

SOFTWARE ENGINEERING

3,4, 5units

PRESENTED

BY

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**UNIT V : Implementation issues structured techniques
coding styles- standards and guidelines documentation
guidelines –time checking scoping rules concurrency
mechanism**

**UNIT V : Quality Assurance –walk through and
inspections- static Analysis symbolic exception- unit
testing and debugging system testing –formal
verification enhancing maintainability during
development management aspects of software
maintenance configuration management source code
metrics other militance tools and techniques.**

Software design

- ▶ The process of design involves drawing patterns or sketch
- ▶ Software design 3 types of activities
- ▶ 1.External design
- ▶ 2.architechral design
- ▶ 3.Detailed design

Fundamentals s/w design concepts

- ▶ Abstraction
- ▶ Structures
- ▶ Information hiding
- ▶ Modularity
- ▶ Concurrency
- ▶ Verifications

For example when u design a s/w in banking project for online net banking .

- ▶ **Meet mr.Bankers** is own banking business his bank is not having any software the report shows that there is considerably drop in the number of customer due to **lack internet banking facilities** now decides to invest to banking s/w.
- ▶ **A team of 4 people** from company meet the bank officals to understand the business problem and expectation from the s/w solution.
- ▶ A team is headed by the manager

Project Manager - budget and expected timeline is taken by the s/w manager.

Architect – he understand technical feasibility requirement, if bank officials wants some functionality he the write person to answer whether it is technically possible. **The problem is he does not understand the much about banking**

Business Analyst - good knowledge in business domain

Ex : MBA finance , chatted account

Who understand the jargons by the business people but the technical people cannot understand.

Quality lead –some experience from the quality lead she will certify the s/w met desired expectations and it is ready to delivered

- ▶ The bank management expects that online banking lot of convenience for their customers
- ▶ Better accuracy
- ▶ Increased productivity (expected value return on investment)
- ▶ Cost reduction
- ▶ Better decision

After the series of meeting the with the bank officials
development firm creates

Requirement document mostly consistent of **scope of the s/w and
expected time lines.**

This is followed by detailed analysis finally generated document
SRS

The gathered requirements are of 2 types

- 1. functional - The user do login and do the transaction is a
functional**
- 2. Non – functional – 500 users use the website without the
server going down or performance degrade. Is non -
functional**

Such requirements need to be architected multiple high end webserver db. is might be needed desired h/w like RAM Processor s/w tools decided such requirements.

Module Lead come up with such s/w architect usually have good amount experience in designing in architect and ususlly one or more modules in the project.

Multiple pages are required for the websites each page would have **related functionality group together**

- **bank balance**
- **Fixed deposits**
- **Bill payments**
- **User profiles**

Modules and modularization

- ▶ Modules contain instructions, processing logic, data structures
- ▶ Modules where interact with each other Home page of the website summary show each module and contents links to various pages this is done HLD.
- ▶ Generally group of programmer is work under the module lead. The teams comes in HLD document.
- ▶ A method can represent one unit of functionality
- ▶ Refer HLD to come with such units
 - Algorithm,
 - flowcharts
 - DFD (This is called detailed designer low level design LLD)
 - class diagram
 - sequence diagram

SRS

BUSINESS REQUIREMENTS

SYSTEM DESIGN

HLD

LLD

After review of LLD the programmer start writing the source code for individual units . Programmer review each other code witten in individual unit properly

Example they may check the code written in

Efficient logic

Coding standard this is called peer review

No dead code

Un-used variables

Once the program is written it is tested for correctness this process is called testing various types of testing

Unit testing - individually units like methods classes validated against their LLD / whether the code is structured as per LLD

Integration testing – behavioural of the module as per the HLD

System testing –

system design is validated by system testing .if the s/w is not design as the desired expectation then this is reported as BUG .it is usually done in Bug tracker

Acceptance testing - finally the s/w is delivered to the client whther the business requirement is mention in the SRS this is called user acceptance testing or UAT. After that the s/w is deployed in the production environment.

Validation and verification

The goals of verification and validation activities are to assess and improve the quality of the work products generated during Development and modification of s/w. quality attributes of interest include correctness, completeness, consistency, reliability, usefulness, usability, efficiency, and over all cost effectiveness

Implementation issues

Introduction

The implementation phase of software development is concerned with translating design specifications into source code. The primary goal of implementation is to write source code and internal documentation.

The source code should be clarity and elegance

- Good coding style
- supporting documents
- Good internal comments

The implementation team should be provided with a well – defined set of software requirements:

- Architectural design specifications
- Detailed design description

Structured Coding Techniques :

Single Entry, Single Exit Constructs

A single entry , single exit program segment that has all statements on some path from the entry to the exit can be specified using only

- sequencing
- Selection
- Iteration

Coding style

Standards and guidelines

Documentation guidelines

Supporting documents

Program unit notebooks

Internal documentation

THANK YOU