

SE - Notes

unit 1

Software :-

Software is a collection of executable program codes, associated libraries & documentation.

Characteristic of software

Software is developed or engineered, ^{not manufactured} not manufactured. - copy/modify

⇒ Software does not wear out. No expiration date

⇒ Software is custom built

evolving Role of software -

⇒ S/W is a Product

Produces, manages & displaying info

⇒ S/W is a Process

Vehicle for delivering the product

It supports or directly provides system function

- It control other programs - OS

- effects communication - Network

- Helps in Building other softwares ex - S/W tools

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MTWTFSS

Changing nature of Software

Software \rightarrow everywhere & anywhere

\therefore It keeps on changing from one situation to other.

1) System Software:-

Collection of programs written to provide services for other programs
eg:- Compiler, filem, Editor

2) Application Software:-

designed to help users to perform specific task
eg C, Java

3) Engineering & Scientific Software

for complicated numeric calculation

Ex: Calculus, Statistics

4) Embedded Software

ties in hardware system & used for control function

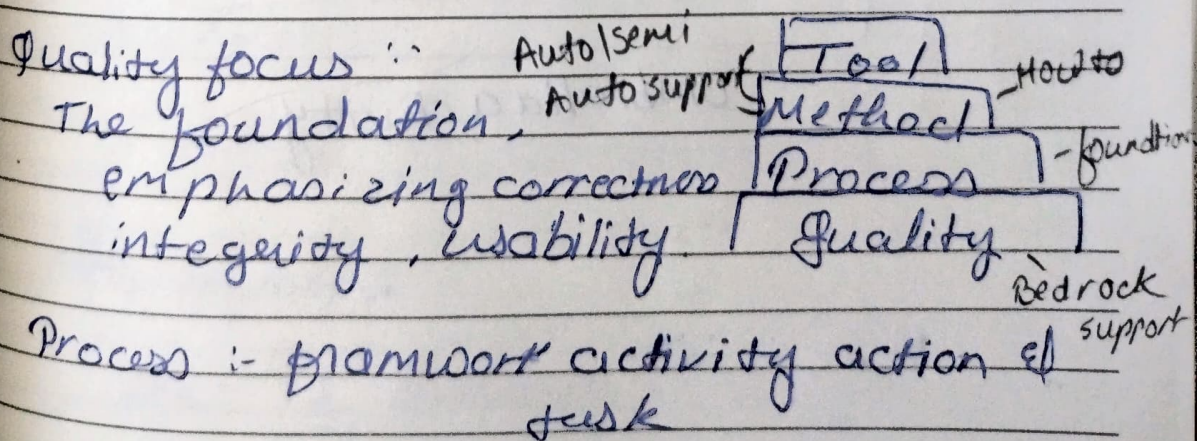
ex:- Microwave oven control

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- 3) Product line Software
It provides specific capabilities for SE
eg Computer Graphics, DBMS
- 6) web application
these are used over a netw
Ex website
- 7) Artificial Intelligence slw
Non-numeric algo to solve complex
Problem
Robotic, Gaming.

Software Engineering

A layered Technology.



Method :- Technical approach for implementing slw

Tools :- Automated support for the development

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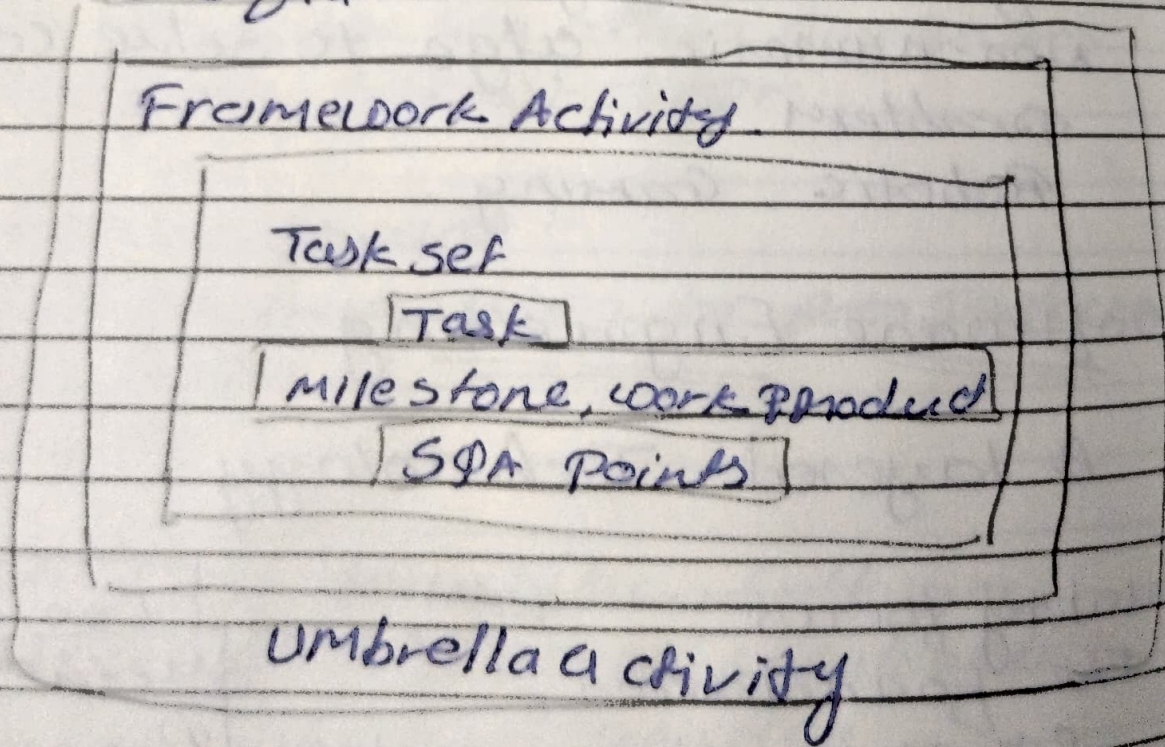
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S/W Process

Process framework

Establish the foundation for S/E by identifying small no of framework activities & umbrella activities that are applicable for entire software process.

Process framework



framework activities. - Small project

communication :-

involves communication with customer & gathering requirement

Planning :-

It establish plan for project

Modelling :-

constructing Models so that customer can understand the requirement & design in a better way.

↑ analysis & design.

construction

combo of code & testing -

Deployment

SW is delivered to customer,
+ feedback

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- UMBRELLA Activities. — large project to track, control & manage the project
- 1) S/w project tracking & control-team.
 - 2) Risk Management — Identify risk, analysis, solve.
 - 3) S/w Quality Assurances
 - 4) formal Technical Reviews.
 - 5) Measurement — Cost, time, Manpower
 - 6) S/w configuration management — changes & effects.
 - 7) Reusability Management
 - ↳ criteria for reusability.
 - 8) Work product preparation & production

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Software Engineering.

- 1) understand the problem.
- 2) plan solution
- 3) carry out the Plan
- 4) examine the result for accuracy.

Software Engineering Principles

value to users:

The primary goal is to provide value

KISS (Keep it simple, Stupid!) Design should be as simple as possible

Maintain the Vision :- A clear vision is crucial

What you produce, others will consume :- Design with understanding Mind.

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Be open to the future :- System should be adaptable.

Plan Ahead for Reuse :- Reuse saves time & effort.

Think! : Thoughtful planning leads to better result

Software Myths.

Management Myths.

Available standards & procedure are enough.

Books should be correct, complete & adaptable to new coming technology.

We can add workers when we get behind the schedule.

From the ^{start} begining itself have to train & take workers.

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We can outsource the project to third party & relax. They will take care of Project

↳ keep on following, & have to keep on loop / touch

Customer Myth

A general statement of objective is enough.

↳ clear & continuous communication is essential for defining requirement

Practitioner Myth

Once the program works, the job is done

↳ Maintenance & evolution
consume significant efforts

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