

SNS COLLEGE OF TECHNOLOGY



Coimbatore-35. An Autonomous Institution

COURSE NAME : 19CST201 AGILE SOFTWARE ENGINEERING

II YEAR/ III SEMESTER

UNIT – I INTRODUCTION TO SOFTWARE ENGINEERING





UNIT I INTRODUCTION TO SOFTWARE ENGINEERING

The Nature of Software -Software Engineering - Software engineering Practice – Process Models: Generic – Prescriptive – Specialized -United Process - Personal and Team Process Models - Process Technology-Understanding Requirements-Design concepts & model-Software quality concepts & Review metrics.







- Generic process framework
- Specialized process models
- The unified process
- Personal and team process models







SPECIALIZED PROCESS MODELS

- This model take on many of the characteristics of one or more of the traditional models
- These models tend to be applied when a specialized or narrowly defined software engineering approach is chosen.
 - Component Based Development (Promotes reusable components)
 - The Formal Methods Model (Mathematical formal methods are backbone here)
 - Aspect Oriented Software Development (AOSD)(use crosscutting technology)





Component Based Development

- Component Based Software Engineering (CBSE) is a process that focuses on the design and development of computer-based systems with the **use of reusable software components**
- Develop software using already available components
- In this kind of development there is no concept of building any software from scratch



- Software component is a software package ,a web service, a web resource that encapsulates a set of related functions/data
- Developed components must be portable
- Replaceable/ Reusable





CBSE Framework Activities

1. Component Qualification:

- Ensures that the system architecture define the requirements of the components for becoming a reusable component.
- It means "the services that are given, and the means by which customers or consumers access these services " are defined as a part of the component interface.

2. Component Adaptation:

• This activity ensures that the architecture defines the design conditions for all component and identifying their modes of connection.





CBSE Framework Activities

3. Component Composition:

• This activity ensures that the Architectural style of the system integrates the software components and form a working system.

4. Component Update:

• This activity ensures the updation of reusable components.



Characteristics of CBSE



- Reusability
- Replaceable
- Not context specific
- Extensible





The Formal Methods Model (Proof, Calculation, precision, Understanding)

• What is a FORMAL METHOD MODEL?

- The Formal Methods Model is an approach to Software Engineering that applies **mathematical methods or techniques** to the process of developing complex software systems. The approach uses a formal specification language to define each characteristic of the system.





Formal methods can be useful in :

- 1. Articulating, and representing requirements .
- 2. Specifying software : developing a precise statement of what the software is to do .
- 3. Software design : Data refinement involves state machine specification, abstraction functions, and simulation proofs .
- 4. Coding verification
- 5. Enhancing early error detection .
- 6. Developing safe, reliable, secure software intensive systems .
- 7. The overall effect of the use of formal techniques on time, cost ,and quality.







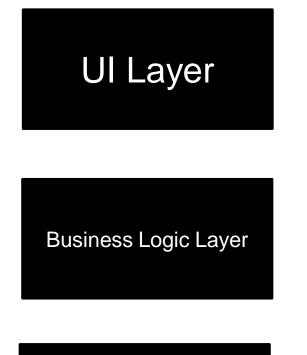
- Formal Proofs
- Model Checking
- Abstraction







Aspect Oriented Software Development



Security
Profile
Logging
Transaction
Management

Data Access Layer





Aspect Oriented Software Development

Advantages :

- Cross cutting Concern
- Reuse
- Quick Development
- Enabled /Disabled





