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# S.E. Notes -2

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# SDLC

# Ch-2 SOFTWARE LIFE CYCLE MODEL

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## INTRODUCTION

A Software life cycle MODEL is also known as Process MODEL

IN SDLC:

It Represents descriptive [defined] and diagrammatic view of SDLC

It identifies all the Requirements Activities for Software [product] development

It Shows or Captures the Order in which these Activities are Gonna perform

It also Divides the Life Cycle into Phases, where different Several different Activities may be Carried Out in Each phase like in the form of Packets

This SDLC process Covers all the activities which are performed from Beginning to Final Product through delivery and retirement.

The life Cycle defines a Methodology for improving the quality of software & Overall development process.

## [SDLC - Software Development Life Cycle]

Software Development Life Cycle [SDLC] is a process used by the Software Industry to design, develop and test high quality software.

Its SDLC Aims to Produce high quality software that meets or Exceeds Customer expectation, Completion within time and Cost Efficient.

SDLC is a framework which defines tasks performed at each step in the Software Development Process.

It is typically Divided into Six to Eight steps:-  
Planning, Requirement, Design, Build, Document, Deploy, Maintain  
It may varies to every Software

SDLC is a way to Measure and improve the Development process  
It allows a fine-grain Analysis of each step of the process  
It places a higher demand of Software & developers

## SEVEN Phases OF Software DEVELOPMENT LIFE CYCLE

- 1 Planning
- 2 Requirements
- 3 Design & Prototype
- 4 Software Development
- 5 Testing
- 6 Deployment
- 7 Operation & Maintenance

### PLANNING

Steps involving in Requirement are —

Requirement Gathering :

- Requirement is a phase in Life Cycle in which PROGRAMMER TEAM Collects all the Specific Requirements or needs from the User to full fill all the Requirements or Needs of Client.
- Here , The Programmer team Collects all data from client and Making or checking weather Requirement is possible or not
- Requirement Analysis — understands the clients Requirement, taking a Overview of Described Software, It follows Hierarchy
- Requirement Specification — are the documentation in a Usable prescription Formate This Document is known As SRS document.

## DESIGN

The Way a Software Application will work

The Goal of this Phase is to transform the Requirements specified in the SRS document in to a structure that is Suitable for implementation in some programming language or in softwares.

It also may also implements SRS document specifications in Flowchart, DFD, Controlflow, object Oriented or various ways

This Phase have Many forms of Designing a Software:-

- Architecture - using templates
- User interface - Customer interaction with Software UI
- Platform - Platform - windows, Apple, Android, Linux
- Programming - method of Solving problems & performing task in Apps
- Communication - method of Communication with client
- Security - Manages - SSL, traffic Encryption, password Protection

# Prototyping is a part of Designing Phase.

# Prototype is like a one of the Early version of Software

## SOFTWARE DEVELOPMENT

### CODING

This Phase is sometime is also known as Implementation Phase & Coding Phase

This Phase Manages the Writing of Codes

## TESTING

After Coding Completion, Each Module is unit Tested

Modules: ARE the devided part of Coding Units. from a single document of Codes.

The Main Objective of Unit testing the Correct Working of the individual Modules during Unit test

## Deployment

In the deployment Phase, the Application Software is made Available to Users.

## Maintenance

Released Software Products needs to be Maintained in this Phase of life Cycle

In this Phase Users discovers bugs that weren't found during testing. This is the last Phase of Life Cycle

It includes:

- Bug Fixing - Error Correction
- Updation
- Enhancement

# PLANNING

Under which:

- Researching on the Product you are planning to Develop
- discussing your plans with Clients
- Identifying Pros & Cons of Product to make it Good or Perfect
- Customers Feedback which includes Surveys, interview, Quizes etc.

# TYPES OF SDLC

- 1 Classic WATERFALL MODEL
- 2 Prototyping MODEL
- 3 Evolutionary MODEL
- 4 Spiral MODEL

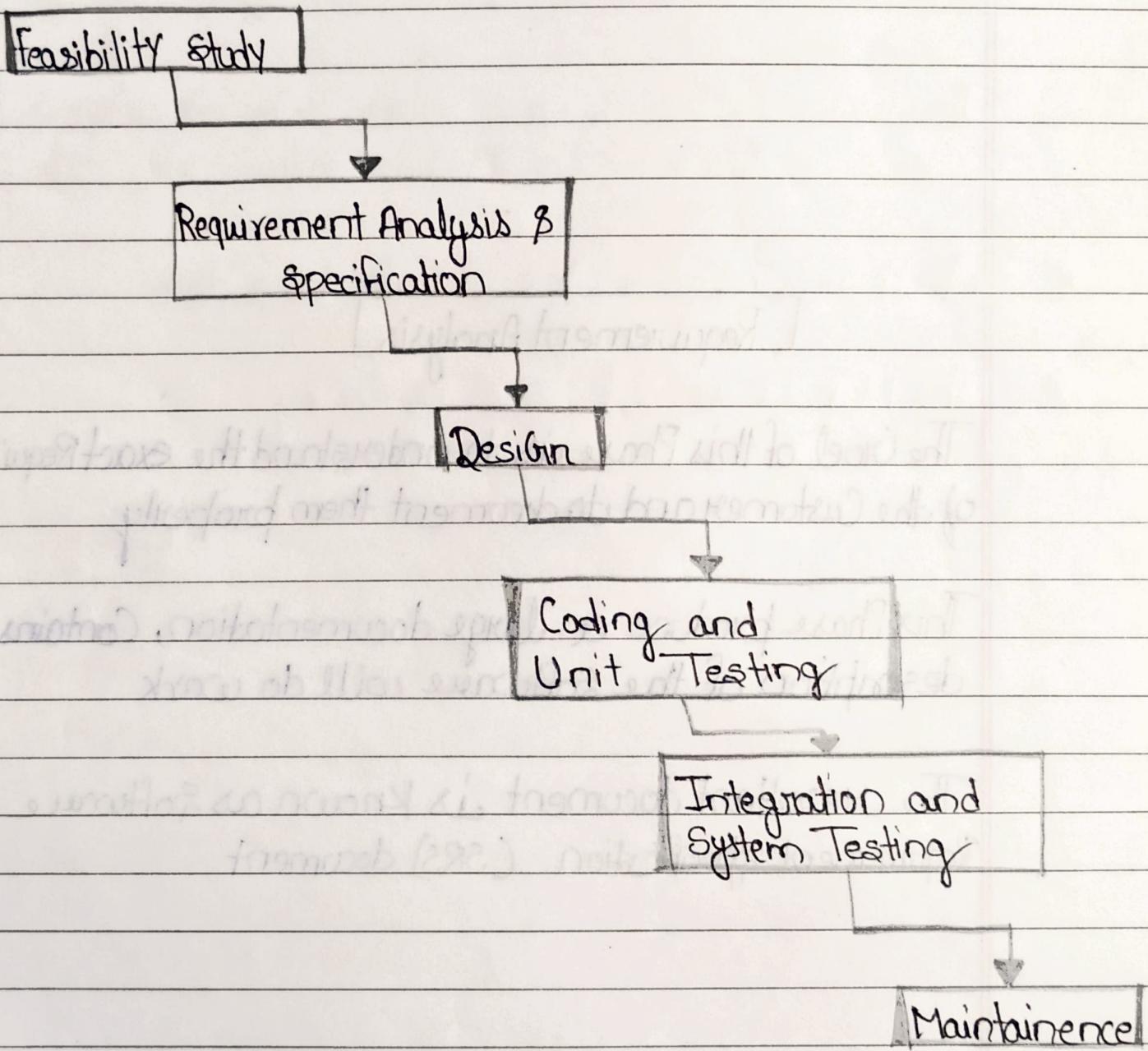
# classical waterfall Model

classic waterfall model is Considered to be a theoretical way of developing Software

All the other Models are based up on this Model

This SDLC is needed to be understand well for developing Proper Understanding of other Life Cycle Models

Different Phase of this Model :-



## FEASIBILITY

This Phase aims to identify whether it would be financially and technically feasible [Possible] to Develop the Software product

## Requirement Analysis

The Goal of this Phase is to understand the exact requirement of the Customer and its document them properly

This Phase produce a large documentation, Contains a description of the software will do work

The Resultant document is known as Software Requirement Specification (SRS) document

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## Design

The goal of this phase, is to transform the requirements specifications in the SRS document into a structure that is suitable for implementation in some programming Languages

## CODING - UNIT TESTING

The purpose of this phase is to translate the Software design into Source Code

This Phase is also Sometimes Called an implementation Phase

After Coding is Complete, It will divided into parts known as Modules

Each Module is unit Tested.

The main objective of unit Testing is to determine correct working of the individual Module during Unit Testing

- \* In this Phase, Implementation of Codes takes place
- \* The Main Phase of SDLC is Coding

## Integration & System Testing

During this phase, the different unit testing modules are integrated in a planned manner

During the Integration step, previously planned modules are added to the partially integrated system and the resultant system is tested.

In System testing, all the integrated modules are tested to ensure that the developed system conform to the requirement specified in the SRS document. System testing consists of 3 kind of testing -

- ↳  $\alpha$ -Testing (by the development team)
- ↳  $\beta$ -Testing (by a friendly set of customer) (Beta Testing)
- ↳ Acceptance Testing (by the customer himself after the product delivered )

## MAINTENANCE

Released software products needs to be maintained in this Phase of life Cycle

It includes:

- ↳ Bug Fixing
- ↳ Updation
- ↳ Enhancement

## Prototype Model

- Prototype Model is one of the Life Cycle Model which is more useful to handle the Customer requirement or change Request.
- The Concept behind this Model is, before going to the actual & final development of ~~the~~ the Software
- Once the Customer approves the prototype, the actual or approved system will goes forward to develop further.
- This Model is most usefull in the designing of GUI part and is also usefull to handle the technical Risks.

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## Evolutionary Model

It is also called successive version model or increment Model

# Spiral MODEL

As shown As:

There are 4 quadrants

1st Quadrant

2nd Quadrant

3 Quadrant

## 4 Quadrant

This Life Cycle model consists of Spiral with many loops. Each loop is known as phase and each phase is divided into 4 quadrants.

The number of loops are not fixed and It may vary from projects to project

- : This Model is also called as Meta Models since it follows all the above models