

Software Engineering

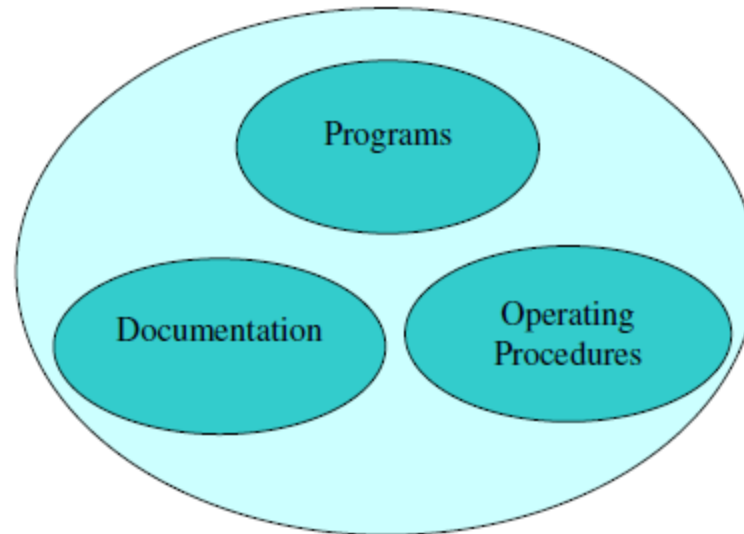
Prepared by: Neha Tripathi

What is software?

- **Computer programs** and **associated documentation**



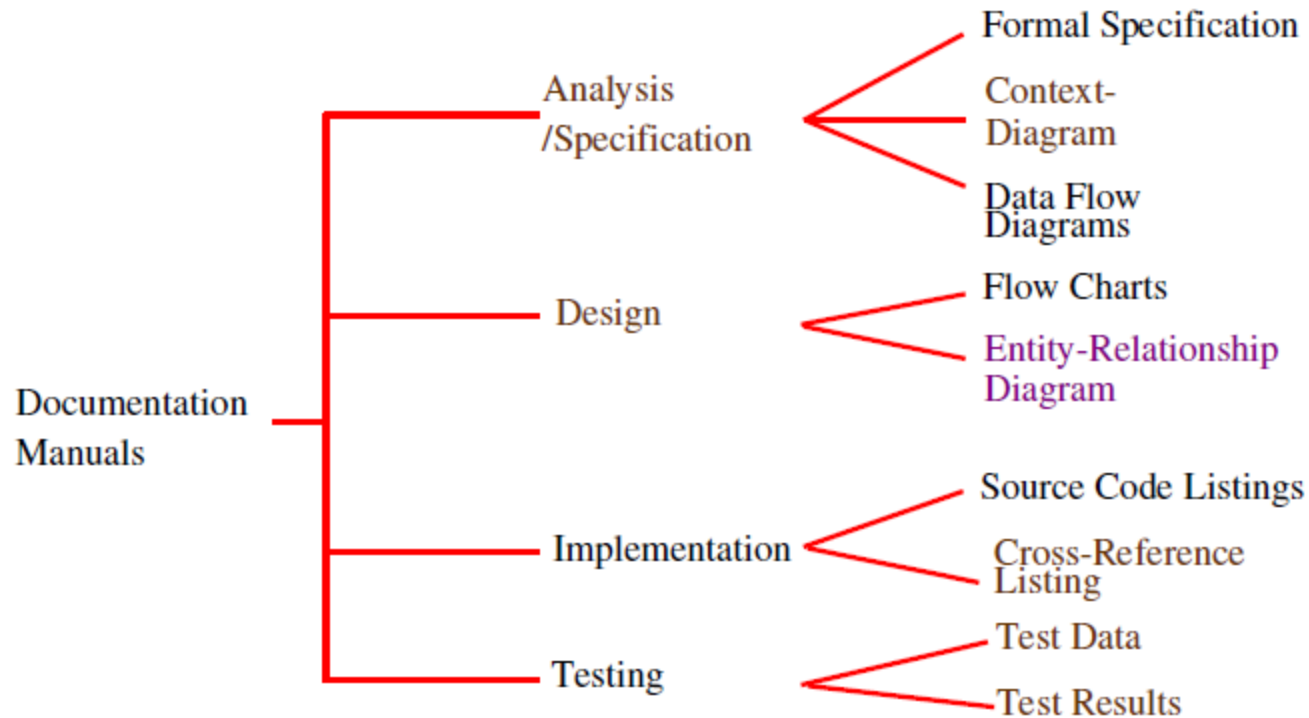
What is software?



Software=Program+Documentation+Operating Procedures

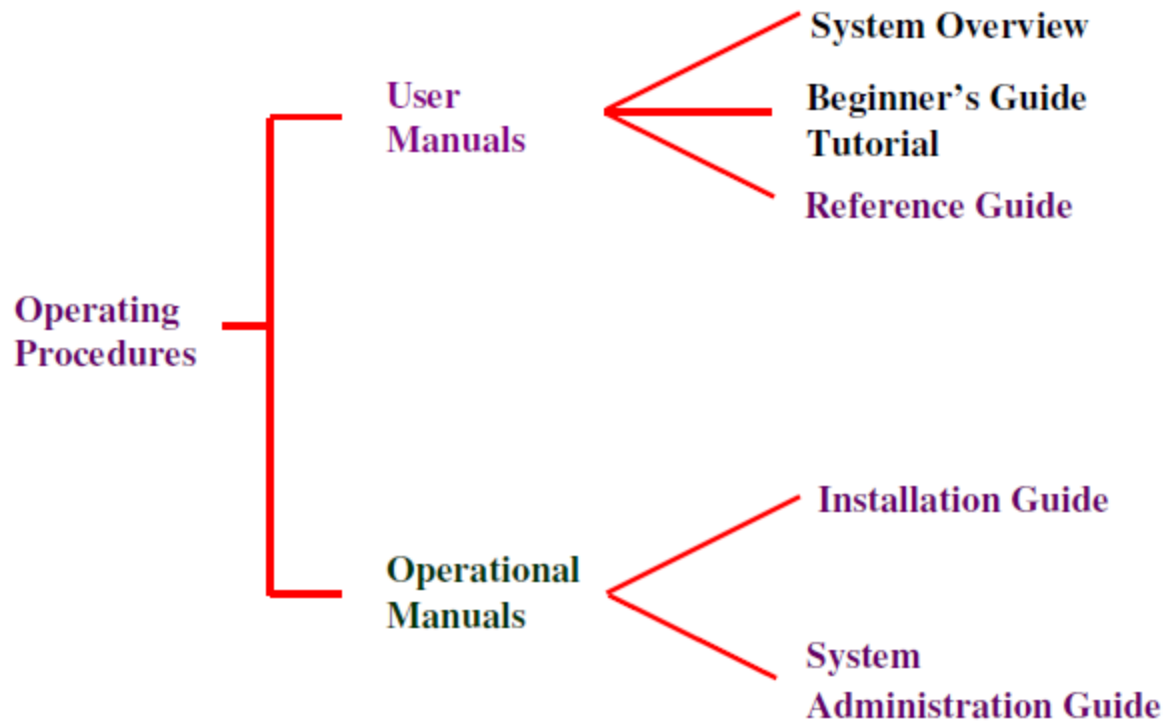
Components of software

Documentation consists of different types of manuals are



List of documentation manuals

Documentation consists of different types of manuals are



List of operating procedure manuals.

What is software engineering?

- **Software engineering** is an engineering discipline which is concerned with all aspects of software production
- **Software engineers should**
 - adopt a systematic and organized approach to their work
 - use appropriate tools and techniques depending on
 - the problem to be solved,
 - the development constraints and
 - use the resources available

What is software engineering?

- The establishment and use of sound engineering principles in order to obtain economically developed software that is reliable and works efficiently on real machines.
- “A discipline whose aim is the production of quality software, software that is delivered on time, within budget, and that satisfies its requirements”.
- Both the definitions are popular and acceptable to majority.
- However, due to increase in cost of maintaining software, objective is now shifting to **produce quality software that is maintainable, delivered on time, within budget, and also satisfies its requirements.**

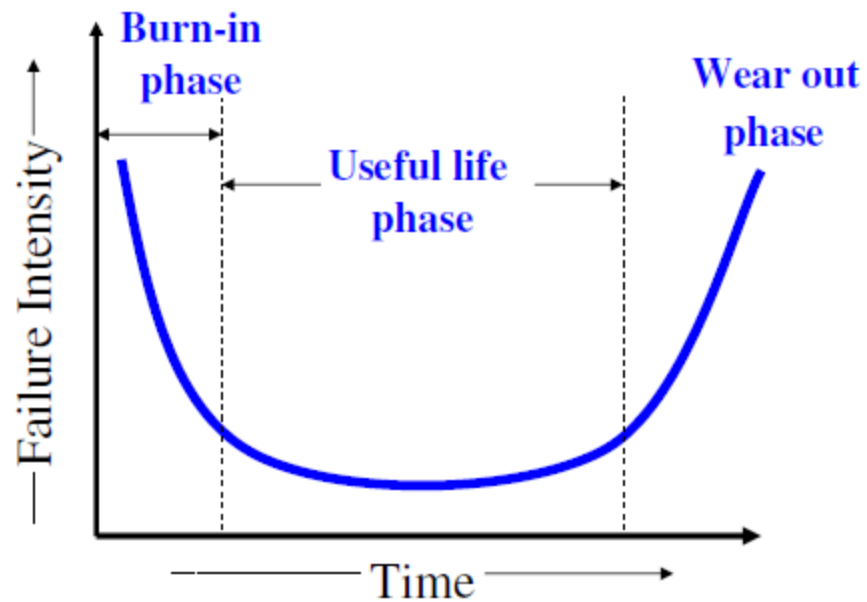
Characteristics/Attributes/Features of Software

Its characteristics that make it different from other things human being build. Features of such logical system:

- **Software is developed or engineered**, it is not manufactured in the classical sense which has quality problem.
- **Software doesn't "wear out." but it deteriorates (due to change).** Hardware has bathtub curve of failure rate (high failure rate in the beginning, then drop to steady state, then cumulative effects of dust, vibration, abuse occurs).
- Although the industry is moving toward component-based construction (e.g. standard screws and off-the-shelf integrated circuits), most **software continues to be custom-built**. Modern reusable components encapsulate data and processing into software parts to be reused by different programs. E.g. graphical user interface, window, pull-down menus in library etc.

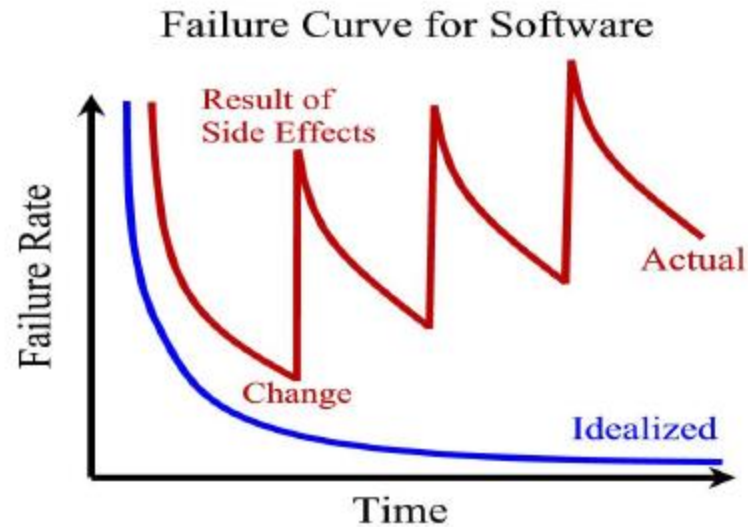
Software Characteristics:

✓ Software does not wear out.



Software Characteristics:

- ✓ Software is not manufactured
- ✓ Reusability of components
- ✓ Software is flexible



Essential Attributes for Software Products

Product Characteristics	Description
Maintainability	The software should evolve to meet the changing demands of the clients.
Dependability	Dependability includes various characteristics. Dependable software should never cause any physical or economic damage at the time of system failure.
Efficiency	The software application should overuse system resources like memory and processor cycle.
Usability	The software application should have specific UI and documentation.

Characteristics of Good Software

- Any software should be judged by what it offers and what are the methods which help you to use it.
- Every software must satisfy the following attributes:
 - Operational**
 - Transitional**
 - Maintenance**

Operational

- This characteristic let us know about how well software works in the operations which can be measured on:
- **Budget**
- **Efficiency**
- **Usability**
- **Dependability**
- **Correctness**
- **Functionality**
- **Safety**
- **Security**

Transitional

- This is an essential aspect when the software is moved from one platform to another:
- **Interoperability**
- **Reusability**
- **Portability**
- **Adaptability**

Maintenance

- This aspect talks about how well software has the capabilities to adapt itself in the quickly changing environment:
- **Flexibility**
- **Maintainability**
- **Modularity**
- **Scalability**

Thank you!