Project Overview

The goal of this project is to create a task management application using React Native and Firebase. The application will allow users to create, edit, delete, and manage their to-do lists. It will also feature a leaderboard that ranks users based on the number of tasks they have completed.

Functional Requirements

1. User Authentication: - Users can sign up and log in. - Users can log out.
2. Task Management: - Users can create new tasks. - Users can edit existing tasks. - Users can delete tasks. - Users can mark tasks as completed.
3. Leaderboard: - Users can see a leaderboard ranking all users by the number of tasks completed.
4. Filtering Tasks: - Users can filter tasks by date (today, week, month).

Non-Functional Requirements

1. Performance: - The app should load tasks quickly and respond to user actions without noticeable delay.
2. Usability: - The user interface should be intuitive and easy to use.
3. Reliability: - The app should handle network errors gracefully. - Data should be consistently saved to and retrieved from Firebase.

Architecture and Components

Overall Architecture
The application is divided into three main components:
Authentication, Task Management, and Leaderboard. Firebase is used as the backend service for authentication and data storage.

Components
1. Authentication: - SignInScreen - SignUpScreen
2. Task Management: - HomeScreen - TaskModal - AddTaskModal - TaskList
3. Leaderboard: - LeaderboardScreen

Data Flow
User Authentication
- User signs in or signs up.
- Authentication data is sent to Firebase Authentication.
- On successful authentication, user data is stored/retrieved from Firestore.

Task Management
- User creates/edits/deletes tasks.
- Task data is sent to Firestore.
- Tasks are retrieved from Firestore and displayed in the TaskList component.

Leaderboard
- User task completion data is retrieved from Firestore.
- Leaderboard is updated and displayed in the LeaderboardScreen component.

Detailed Design

TaskModal Component

Props
- list: The list of tasks.
- updateList: Function to update the list.
- firebaseService: Instance of the FirebaseService class.
- closeModal: Function to close the modal.

State
- newTodo: The new task to be added or edited.
- dueDate: The due date of the task. - todoTime: The time of the task.
- isDatePickerVisible: Boolean to show/hide the date picker.
- isTimePickerVisible: Boolean to show/hide the time picker.
- isEditMode: Boolean to indicate if the task is being edited.
- editIndex: Index of the task being edited.

Methods
- toggleTodoCompleted: Toggle the completion status of a task.
- handleAddOrEditTodo: Add or edit a task.
- deleteTodo: Delete a task. - editTodo: Edit a task.
- showDatePicker: Show the date picker.
- hideDatePicker: Hide the date picker.
- handleConfirmDate: Handle date selection.
- showTimePicker: Show the time picker.
- hideTimePicker: Hide the time picker.
- handleConfirmTime: Handle time selection.