



RAMA UNIVERSITY

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FACULTY OF ENGINEERING & TECHNOLOGY

BCS-503: Object Oriented Techniques

Lecture-02

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Computer Science & Engineering

OBJECTIVES

In this PPT, you will learn to:

- ❖ **Software Development Approaches**

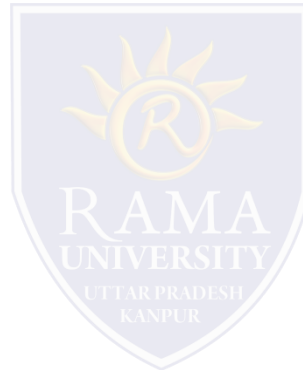
- ❖ **Waterfall approach**

- ❖ **Prototyping approach**

- ❖ **Spiral approach**

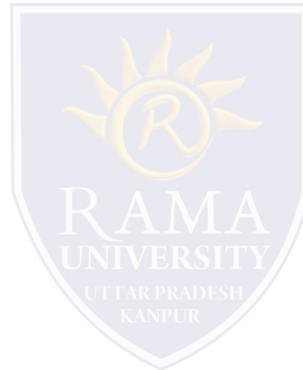
- ❖ **Win-win spiral approach**

- ❖ **Incremental approach**



SOFTWARE DEVELOPMENT APPROACHES

- Different types of projects have different requirements.
- It is required to tailor the SDLC phases to meet the specific needs of the project.
- The tailoring the SDLC phases, gives rise to various software development approaches:
 - 1) Waterfall approach
 - 2) Prototyping approach
 - 3) Spiral approach
 - 4) Win-win spiral approach
 - 5) Incremental approach



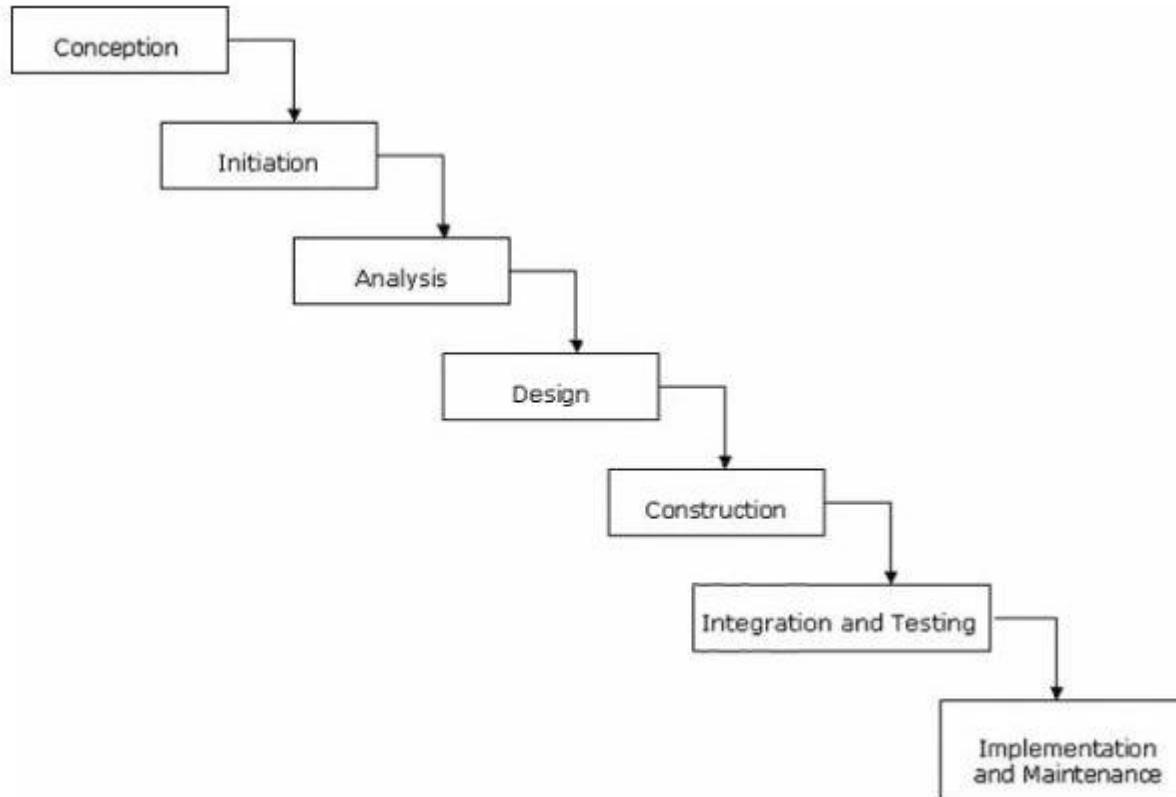
What is Waterfall Approach

- Describes the software development process in a linear sequential flow.
- It is the earliest approach used for software development.
- Defines the software development process in seven phases:
 - 1) Conception
 - 2) Initiation
 - 3) Analysis
 - 4) Design
 - 5) Construction
 - 6) Integration and testing
 - 7) Implementation and maintenance



WATERFALL APPROACH (Contd.)

The following figure shows various phases of the waterfall approach:

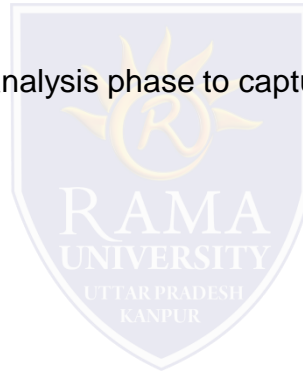


Waterfall Approach

PROTOTYPING APPROACH

What is Prototyping Approach

- Also known as evolutionary approach.
- It is a sample implementation of the system that shows limited and main functional capabilities of the proposed system.
- It is used in the requirements gathering and analysis phase to capture the exact requirement of the proposed system.



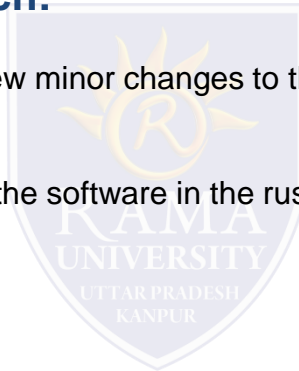
PROTOTYPING APPROACH (Contd.)

Various types of prototypes:

- Throwaway prototypes
- Evolutionary prototypes

Limitations of prototyping approach:

- Gives clients the false impression that a few minor changes to the prototype will give them the required system.
- May compromise on the overall quality of the software in the rush to develop the prototype.

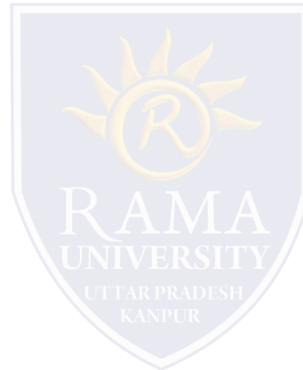


What is Spiral Approach

- Includes the iterative nature of the prototyping approach and the linear nature of the waterfall approach.
- It is ideal for developing software that are released in various versions.

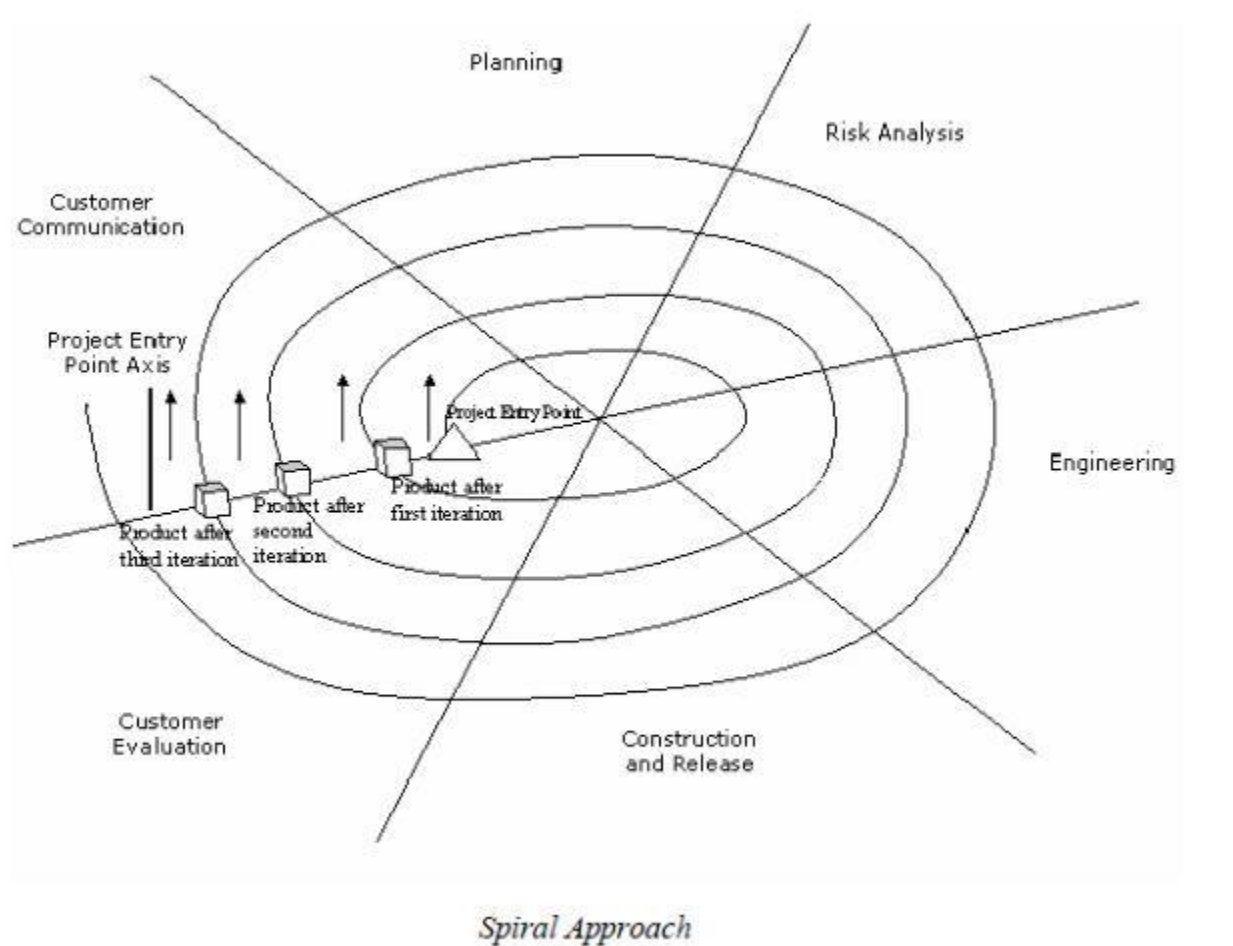
- **The six phases of spiral approach are:**

- 1) Customer communication
- 2) Planning
- 3) Risk analysis
- 4) Engineering
- 5) Construction and release
- 6) Customer evaluation



SPIRAL APPROACH (Contd.)

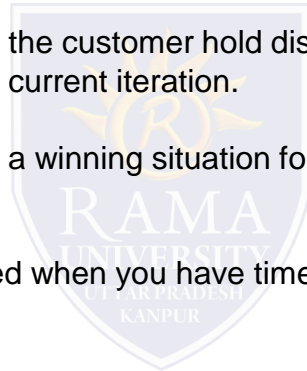
The following figure shows the various phases of the spiral approach:



WIN-WIN SPIRAL APPROACH

What is Win-Win Spiral Approach

- It is an extension of the spiral approach.
- The phases in this approach are same as the phases in the spiral approach.
- In this approach, the development team and the customer hold discussions and negotiate on the requirements that need to be included in the current iteration.
- The approach is called win-win because it is a winning situation for the development team and also for the customer.
- The win-win spiral approach is generally used when you have time-bound releases.



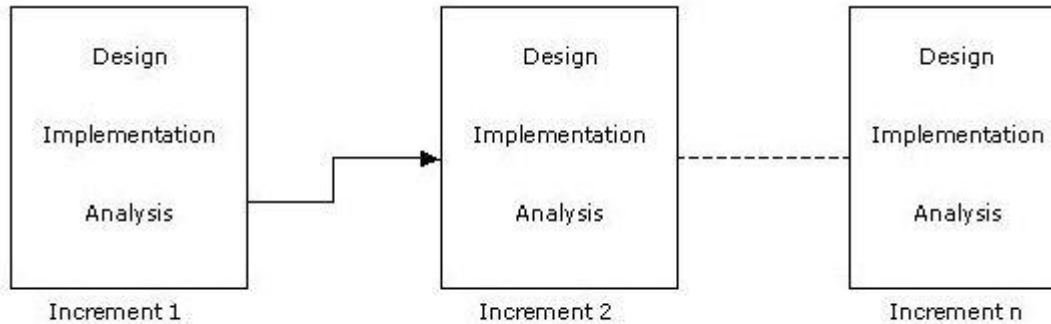
What is Incremental Approach

- In an incremental approach, software requirements are broken down into various functional units.
- Each functional unit is implemented in an increment and the final product is achieved after all the functional units are implemented in the development process.
- Each increment in the incremental approach includes three phases:
 - 1) Design
 - 2) Implementation
 - 3) Analysis



INCREMENTAL APPROACH (Contd.)

The following figure shows the Incremental approach with various phases:

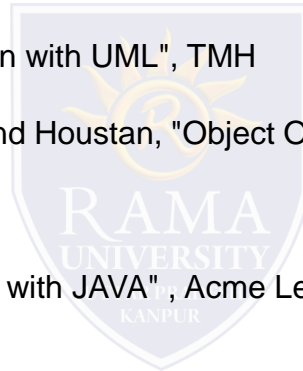


Incremental Approach



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MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q1. A model that is the demo implementation of the system.

- a) waterfall
- b) prototype
- c) incremental
- d) agile

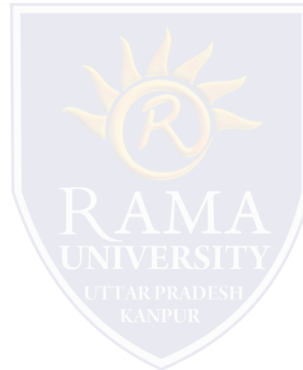


MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q2. Methodology in which project management processes were step-by step.

- a) Incremental
- b) Waterfall
- c) Spiral
- d) Prototyping



MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q3. In the spiral model 'risk analysis' is performed.

- a) In the first loop
- b) In every loop
- c) Before using the spiral model
- d) in first and second loop

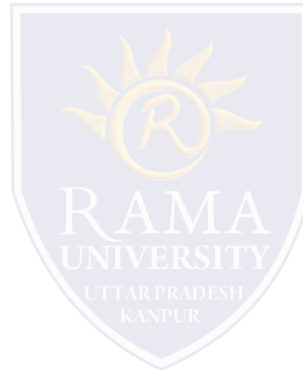


MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q4. In the spiral model, at what phase do customers evaluate the project?

- a) Planning Phase
- b) Risk Analysis Phase
- c) Evaluation Phase
- d) Customer Feedback Phase



MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q5. In what phase of the spiral model is testing done?

- a) Planning
- b) Developmental
- c) Risk Analysis
- d) Evaluation



In this PPT, you learned that:

- Different types of projects have different requirements. Therefore, it may be required to tailor the SDLC phases according to the specific needs of the project. This gives rise to various software development approaches. Some of these approaches are:
 - 1) Waterfall approach
 - 2) Prototyping approach
 - 3) Spiral approach
 - 4) Win-win spiral approach
 - 5) Incremental approach

