

ASSIGNMENT-5:

DEVELOPING THE SOFTWARE REQUIREMENTS SPECIFICATION

(SRS)

GROUP 9

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1. Introduction

1.1 Purpose

The purpose of this document is to define the requirements and framework for developing the **Mental Wellness & Habit Tracker App with AI Coach**. This app is designed to empower users to improve their mental health and build healthy routines by providing tools for habit tracking, mood monitoring, and personalized AI-driven guidance. By addressing gaps in current mental wellness solutions, the app aims to deliver real-time feedback, tailored recommendations, and seamless wearable integration while prioritizing user privacy and data security.

1.2 Product Scope

The app caters to a growing need for accessible mental wellness tools in a fast-paced world where stress, anxiety, and inconsistent routines are common challenges. It integrates advanced features such as real-time AI analysis, wearable device connectivity, and offline functionality for uninterrupted user experience. The scope of the project includes:

- **Core Features:** Mood tracking, habit monitoring, and AI-driven coaching.
- **User Classes:** General users, wellness enthusiasts, and health professionals.
- **Platforms:** Compatibility with Android, iOS, and wearable devices.
- **Security and Compliance:** Robust measures to protect sensitive user data, including adherence to GDPR, SOC 2, and HIPAA standards.

1.3 Glossary

1.3.1.1 Definitions

- **Mental Wellness:** A holistic state of emotional and psychological well-being.
- **Habit Tracker:** A feature that enables users to monitor and manage daily activities to build positive routines.

- **AI Coach:** An intelligent system that analyzes user data to provide actionable insights and personalized advice.
- **Wearable Devices:** Smart devices like fitness trackers and smartwatches that collect biometric and activity data.

1.3.1.2 Acronyms and Abbreviations

- **AI:** Artificial Intelligence
- **GDPR:** General Data Protection Regulation
- **SOC 2:** Service Organization Control 2
- **HIPAA:** Health Insurance Portability and Accountability Act
- **RBAC:** Role-Based Access Control
- **MFA:** Multi-Factor Authentication
- **RTO:** Recovery Time Objective
- **RPO:** Recovery Point Objective

1.4 References

1. **Vision Document:** Comprehensive overview of project objectives and feature details.
2. **System Architecture:** Detailed design and technical components of the app.
3. **Regulatory Standards:** GDPR, SOC 2, and HIPAA compliance documentation.
4. **User Feedback and Survey Data:** Inputs from target users and beta testers.

1.5 Overview

The **Mental Wellness & Habit Tracker App with AI Coach** addresses the increasing prevalence of mental health challenges by providing an easy-to-use platform that integrates AI-powered coaching with real-time tracking features. Unlike existing tools that lack personalization and real-time feedback, this app harnesses wearable device data to deliver tailored recommendations for stress management, emotional health, and habit-building. With robust encryption and compliance measures, the app ensures user trust and meets stringent security standards.

2. General Description

2.1 Product Perspective

The **Mental Wellness & Habit Tracker App with AI Coach** is an innovative mobile application designed to bridge the gap between traditional mental health tools and modern AI capabilities. The app integrates seamlessly with wearable devices, allowing it to analyze biometric and behavioral data for personalized recommendations. This approach distinguishes it from existing solutions that rely on static inputs and generic advice.

2.2 Product Functions

1. Mood Tracking:

- Users can log their emotions daily, select from predefined options, or add detailed comments.
- Provides visual analytics, helping users identify trends in their emotional well-being over time.

2. Habit Monitoring:

- Supports the creation, modification, and tracking of daily routines.
- Users can receive reminders for pending habits and track their completion rates.

3. AI-Driven Coaching:

- Analyzes mood and habit data to offer actionable advice, motivational tips, and stress management strategies.
- Tailored insights based on real-time wearable data, such as sleep patterns and heart rate.

4. Wearable Integration:

- Collects biometric inputs like activity levels, sleep quality, and heart rate variability from popular wearable devices.
- Offers passive data collection to minimize user effort.

5. Security and Privacy:

- Utilizes encryption and secure servers to protect sensitive user data.
- Adheres to industry standards for data protection, ensuring user confidence and compliance.

2.3 User Classes and Characteristics

2.3.1.1 User Classes and Characteristics

1. **General Users:** Individuals aiming to improve their mental health and establish consistent routines through habit tracking and mood analysis.
2. **Mental Health Enthusiasts:** Users deeply engaged in self-care and wellness practices who require detailed insights into their progress.
3. **Health Professionals:** Practitioners using the app as a tool to monitor their clients' well-being and suggest improvements based on data trends.

2.4 Operating Environment

1. Mobile Platforms:

- The app is compatible with Android and iOS, requiring modern devices with active internet connections.

2. Wearable Devices:

- Supports smartwatches and fitness trackers for biometric data collection.

3. Backend Servers:

- Cloud-based infrastructure ensures secure data storage and seamless connectivity.

4. Network Requirements:

- Provides offline functionality for habit and mood logging with automatic cloud synchronization upon reconnection.

5. Security Framework:

- Implements firewalls, multi-factor authentication, and role-based access control to secure user interactions and data.

2.5 Assumptions and Dependencies

2.5.1 Assumptions

1. Users have access to compatible wearable devices and mobile platforms (Android or iOS) for full app functionality.
2. Reliable internet connectivity is available for syncing data to cloud servers, though offline logging is supported.
3. The AI algorithm can effectively analyze data patterns and provide meaningful insights without extensive user input.
4. Users are willing to share sensitive mood and habit data, trusting the app's robust privacy and security measures.
5. The development team has access to necessary third-party APIs for wearable device integration and notification services.

2.5.2 Dependencies

1. **Wearable Device APIs:** The app relies on APIs from popular wearable device manufacturers to collect biometric data. Any changes or outages in these APIs may impact app functionality.
2. **Cloud Infrastructure:** The app depends on stable and secure cloud services for data storage and real-time AI processing. Service disruptions could affect user experience.
3. **Regulatory Compliance:** Adherence to GDPR, SOC 2, and HIPAA standards is mandatory for app deployment and user trust. Updates to these regulations may require system modifications.
4. **Third-Party Services:** Integration with services like push notifications and weather data enhances functionality but introduces reliance on external providers.
5. **User Engagement:** The app's success depends on user commitment to regularly log mood and habits for accurate AI recommendations.

3. Specific Requirements

3.1 Functional Requirements

1. Sign Up and Login

- Users can create an account with basic details like name, email, and password.
- Extra security through a code sent to their phone or email (two-step login).
- Users can reset forgotten passwords easily.

2. Track Mood

- Users can record how they feel every day by choosing options or writing their own comments.
- The app shows mood patterns using easy-to-read graphs.

3. Track Habits

- Users can add, edit, and monitor daily habits (like exercising or meditating).
- The app sends reminders to help users stick to their habits.

4. AI Coach

- The app uses smart technology to give advice based on mood and habits.
- Suggestions include stress tips, encouragement, and ideas to improve routines.

5. Wearable Devices

- The app works with fitness trackers or smartwatches to collect activity and sleep data.
- Data syncs automatically to make tracking easier.

6. Wellness Surveys

- Users can answer health surveys for a deeper look at their well-being.

- The app gives helpful feedback based on survey answers.

7. Reports and Trends

- The app shows progress with charts and reports, like mood changes over weeks or completed habits.

8. Notifications

- Users can set up reminders for habits, wellness tips, and check-ins.

9. Privacy and Safety

- User data is protected with strong security measures.
- The app follows strict privacy rules like GDPR and HIPAA.

10. Offline Use

- Users can log their mood or habits without internet access. The app syncs data when back online.
-

3.2 Non-Functional Requirements

1. Speed

- The app responds quickly, within 2 seconds for most actions.
- Syncing with devices happens within 5 seconds on a good connection.

2. Scalability

- The app can handle a large number of users without slowing down.

3. Reliability

- The app should work 99.9% of the time without crashes.

4. Ease of Use

- The app should be simple to use, even for beginners.
- It will meet accessibility standards for users with disabilities.

5. Easy to Update

- App updates should be smooth and not disrupt users.

6. Compatibility

- Works with Android (version 10 and above) and iOS (version 13 and above).

7. Security

- Ensures only authorized users can access data (uses two-step login).
- Data is encrypted to keep it safe.

8. Backups

- Data is backed up daily to avoid loss, and recovery should take less than an hour.
-

3.3 External Interface Requirements

1. App Interface

- Easy to use on smartphones and tablets.
- Offers light and dark modes for user preference.

2. Device Integration

- Works with fitness trackers and smartwatches like Fitbit and Apple Watch.

3. Third-Party Services

- Supports notifications via services like Firebase.
- Can include weather data for mood insights.

4. Data Exchange

- Uses common formats like JSON to share data between the app and servers.

5. Compatibility

- App works on the latest Android and iOS versions.

6. Device Requirements

- Works on devices with at least 2GB RAM and 50MB storage.

7. Error Handling

- Clear messages guide users if something goes wrong, like syncing issues.

4. Use Cases

4.1 Use case descriptions

4.1.1.1. Registration

Actors:

- **Citizen/User:** Registers on the app.
- **Wellness Server:** Stores user data.

Main Flow:

1. Citizen selects "Register" and enters details (e.g., name, email, password).
2. Wellness Server validates the input and creates an account.
3. A confirmation is sent to the user.

Alternative Flows:

- **Invalid Input:** Prompts the user to correct input errors.
- **Duplicate Account:** Suggests the user logs in instead of creating a new account.

Preconditions:

- The system is online.
- The user does not have an existing account.

Postconditions:

- A new account is successfully created.

4.1.1.2. Manage Physical Activity Diary

Actors:

- **Citizen/User:** Logs physical activity.
- **Sensor:** (Optional) Syncs activity data.
- **Wellness Server:** Stores and processes activity entries.

Main Flow:

1. Citizen logs in and adds activity details (e.g., type, duration).
2. Data is stored, and metrics are updated accordingly.

Alternative Flows:

- **Sensor Integration:** Automatically syncs data from connected devices.
- **Incomplete Data:** Prompts the user to provide missing details.

Preconditions:

- The user is logged in.
- A sensor is connected (if applicable).

Postconditions:

- Physical activity is logged, and metrics are updated.
-

4.1.1.3 3. Fill Out Wellness Survey

Actors:

- **Citizen/User:** Completes the wellness survey.
- **Wellness Server:** Analyzes survey responses.

Main Flow:

1. Citizen selects a wellness survey and answers the questions.
2. The Wellness Server processes responses and provides feedback.

Alternative Flows:

- **Partial Completion:** Saves progress for later completion.
- **Invalid Input:** Prompts the user to correct any errors.

Preconditions:

- The user is logged in.

- Active surveys are available.

Postconditions:

- Survey responses are saved, and feedback is provided to the user.
-

4.1.1.4 4. Sleep Monitoring**Actors:**

- **Citizen/User:** Logs or views sleep data.
- **Sensor:** Automatically tracks sleep (optional).
- **Wellness Server:** Analyzes sleep data and provides insights.

Main Flow:

1. Citizen views or manually logs sleep data.
2. If a sensor is connected, data syncs automatically.
3. The Wellness Server analyzes the data and provides recommendations.

Alternative Flows:

- **Manual Input:** The user manually logs sleep times.
- **Incomplete Data:** Prompts the user to correct or complete the entry.

Preconditions:

- The user is logged in.
- A sensor is connected (if applicable).

Postconditions:

- Sleep data is logged, and insights are provided to the user.
-

4.1.1.5 5. Manage Notifications**Actors:**

- **Citizen/User:** Configures reminders and notifications.
- **Wellness Server:** Sends notifications based on user preferences.

Main Flow:

1. Citizen updates notification preferences (e.g., times, types).
2. The Wellness Server stores the preferences and schedules reminders accordingly.

Alternative Flows:

- **No Changes:** The system retains existing settings.
- **Invalid Time:** Prompts the user to correct invalid time inputs.

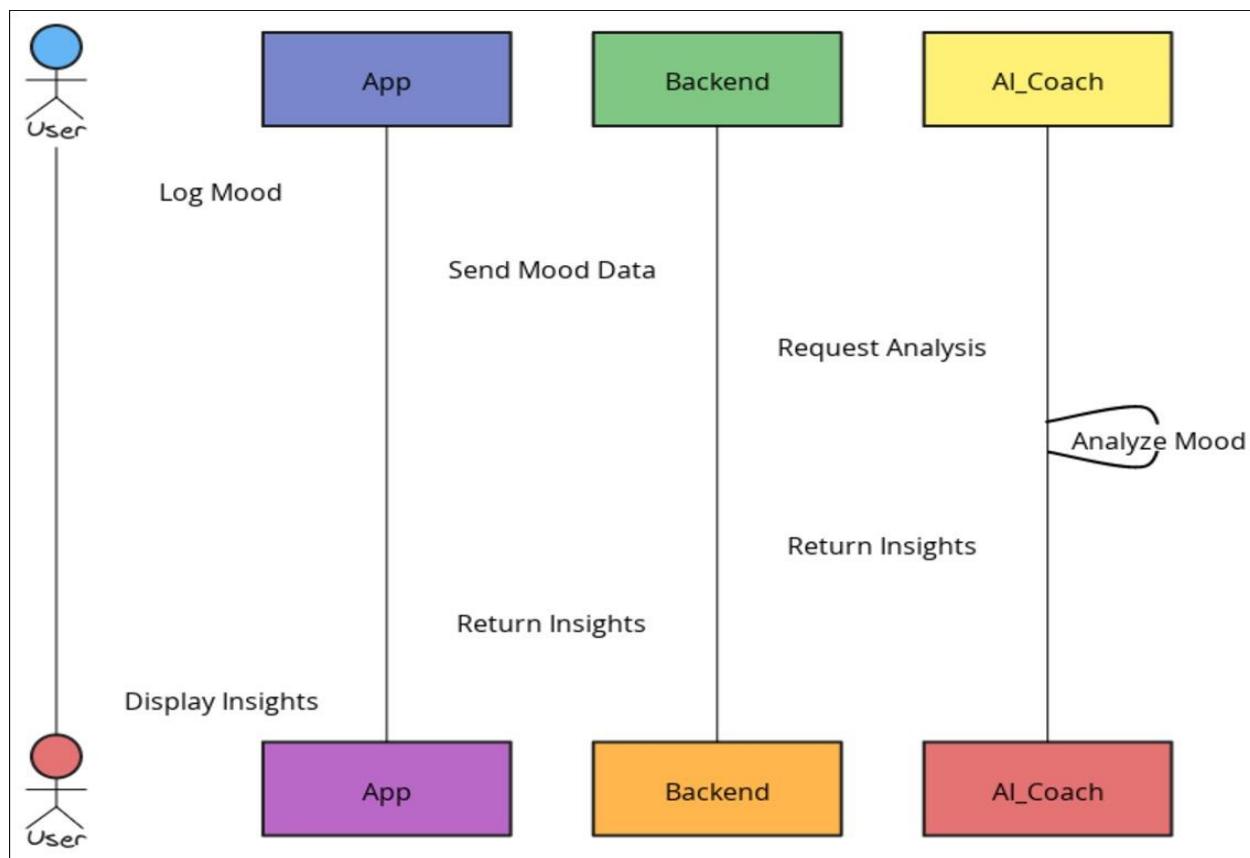
Preconditions:

- The user is logged in.

Postconditions:

- Notification preferences are updated, and reminders are sent as scheduled.

4.2 Basic and alternative flows



5. Technical Details

5.1 Traceability Matrix

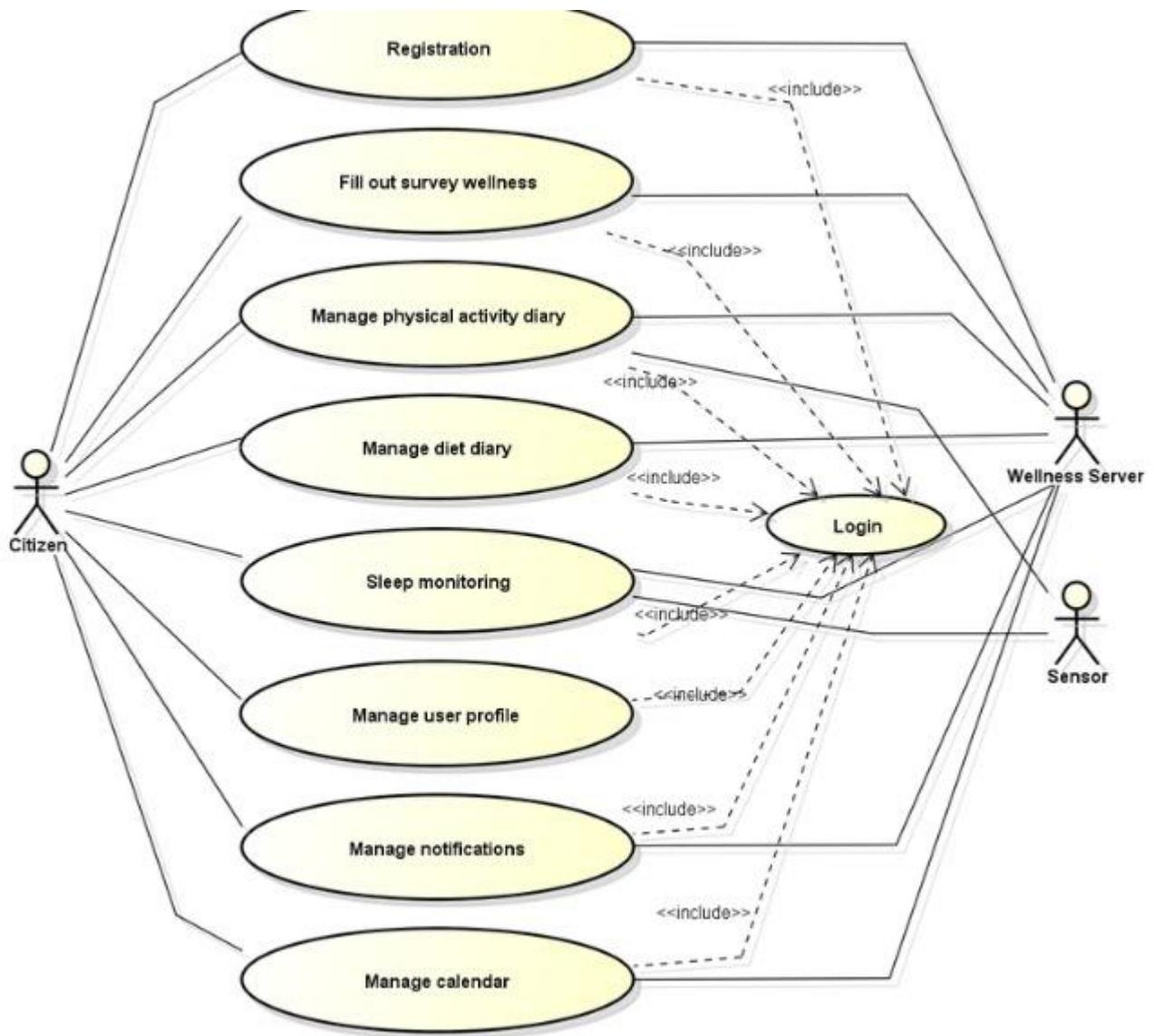
Requirements Traceability Matrix (RTM)

Requirement ID	Requirement Description	Project Goal	Use Case	Test Case
FR-001	User Registration and Login	Provide secure access to the app	Registration	TC-001: Verify user registration
FR-002	Mood Tracking Feature	Enable users to log and analyze emotional trends	Track Mood	TC-002: Validate mood logging UI
FR-003	Habit Monitoring Feature	Help users develop consistent routines	Manage Physical Activity Diary	TC-003: Validate habit reminders
FR-004	AI-Driven Personalized Coaching	Deliver actionable insights and motivation	Fill Out Wellness Survey	TC-004: Test AI-generated advice
FR-005	Wearable Device Integration	Collect real-time biometric and activity data	Sleep Monitoring	TC-005: Verify wearable sync
FR-006	Wellness Surveys	Enable comprehensive user wellness analysis	Fill Out Wellness Survey	TC-006: Check survey functionality
FR-007	Reports and Trends	Provide data visualizations for user insights	Sleep Monitoring	TC-007: Validate reports accuracy
FR-008	Notification Management	Ensure users receive timely reminders	Manage Notifications	TC-008: Test notification settings
NFR-001	App Response Time (<2s for	Ensure seamless user	-	TC-009: Performance

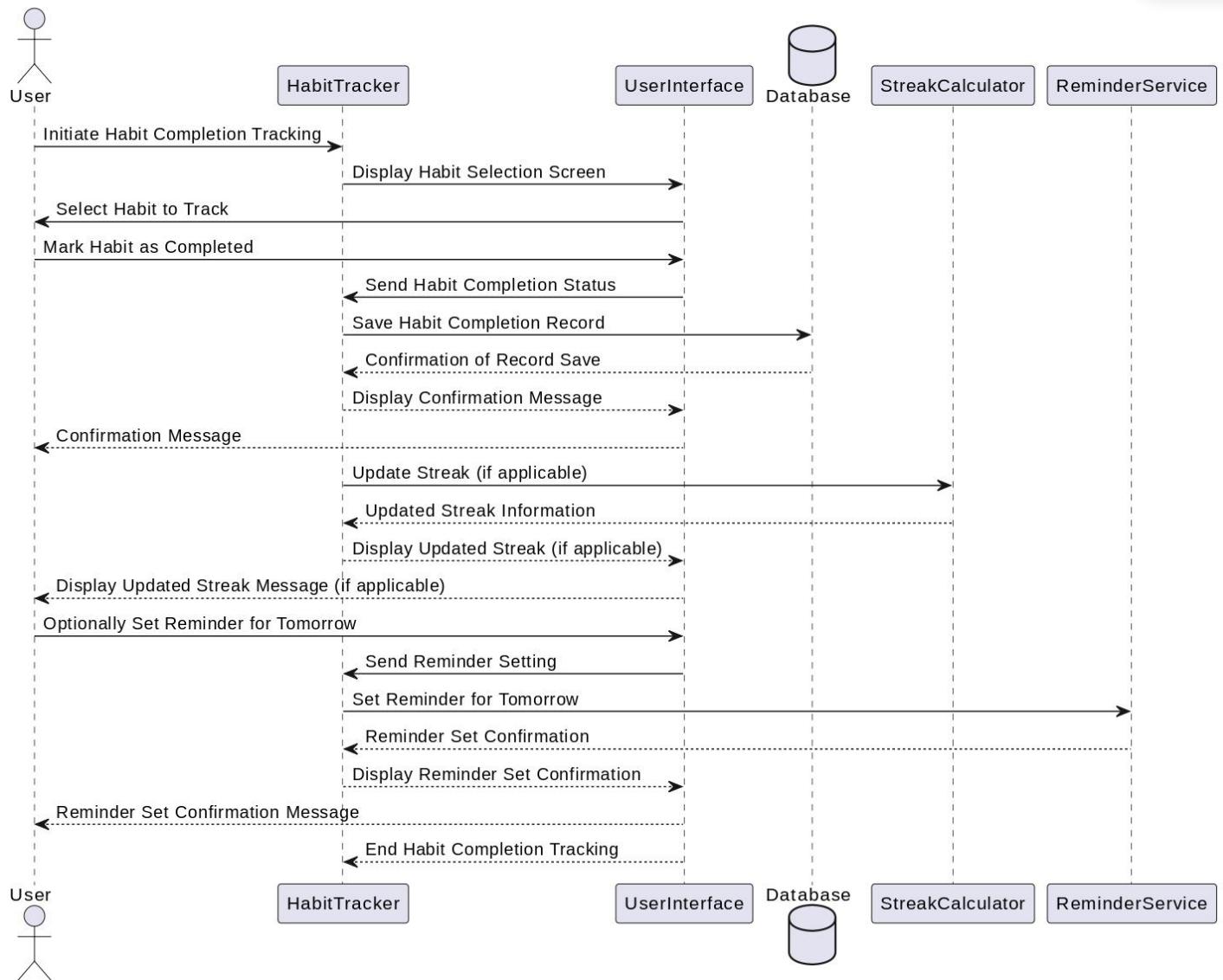
	most actions)	experience		test
NFR-002	Security (Two-step login, encryption)	Protect sensitive user data	Registration	TC-010: Test login security
NFR-003	Compatibility with Android (v10+) and iOS (v13+)	Ensure broad user accessibility	-	TC-011: Validate OS compatibility
NFR-004	Data Backup and Recovery (<1-hour RTO)	Ensure data availability	-	TC-012: Test backup and recovery
NFR-005	Offline Functionality for Logging	Maintain usability in offline mode	Track Mood	TC-013: Verify offline syncing

5.2 Visual Representations

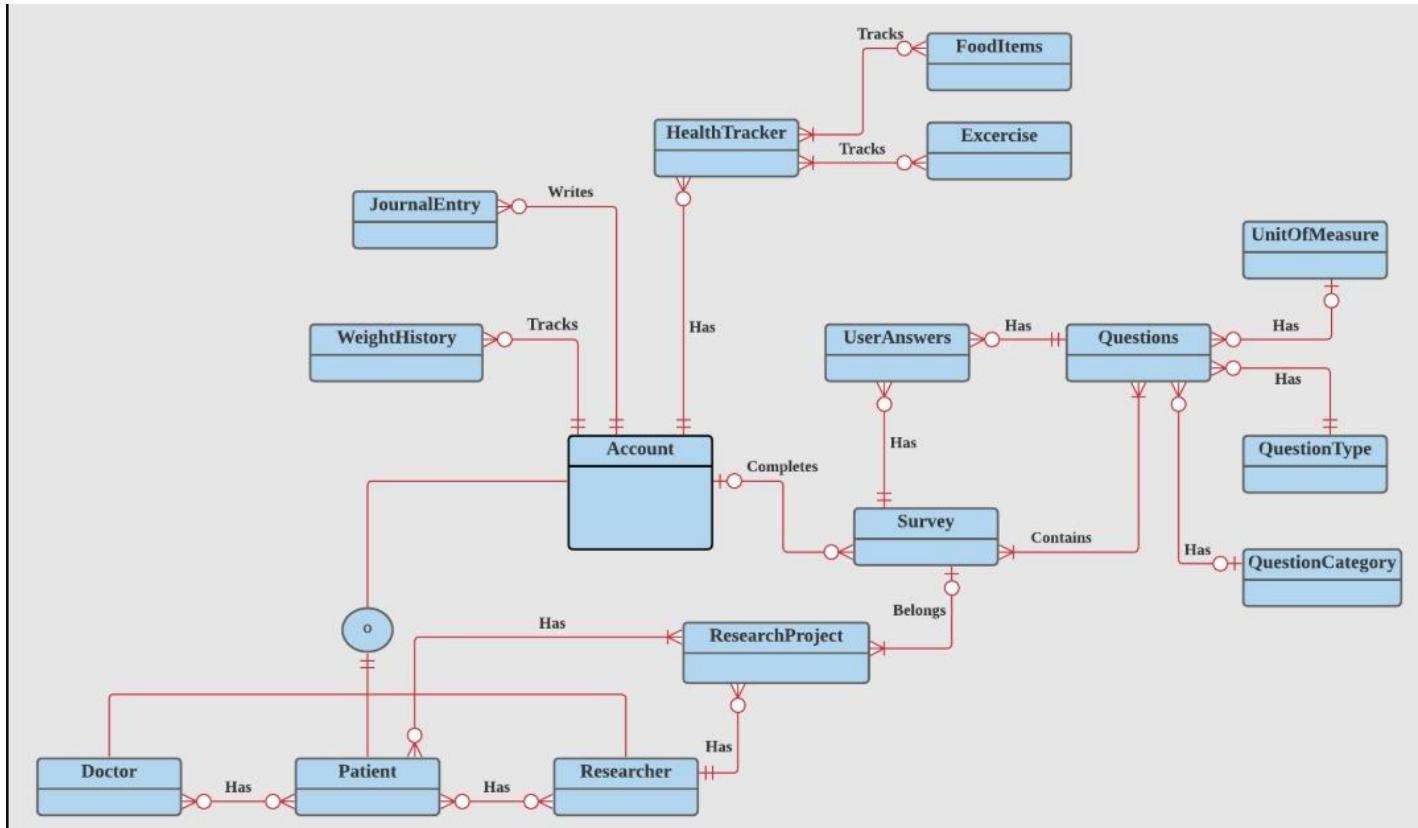
5.2.1 Use Case Diagram



5.2.2 Sequential Diagram



5.2.3 ER Diagram



Entities and Attributes:

- **Account**: Central entity that connects users (patients, doctors, and researchers) to various features like health tracking, journal entries, and weight history.
- **HealthTracker**: Tracks specific data such as food items and exercises.
- **JournalEntry and WeightHistory**: Allow users to log their progress and track weight changes over time.
- **Survey, Questions, and UserAnswers**: Support the interaction between users and surveys for wellness analysis. The **Questions** entity is further categorized into **QuestionType**, **UnitOfMeasure**, and **QuestionCategory**.
- **ResearchProject**: Links researchers to patient data for study purposes.
- **Doctor and Patient**: Show the relationship between healthcare providers and users (patients).
- **Wearable Data** (Implied through HealthTracker): Represents external data sources such as devices for tracking physical activity or biometric data.

Relationships:

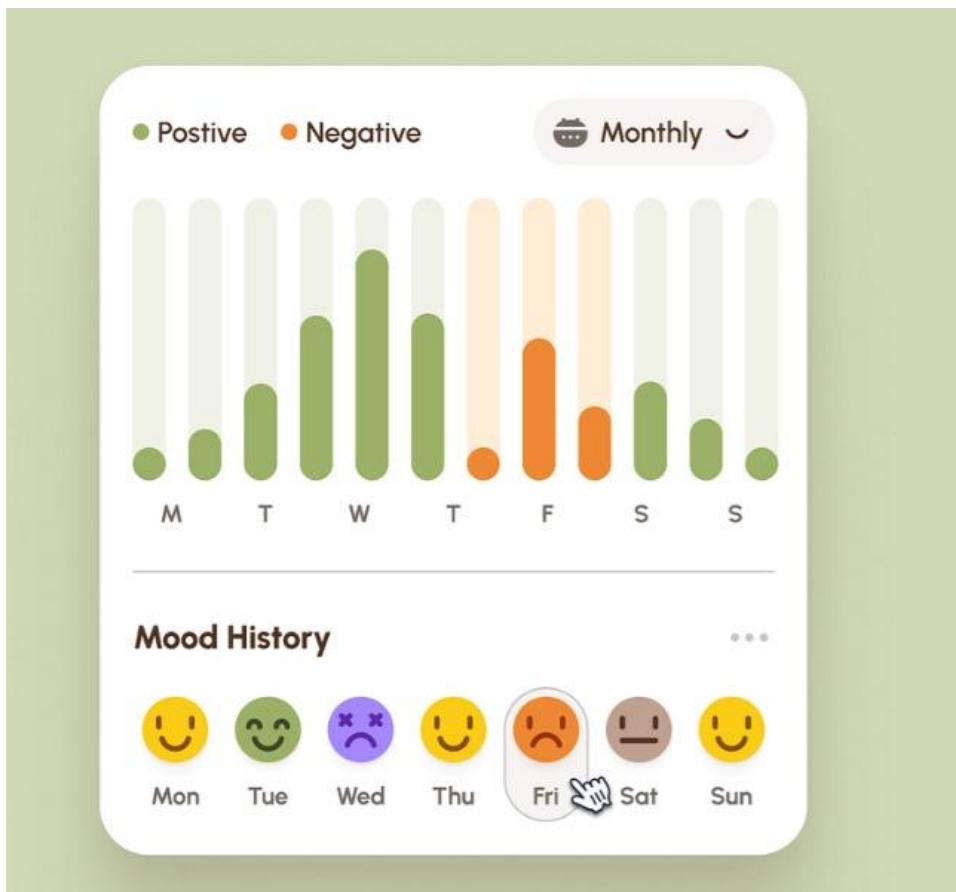
One-to-Many and Many-to-Many Relationships:

- An **Account** can have multiple **JournalEntries** and **WeightHistories**.
- An **Account** completes multiple **Surveys**, which contain many **Questions**. Each question can have multiple **UserAnswers**.
- **ResearchProjects** are associated with multiple **Patients** and **Researchers**.

Tracking and Logging:

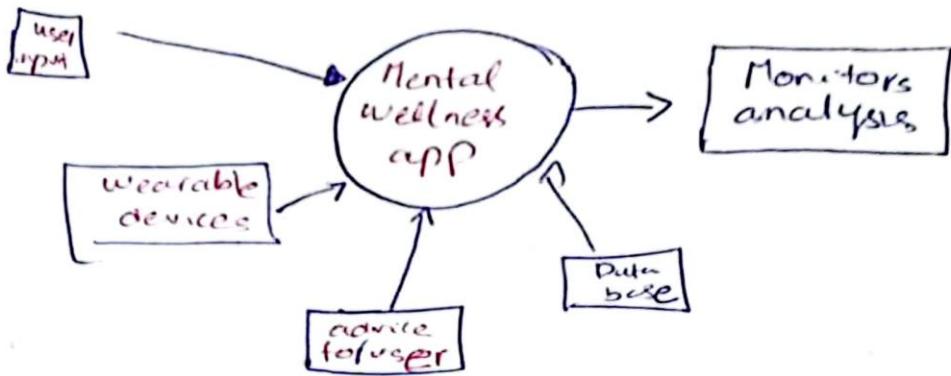
- **HealthTracker** links users to activities like exercise and diet tracking.

5.2.4 Mockup



5.2.5 Data-Flow Diagram

level - 0

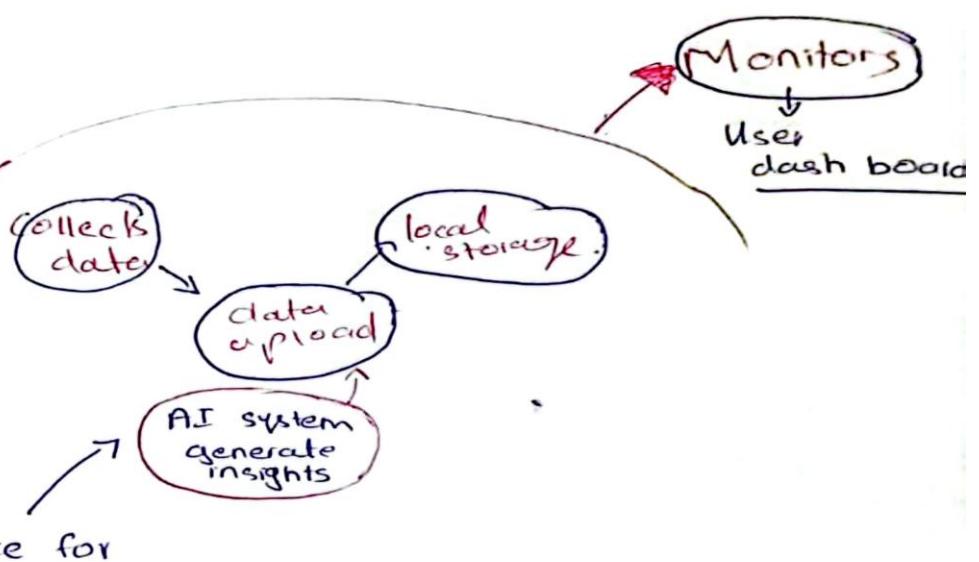


level - 1

User logs

advice for user

User dash board



6. Stakeholder Feedback

6.1 Stakeholder Inputs and Their Integration into the SRS

Stakeholders are integral to the development process of the **Mental Wellness & Habit Tracker App with AI Coach**, ensuring that the final product addresses real-world needs effectively. This section discusses the key inputs from stakeholders, including general users, wellness enthusiasts, health professionals, and regulatory experts, and highlights how these inputs have been addressed in the Software Requirements Specification (SRS).

6.1.1 Stakeholder Groups and Their Inputs

1. General Users

- **Input:** Desire for an intuitive and user-friendly interface that accommodates users with varying levels of technical expertise.
- **Addressed:**
 - The app design incorporates accessibility standards to ensure ease of use for beginners.
 - Simple workflows for mood tracking, habit monitoring, and AI coaching were prioritized in the user interface.
 - A "Help" section and onboarding tutorial were added to guide new users.

2. Wellness Enthusiasts

- **Input:** Need for detailed insights into wellness trends, including advanced analytics for mood and habit patterns.
- **Addressed:**
 - The app features comprehensive reports and visualizations that highlight trends over time.
 - Users can access detailed progress metrics, including graphs and charts for mood fluctuations and habit completion rates.

3. Health Professionals

- **Input:** Tools to monitor and analyze patient or client data, with an emphasis on secure sharing and compliance with regulations.

- **Addressed:**
 - The app supports the creation of professional reports that summarize user trends for external sharing.
 - Compliance with GDPR, SOC 2, and HIPAA ensures that sensitive client data is protected.
 - Role-based access control (RBAC) and multi-factor authentication (MFA) enhance data security for professional users.

4. Regulatory Experts

- **Input:** Strict adherence to data security and privacy standards, ensuring user trust and legal compliance.
- **Addressed:**
 - Encryption protocols for data storage and transmission were integrated into the app.
 - Comprehensive compliance measures include daily backups, secure servers, and adherence to GDPR, SOC 2, and HIPAA standards.

5. Beta Testers (Subset of General Users and Wellness Enthusiasts)

- **Input:** Feedback on early versions of the app, focusing on usability, performance, and feature completeness.
- **Addressed:**
 - Performance optimizations were implemented, including faster response times and reduced syncing delays.
 - Adjustments to the layout and color scheme improved the app's usability, including light and dark mode options.
 - Offline functionality was enhanced based on tester feedback, ensuring seamless mood and habit logging without internet access.

6. Third-Party Service Providers

- **Input:** Requirements for seamless integration with APIs for wearable devices and notifications.
- **Addressed:**

- Collaboration with API providers ensured reliable data syncing from wearable devices.
- Notifications were tested for accuracy and reliability across diverse platforms.

6.1.2 Specific Adjustments Based on Feedback

- **Enhanced Notifications:** Initial feedback highlighted the need for more customizable reminders. As a result, the app allows users to adjust notification times, types, and frequencies.
- **Offline Mode Improvements:** Beta users noted issues with offline data syncing. Enhancements now ensure that offline entries are seamlessly synchronized when connectivity is restored.
- **Data Visualization Updates:** Stakeholders requested clearer and more actionable data insights. The app's reporting module now includes trend breakdowns, comparative metrics, and actionable recommendations.
- **Security Upgrades:** Regulatory feedback prompted the inclusion of additional encryption layers and automated compliance audits.

6.1.3 Ongoing Stakeholder Engagement

To ensure the app continues to meet stakeholder expectations post-launch, the following processes have been established:

1. **Regular Surveys and Feedback Loops:** Periodic feedback collection from users and professionals to refine existing features and identify new needs.
2. **Stakeholder Review Panels:** Quarterly reviews with health professionals and regulatory experts to assess compliance and suggest enhancements.
3. **Open Beta Programs:** Continuous beta testing cycles for iterative improvements based on real-world use.

By actively incorporating these diverse inputs, the **Mental Wellness & Habit Tracker App** achieves a balance between user needs, technical feasibility, and regulatory compliance, ensuring a robust and user-centric product.

ASSIGNMENT-5: DEVELOPING THE SOFTWARE REQUIREMENTS SPECIFICATION

by Zunaira Abdul Aziz

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1. Introduction

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1.2 Product Scope

The app caters to a growing need for accessible mental wellness tools in a fast-paced world where stress, anxiety, and inconsistent routines are common challenges. It integrates advanced features such as real-time AI analysis, wearable device connectivity, and offline functionality for uninterrupted user experience. The scope of the project includes:

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- **Platforms:** Compatibility with Android, iOS, and wearable devices.
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1.3.1.2 Acronyms and Abbreviations

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1.5 Overview

The **Mental Wellness & Habit Tracker App with AI Coach** addresses the increasing prevalence of mental health challenges by providing an easy-to-use platform that integrates AI-powered coaching with real-time tracking features. Unlike existing tools that lack personalization and real-time feedback, this app harnesses wearable device data to deliver tailored recommendations for stress management, emotional health, and habit-building. With robust encryption and compliance measures, the app ensures user trust and meets stringent security standards

2. General Description

2.1 Product Perspective

The **Mental Wellness & Habit Tracker App with AI Coach** is an innovative mobile application designed to bridge the gap between traditional mental health tools and modern AI capabilities. The app integrates seamlessly with wearable devices, allowing it to analyze biometric and behavioral data for personalized recommendations. This approach distinguishes it from existing solutions that rely on static inputs and generic advice.

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1. Mood Tracking:

- Users can log their emotions daily, select from predefined options, or add detailed comments.
- Provides visual analytics, helping users identify trends in their emotional well-being over time.

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- Supports the creation, modification, and tracking of daily routines.
- Users can receive reminders for pending habits and track their completion rates.

3. AI-Driven Coaching:

- Analyzes mood and habit data to offer actionable advice, motivational tips, and stress management strategies.
- Tailored insights based on real-time wearable data, such as sleep patterns and heart rate.

4. Wearable Integration:

- Collects biometric inputs like activity levels, sleep quality, and heart rate variability from popular wearable devices.
- Offers passive data collection to minimize user effort.

5. Security and Privacy:

- Utilizes encryption and secure servers to protect sensitive user data.
- Adheres to industry standards for data protection, ensuring user confidence and compliance.

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2.3 User Classes and Characteristics

2.3.1.1 *User Classes and Characteristics*

1. **General Users:** Individuals aiming to improve their mental health and establish consistent routines through habit tracking and mood analysis.
2. **Mental Health Enthusiasts:** Users deeply engaged in self-care and wellness practices who require detailed insights into their progress.
3. **Health Professionals:** Practitioners using the app as a tool to monitor their clients' well-being and suggest improvements based on data trends.

2.4 Operating Environment

1. Mobile Platforms:

- The app is compatible with Android and iOS, requiring modern devices with active internet connections.

2. Wearable Devices:

- Supports smartwatches and fitness trackers for biometric data collection.

3. Backend Servers:

- Cloud-based infrastructure ensures secure data storage and seamless connectivity.

4. Network Requirements:

- Provides offline functionality for habit and mood logging with automatic cloud synchronization upon reconnection.

5. Security Framework:

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- Implements firewalls, multi-factor authentication, and role-based access control to secure user interactions and data.

2.5 Assumptions and Dependencies

2.5.1 Assumptions

1. Users have access to compatible wearable devices and mobile platforms (Android or iOS) for full app functionality.
2. Reliable internet connectivity is available for syncing data to cloud servers, though offline logging is supported.
3. The AI algorithm can effectively analyze data patterns and provide meaningful insights without extensive user input.
4. Users are willing to share sensitive mood and habit data, trusting the app's robust privacy and security measures.
5. The development team has access to necessary third-party APIs for wearable device integration and notification services.

2.5.2 Dependencies

1. **Wearable Device APIs:** The app relies on APIs from popular wearable device manufacturers to collect biometric data. Any changes or outages in these APIs may impact app functionality.
2. **Cloud Infrastructure:** The app depends on stable and secure cloud services for data storage and real-time AI processing. Service disruptions could affect user experience.
3. **Regulatory Compliance:** Adherence to GDPR, SOC 2, and HIPAA standards is mandatory for app deployment and user trust. Updates to these regulations may require system modifications.
4. **Third-Party Services:** Integration with services like push notifications and weather data enhances functionality but introduces reliance on external providers.
5. **User Engagement:** The app's success depends on user commitment to regularly log mood and habits for accurate AI recommendations.

3. Specific Requirements

3.1 Functional Requirements

1. Sign Up and Login

- Users can create an account with basic details like name, email, and password.
- Extra security through a code sent to their phone or email (two-step login).
- Users can reset forgotten passwords easily.

2. Track Mood

- Users can record how they feel every day by choosing options or writing their own comments.
- The app shows mood patterns using easy-to-read graphs.

3. Track Habits

- Users can add, edit, and monitor daily habits (like exercising or meditating).
- The app sends reminders to help users stick to their habits.

4. AI Coach

- The app uses smart technology to give advice based on mood and habits.
- Suggestions include stress tips, encouragement, and ideas to improve routines.

5. Wearable Devices

- The app works with fitness trackers or smartwatches to collect activity and sleep data.
- Data syncs automatically to make tracking easier.

6. Wellness Surveys

- Users can answer health surveys for a deeper look at their well-being.

- The app gives helpful feedback based on survey answers.

7. Reports and Trends

- The app shows progress with charts and reports, like mood changes over weeks or completed habits.

8. Notifications

- Users can set up reminders for habits, wellness tips, and check-ins.

9. Privacy and Safety

- User data is protected with strong security measures.
- The app follows strict privacy rules like GDPR and HIPAA.

10. Offline Use

- Users can log their mood or habits without internet access. The app syncs data when back online.
-

3.2 Non-Functional Requirements

1. Speed

- The app responds quickly, within 2 seconds for most actions.
- Syncing with devices happens within 5 seconds on a good connection.

2. Scalability

- The app can handle a large number of users without slowing down.

3. Reliability

- The app should work 99.9% of the time without crashes.

4. Ease of Use

- The app should be simple to use, even for beginners.
- It will meet accessibility standards for users with disabilities.

5. Easy to Update

- App updates should be smooth and not disrupt users.

6. Compatibility

- Works with Android (version 10 and above) and iOS (version 13 and above).

7. Security

- Ensures only authorized users can access data (uses two-step login).
- Data is encrypted to keep it safe.

8. Backups

- Data is backed up daily to avoid loss, and recovery should take less than an hour.
-

3.3 External Interface Requirements

1. App Interface

- Easy to use on smartphones and tablets.
- Offers light and dark modes for user preference.

2. Device Integration

- Works with fitness trackers and smartwatches like Fitbit and Apple Watch.

3. Third-Party Services

- Supports notifications via services like Firebase.
- Can include weather data for mood insights.

4. Data Exchange

- Uses common formats like JSON to share data between the app and servers.

5. Compatibility

- App works on the latest Android and iOS versions.

6. Device Requirements

- Works on devices with at least 2GB RAM and 50MB storage.

7. Error Handling

- Clear messages guide users if something goes wrong, like syncing issues.

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4. Use Cases

4.1 Use case descriptions

4.1.1.1 1. Registration

Actors:

- **Citizen/User:** Registers on the app.
- **Wellness Server:** Stores user data.

Main Flow:

1. Citizen selects "Register" and enters details (e.g., name, email, password).
2. Wellness Server validates the input and creates an account.
6
3. A confirmation is sent to the user.

Alternative Flows:

- **Invalid Input:** Prompts the user to correct input errors.
- **Duplicate Account:** Suggests the user logs in instead of creating a new account.

Preconditions:

- The system is online.
- The user does not have an existing account.

Postconditions:

- A new account is successfully created.

4.1.1.2 2. Manage Physical Activity Diary

Actors:

- **Citizen/User:** Logs physical activity.
- **Sensor:** (Optional) Syncs activity data.
- **Wellness Server:** Stores and processes activity entries.

Main Flow:

1. Citizen logs in and adds activity details (e.g., type, duration).
2. Data is stored, and metrics are updated accordingly.

Alternative Flows:

- **Sensor Integration:** Automatically syncs data from connected devices.
- **Incomplete Data:** Prompts the user to provide missing details.

Preconditions:

- The user is logged in.
- A sensor is connected (if applicable).

Postconditions:

- Physical activity is logged, and metrics are updated.

4.1.1.3 3. Fill Out Wellness Survey

Actors:

- **Citizen/User:** Completes the wellness survey.
- **Wellness Server:** Analyzes survey responses.

Main Flow:

1. Citizen selects a wellness survey and answers the questions.
2. The Wellness Server processes responses and provides feedback.

Alternative Flows:

- **Partial Completion:** Saves progress for later completion.
- **Invalid Input:** Prompts the user to correct any errors.

Preconditions:

- The user is logged in.

- Active surveys are available.

Postconditions:

- Survey responses are saved, and feedback is provided to the user.
-

4.1.1.4 4. Sleep Monitoring**Actors:**

- **Citizen/User:** Logs or views sleep data.
- **Sensor:** Automatically tracks sleep (optional).
- **Wellness Server:** Analyzes sleep data and provides insights.

Main Flow:

1. Citizen views or manually logs sleep data.
2. If a sensor is connected, data syncs automatically.
3. The Wellness Server analyzes the data and provides recommendations.

Alternative Flows:

- **Manual Input:** The user manually logs sleep times.
- **Incomplete Data:** Prompts the user to correct or complete the entry.

Preconditions:

- The user is logged in.
- A sensor is connected (if applicable).

Postconditions:

- Sleep data is logged, and insights are provided to the user.
-

4.1.1.5 5. Manage Notifications**Actors:**

- **Citizen/User:** Configures reminders and notifications.
- **Wellness Server:** Sends notifications based on user preferences.

Main Flow:

1. Citizen updates notification preferences (e.g., times, types).
2. The Wellness Server stores the preferences and schedules reminders accordingly.

Alternative Flows:

- **No Changes:** The system retains existing settings.
- **Invalid Time:** Prompts the user to correct invalid time inputs.

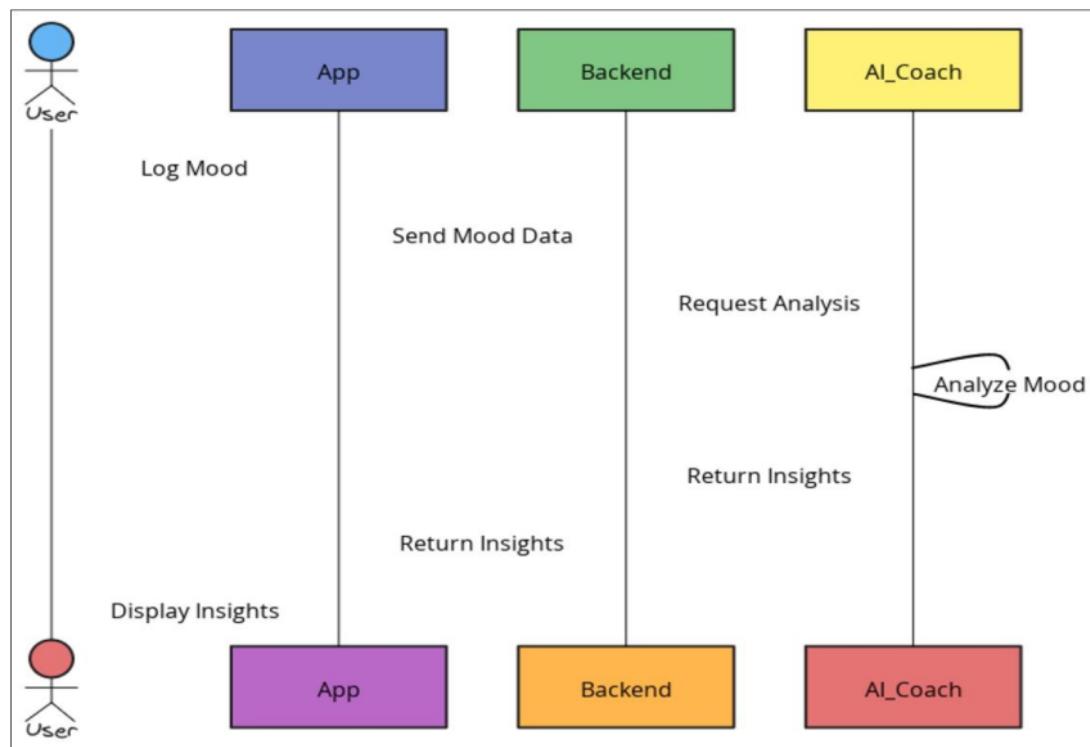
Preconditions:

- The user is logged in.

Postconditions:

- Notification preferences are updated, and reminders are sent as scheduled.

4.2 Basic and alternative flows



5. Technical Details

5.1 Traceability Matrix

Requirements Traceability Matrix (RTM)

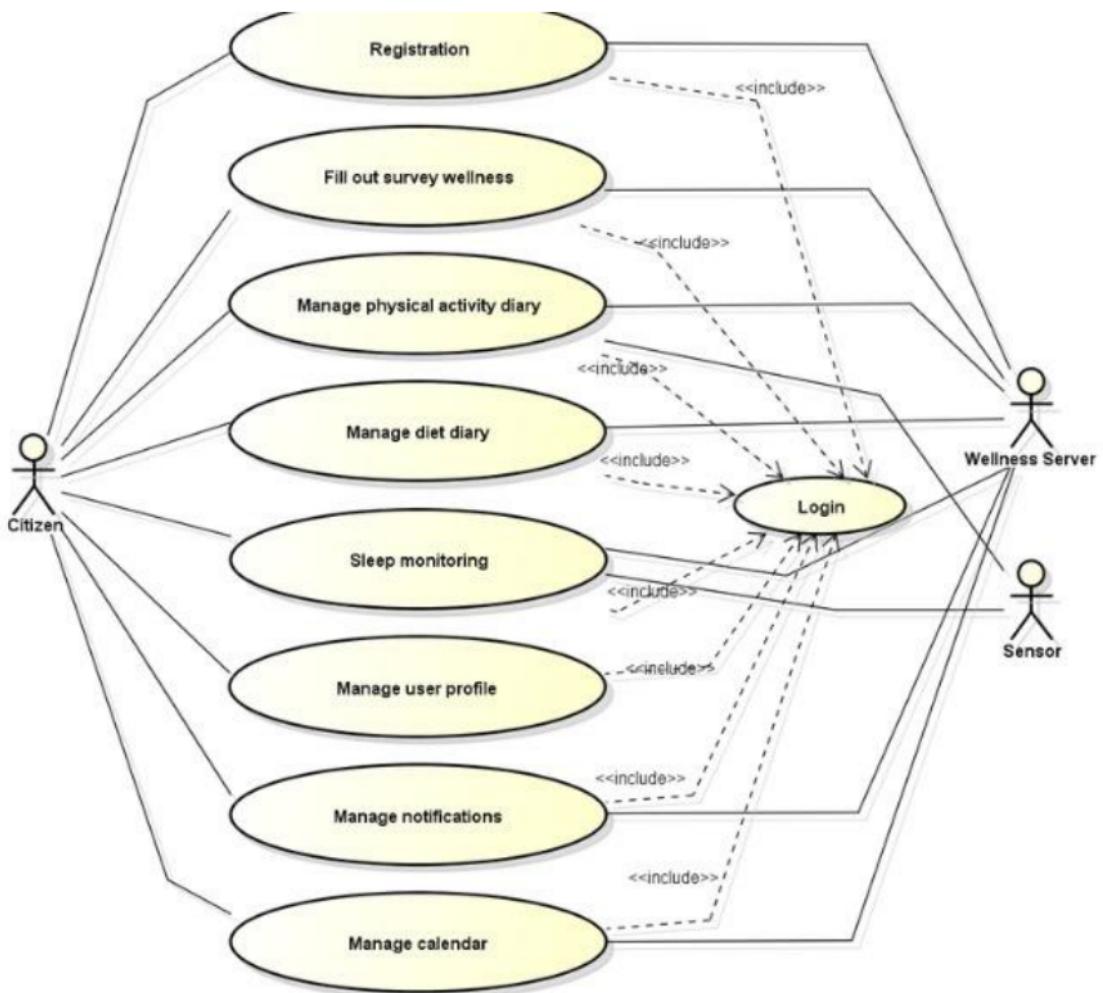
Requirement ID	Requirement Description	Project Goal	Use Case	Test Case
FR-001	User Registration and Login	Provide secure access to the app	Registration	TC-001: Verify user registration
FR-002	Mood Tracking Feature	Enable users to log and analyze emotional trends	Track Mood	TC-002: Validate mood logging UI
FR-003	Habit Monitoring Feature	Help users develop consistent routines	Manage Physical Activity Diary	TC-003: Validate habit reminders
FR-004	AI-Driven Personalized Coaching	Deliver actionable insights and motivation	Fill Out Wellness Survey	TC-004: Test AI-generated advice
FR-005	Wearable Device Integration	Collect real-time biometric and activity data	Sleep Monitoring	TC-005: Verify wearable sync
FR-006	Wellness Surveys	Enable comprehensive user wellness analysis	Fill Out Wellness Survey	TC-006: Check survey functionality
FR-007	Reports and Trends	Provide data visualizations for user insights	Sleep Monitoring	TC-007: Validate reports accuracy
FR-008	Notification Management	Ensure users receive timely reminders	Manage Notifications	TC-008: Test notification settings
NFR-001	App Response Time (<2s for	Ensure seamless user	-	TC-009: Performance

	most actions)	experience		test
NFR-002	Security (Two-step login, encryption)	Protect sensitive user data	Registration	TC-010: Test login security
NFR-003	Compatibility with Android (v10+) and iOS (v13+)	Ensure broad user accessibility	-	TC-011: Validate OS compatibility
NFR-004	Data Backup and Recovery (<1-hour RTO)	Ensure data availability	-	TC-012: Test backup and recovery
NFR-005	Offline Functionality for Logging	Maintain usability in offline mode	Track Mood	TC-013: Verify offline syncing

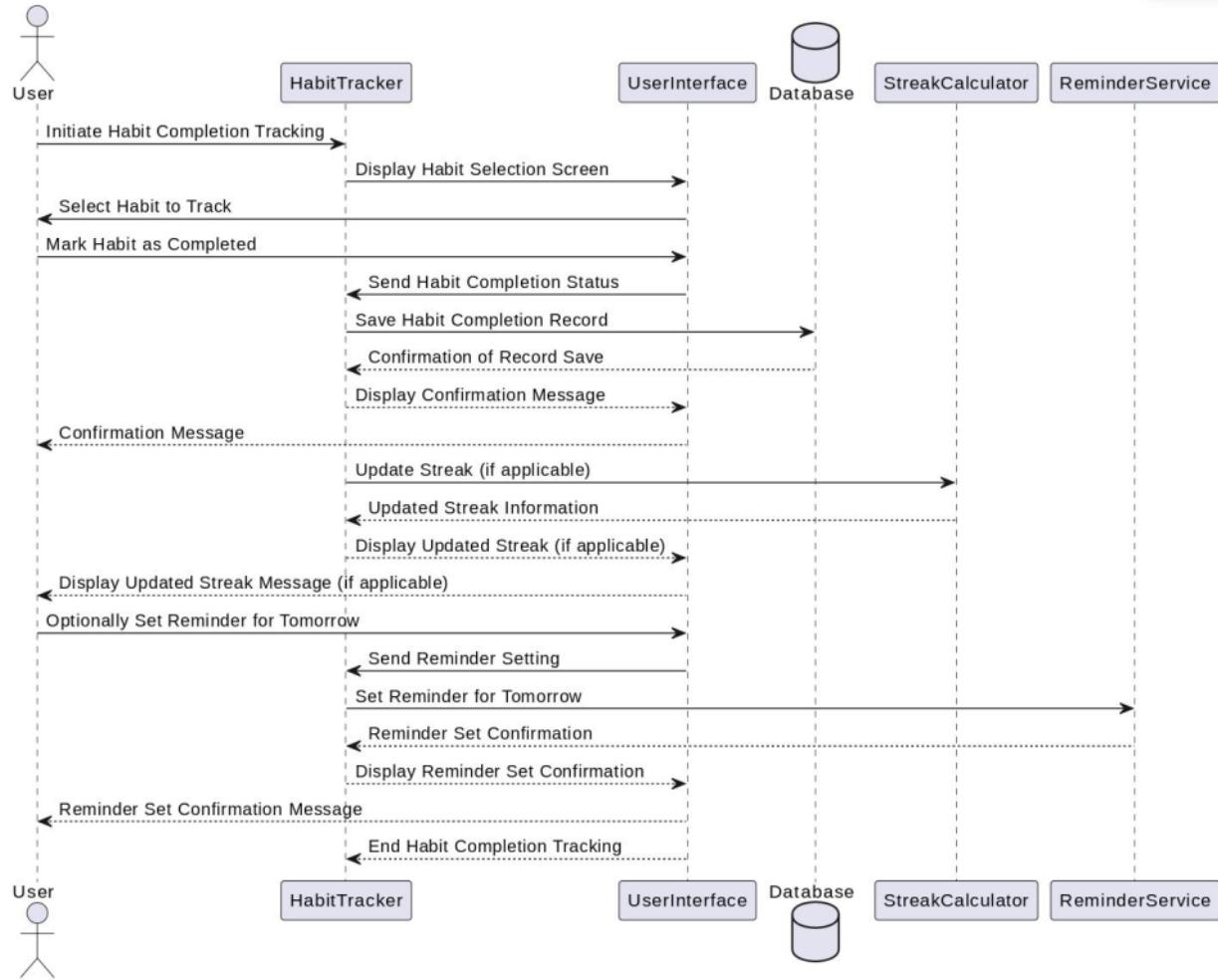
5.2 Visual Representations

3

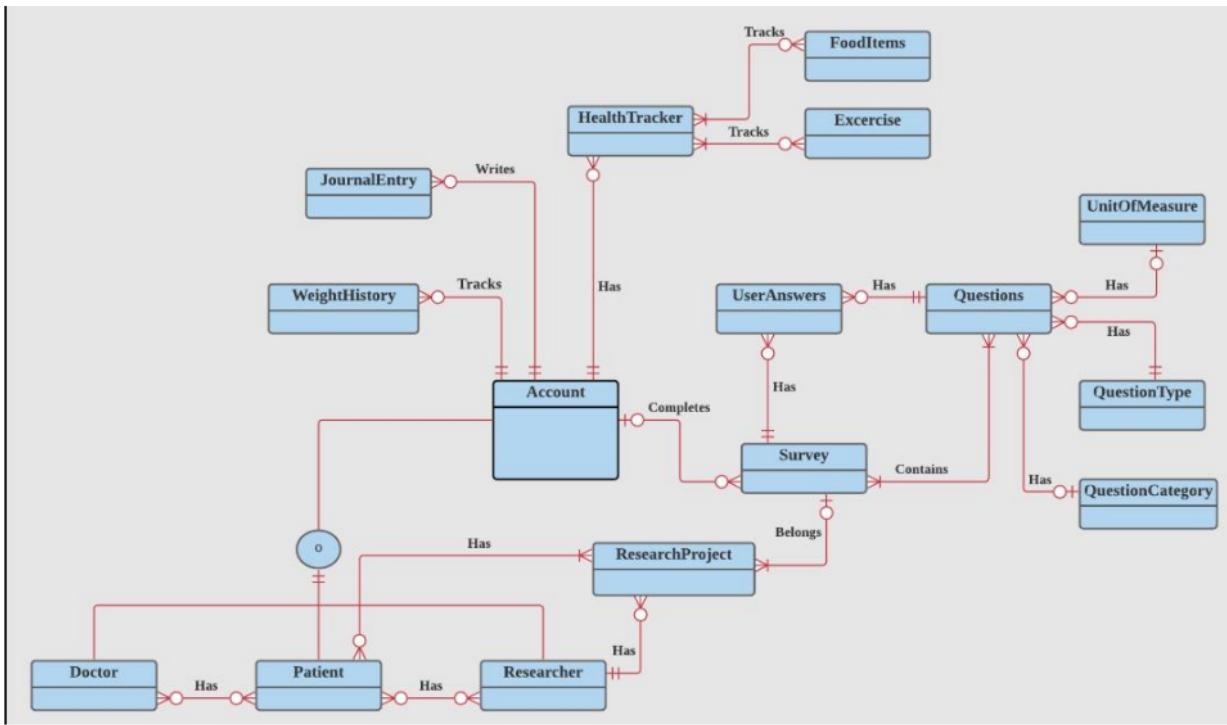
5.2.1 Use Case Diagram



5.2.2 Sequential Diagram



5.2.3 ER Diagram



Entities and Attributes:

- **Account:** Central entity that connects users (patients, doctors, and researchers) to various features like health tracking, journal entries, and weight history.
- **HealthTracker:** Tracks specific data such as food items and exercises.
- **JournalEntry and WeightHistory:** Allow users to log their progress and track weight changes over time.
- **Survey, Questions, and UserAnswers:** Support the interaction between users and surveys for wellness analysis. The Questions entity is further categorized into **QuestionType**, **UnitOfMeasure**, and **QuestionCategory**.
- **ResearchProject:** Links researchers to patient data for study purposes.
- **Doctor and Patient:** Show the relationship between healthcare providers and users (patients).
- **Wearable Data (Implied through HealthTracker):** Represents external data sources such as devices for tracking physical activity or biometric data.

Relationships:

One-to-Many and Many-to-Many Relationships:

- An **Account** can have multiple **JournalEntries** and **WeightHistories**.
- An **Account** completes multiple **Surveys**, which contain many **Questions**. Each question can have multiple **UserAnswers**.
- **ResearchProjects** are associated with multiple **Patients** and **Researchers**.

Tracking and Logging:

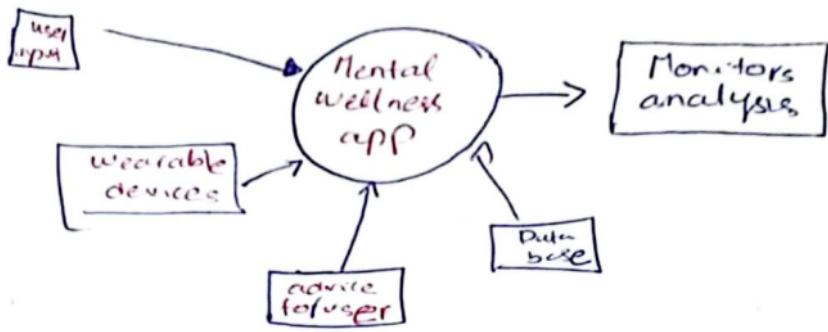
- **HealthTracker** links users to activities like exercise and diet tracking.

5.2.4 Mockup

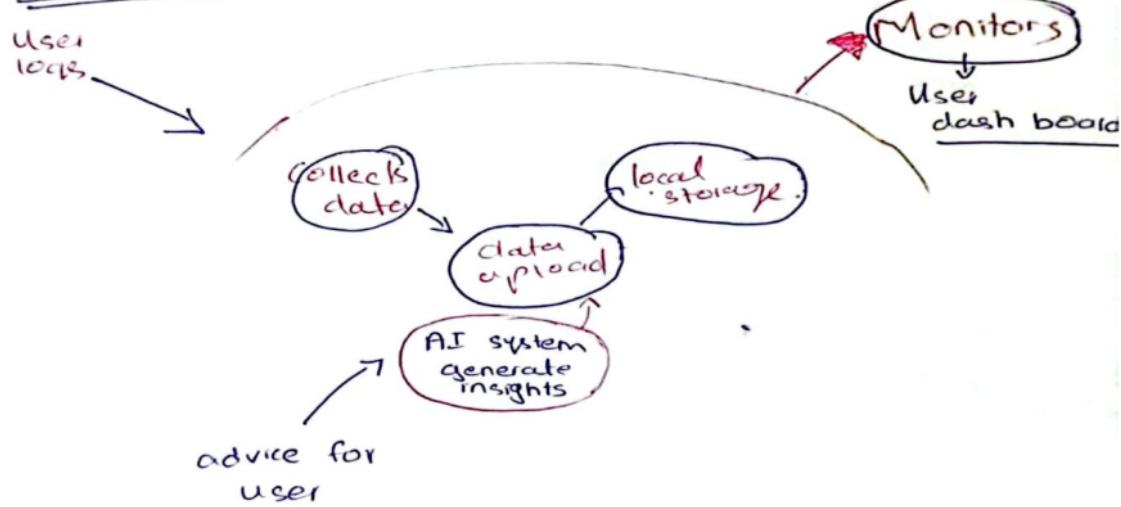


5.2.5 Data-Flow Diagram

level - 0



level - 1



6. Stakeholder Feedback

6.1 Stakeholder Inputs and Their Integration into the SRS

Stakeholders are integral to the development process of the **Mental Wellness & Habit Tracker App with AI Coach**, ensuring that the final product addresses real-world needs effectively. This section discusses the key inputs from stakeholders, including general users, wellness enthusiasts, health professionals, and regulatory experts, and highlights how these inputs have been addressed in the Software Requirements Specification (SRS).

6.1.1 Stakeholder Groups and Their Inputs

1. General Users

- **Input:** Desire for an intuitive and user-friendly interface that accommodates users with varying levels of technical expertise.
- **Addressed:**
 - The app design incorporates accessibility standards to ensure ease of use for beginners.
 - Simple workflows for mood tracking, habit monitoring, and AI coaching were prioritized in the user interface.
 - A "Help" section and onboarding tutorial were added to guide new users.

2. Wellness Enthusiasts

- **Input:** Need for detailed insights into wellness trends, including advanced analytics for mood and habit patterns.
- **Addressed:**
 - The app features comprehensive reports and visualizations that highlight trends over time.
 - Users can access detailed progress metrics, including graphs and charts for mood fluctuations and habit completion rates.

3. Health Professionals

- **Input:** Tools to monitor and analyze patient or client data, with an emphasis on secure sharing and compliance with regulations.

- **Addressed:**
 - The app supports the creation of professional reports that summarize user trends for external sharing.
 - Compliance with GDPR, SOC 2, and HIPAA ensures that sensitive client data is protected.
 - ⁹ Role-based access control (RBAC) and multi-factor authentication (MFA) enhance data security for professional users.

4. Regulatory Experts

- **Input:** Strict adherence to data security and privacy standards, ensuring user trust and legal compliance.
- **Addressed:**
 - Encryption protocols for data storage and transmission were integrated into the app.
 - Comprehensive compliance measures include daily backups, secure servers, and adherence to GDPR, SOC 2, and HIPAA standards.

5. Beta Testers (Subset of General Users and Wellness Enthusiasts)

- **Input:** Feedback on early versions of the app, focusing on usability, performance, and feature completeness.
- **Addressed:**
 - Performance optimizations were implemented, including faster response times and reduced syncing delays.
 - Adjustments to the layout and color scheme improved the app's usability, including light and dark mode options.
 - Offline functionality was enhanced based on tester feedback, ensuring seamless mood and habit logging without internet access.

6. Third-Party Service Providers

- **Input:** Requirements for seamless integration with APIs for wearable devices and notifications.
- **Addressed:**

- Collaboration with API providers ensured reliable data syncing from wearable devices.
- Notifications were tested for accuracy and reliability across diverse platforms.

6.1.2 Specific Adjustments Based on Feedback

- **Enhanced Notifications:** Initial feedback highlighted the need for more customizable reminders. As a result, the app allows users to adjust notification times, types, and frequencies.
- **Offline Mode Improvements:** Beta users noted issues with offline data syncing. Enhancements now ensure that offline entries are seamlessly synchronized when connectivity is restored.
- **Data Visualization Updates:** Stakeholders requested clearer and more actionable data insights. The app's reporting module now includes trend breakdowns, comparative metrics, and actionable recommendations.
- **Security Upgrades:** Regulatory feedback prompted the inclusion of additional encryption layers and automated compliance audits.

6.1.3 Ongoing Stakeholder Engagement

To ensure the app continues to meet stakeholder expectations post-launch, the following processes have been established:

1. **Regular Surveys and Feedback Loops:** Periodic feedback collection from users and professionals to refine existing features and identify new needs.
2. **Stakeholder Review Panels:** Quarterly reviews with health professionals and regulatory experts to assess compliance and suggest enhancements.
3. **Open Beta Programs:** Continuous beta testing cycles for iterative improvements based on real-world use.

By actively incorporating these diverse inputs, the **Mental Wellness & Habit Tracker App** achieves a balance between user needs, technical feasibility, and regulatory compliance, ensuring a robust and user-centric product.

ASSIGNMENT-5: DEVELOPING THE SOFTWARE REQUIREMENTS SPECIFICATION

ORIGINALITY REPORT



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