ADHD Task Manager

Non-Functional Requirements Specification

# 

# Introduction

The ADHD Task Manager is an application designed to address the challenges that people with attention deficit hyperactivity disorder (ADHD) face in managing their daily tasks and staying focused on their goals. Traditional task management and organization tools may not be effective for people with ADHD, as they require a high level of focus and discipline. The ADHD Task Manager offers a range of features, including a customizable task list, Pomodoro timer, habit tracker, rewards system, and insights and analytics.

These features are designed to be user-friendly and accessible, providing people with ADHD with an effective tool to manage their time and stay on track. Overall, the ADHD Task Manager is a valuable resource for people with ADHD who struggle with time management and organization, helping them to achieve their goals and improve their quality of life.

# System-Wide Functional Requirements

The ADHD Task Manager will be designed to address the challenges that people with ADHD face in managing their daily tasks and staying focused on their goals. To achieve this goal, the system will incorporate several key features, including a secure authentication process to ensure that only authorized users can access the system and their personal data.

In addition, the system will include task management functionality that allows users to create and manage their tasks easily. This functionality will enable users to add due dates, prioritize tasks, and categorize tasks by project or topic.

To help users stay focused and productive, the system will include a Pomodoro timer, which allows users to work in intervals of focused work and rest. The timer will be adjustable to accommodate different work preferences.

To encourage users to develop good habits and stay on track with their goals, the system will include a habit tracker. This functionality will allow users to set goals, track progress, and receive reminders to stay on track.

The ADHD Task Manager will also include a rewards system to motivate users to complete tasks and achieve their goals. This functionality will allow users to earn points or badges for completing tasks and provide incentives for continued use of the system.

Finally, to help users understand their productivity and track their progress, the system will include insights and analytics. This functionality will include graphs and charts that display data on completed tasks, time spent on tasks, and other relevant metrics.

By incorporating these system-wide functional requirements into the design and development of the ADHD Task Manager, the system will provide users with a comprehensive and effective tool for managing their time and staying on track with their goals.

\*CCRD - critical, core, risky, difficult.

Revised Functional Requirements

Critical

* Add task
  + The app relies on task(s) being created and added to the database
* create account
  + Tasks created need to belong to an individual user

Core

* edit tasks
  + user has the privilege to change task details; Allows flexibility
* view tasks
  + User needs to see the tasks that are stored in the database
* delete tasks
  + User allowed to delete tasks upon completing it or task is no longer needed.
* Award reward when user completes a task

Risky

* Legal expectation regarding data protection
  + data encryption or lack of it can expose sensitive user information

Difficult

* Award reward if tasks gets completed.
  + it would be difficult to determine if the task is actually completed or it has been just falsely done.

Revised Non-functional Requirements

Non-functional Requirements

Usability

* activating snooze for notifications for X minutes
* set due date and time for each task
* Change font size/colour
* connection to peripherals such as Bluetooth devices
* The app meets the needs of users with wide range of needs (that is the app ought to be highly customisable)

Reliability

* check username and password meet the constraints in place for security
* change password and/or username
* Use low CPU resources (figure 1)
* There should be a backup system for data recovery

Performance

* short response time (such as in user input and expected out put)
* Short response time when navigating between screens

Security

* User data must be stored securely by secure login or encryption
  + Although data is stored locally, some sort of protection needs to be implemented.

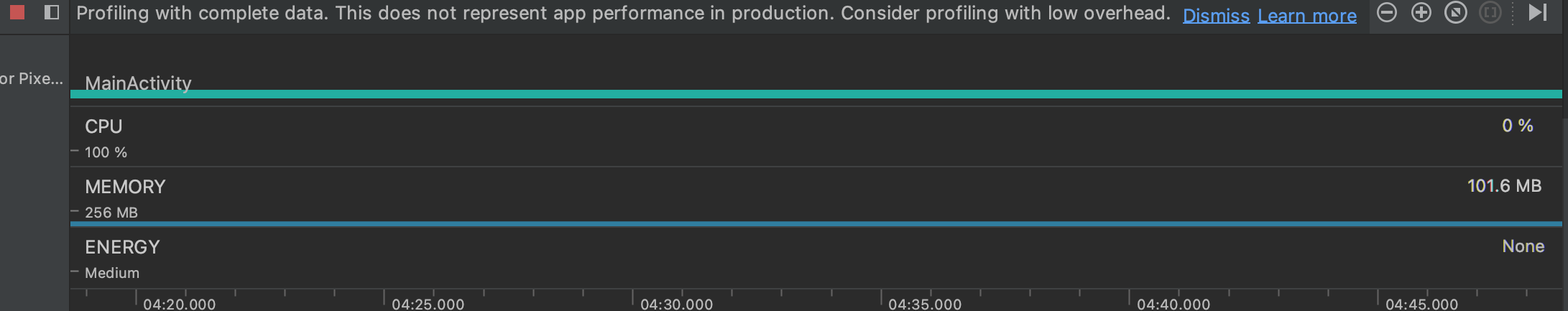


Figure 1. Analyzing app performance by using Android Profiler

# System Qualities

## Usability

The app will be designed to avoid cluttering by adhering to a minimalist design approach so that the screen is not distracting for users with ADHD. Moreover, the app will be designed with ease of navigation in mind.

The design pattern will be consistent to promote ease of using and learning about how the app works. In addition, verbal and/or text feedback, based on user preference, will be provided when the user interacts with the app. For instance, *List successfully created* or *Congratulations! Task AB Completed*.

To make the app for versatile and user friendly, multilanguage functionality will be added for localized support, which can include user manual, notifications, and instructions based on the users’ preference.

## Reliability

The reliability of the app will rely on factors such as successfully detecting errors like invalid user inputs and displaying appropriate error messages instead of crashing. Furthermore, the user will be given the option to re-enter correct inputs or quit.

Moreover, the reliability will be consolidated by thoroughly testing the app and fixing potential bugs. The app’s performance will also be monitored over time using analytics tools and error tracking software.

It is envisaged that the app will be able to work best with internet connection but will also provide limited services when there is no internet connection.

## Performance

The performance of the app will be reflected on factors such as ability to scale and to accommodate the surge in the number of app users.

The apps performance will also be enhanced by

* Optimizing database queries. Such as not using SELECT\* but only columns needed.
* Aiming for a response time of <= 1 second.
* Using Android Profiler tool to measure response time.
* Using Android App Startup which is a library that helps optimize the startup process.
* Avoiding memory leaks to optimize shutdowns; use onDestroy() method to releases resources.
* the throughput will be identified by collecting performance data and analyzing performance metrics to understand the throughput.
* Reviewing the code as a group; peer reviewing.

## Supportability

Documentation

Support will be provided in various forms. The documentation component will include a multilanguage user manual that includes guidance to install the app. In addition, the documentation will provide explanations about the features included. A remote repository will be uploaded on GitHub with relevant documents which can support collaboration among developers.

To achieve flexible configurability, the system will be designed with modularity in mind for easier bug fixing. The app size will also be specified to help users make informed decisions.

Connectivity

It is envisaged that the app will function with and without internet connection. However, the latter will provide limited functions. Appropriate audio/visual messages will be displayed when offline so that users can know certain features/functions will not be accessible. This will allow users living in area with poor network connection to use the core features. The app will also connect with other preinstalled applications like Gmail to help keep the user organized.

In addition, the app will be able to connect with external peripherals such as wireless wearables and headphones.

Adaptability

The goal is to build the app with flexible configuration for greater adaptability which will include features such as:

* user changing font size, reminder tone, and frequency of reminders.
* users can change from auditory notifications to visual notifications and vice versa.
* using analytics to identify area where the app can be improved, such as features that are causing dissatisfaction to users.

Localization

The goal is to provide a localized version of support from notifications to visual elements to improve user experience via closely resonating with a user’s local region and culture. This will be achieved by using a localization framework (Internationalization framework).

Moreover, appropriate graphics, images, and icons that aligns with users’ cultural background and preference will be used. Using a localization framework will also enable the app to be discovered in search engines using different languages.

App users can also be equipped with location awareness which can be used to notify them if their destination of interest is reached; For example, attending an appointment.

# System Interfaces

## User Interfaces

System Interfaces Taking FURPS+ and supporting requirements into account, we can outline the application interfaces for a mobile app designed to assist people with ADHD in managing daily tasks and improving productivity. The app will offer various tools and features to help users effectively manage their time and stay on track.

4.0.1 External System Interfaces

* Calendar Integration (e.g., Google Calendar, Apple Calendar, Microsoft Outlook): The application should incorporate OAuth 2.0 for authentication/authorization, using APIs from calendar services to facilitate integration.
* Notifications: Integration with the mobile device's native notification system is essential for delivering timely reminders and alerts.
* Cloud Storage: The app should connect with widely used cloud storage services (e.g., Google Drive, Dropbox, iCloud) to enable backup and data syncing across devices, using respective APIs for authentication and file handling.

4.0.2 Device Interfaces

* Sensors: The application should make use of built-in device sensors, such as GPS for location-specific reminders and accelerometers for monitoring movement during concentration periods.
* Accessibility: The app needs to be compatible with standard accessibility options provided by the mobile OS, including text-to-speech, adjustable font sizes, and high-contrast mode.

4.0.3 Communication Interfaces

* Secure Data Exchange: The application should employ HTTPS for protected data transfer between the mobile device and backend servers, with WebSocket for instantaneous updates.
* API: A RESTful API should be available for developers to access and manage user data, complying with OAuth 2.0 for authentication and authorization.

4.0.4 User Interfaces for the ADHD management mobile application, user interfaces should prioritize simplicity, user-friendliness, and accessibility. Consider the following requirements:

* Initial Experience: The app must offer a straightforward onboarding process that clearly explains its features and functions.
* Navigation: The application should have an easy-to-use navigation system that allows quick access to its main features, ensuring seamless user experience.

These interfaces, complete with necessary details, protocols, ports, and logical addresses, will serve as the basis for the development and validation of the software against the interface requirements. By doing so, we can ensure a well-rounded and efficient application that caters to the needs of individuals with ADHD in managing their daily tasks and enhancing their productivity.

### Look & Feel

# Appearance & Style of the user interface must be visually appealing, with a simplistic design that facilitates ease of use. A soothing color palette will help users maintain concentration, and the app should employ an easily readable font. Clear visual indicators for important UI elements, such as interactive buttons and alerts, should be present, along with instinctive touch controls and gestures.

### Layout and Navigation Requirements

# Structure and Navigation Essentials within the app's structure should feature a main dashboard showcasing an overview of the user's tasks, events, and progress. A readily accessible menu or navigation panel should enable users to reach features like task lists, schedules, notifications, and configurations. Smooth navigation between the app's various sections is essential.

### Consistency

Uniformity Across all screens and functionalities of the user interface must exhibit a consistent design, layout, and functionality. Consistency in navigation elements, screen dimensions and forms, data input/output positions, and language will ensure an intuitive user experience.

### User Personalization & Customization Requirements

Customization & Tailoring Options for Users should give the user the ability to modify the app's appearance, including color themes, font dimensions, and alert preferences. The app must also provide personalization features based on individual user attributes, such as automatically recommending task prioritization or time management tactics aligned with the user's inclinations and patterns.

## Interfaces to External Systems or Devices

### Software Interfaces

Software Connectivity of the app should be capable of linking with the device's built-in calendar and reminder apps, and support integration with widely used third-party efficiency tools like Google Calendar and Trello. Importing and exporting data in common formats like CSV and JSON should also be possible.

### Hardware Interfaces

Control devices utilizing the app must be adaptable with regular mobile interfaces. This includes touchscreen input and specific device sensors like accelerometers. Inclusively, it could eventually be compatible with popular wearable devices like smart watches which would allow users to receive notifications and watch their progress on tasks.

### Communications Interfaces

Communication Links incorporated within the app must enable communication with other devices and systems using standard protocols, such as Wi-Fi, Bluetooth, and cellular networks, to enable features like cloud-based synchronization, data backups, and compatibility across multiple platforms. Secure communication protocols (e.g., HTTPS, SSL/TLS) should also be supported to ensure data privacy and protection.

# Business Rules

## Class: Legal Rules

### LR1 Compliance Rules

Rule Name: LR1 Compliance Rules

Rule: The ADHD Task Manager will comply with all legal requirements set by national and international governing bodies.

## Class: Task Rules

### TR01 Task Completion

Rule Name: TR01 Task Completion

Rule: A Task can only be marked as complete when a user indicates it is complete on the app.

### TR02 Reward for Task

Rule Name: TR02 Reward for Task

Rule: If a task is completed, reward the user with reward

### TR03 Reward for Day

Rule Name: TR03 Reward for Day

Rule: If User completes all tasks for a certain day, give the full day reward.

# System Constraints

Design Constraints

* + The app will be developed for Android operating system with the expected CPU [speed](https://insidetechworld.com/phones/top-android-phones-with-fastest-processors-in-2021/) of 1.8 GHz to 3 GHz or higher.

Implementation requirements

Android studio IDE will be used with Kotlin as the programming language and a distributed version control system will be used to allow simultaneous real-time collaboration and keep track of the project’s progress by keeping the relevant documents in a remote repository.

The documentations once completed are pushed to the remote repo and is critically analysed during team meetings, prior to fortnightly oversight meetings. Moving forward, Group members will create individual local git branches and push commits to the remote branches to avoid breaking the main branch once coding begins.

Location based reminders will be implemented using Google Maps SDK to help users to attend meetings and appointments.

Interface requirements

With the modular approach in focus, the Model View Controller (MVC) design pattern will be followed. The view component will act as the presentation layer and it what the user will see on the screen. The model component will be the data layer, handling the business logic and data. The controller component will act as bridge between the other two components by processing user input, updating the model with new data and updating the view so that reflect the changes in the data.

The home screen must be easy to navigate and provide features such as a task list, timer, or a journal via a button. The app screen is also expected to follow the phones orientation, that is, landscape or portrait as per the phones orientation. The setting feature will allow users to customize such as font size, language, and notification settings.

The size and weight of the physical hardware on which the app will be hosted is expected to be identical to current Android smart phones in the market.

# System Compliance

## Licensing Requirements

The ADHD Task Manager will require a valid license for use. The license will be provided to the user upon the user registering an account and is valid until the user closes the account. The license will be enforced by the software, and users will be required to activate the software using their license key. The software will also include mechanisms to prevent unauthorized use of the system.

## Legal, Copyright, and Other Notices

The ADHD Task Manager will include legal disclaimers and copyright notices. The disclaimers will indicate that the software is provided "as-is" and that the developer makes no guarantees about the effectiveness or suitability of the software for any particular purpose. The copyright notices will indicate the owner of the software and the year of copyright. The software will also comply with any applicable trademark and logo compliance issues.

## Applicable Standards

The ADHD Task Manager will comply with industry standards for usability, interoperability, and internationalization. The software will be designed to work natively on Android devices. The software will also comply with any relevant legal and regulatory standards, including those related to data privacy and security. Additionally, the software will comply with any applicable industry standards for software development and testing, to ensure that the software is reliable and performs as expected.

# System Documentation

## System Documentation

Documentation to be created include but not limited to:

* User Manual

A User Manual will be created to describe in detail how to properly work the application. This will be available on the application as well as online.

* Terms and Conditions

The Terms and Conditions users will agree to by using this application.

* User Licence Agreement

What the User is allowed to do with the application now they have it.