**Offroad Challenge Tracker**

**Project Overview**

The Offroad Challenge Tracker is a mobile application designed to manage track records and scores for participants in Rain Forest Challenges (RFC). The app ensures accurate tracking of completion times, penalties, and scores while dynamically calculating rankings based on total scores across multiple tracks. This system will allow users to add participants, record their performance per track, and generate rankings while filtering by categories.

**Objectives**

1. To provide an efficient and automated system for managing RFC participant records.
2. To accurately calculate rankings based on track scores and penalties.
3. To allow seamless addition, modification, and deletion of participants and track records.
4. To facilitate real-time score updates and ranking adjustments based on user-defined filters.
5. To ensure the application functions offline, allowing seamless operations in remote areas.

**Requirements**

**Functional Requirements**

1. User can add participant details, including:
   * Participant Number
   * Driver Name
   * Co-driver Name
   * Category Selection (All, Stock, Mod Petrol, Mod Diesel, Pro, Ladies + Pro)
2. Users can:
   * Add, edit, and delete participant details.
   * Add tracks individually.
   * Enter track details such as completion time, score, and penalties.
   * Submit details and store them in the SQLite database.
3. Automated ranking calculation based on total scores.
4. Display rankings with filtering options by category.
5. Ability to finalize event results, preventing further additions.

**Non-Functional Requirements**

1. **Usability:** The app should have an intuitive and user-friendly interface.
2. **Performance:** Data storage and retrieval should be optimized for speed.
3. **Security:** SQLite database should be secured against unauthorized access.
4. **Scalability:** The app should allow future updates for more categories or rule changes.
5. **Offline Functionality:** The app must work without an internet connection.

**Execution Process**

1. **User Registration (if applicable).**
2. **Adding Participants:** Users input participant details and store them in the database.
3. **Adding Tracks:** Users add tracks and input performance data per participant.
4. **Data Processing:** The system calculates scores and rankings dynamically.
5. **Finalization:** Users complete track entries, and final rankings are displayed.
6. **Export & Sharing:** Option to export data or share results if needed.

**Additions to Core Features**

**1. Automated Score Calculation**

* System auto-generates scores based on completion time and penalties.
* Dynamic updates ensure rankings reflect real-time performance.

**2. Managing the Participant and Track Records**

* Option to edit, remove, or modify participant details before finalization.
* History tracking for each participant’s performance over multiple tracks.

**3. Additional Features**

* **Leaderboard View:** Displays top-ranked participants dynamically.
* **Performance Analytics:** Graphical representation of individual performance across tracks.
* **Data Export:** Allows exporting final rankings as a CSV/PDF.
* **Dark Mode Support:** UI customization for better user experience.
* **Cloud Backup (Future Scope):** Option to sync data with cloud storage.

**Tech Stack**

* **Frontend:** Flutter
* **Backend:** SQLite
* **Version Control:** GitHub

**Challenges and Mitigation**

**Challenges**

1. **Ensuring offline functionality**
2. **Handling large participant and track data**
3. **Optimizing ranking calculations for speed and accuracy**

**Mitigation Strategies**

1. Implement local SQLite storage for seamless offline usage.
2. Optimize database queries and indexing for better performance.
3. Use efficient algorithms for ranking and score calculation.

**Project Duration**

* The estimated duration for the Offroad Challenge Tracker project is approximately two months. This timeline includes multiple phases such as research, development, testing, and deployment to ensure a seamless and efficient application. During the research phase, requirements will be analyzed and finalized. The development phase will focus on implementing core functionalities, followed by rigorous testing to identify and resolve any issues. Finally, the deployment phase will ensure that the application is stable and ready for use in real-world scenarios.

**Scope of Our Work**

1. Development of the entire application UI/UX.
2. Implementation of database and ranking logic.
3. Ensuring offline functionality with SQLite.
4. Providing a user-friendly dashboard for participant and track management.
5. Testing and debugging before deployment.

**Not in the Scope of Our Work**

1. Cloud storage or online synchronization (can be included in future updates).
2. Multi-device synchronization.
3. Third-party API integrations for live event streaming.

**Conclusion**

The Offroad Challenge Tracker will revolutionize the way RFC competitions manage participant performance. By automating score calculations and ranking generation, the system will enhance accuracy, efficiency, and reliability. With offline capabilities and a streamlined UI, it will provide a robust solution for event organizers to track performance, manage participants, and generate results effortlessly.