

Assignment : Unit 02

1. Define Software Process Life Cycle Phase.

Answer-> SDLC is a process which defines the various stages involved in the development of software for delivering a high-quality product.

- SDLC stages cover the complete life cycle of a software i.e. from inception to retirement of the product.
- Adhering to the SDLC process leads to the development of the software in a systematic and disciplined manner.

Purpose of SDLC :

- Purpose of SDLC is to deliver a high-quality product which is as per the customer's requirement.
- SDLC has defined its phases as, Requirement gathering, Designing, Coding, Testing, and Maintenance.
- It is important to adhere (to stick an object) to the phases to provide the Product in a systematic manner.

2. Describe software process lifecycle phase.

Answer -> Software life cycle models describe phases of the software cycle and the order in which those phases are executed.

- . Each phase produces deliverables required by the next phase in the life cycle.
- . Requirements are translated into design.

The different life cycle phases are:

- i. Engineering and production stages

- ii. Inception Phase
- iii. Elaboration Phase
- iv. Construction Phase
- v. Transition Phase

i. Engineering and Production Phases/ Stages

Two stages of the life cycle:

- . The engineering stage – driven by smaller teams doing design and synthesis activities.
- . The production stage – driven by larger teams doing construction, test and deployment activities.

LIFE-CYCLE ASPECT	ENGINEERING STAGE EMPHASIS	PRODUCTION STAGE EMPHASIS
Risk reduction	Schedule, technical feasibility	Cost
Products	Architecture baseline	Product release baselines
Activities	Analysis, design, planning	Implementation, testing
Assessment	Demonstration, inspection, analysis	Testing
Economics	Resolving diseconomies of scale	Exploiting economics of scale
Management	Planning	Operations

ii. Inception Phase

- Overriding goal – to achieve concurrence among stakeholders on life cycle objectives.
- Essential activities:
 - . Formulating the scope of the project.
 - . Synthesizing the architecture.
 - . Planning and preparing business case.

iii. Elaboration Phase

- During the elaboration phase, an executable architecture prototype is built.

- Essential activities:
 - . Elaboarting the vision.
 - . Elaborating the process and infrastructure.
 - . Elaborating the architecture and selecting components.

iv. Costruction Phase

- During the construction phase: All remaining components and application features are integrated into the application.
- All features are thoroughly tested.
- Essential activities:
 - . Resource management, control and process optimization.
 - . Complete component development and testing against evaluation criteria.
 - . Assesment of the product releases against acceptance criteria of the vision.

v. Transition Phase

- The transition phase is entered when baseline is matured enough to be deployed in the end-user domain.
- This phase could include beta testing , conversion of optional databases and training of users and maintainers.
- Essential activities:
 - .Synchronization and integration of concurrent construction into consistent deployment baselines.
 - .Deployment specific engineering.

3.Explain about the Software Architecture on the basis of Management Perspective and Technical Perspective.

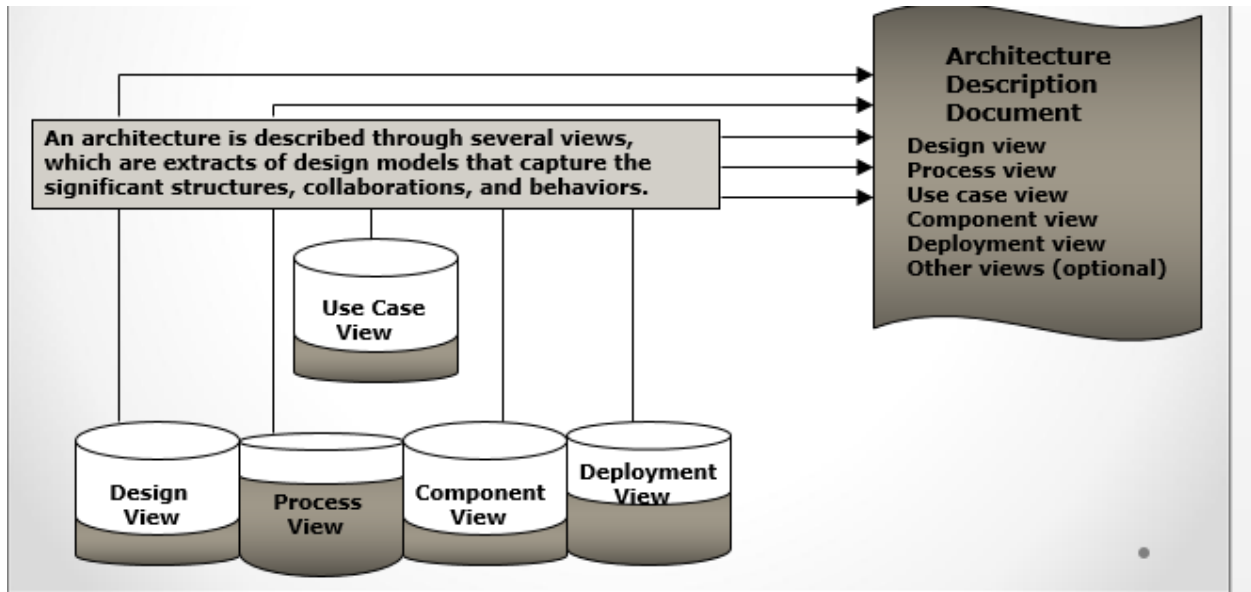
Answer -> **Software Architectures : Management Perspectives**

- From a management perspective, there are three different aspects of an architecture :
 - . An architecture (the intangible design concept) is the design of software system, as different or similar to design of a component.

. An architecture baseline (the tangible artifacts) is a slice (portion) of information across the engineering artifact sets sufficient to satisfy all stakeholders that the vision can be achieved within the parameters of the business case (cost, profit, time, people).

Technical Perspective:

The model which draws on the foundation of architecture developed at *Rational Software Corporation* and particularly on Philippe Kruchten's concepts of software architecture :



- The use view describes how the system's critical use cases are realized by elements of the design model. It is modeled statically using case diagrams, and dynamically using any of the UML behavioral diagrams.
- The design view addresses the basic structure and the functionality of the solution
- The process view addresses the run-time collaboration issues involved in executing the architecture on a distributed deployment model, including the logical software network topology, interprocess communication and state management.
- The component view describes the architecturally significant elements of the implementation set and addresses the software source code realization of the system from perspective of the project's integrators and developers.

- The deployment view addresses the executable realization of the system, including the allocation of logical processes in the distribution view to physical resources of the deployment network.

4. Define Software Process Workflows.

Answer-> The term *workflow* is used to mean a thread of cohesive and most sequential activities.

There are seven top-level workflows:

1. **Management** workflow: controlling the process and ensuring win conditions for all stakeholders.
2. **Environment** workflow: automating the process and evolving the maintenance environment.
3. **Requirements** workflow: analyzing the problem space and evolving the requirements artifacts.
4. **Design** workflow: modeling the solution and evolving the architecture and design artifacts.
5. **Implementation** workflow: programming the components and evolving the implementation and deployment artifacts.
6. **Assessment** workflow: assessing the trends in process and product quality.
7. **Deployment** workflow: transitioning the end products to the user.

5. What are the four basic key principles of software process workflows.

Answer -> The four basic key principles of software process workflows are :

1. **Architecture-first approach:**

Implementing and testing the architecture must precede full-scale development and testing and must precede the downstream focus on completeness and quality of the product features.

2. **Iterative life-cycle process:**

The activities and artifacts of any given workflow may require more than one pass to achieve adequate results.

3. **Roundtrip engineering:**

Raising the environment activities to a first-class workflow is critical; the environment is the tangible embodiment of the project's process and notations for producing the artifacts.

4. Demonstration-based approach:

Implementation and assessment activities are initiated nearly in the life-cycle, reflecting the emphasis on constructing executable subsets of the involving architecture.

6. Discuss about the Software Process Checkpoints and Milestones.

- ❑ Answer-> It is important to have visible milestones in the life cycle , where various stakeholders meet to discuss progress and plans.

The purpose of this event is to:

- Synchronize stakeholder expectations and achieve concurrence on the requirements, the design, and the plan.
- Synchronize related artifacts into a consistent and balanced state
- Identify the important risks, issues, and out-of-tolerance conditions
- Perform a global assessment for the whole life-cycle.

Three types of joint management reviews are conducted throughout the process:

1. Major milestones – provide visibility to system-wide issues, synchronize the management and engineering perspectives and verify that the aims of the phase have been achieved.
2. Minor milestones – iteration-focused events, conducted to review the content of an iteration in detail and to authorize continued work.
3. Status assessments – periodic events provide management with frequent and regular insight into the progress being made.

