

Unit 1

Software Development Process

classmate

Date _____
Page _____

- what is the software ?
- Software is a set of instructions to take input from user and process it and gives output to the user in terms of function and performance as determine by the user to the software.
- It is developed to handle as input process output system achieve pre-determined goals.

• characteristics of software .

1. Efficiency
2. maintainability
3. Dependability
4. custom built software
5. software doesn't "wear out."

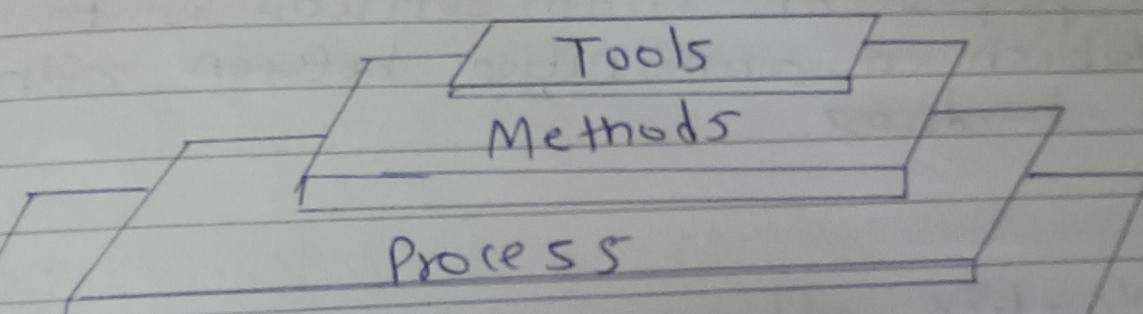
2M

+ Software engineering is subject in department
- Software engineering is subject in which we discuss
of computer science in which we discuss suggestion
discuss theories we discuss different efficient
and different methods different efficient
methods with help of this we can we
develop a good software.

IMP

- * 4 Marts / 6 Marts
 - * Software as layered approach
 - Software engineering is a layered technology
any software can be developed using
these layered approaches. Various layers
on which the technology is based are
quality focus layer, process layer, methods
layer, tools layer.
- * A disciplined quality management is a
backbone of software engineering technology
- * Process layer is a foundation of software
engineering basically - process defines the
framework for timely delivery of software
- * In method layer the actual method of
implementation is carried out with the help
of requirement analysis, designing, coding
using desired programming constructs and
testing.

- software tools are used to bring automation in software development process



- * Quality Management.
- * Software as layered approach.

+ Types of software

1. System software

- It is collection of programs written to service other programs.
- the purpose of system software is to establish a communication between with the hardware.

2. Application software.

- It consist of standalone programs that are developed for specific business need.
- This software may be supported by database systems.

3. Scientific software

- This software used for scientific research and analysis by capturing data and performing complex analysis with reports, graphs, and image-generating facilities for the scientific community.

4. Embedded software

- This category consists of program that can reside within a product or system.
- The web such software can be used to implement and control features and functions for the end-user and for the system itself

5. web application
- web app
 - web page
 - The web programming language Java.

classmate

5. web applications

- web application software consists of various web pages that can be retrieved by a browser
- The web pages can be developed using programming language like HTML, DHTML, Java.

classmate

- software process framework
- The process of framework contains if several activities which are applicable to all type of projects.
- The software process framework is considered as a group of various type of task sets.
- In the task sets there is collection of small work tasks, projects milestones, work productivity as well as software quality assurance points common process framework.

Framework activities

Task sets

Task
Milestone, work-product
SQA points

Umbrella activities

Software process framework.

* Umbrella Activities

1. Software project tracking and control

This activity consists of accessing the project plan and comparing it with the predefined schedule. This is done by the development team.

2. Risk management.

- Risk is considered as an event which may or may not occur.

- If the event occurs then it may leads to some unwanted outcomes. Hence, there is need of proper risk management.

3. Software Quality Assurance (SQA)

- software Quality Assurance is the planned as well as systematic pattern of activities which are necessary to provide an assurance of software quality.

4. Reusability management.

→ It involves describing of the criteria regarding reuse of the product.

- The quality of software can be considered as good when it is found that the components of the software which are developed for any specific application can also seem to be useful for developing other types of applications.

IMP
* Explain waterfall model

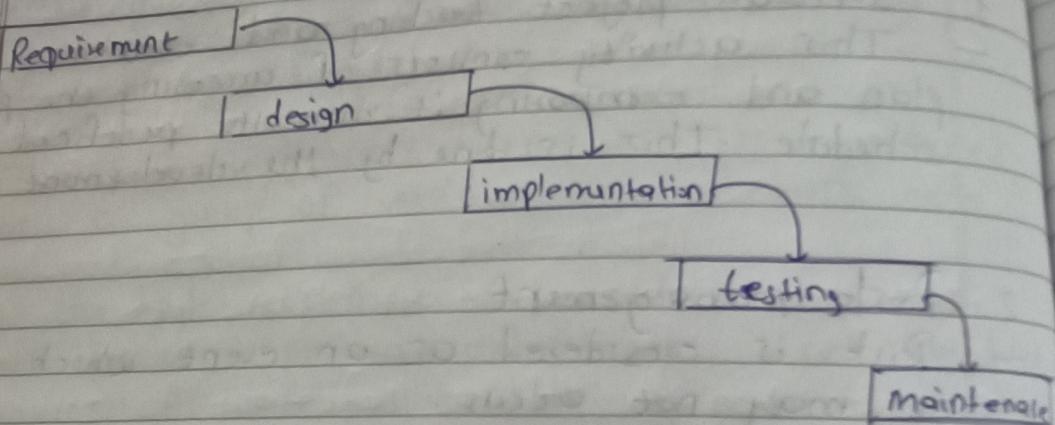


fig: * waterfall model

* waterfall model is the first approach used in software development process

It is also called as classical life cycle model or linear sequential model.

In waterfall model any phase of development process begins only if previous is completed

1. Requirement analysis

- In this phase all business requirement of system are gathered and analysed by communication between stakeholders and customer or user.

- At the end of this phase requirement specification document (SRS) is created.

2. Design :-

- It is blue print of system representing system's internal structure and behavior.

- Based on requirement specification document design of system is created called software architecture.

3. Implementation :-

- In implementation phase actual coding is constructed for software architecture using hardware and software requirements of system.

- It is responsibility of developer.

4. Testing / verification

- Here coding or job done by developer is verified against requirements of user in order to ensure that software will satisfy all business requirements of user.

- After the successful verification software is developed at user's site for their use.

↳ Maintenance :-
→ While using software if user faces some problems, then those problems must be solved time to time by development team. This task comes under maintenance of software.

* Advantages of waterfall model

- i) It is very simple to understand and easy to use.
- ii) phases of waterfall model do not overlap with each other.
- iii) It is useful for small projects in which requirements are clear initially.

* Disadvantages of waterfall model

- i) It is not useful for large projects.
- ii) not suitable for projects in which requirements are not clear initially.

IMP
- Agile

- Agile where increments

- Agile custom provisions

- Agile small provisions last even after

• At a

• A

• I

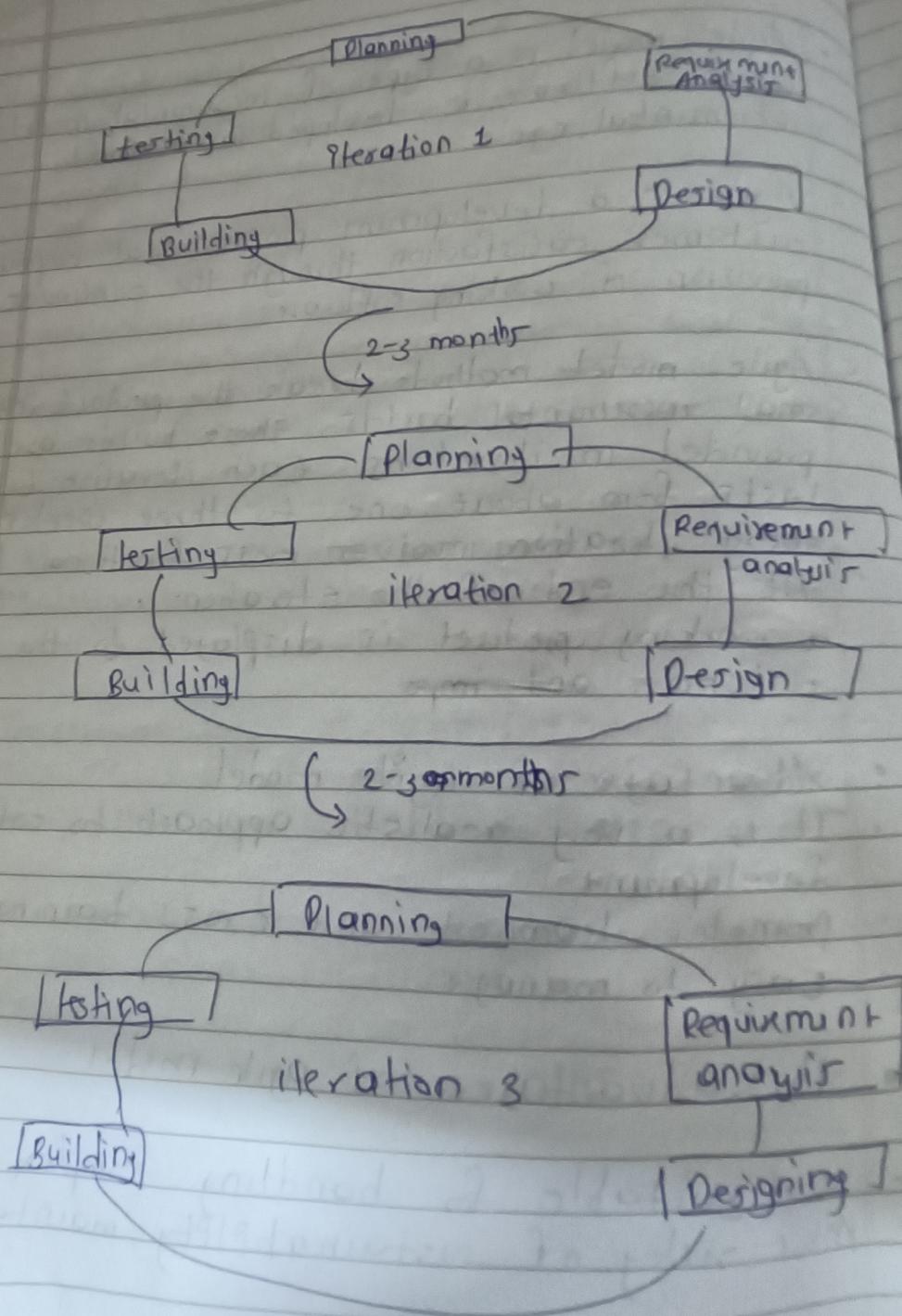
• d

• p

IMP

* Agile model

- Agile model is a type of incremental model where software is developed in a rapid incremental cycle.
- Agile is a development process that emphasizes customer satisfaction through the continuous provision of working software.
- Agile methods break the product into small incremental builds. These builds are provided in iterations. Each iteration typically lasts from about one to three weeks. Every iteration involves cross-functional teams working together.
- At the end of the iteration, a working product is displayed to the customer ~~and improved~~.
- Advantages of agile model
- It is a very realistic approach to software development.
- Promotes teamwork and cross training.
- Easy to manage.
- Disadvantages of agile model
- Not suitable for handling complex dependencies.
- More risky of sustainability, maintainability.



- Agile model.

- + Extreme programming
- Extreme programming is an incremental development methodology that uses practices that follow the principles of XP.
- XP is a highly predictable and a software development methodology.
- It follows a small to large approach.
- The first step is to simplify the system.
- It follows a iterative approach.
- Shows a continuous improvement.
- 1. Planning
 - The first step is to plan a system.
 - It is a second step.
- Cut the system into smaller parts.

• Extreme programming (XP)

- Extreme programming (XP) is originally described by Kent Beck, which is one of the most popular agile methodologies. Extreme programming is a set of practices that conforms to the values and principles of agile.
- XP is a lightweight, efficient, low-risk, flexible, predictable, scientific, and fun way to develop a software.
- small to medium sized teams that work under vague and rapidly changing requirements
- The five values of XP are communication, simplicity, feedback, courage, and respect
- follows object oriented approach.
- shows following phases of XP process

1 Planning :-

- the planning activity begins with the creation of a set of stories that describe required features and functionality for software to be built.
- customers and the XP team work together to decide how to group stories into the next release to be developed by the XP team.

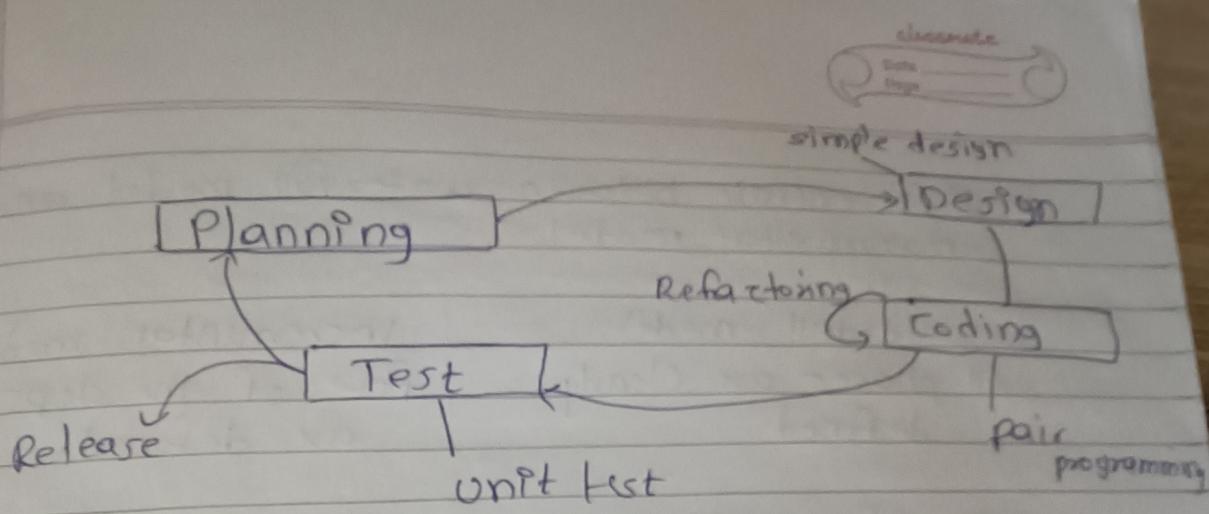
2) design :-
- XP design follows the KIS (keep it simple) principle. A simple design is always preferred over a more complex representation.

3) coding :-

- XP recommends that after stories are developed and preliminary design work is done, the team should not move to code, but rather develop a series of unit test that will be exercise each stories.
- Once the unit test has been created, the developer better able to focus on what must be implemented to pass the unit test

4) Testing :-

- The creation of unit test before coding is the key element of the XP approach.
- The unit tests that are created should be implemented using framework that enables them to be automated. This encourages regression testing strategy whenever code is modified.



- * Advantages of Extreme programming (XP)
 - . Emphasis on customer Involvement
 - . simple design
 - . continuous reviews

. Disadvantages :-

- 1) XP has lack of structure and necessary documentation.
- 2) Relatively high costs
- 3) Additional work

* Differentiate between waterfall model and incremental model

waterfall model

All phases are clearly defined

one of most systematic methods for software development

Being oldest, this is one of the time tested methods

The working model is available only in the latter part of the development

incremental model
few of the steps are defined.

It is iterative in nature.

new model for development

this model could be time consuming.

