SOFTWARE ENGINEERING

CH - 1

A software is a collection of programs.

Software Engg. is a systematic approach of developing a software i.e. step by step analysis and development of a software.

Software Engineering is a discipline or whose aim is the production of fault free software that satisfies the user's needs and that is delivered on time and within budget.

TYPES OF SOFTWARE

1.) System Software.

These s/w are very necessary for the basic functionality of a system.

Eg :→ Operating System, Device Drivers etc.

2) Application Software.

Softwares developed to run a specific application on a computer system

Eg: Spreadsheet, Railway Ticket Booking, MS word etc.

3.) Utility Software.

These s/w are in the form of ready-made package to do some specific operations. They are used to enhance & secure existing programs and data.

ex: Antivirus. S/w ; File Compression s/w.

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✱ SOFTWARE CRISIS

It refers to the problems faced during development phase of a software. At various stages, the developer may face certain issues due to which a software development may be halted.

Various crisis that can occur are :-

1) Schedule and Cost Slippage.
   → Product may not be delivered in time bounds.
   → The production cost can be more than the budget of the user.

2) No Adequate Quality
   When product is below the expected quality and have errors or bugs in it.

3) Communication Gap.
   The communication gap between the user and the developer may lead to wrong definition and misunderstanding of the user requirements.

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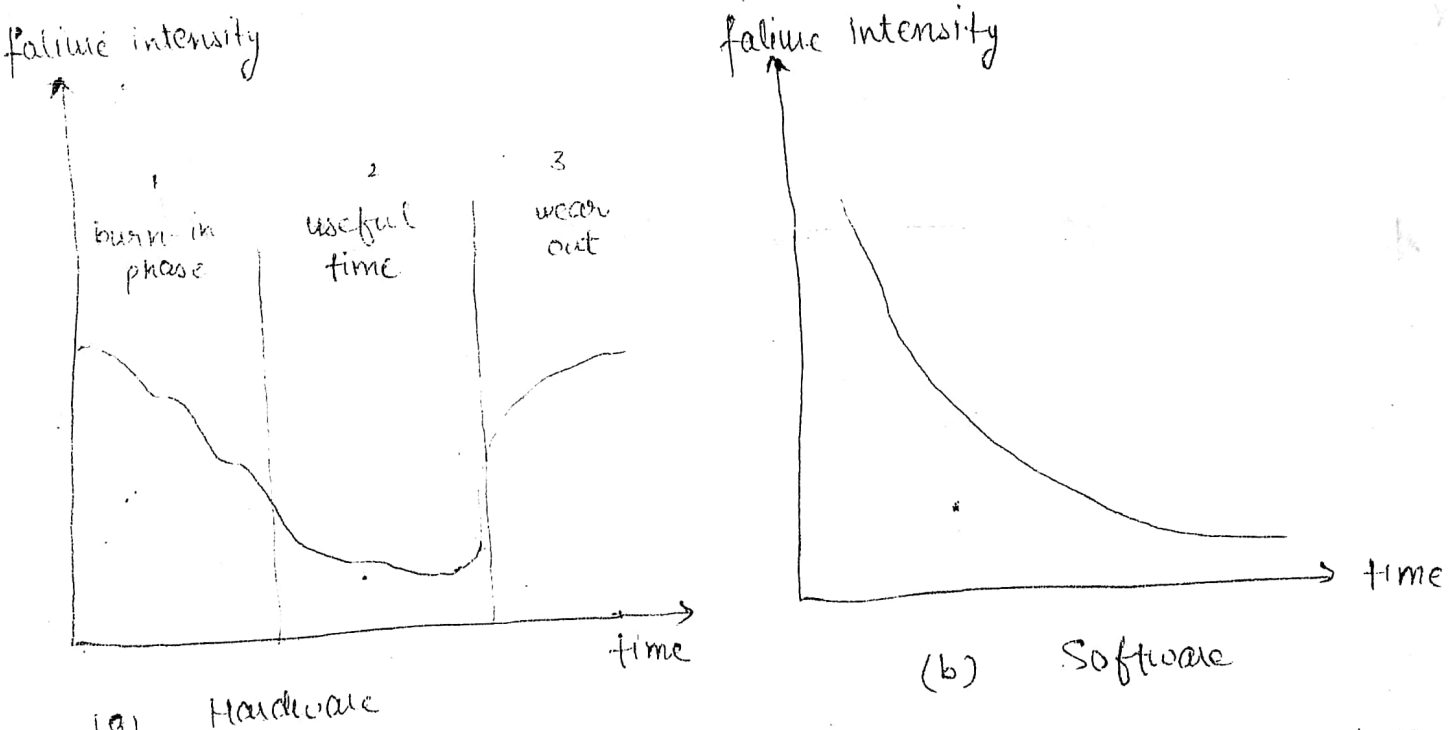
Changes in requirement :

User's requirement can vary till the completion of the project from those that were defined in the begining. It may lead to customer dis-satisfaction.

5) Compatibility Problems.

With the rapid change & progress in technology, the old softwares may not be operated on new platforms.



(a) Hardware (b) Software

Fig: RELATIVE CHANCES OF FAILURE H/w & S/w WITH TIME.

NOTE → In a S/w, errors / bugs decreases with time due to continous modification & enhancement of code. and removal of bugs from the S/w from time to time.

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☆ DIFFERENCE b/w SOFTWARE & PROGRAM.

SOFTWARE (PRODUCT)	PROGRAM
1) Product of a software is developed by a group of s/w engineers working in a team.	Programs are developed by individuals, mostly for their sole usage.
2) A software has a very good user interface and documentation support.	As developed by an individual they may lack good interface and proper documentation.
3) Software products are ~~too~~ large in ~~in~~ size and consists of many 'KILO' lines of code.	A program is small in size and have a limited functionality.
4) It is used by a group of users.	It is used and maintained by an individual.
5) It consist of program code as well as many associated documents and manuals.	A program only have the coding statements and no user manuals with it.

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DOCUMENTATION

Documentation is the breif overview of the functionality and usage of the software product.

- It helps in better understanding the program code.
- It help the developers while modifying the code.
- The short description of code improves the readability of the program.
- It helps the end users to interact with the software GUI using the manuals provided.

TYPES OF DOCUMENTATION

1) Internal Documentation.

It refers to the labelling done within the program code for understanding its functionality. It can be done through:

a) COMMENTS — Single-line and multi-line comments can be used to describe the working of the code.

b) NAMING CONVENTION — The variable used

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in the program must be named according to the function they perform. It allows better understanding of source code.

2) EXTERNAL DOCUMENTATION.

The external documentation comprises of the additional documents provided to the users that include step by step description of every feature of the s/w product.

a) User Manuals.

b) Reports.

★ MAINTENANCE & MODIFICATION

Every software needs to be enhanced or modified with time. This is because the user requirements changes with time. Various levels or types of maintainance are

1) CORRECTIVE MAINTENANCE.

This type of modification in code is done to remove the bugs & flaws incurred in the software systems. This allows the s/w to operate in the existing environments with efficiency.

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