CA6C1 – DevOps National Institute of Technology, Trichy
Homework 1
Effort Estimation and Software Waste

Roll No. 205224001

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

1 Scenario

A **10-member development team** is responsible for building a **Maha-Khumb mobile app** within **3 months**.

1.1 Backlog Creation

The **Product Owner** defines the backlog with user stories:

- **User Story 1:** As a user, I want to register and log in securely so that I can access personalized features.
- **User Story 2:** As a user, I want to watch live event streaming so that I can experience the event remotely.
- **User Story 3:** As a user, I want real-time navigation within the event so that I can find locations easily.
- **User Story 4:** As a user, I want to receive emergency alerts so that I can stay safe during the event.

1.2 Discussion

The team analyzes the complexity of implementing the registration and login functionality. Key discussion points include:

- Implementing authentication using email and password.

- Securely storing user credentials using encryption.
- Handling account verification through email or OTP.
- Preventing unauthorized access with security measures such as CAPTCHA and two-factor authentication.

1.3 Card Selection and Estimation

Each team member selects a card representing their estimated effort:
{3, 5, 8, 5, 5, 3, 8, 8, 5, 5, 8}
Estimates range from 3 to 8.

1.4 Reevaluation and Consensus

- **Developer 1:** Believes the registration and login UI is straightforward and estimates **3**.
- **Developer 2:** Argues that implementing form validation and basic authentication requires moderate effort, estimating **5**.
- **Developer 3:** Highlights the complexity of securing passwords with hashing and encryption, estimating **8**.
- **Developer 4:** Points out that email verification and account recovery mechanisms can be challenging, estimating **5**.
- After further discussion, the team revotes and reaches a consensus on a final estimate of **5 story points**.

1.5 Final Estimation and Backlog Update

- The user story is assigned **5 story points**.
- The team proceeds with estimation for the next backlog item.

1.6 Execution and Release

Team Velocity: 20 Story Points per Sprint
Final Estimations:

- Registration and Login: 5 Story Points
- Live Streaming: 13 Story Points
- Real-Time Navigation: 8 Story Points
- Emergency Alerts: 5 Story Points

Release Planning:
Total estimated story points:

$$5 + 13 + 8 + 5 = 31 \text{ story points}$$

With a **velocity of 20 story points per sprint**, the team will need utmost **2 sprints** (4 weeks) to complete these core features. Additional **testing, bug fixes, and deployment** will require further sprints.

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.

2 Measuring Software Development Waste in Open-Source Software Projects using Fork Distribution:

Open Source Link: `https://github.com/rupali-codes/LinksHub`
Total Forks: 597
Active Forks: 52 (8.71%)
Backup Forks: 170 (28.48%)
Potentially Stale Forks: 84 (14.07%)
Stale Forks: 291 (48.74%)
The LinksHub repository has a low number of active forks (8.71%), while nearly half (48.74%) are stale, indicating that many users fork the project but do not actively contribute.