Dev-Ops HW-1

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Q1: Read about "Planning Poker" - Agile estimation technique and illustrate an example with a Development Team of 10 who are tasked to develop a mobile app for Maha-Khumb in 3 months.

Ans.
Scenario: A Development Team of 10 is tasked with developing a mobile app for the Maha-Khumb festival in 3 months.

Steps:

1. **User Story Breakdown:**
    - The Product Owner has broken down the app's features into user stories. Examples:
        - "As a pilgrim, I want to see a map of the festival grounds with key locations marked."
        - "As a user, I want to see a schedule of religious events."
        - "As a pilgrim, I want to be able to find the locations of drinking water and restrooms."
        - "As a user, I want to see live traffic and crowd density information."
        - "As a user, I want to be able to make donations."
2. **Planning Poker Session:**
    - The team gathers for a Planning Poker session.
    - The Product Owner presents the first user story: "As a pilgrim, I want to see a map of the festival grounds with key locations marked."
    - Each team member silently selects a card.
    - **Example Round:**
        - 4 team members choose "5" (story points).
        - 3 team members choose "8."
        - 2 team members choose "3."
        - 1 team member chooses "13"
    - **Discussion:**
        - The team members who chose "13" and "3" explain their reasoning.
        - The team member who chose 13, might have been thinking about the complexity of integrating with a live mapping service, and the team member who chose 3, might have been thinking about using a static map.

        - The team discusses the technical complexities, potential challenges, and dependencies.
        - After the discussion, the team re-estimates.
        - After the second round of estimations, most of the team agree on 8 story points.
    - The Product owner records the 8 story points for that user story.
    - The team moves on to the next user story.
3. **Iteration:**

    - The team repeats the Planning Poker process for each user story until all stories have been estimated.
4. **Velocity and Release Planning:**

    - The team uses the estimated story points to calculate their velocity (the average number of story points they can complete in a sprint).
    - Based on the velocity and the total estimated effort, the team can plan the sprints for the 3-month development period and determine which features can be delivered within the timeframe.

Q2: Read Paper – Measuring Software Development Waste in OSS Projects - https://arxiv.org/pdf/2409.19107. Pick one measure from this paper and apply it on any open-source repository. Share results.

Ans.

PR Rejection Rate Analysis for axios Repository -

The paper *"Measuring Software Development Waste in Open-Source Software Projects"* proposes measures to identify waste. One such measure is the **PR Rejection Rate (PRR)**, which indicates unused contributions and backlog mismanagement.

1. Measure Selected: PR Rejection Rate (PRR):

- **Definition:** Ratio of unmerged pull requests (PRs) to merged PRs.
- **Formula:**PRR = Unmerged PRs / Merged PRs

2. Repository Analyzed:

- **Repository: axios/axios** on GitHub (https://github.com/axios/axios).
- **Method:** Used GitHub API and Python to fetch PR data.

3. Results:

```
(base) jaiminpatel@Jaimins-MacBook-Pro-3 Desktop %
Fetching PR data, please wait...

Total Closed PRs: 1670
Merged PRs: 940
Unmerged PRs: 730
PR Rejection Rate: 0.78
```

A PRR of **0.78** suggests that for every merged PR, approximately **0.78 PRs** were closed without merging. This indicates a **moderate level of waste** in terms of unmerged contributions.

4. Conclusion:
The PR Rejection Rate of **0.78** for the **axios** repository highlights a need for improved backlog management to reduce unused contributions.