Digital Assignment-1

Name : Nithish.G

Reg No : 19BCS0012

Course : Software Engineering

Code : CSC 3003

1. IEEE defines of Software Engineering

↳ The application of a Systematic, disciplined, quantifiable approach to the development, operation and maintenance of software that is the application of engineering to develop software.

2. CMM

•↳ The Software Engineering Institute (SEI) Capability Maturity Model (CMM) Specifies an increasing series of levels of a software development Organization.

• It's a bench-mark of measuring the maturity of an organization software process.

Purpose of CMM

• CMM defines the standard software organization.

• The higher the level of cmm better the software development process, hence reaching each level is an expensive and time-consuming process.

List of CMM Levels:

• CMM defines 5 levels of process maturity based on the certain key Process Areas (KPA)

• <u>Level 5 -</u> Optimizing ($<1\%$)
  ↳ Process change management
  ↳ technology change management

* defect prevention

Level 4 - Managed (<5%)

- software quality management
- quantitative process management

Level 3 - Defined (<10%)

- Peer reviews
- intergroup coordination
- Software product engineering
- integrated software management
- training Program

Level 2 - Repeatable (~15%)

- Software configuration management
- Software quality assurance
- Software project tracking and oversight
- Software project planning
- requirements management

Level 1 - initial (~70%)

3.) Project:

* A software Project is one instance of the development Problem.

** A Project is well-defined task, which is a Collection of several Operations done in order to achieve a goal.

→ Software Project is the complete procedure of software development from requirement gathering to testing and maintenance, Carried out according to the execution methodologies, in a specified Period of time to achieve intended Software Product.

Process

* Software Process: the sequence of steps Performed to Produce software with high quality, Within budget and ~~schedule~~ Schedule.

* Software Process is a method of developing a software.

↳ Software Engineering focus on Process.

↳ Proper Processes will help achieve Project objectives of high QP.

Two major Processes:

* Development → focuses on development and quality steps needed to engineer the software.

* Project management : focuses on Planning and controlling the development Process.

Product:

* In the context of software engineering, Product includes any Software manufactured based on the Customer request.

→ It can also be said that this is the result of a Project.

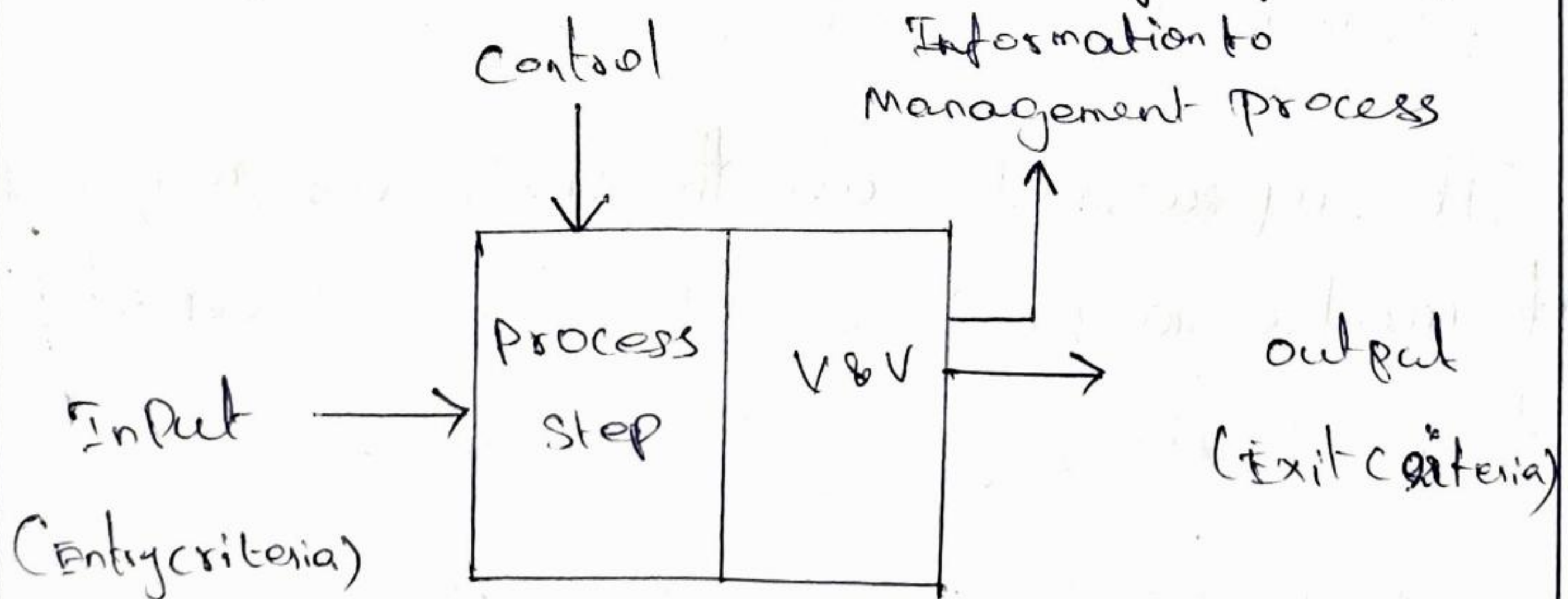4.7 ETVX Specification:

• ETVX approach to specify a step

⤷ Entry Criteria: What conditions must be satisfied for initiating this Phase.

⤷ Task : What is to be done in this Phase

⤷ Verification: The checks done on the Outputs of this Phase.

⤷ eXit Criteria : When can this Phase be considered done successfully.

• A Phase also Produces info for mgmt.

```
              Control            Information to
                                 Management Process
                 │                      ▲
                 ▼                      │
            ┌─────────┬─────────┐       │
Input  ───▶ │ Process │  V & V  │───────┴──────▶  output
            │  Step   │         │              (Exit criteria)
(Entry criteria) └─────────┴─────────┘
```

5) Characteristics of software Process

* Predictability
* Support Testability & Maintainability
* Support change
* Early defect removal
* Process improvement and feedback

6) The software development life cycle

A software life cycle model (also termed Process model) is a pictorial and diagrammatic representation of the software life cycle.

It represents all the methods required to make a software product transit through its life cycle stages.

* And it also represents the Process of developing software.

Stages of SDLC :

1. Planning
2. Requirements Analysis
3. Design
4. Development
5. Testing
6. Implementation
7. Maintenance

1) Planning :

*→ In the planning phase, Project goals are determined and a high-level Plan for the intended project is established.

*→ Planning is the most fundamental and Critical organizational phase.

Three **Primary activities** involved in the Planning Phases are :

1.→ Identification of the system for development.

2.→ ~~feasib.~~ Set the Project scope

3.→ Develop Project Plan.

2.4 Requirements Analysis:

*✓ In the Requirement Analysis Phase end user business requirments are analyzed and project goals converted into the defined system functions that the organizatio intends to develop.

Activites:

- ↳ Gathering business requirement
- ↳ Creating process diagrams.
- ↳ Represent and document the Software requirements

*✓ Business requirement gathering is the most crucial part at this level of SDLC. Bussiness requirement are a brief set of business functionalites that the System needs to meet in order to be successful.

3) Design

* In the design Phase, we describe the desired features and operation of the system.

This Phase includes business rules, screen layouts and other necessary documentation.

Primary activities:

→ Design the technical structure based on (SRS) SysSoftware Requirement Specification.

→ Design overal system structure.

4) Development:

* In the Development Phase all the documents from the previous Phase are transformed into the actual System.

Activities:

* Build the technical architecture, database and programs.

→ Bulid Programs in the small units and integrated in next phase.

5·7 Testing:

In the testing Phase all the piece of Code are integrated and deployed in the testing environment. Tester than check the system for errors, bugs and defects to verify the systems's functional.ities work as expected or not.

Primary activites:-

↳ write test Conditions.

↳ Perform testing.

6·7 Implementation / Deployment:

→ write user documentation

→ Provide training

→ Product is deployed in customer environment or released to market.

* This Phase is also called reffered to as 'delivery'.

7. Maintenance:

* It is necessary to maintain and upgrade the system from time to time so it can adapt to future needs.

↳ Build a help desk   <u>Activities.</u>

↳ Support corrections, improvements and adaptations

↳ Support system changes.

— X — X — X —