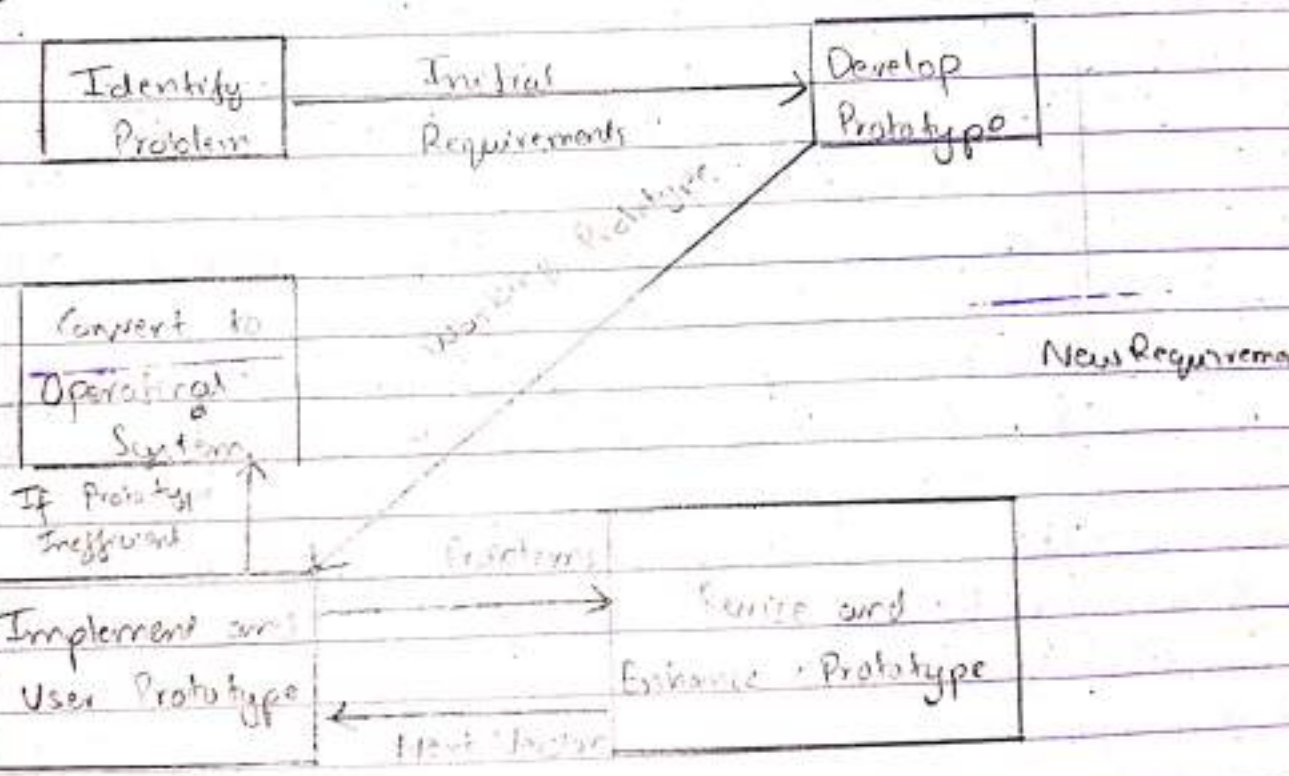
Chapter 1.2

① Explain what is meant by Prototyping approches. Write its advantages and disadvantages.

Ans. Prototyping approach is a iterative development process.
- the requirements are quickly converted to a working system
- system is continually revised.
- it is a form of Rapid Application Development
- it is building a scaled-down working version of the system.



It can be defined as an interactive process for systems development in which users and analysts are in close collaboration for converting requirements to a working system that is continuously revised.

- It is a complex technique and to apply it successfully, detailed knowledge of the SDLC is required.

Advantages of prototypes:

- Potential for changes to the system early in the development.
- Opportunity to stop developing a non-working system.
- Possibility of developing system that closely addresses users requirements and expectations.

Its disadvantages are:

- Prototyping is difficult to manage
- Increase cost.

(2) What are the Phases of RAD?

Ans. RAD (Rapid Application Development) is a system/software development process based on prototyping without any specific planning.

The phases of RAD are as follows

(i) Requirements planning

- Involves identifying and analyzing project objectives and requirements.
- It focuses on gathering input from stakeholders to establish a clear understanding of the system's scope and purpose.

(ii) User Design:

- The development team creates a prototype or mock-up of the system's user interface and experience.
- Feedback from users is actively sought and incorporated to ensure the design meets their expectations and needs

(iii) Construction

- The construction phase is where the actual development of the software takes place.
- Developers utilize the feedback received during the user design phase to rapidly build the application, prioritizing the delivery of working features.

(iv) Cutover

- The fully functional system is thoroughly tested, integrated, and deployed to the production environment.
- This phase involves transitioning from the development environment to the live environment, ensuring the system is stable and ready for end users.

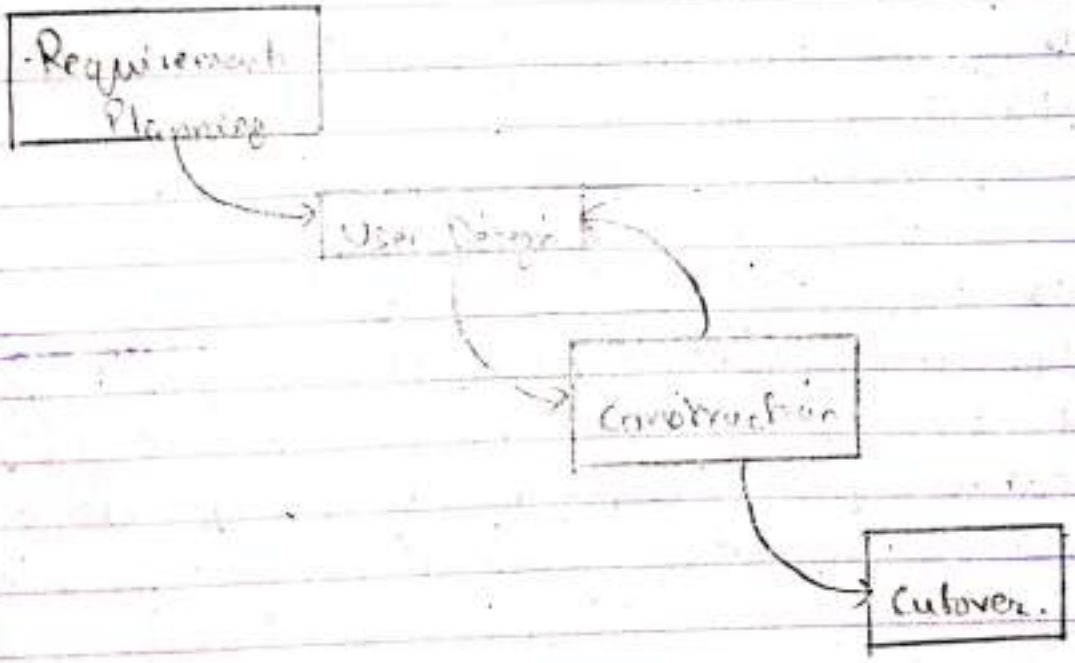


Fig: Phases of RAD

(3) What are the major activities of spiral model?

Ans Spiral model is a combination of iterative development process model and sequential linear development model i.e the waterfall model with a very high emphasis on risk analysis.

The major activities of spiral model are:

(i) Objectives determination and identify alternative solutions.

- Requirements are gathered from the customers and the objectives are identified, elaborated, and analyzed at the start of every phase. Then alternative solutions possible for the phase are proposed in this quadrant.

(ii) Identify and resolve risks.

- During the second quadrant all the possible solutions are evaluated to select the best possible solution
- Then the risks associated with that solution is identified and the risks are resolved using the best possible strategy. At the end of this quadrant, Prototype is built for the best possible solution.

(iii) Develop next version of the Product

- During the third quadrant, the identified features are developed and verified through testing.
- At the end of the third quadrant, the next version of the software is available.

(iv) Review and plan for the next Phase:

In the fourth quadrant, the customers evaluate the so far developed version of the software. In the end, planning for the next phase is started.

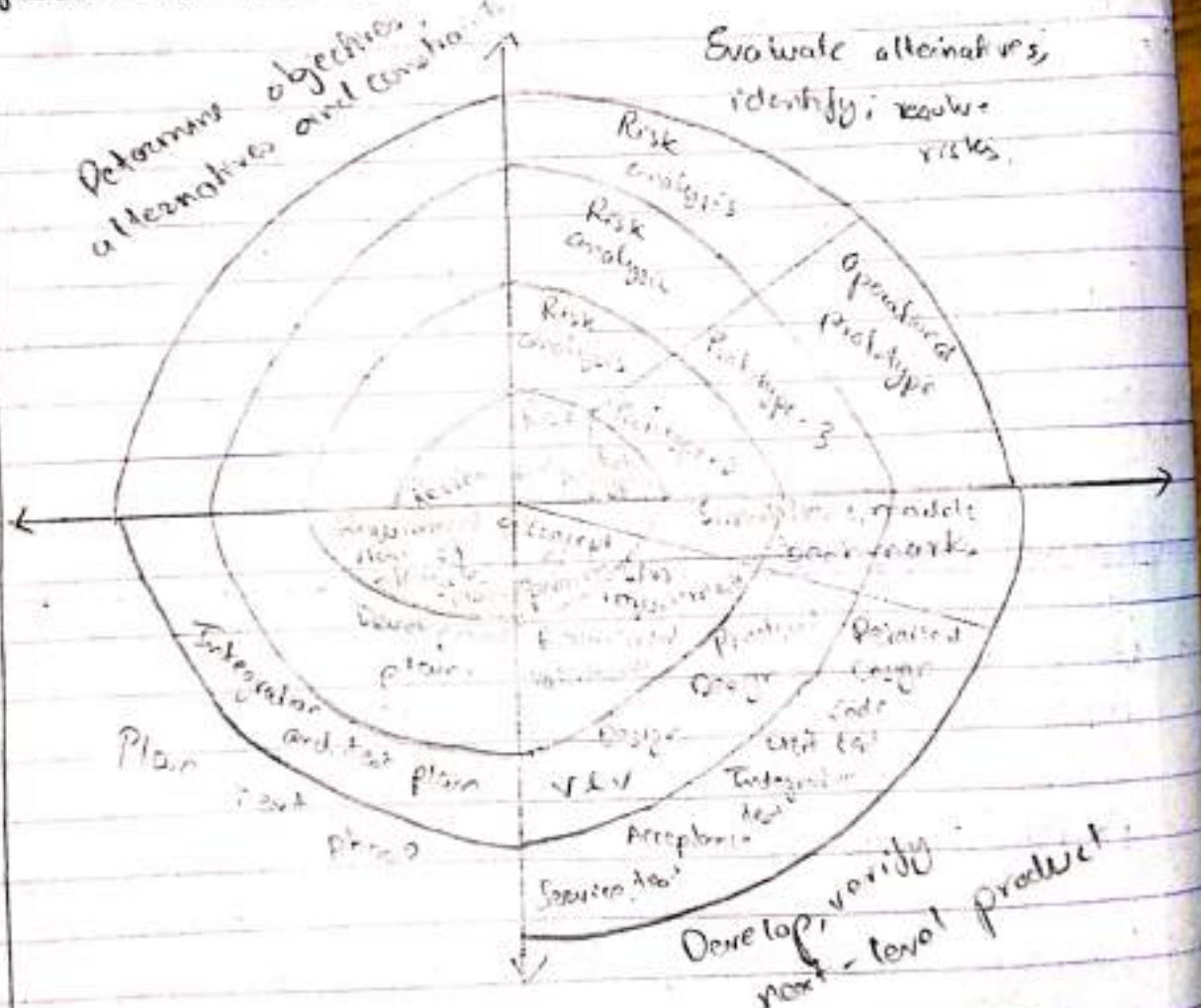


Fig: Spiral model.

(4) Explain what is meant by Agile Methodologies.

Ans. Agile methodologies challenge conventional engineering-based approaches by acknowledging the unique nature of system / software development compared to civil engineering.

- System / software requirements are less defined, and the development process is fluid and unpredictable.
- The core principles of Agile emphasize adaptability over predictability, prioritizing the importance of people over rigidly defined roles.
- Agile promotes self-adaptive processes that evolve as the software is developed and reviewed by project participants.
- Agile is particularly well-suited for project with dynamic or uncertain requirements.
- The active involvement of engaged customers is essential for the success of Agile projects.

Its three key principles are:-

- Adaptive rather than predictive
- Emphasize people rather than rules.
- Self-adaptive processes, as software is developed, the process used should be refined and improved of course after reviewed by people working on the project.

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(5) What is extreme Programming?

Ans Extreme Programming (XP) is an agile software development framework that aims to produce higher quality software, and higher quality of life for the development team.

- XP is the most specific of the agile frameworks regarding appropriate engineering practices for software development.

When Applicable.

- Dynamically changing software requirements.
- Risks caused by fixed time projects using new technology.
- Small, co-located extended development team
- The technology you are using allows for automated unit and functional tests.

(6) When would you use Agile Methodologies Vs Traditional Methodologies to System development?

Ans Agile methodologies are used instead of traditional methodologies in system development in the following situations:

(i) Unpredictable or dynamic requirements.

(ii) Responsible and motivated developers

(iii) Customers who understand the process and will get involved.