As a Junior Engineer you have a task to introduce a new team member into Agile methodology used in our projects. Please provide answers in a text file.

* What is Agile?
* What is estimation?
* Name and explain 3 estimation techniques used in Agile.
* What are story points and how do we estimate them?
* What is peer review?
* What is waterfall / scrum / Kanban?
* Name 2 strengths and 2 weaknesses of waterfall / scrum / Kanban (2 for each).
* What is a Kanban board used for?
* What is Definition of Done?
* What is a sprint? How long does this last?
* What is a backlog?
* What is an epic / story / task / bug ?
* What are SMEs (subject matter expert)?
* Why do we record work at the end of the day?
* Name best practices for recording work (up to 3).
* **What is Agile?**

The Agile methodology is a project management approach that involves breaking the project into phases and emphasizes continuous collaboration and improvement. Teams follow a cycle of planning, executing, and evaluating.

Principles of Agile methodology have been described in the Agile Manifesto, written in 2001. Agile methodology principles focus on individuals and interactions, working products, customer collaboration and being able to respond to changes.

A diagram of a process

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* **What is** **estimation?**

Estimation involves the process of estimating the time, effort, and resources required to complete specific tasks or user stories within an Agile project. Agile estimation techniques are designed to be lightweight, collaborative, and responsive to change, aligning with the principles of Agile methodologies. Some commonly used Agile estimation techniques: Story Points, Planning Poker, T-Shirt Sizes, Relative Estimation, Ideal Days, Bucket System.

* **Name and explain 3 estimation techniques used in Agile.**

**Story Points** - are often used to describe features or functionality from the end-user's perspective. Story points are a unit of measure that represents the relative complexity and effort required to complete a user story. Teams assign story points to each user story, typically using a scale like the Fibonacci sequence (1, 2, 3, 5, 8, 13, etc.) or another scale that makes sense for the team. The actual value of a story point is less important than the relative difference between story points.

**Ideal Days**: estimate how many ideal (uninterrupted) working days a task or user story will take to complete. While it involves actual time estimates, it's still relative in nature, as it focuses on effort rather than calendar time.

**Bucket System:** items are placed into predefined buckets or categories, such as "Quick Wins," "Medium Effort," or "Big Projects." This allows for a rough estimation without specific numerical values.

* **What are story points and how do we estimate them?**

Story points are a unit of measure used in Agile software development to estimate the relative complexity, effort, and size of user stories or tasks within a project.

The purpose of using story points is to allow development teams to estimate the work involved in completing user stories. Story points are a relative measurement that helps teams understand the effort involved and prioritize work effectively.

* **What is peer review?**

Peer review in the context of Agile software development typically refers to a collaborative and quality assurance process where team members review each other's work, such as code, design, documentation, or other artifacts, to ensure its quality, correctness, and alignment with established standards and best practices. The primary goal of peer review in Agile is to catch issues early in the development process, promote knowledge sharing, and improve the overall quality of the product being developed.

* **What is** **waterfall /** **scrum /** **Kanban?**

**The** **waterfall** methodology — also known as the waterfall model — is a sequential development process that flows like a waterfall through all phases of a project (analysis, design, development, and testing, for example), with each phase completely wrapping up before the next phase begins.It was one of the earliest systematic approaches to managing and organizing complex projects. It is a highly structured and document-driven methodology.

**A diagram of a waterfall method

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**Scrum** methodology is an agile project management framework that helps teams structure and manage their work through a set of values, principles, and practices. Much like a rugby team (where it gets its name) training for the big game, scrum encourages teams to learn through experiences, self-organize while working on a problem, and reflect on their wins and losses to continuously improve. It is most frequently used by software development teams, however its principles and lessons can be applied to all kinds of teamwork. Scrum methodology describes a set of meetings, tools, and roles that work in concert to help teams structure and manage their work.

A diagram of scrum

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**Kanban** is an Agile management method built on a philosophy of continuous improvement, where work items are “pulled” from a product backlog into a steady flow of work. The framework is applied using Kanban boards—a form of visual project management. The term "Kanban" itself is Japanese for "visual card" or "signboard." The primary goal of Kanban is to optimize workflow, increase efficiency, and reduce waste by making work processes more transparent and manageable.

A screenshot of a board

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* **Name 2** **strengths and 2** **weaknesses of** **waterfall / scrum / Kanban (2 for each).**

|  |  |  |
| --- | --- | --- |
|  | **strengths** | **weaknesses** |
| **Waterfall** | **Presence of a clear structure**  **Extremely stable** | **Costly and inflexible.**  **Delayed testing.** |
| **Scrum** | **Continuous Improvement Enhanced Collaboration** | **Uncertainty and Change**  **Complexity of Implementation** |
| **Kanban** | **Continuous Improvement**  **Simplicity and Flexibility** | **Lack of Deadlines**  **Limited Structure** |

* **What is a Kanban board used for?**

A Kanban board is a visual management tool used to represent and manage work in progress (WIP) in a workflow or process. It provides a clear, real-time view of the status of tasks, work items, or projects as they move through various stages, helping teams and organizations to improve efficiency, collaboration, and workflow management.

* **What is Definition of Done?**

The "Definition of Done" (DoD) is a crucial concept in Agile methodologies, particularly in Scrum and Kanban. It represents a clear and agreed-upon set of criteria or conditions that must be met for a work item, user story, or task to be considered complete and ready for delivery to the customer, stakeholders, or the production environment. The Definition of Done serves to ensure that the work meets the required quality standards and that it is potentially shippable.

* **What is a sprint? How long does this last?**

Sprint is a set period of time during which specific work has to be completed and made ready for review.

The typical duration of a sprint in Scrum is 2 to 4 weeks. However, the specific duration can vary depending on the team's preferences and the nature of the work.

* **What is a backlog?**

Within agile project management, product backlog refers to a prioritized list of functionality which a product should contain. It is sometimes referred to as a to-do list, and is considered an 'artifact' within the scrum software development framework.

* **What is an epic / story / task / bug ?**

These are all issue types.

**Epic** – is a big user story that needs to be broken down. Epics group together bugs, stories, and tasks to show the progress of a larger initiative. In agile development, epics usually represent a significant deliverable, such as a new feature or experience in the software your team develops.

**Story** is the smallest unit of work that needs to be done.

**Task** represents work that needs to be done.

**Bug** is a problem which impairs or prevents the functions of a product.

* **What are SMEs (subject matter expert)?**

Subject matter experts, also called SMEs, are professionals who have advanced knowledge in a specific field. The involvement of SMEs in Agile teams is essential for delivering valuable and high-quality products.

* **Why do we record work at the end of the day?**

Recording work at the end of the day in Agile, often referred to as the "end-of-day update" or "end-of-day status update," is a practice that serves several important purposes within Agile methodologies like Scrum and Kanban: Transparency, Daily Accountability, Daily Stand-up Meetings, Identifying Blockers, Improvement and Reflection, Alignment and Coordination, Documentation, Planning for the Next Day, Communication and Collaboration.

* **Name best practices for recording work (up to 3).**

1. Use a Visual Work Tracking System such as a physical or digital Kanban board, a task management tool, or Agile project management software.
2. Clear Work Item Descriptions: Ensure that each work item, whether it's a user story, task, or feature, has a clear and concise description.
3. Regular and Consistent Updates: Recording work at the same time each day, such as at the end of the workday, is a common practice.