plan for iterative & incremental nature
- Fundamental business requirement through set of primary use cases.
- Architecture at this point is tentative outline of major subsystem & ph.

Planning -
- identifies resources,
- Assess major risks
- define schedule.

* Elaboration phase :- encompasses the communication & modeling activities
- Elaboration refines ~~the~~ and expands use case
- expands the architectural representation into ① Use case model ② Requirement model ③ design model ④ implementation model ⑤ deployment model.
- Plan is carefully reviewed to ensure that scope, risks & delivery dates remain reasonable. Modification to plan is done at this time.

* Construction phase :- The construction phase of UP is identical to the construction activity defined for the generic s/w process
- Make each use case operational.
- component is being implemented unit Test cases are designed & executed. For each in addition integration activity & integration testing is done. & Finally acceptace at developer side

* Transition phase :
  S/w is given to end user for beta testing & take user reports & Feedback defect & necessarych
  - user manuel, troubleshooting guides, installation process are prepared.
  -

Requirement engineering :- The process of establishing the services that requires from a system and constraints under which it operates and is developed.

the output is Requirement doc. and is consist of functional & Non-functional req.

Type of requirements.
— User Requirement — statement in natural language plus diagrams of the services the system provides and its operational constraints written for ~~communication~~ customer.

— System Requirements :- a structured doc. setting out detailed descriptions of the system's functions. services & operational constraints.
Defines what should be implemented so may be part of contract between client and contractor.

Functional Requirement — What is expected in terms of functionality.
statement of services the system should provide. how the system should react to particular inputs and how the system should behave in particular situations.

* Non-functional Requirement :- constraints on the services or functions offered by the system such as timing constraints, Constraint on the development process,