B. TECH. IT 5TH SEM SOS(E & T), GGU, BILASPUR C G

Elective-I Software Engineering(IT05TPE11)

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U-2 Contents

- Software Requirement Specification-
  Problem Analysis
  Requirement Specification
  Validation
  Metrics
  Monitoring & Control

Software Requirement Specification(SRS)

- SRS is a document that completely describes “WHAT” the proposed software should do without describing “HOW” the software will do it.
- Goal

Need for SRS

- Automate…..
- Bridge the communication gap….
- Clients Understand their own need….
- Agreement….
- Reference for validation…..
- Prerequisite….
- Reduced development cost…..

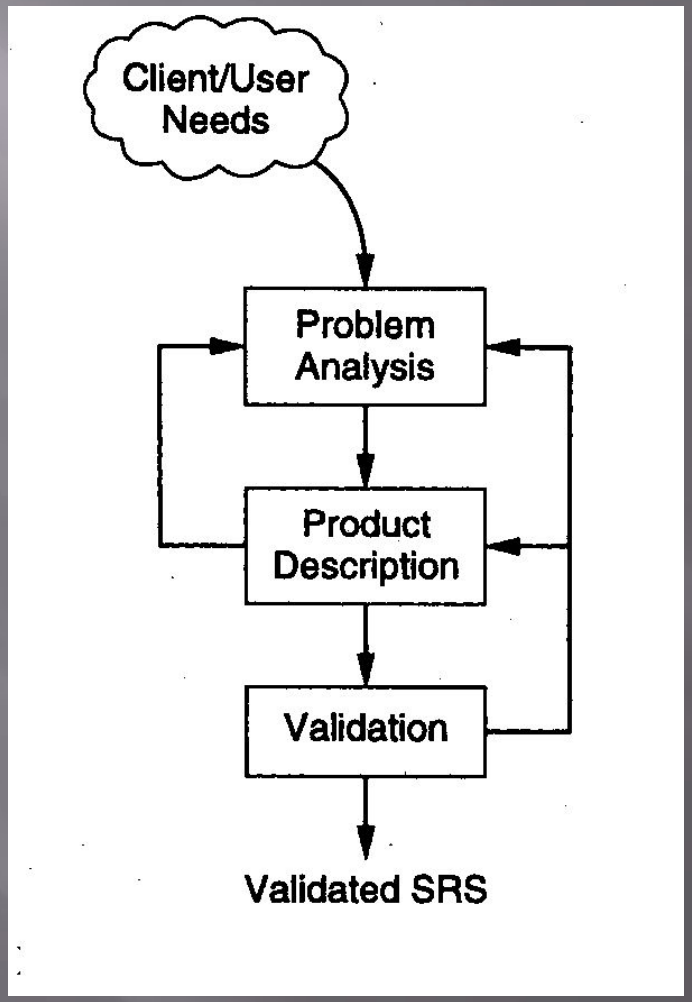
Requirement Process

- Sequence of activities….
- Standalone or component of system….
- Requirement Phase consist of-

  Problem Analysis

  Requirement Specification

  Requirement validation
- Difference between Analysis & Design….?


Client/User Needs
Problem Analysis
Product Description
Validation
Validated SRS

Problem Analysis

- Analysis Issues
- Informal Approach
- Structured Analysis
- Object Oriented Modelling
- Other modelling approach
- Prototyping

Problem Analysis Methods

- Informal Approach
- Conceptual
- Prototyping

Requirement Specification

- Characteristics of an SRS:

  Correct,

  Complete,

  Unambiguous,

  Verifiable,

  Consistent,

  Ranked for Importance,

  Modifiable,

  Tracable

Component of SRS

- Functionality
- Performance
- Design Constraints
- External Interface

Specification Language

- Natural Language
- Formal Language
- Regular Expression
- Decision Table
- Finite State Automata

Structure of Required Documents

- 1. Introduction
  - 1.1 Purpose
  - 1.2 Scope
  - 1.3 Definitions, Acronyms, and Abbreviations
  - 1.4 References
  - 1.5 Overview
- 2. Overall Description
  - 2.1 Product Perspective
  - 2.2 Product Functions
  - 2.3 User Characteristics
  - 2.4 General Constraints
  - 2.5 Assumptions and Dependencies
- 3. Specific Requirements
- …
- ….

Validation

- A - Requirement Review-Methods
- B – Other Methods
- Error

  Omission

  Inconsistency

  Incorrect

  Ambiguity

Other Methods

- Automated Cross Referencing
- Reading
- Construction Scenario
- Prototyping

Metrics

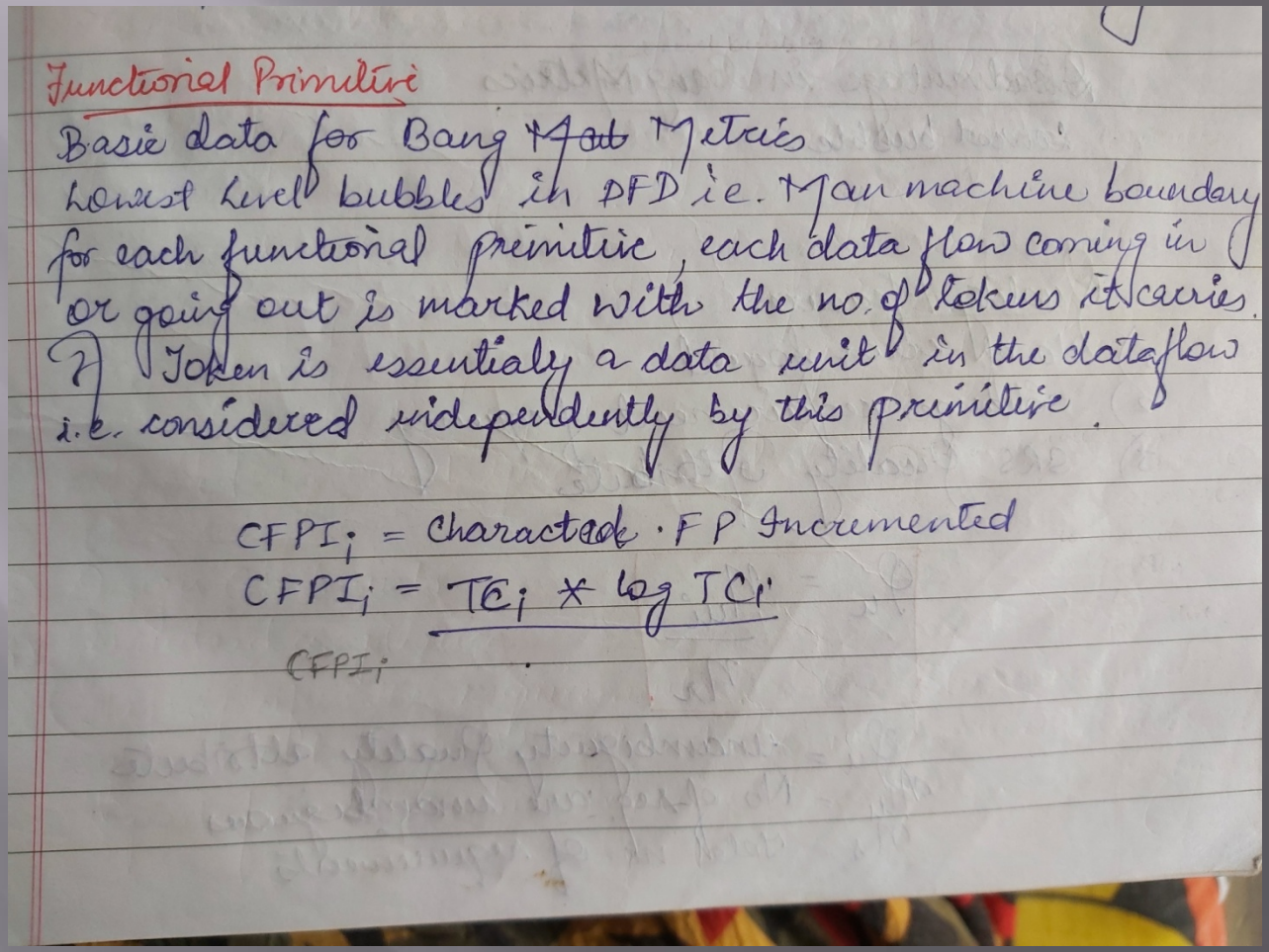
A. Size Measures

- Text Based Measure
- Function Points
- Bang Metrics

B. Quality Measures(Process Based)

1. No of error found
2. Change Requirement frequency
3. SRS quality Attributes

Bang Metric



Functional Primitive

Basic data for Bang Metrics

Lowest level bubbles in DFD i.e. Man machine boundary for each functional primitive, each data flow coming in or going out is marked with the no. of tokens it carries.

Token is essentially a data unit in the dataflow i.e. considered independently by this primitive.

$CFPI_i$ = Character · FP Incremented

$CFPI_i = \frac{TC_i * \log TC_i}{CFPI_i}$

~~Cluster~~ Corrected FP increment is defined by

$$CFPI_i = \frac{TC_i \times \log TC_i}{2}$$

Where ~~TC~~ TC_i = Total no. of token involved in primitive

The final metrics of the system is

$$Bang = \sum_{i=1}^{i=N} CFPI_i \times W_i$$

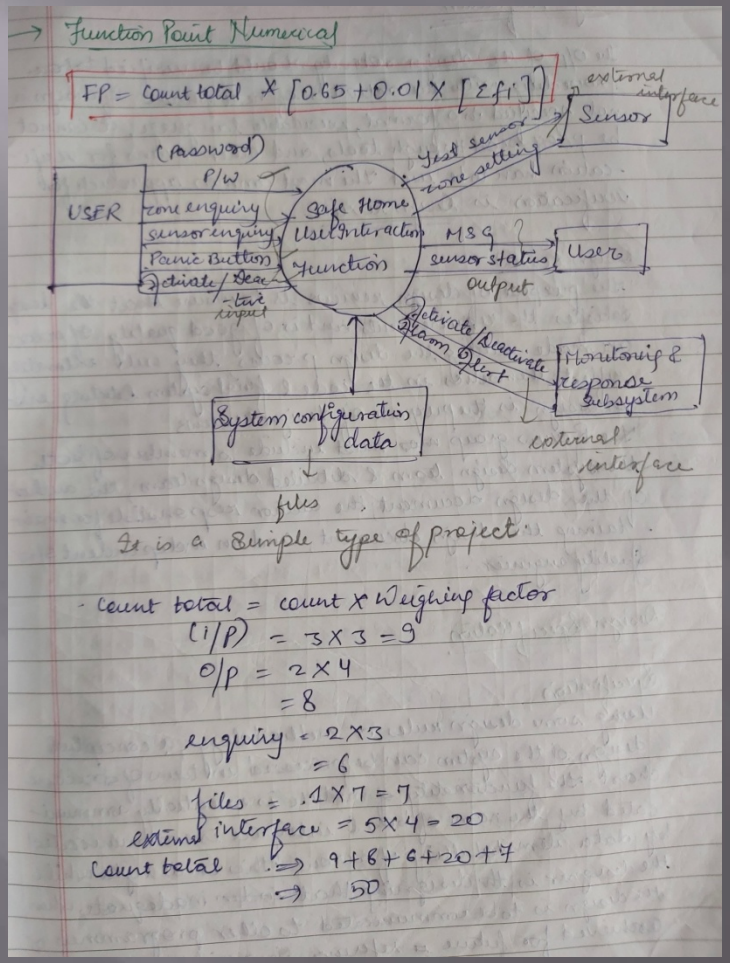
where N = Total no. of functional primitive.

W_i = Complexity ~~date~~ weight of I primitive.

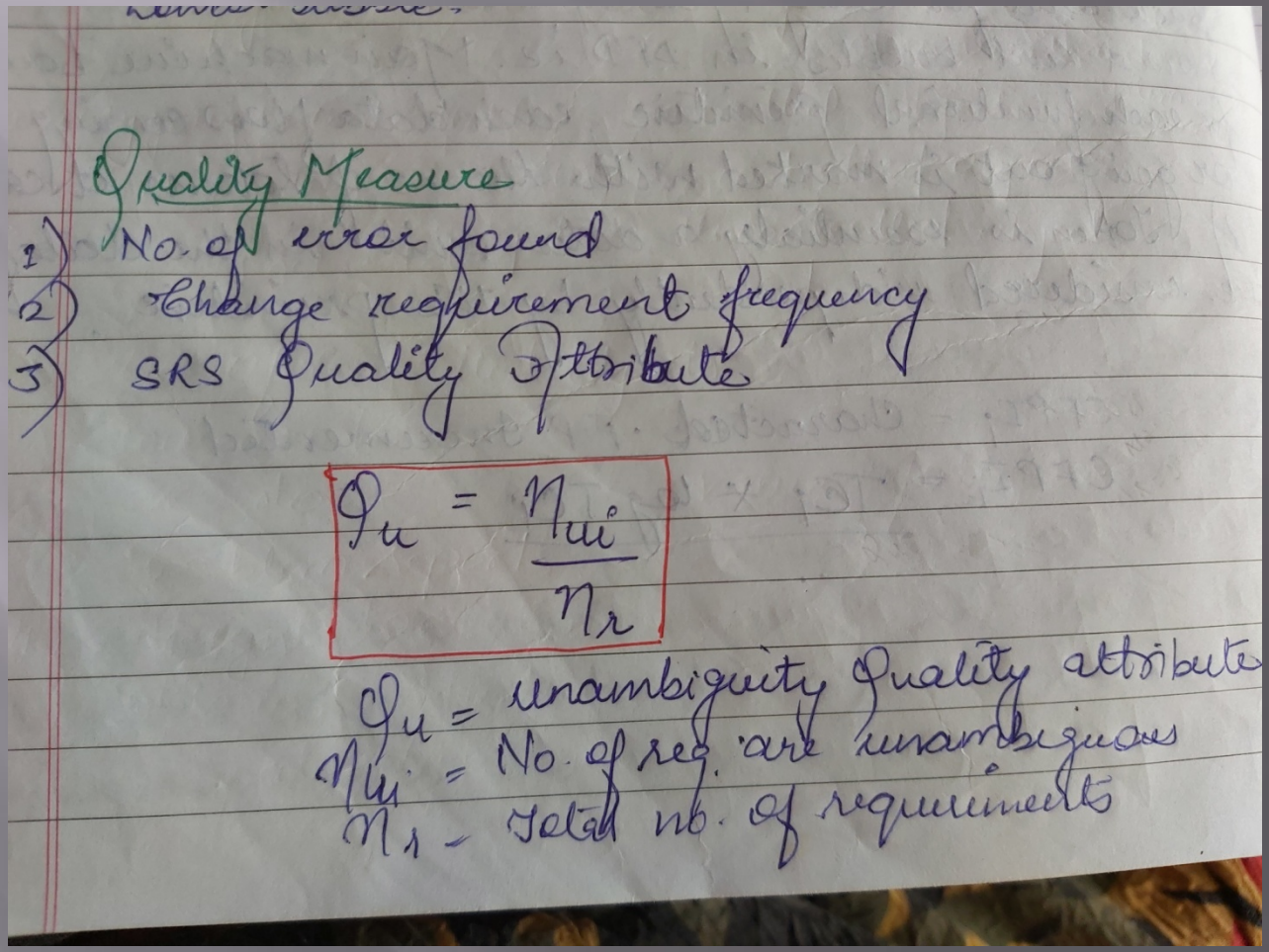
Simple Update = 0.5
Verification = 1.0
control device = 2.5

} in place of (W_i)

Function Point



Quality Measure



Quality Measure

1) No. of error found
2) Change requirement frequency
3) SRS Quality Attribute

$$Q_u = \frac{n_{ui}}{n_r}$$

Q_u = unambiguity quality attribute
n_{ui} = No. of req. are unambiguous
n_r = Total no. of requirements

$$Q_c = \frac{n_u}{n_i \times n_s}$$

Q_c = completeness quality attribute
n_u = no. of unique function specify.
n_s = no. of states defines.
n_i = no. of input define in SRS.

e Make - Buy Decision

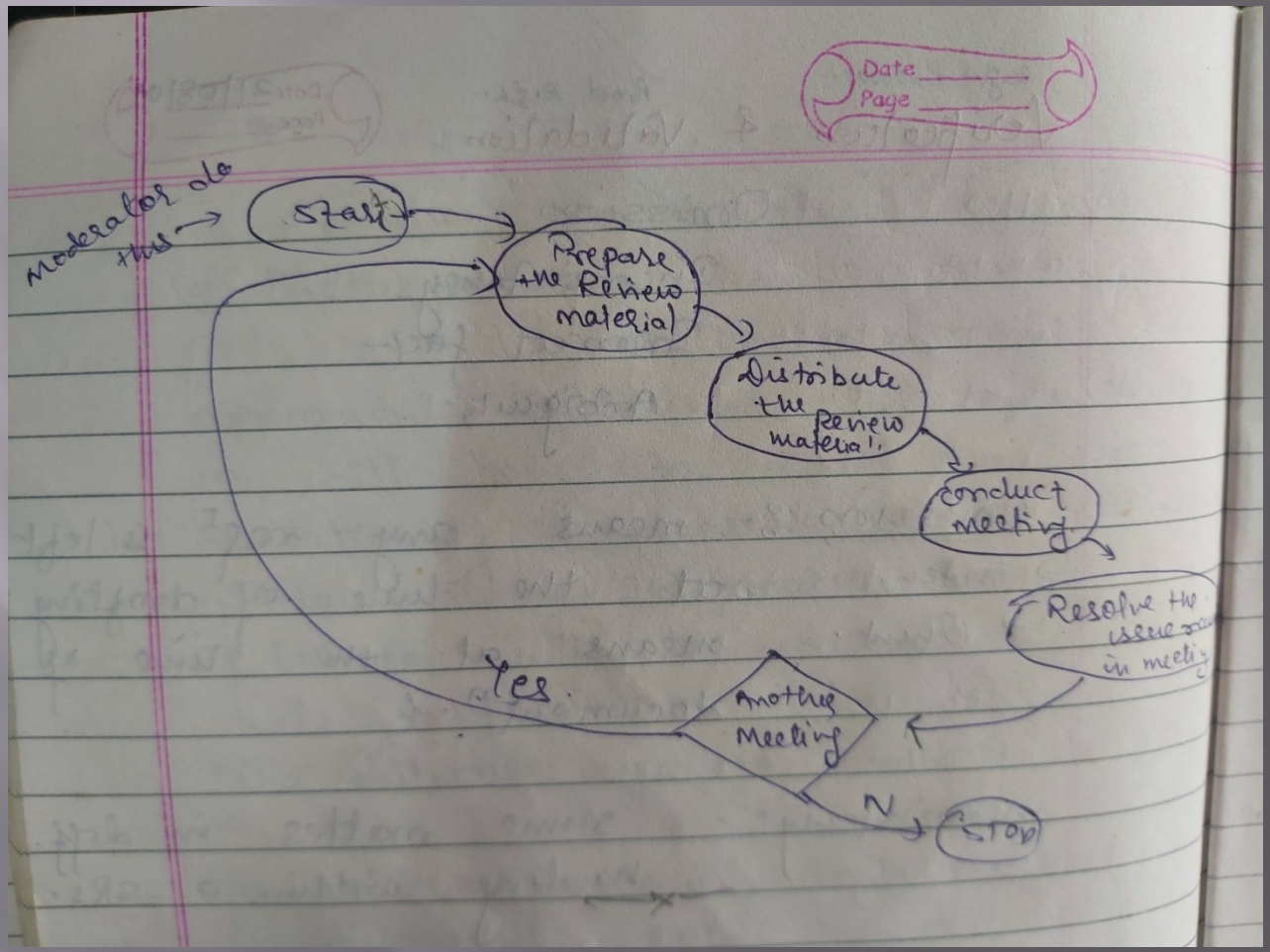
Project Monitoring & Control

- Timesheets
- Reviews
- Cost Schedule Milestones
- Earned Valued Method
- Unit Development Folder

Timesheet

- Progress & Expenditure….
- Records how much time different project members are spending on different identified activities in the project.

Reviews


Date
Page
moderator do this
Start
Prepare the Review material
Distribute the Review material
conduct meeting
Resolve the issue
Another Meeting
Yes
N
STOP

Cost Schedule Milestones

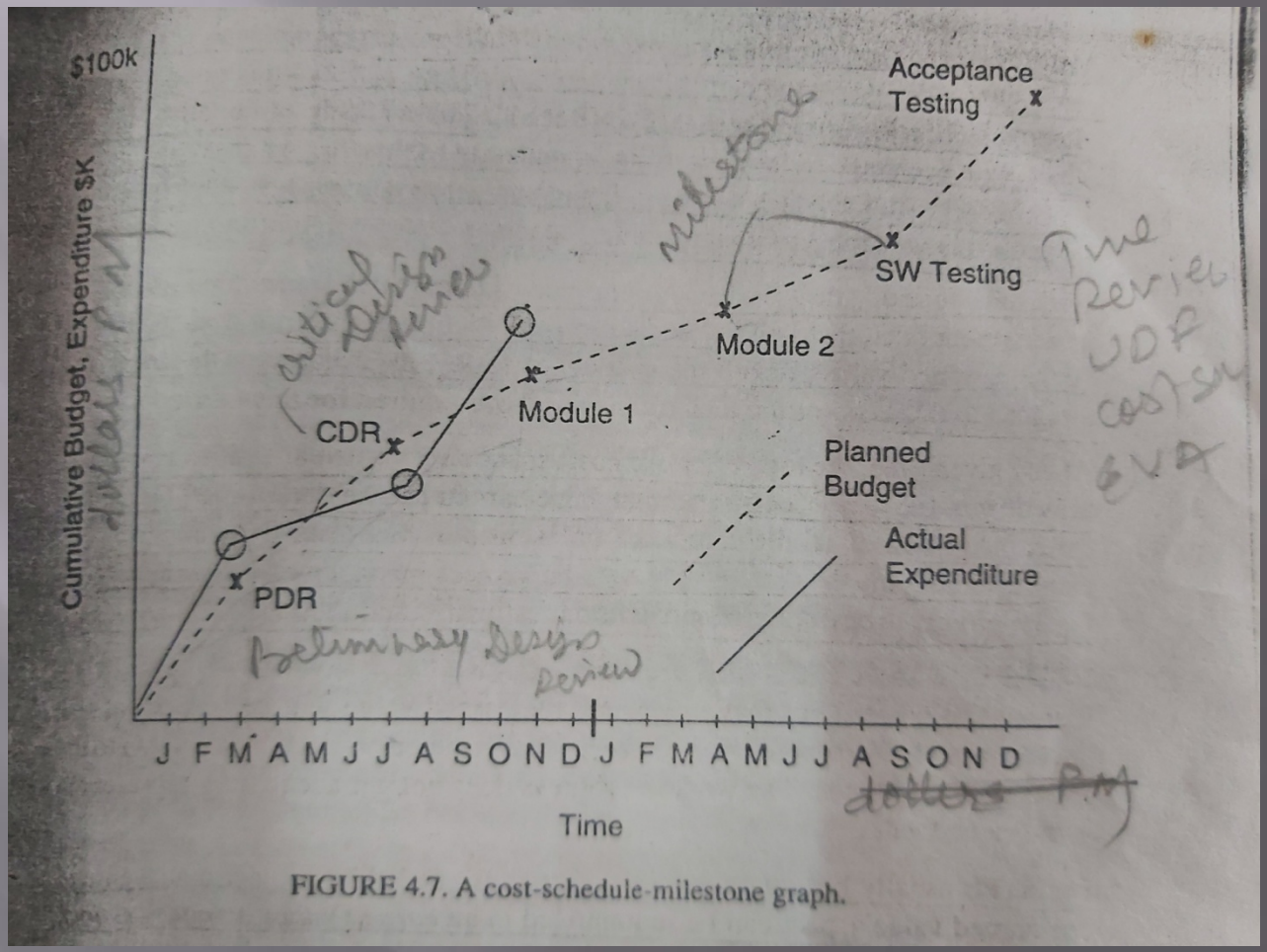


FIGURE 4.7. A cost-schedule-milestone graph.

Earned Valued Method

- After design phase…
- Summary Task Planning Sheet(STPS)….
- Earned value Summary Report….

Unit Development Folder

- To counter 90% syndrome..
- Programmer Notebook…
- UDF for each unit…. After system design phase…
- Schedule & progress report of unit….
- Single place for collecting all documentation for a Unit…

Thank You

- Any Doubt from Unit-2??????