**UNIT – 4**

**Introduction to Agile software development methodology**

<https://www.geeksforgeeks.org/software-engineering-agile-software-development/>

**Agile software development lifecycle?**

<https://www.geeksforgeeks.org/agile-sdlc-software-development-life-cycle/>

**Agile Frameworks**

<https://www.geeksforgeeks.org/what-are-agile-frameworks/>

**Estimation techniques:**

<https://www.geeksforgeeks.org/estimation-technique-in-agile/>

**Compare scrum and kanban agile methodology**

<https://www.geeksforgeeks.org/difference-between-scrum-and-kanban/>

**Explain the roles in (i)Scrum team (ii)XP team**

<https://www.geeksforgeeks.org/what-is-a-scrum-team-structure-roles-and-responsibilities/>

<https://www.geeksforgeeks.org/software-engineering-extreme-programming-xp/>

**What do you understand by user stories**

<https://www.geeksforgeeks.org/what-is-a-user-story-in-agile/>

**Differentiate between agile methodology and waterfall model**

<https://www.geeksforgeeks.org/agile-vs-waterfall/>

**Agile Manifesto: Principles**

<https://www.geeksforgeeks.org/agile-manifesto-for-software-development/>

**Benefits and Challenges of Agile**

<https://www.geeksforgeeks.org/agile-methodology-advantages-and-disadvantages/>

**Agile Values**

<https://www.geeksforgeeks.org/what-are-the-4-agile-values/>

**Life Cycle of Agile development**

**OR**

**Phases of Agile Model.**

7 key stages of the Agile software development life cycle (SDLC)

The Agile development life cycle is usually made up of a few stages, each of which is meant to make the development process easier. These stages might be slightly different depending on the chosen Agile methodology.

**Phase 1: Concept**

The concept phase, also known as project initiation, is the first stage in Agile software development. It involves the product owner, business analysts, the development team and future users, who establish a vision of the project, and define its scope, objectives, and goals. The concept phase often includes an initial list of features and a product backlog.

At this stage, the objective is to get all the involved parties to agree on the overall goal, and ensure that everyone has a common understanding of the tasks that need to be completed and the reasons behind them.

**Phase 2: Inception**

The inception phase of an Agile project refers to the early stages of planning and envisioning how the finished product will look. Teams go into greater detail when it comes to plans and analyses, with the end goal of refining the project vision that was established during the Concept stage. They might also define initial requirements, conduct feasibility studies or run risk assessments.

The purpose of inception is to establish the project’s course and guarantee that it will satisfy both business objectives and customer requirements before moving on to the more iterative and execution-oriented phase.

**Phase 3: Iteration**

This phase involves cross-functional teams who implement prioritized features from the backlog. Depending on the Agile methodology, this takes from one to four weeks (usually two). During each iteration, teams design and develop features, then test and integrate them.

Iteration encourages stakeholders to provide regular feedback and fosters a continuous focus on delivering working software. It also makes it possible to quickly adapt to shifting requirements. The iterative stage allows for frequent corrections and ensures that product is delivered in small, regular increments.

**Phase 4: Testing**

Agile puts strong emphasis on testing. This includes test-driven development (TDD), automated testing, and manual tests, run incrementally and iteratively. Testers collaborate closely with developers to establish approval criteria for users and develop test cases. They also make sure that each feature complies with the specified requirements.

Because of continuous integration and frequent deployments, testing is always done on the most recent code. As a result, issues can be identified and addressed early in the process.

This method enables quick feedback, aids in maintaining product quality, and guarantees that the software will continue to be dependable and error-free.

**Phase 5: Release**

During the release phase, end-users or customers receive working and potentially shippable increments of the software. Iterative features are integrated, tested, and prepared for deployment.

This stage also usually involves final performance testing, security assessments and documentation updates, as well as user acceptance testing (UAT) to ensure that user needs are met and the software is successful. Once the software is ready, it is released to production or made available to users.

**Phase 6: Maintenance**

Following the release of the software product, support and upkeep are required. This Agile development life cycle stage goes beyond development. Tasks include addressing flaws, improving existing features, and accommodating changing requirements in response to user feedback and evolving needs.

Maintenance teams prioritize and implement improvements in iterative cycles. To ensure the software keeps providing value, it is updated to fix bugs and incorporate user feedback.

**Phase 7: Retirement**

In Agile, the retirement phase represents the end of the software’s life cycle. The goal here is to safely shut down software that is no longer used or supported. Teams perform data migration and archiving. They ensure a seamless transition for users to new or alternative versions and products. To achieve a smooth exit of the software from the organization’s portfolio, careful planning and communication with the relevant stakeholders are essential.