Software Engineering

Software Engineering

- Software engineering is a combination of two words software and Engineering.
- **Software Engineering** is the process of designing, developing, testing, and maintaining software.
- Software Engineering include tool and process for developing software.
- Its not used for only developing .

Why Software Engineering required?

- For managing software
- Cost management
- Quality Management
- To manage changing/dynamic nature of software.

Principle/attribute of Software Engineering

- **Modularity**
- **Abstraction**
- **Encapsulation**
- **Reusability**
- **Maintenance**
- **Reliability**
- **Efficiency**

Requirement Engineering

- **Requirements engineering (RE)** refers to the process of defining, documenting/ maintaining requirements.
- We understand customer requirement

Requirement Engineering Process

1. Feasibility Study
2. Requirement Gathering/Elicitation
3. Software Requirement Specification
4. Software Requirement Validation

Coupling

- Coupling describes interdependence and interaction between software modules
- Coupling represent Top Level design(break the s/w into module)
- Coupling should be low.
- Coupling inter-module
- Coupling represents the relationships between modules.

Cohesion

- Cohesion refer detail design
- Cohesion intro module within module
- Cohesion represents the relationship within a module.
- Cohesion should be high
- Cohesion describes how the elements in a particular module are releted with each other.

Design Approach

- Function Oriented
- Top level module divide/de-composed into sub -module
- Top-down approach
- Divide and conquer approach
- High level design
- EX : DFD

Object Oriented

- Consider as Object
- Bottom-up approach
- Each object has its own state and behavior
- EX:UML

DFD

- Represent data graphically
- How data is flow from one module to other

DFD element:

- Source/Sink: Rectangle external entity
- Data flow: Arrow
- Process: Circle
- Data Store: parallel line