MEND, LLC

MENDmate™ Pro
Software Requirements Specification

Version <1.0>

MEND™ Proprietary & Copyright Statement

Revision History

Date	Version	Description	Author
<dd/mmm/yy>	<x.x>	<details>	<name>

Table of Contents

Software Requirements Specification

1. Introduction

This section of the Software Requirements Specification (SRS) provides an overview of the entire document and MENDmate™ Pro, including its purpose and related references to the software..

1.1 The Purpose of MENDmate™ Pro

For therapists and their patients addressing mental health through assigned therapy homework, the MENDmate™ Pro online homework system is a Web-based application that gives therapists the ability to monitor patient progress, analyze trends, and streamline the user experience for completing their homework with self-monitoring capabilities, engagement reminders, and a convenient means to access educational resources. Unlike a therapist verbally assigning homework to their patients post session or by email, MENDmate™ Pro provides therapists the means to conveniently assign, track, and offer resources for the completion of therapy homework.

1.2 The Purpose of this Document

The purpose of this document is to describe the functional and nonfunctional requirements for software release 1.0 of the progressive web application, MENDmate™ Pro. This document serves as a comprehensive reference for the software project's requirements, providing a clear and detailed understanding of what the system is expected to achieve. It is intended to align stakeholders, developers, and testers by defining the scope, functionality, and constraints of the system. By consolidating all requirements into one structured document, it ensures consistency, reduces ambiguity, and acts as a foundation for development, testing, and future maintenance.

1.3 Document Conventions

Standards or typographical conventions followed can be found in MEND, LLC's branding guide. See here.

1.4 References

A list of documents or other resources to which this SRS refers.

1. MEND, LLC's Branding Guide: URL
2. MENDmate™ Pro Project Glossary: URL
3. MENDmate™ Pro Vision and Scope: URL
4. MENDmate™ Pro Use Cases: URL
5. MENDmate™ Pro Business Rules: URL
6. MENDmate™ Pro User Interface Wireframe/Prototypes: URL
7. MENDmate™ Pro API Document: URL

2. Project Glossary

The project glossary is available here: URL.

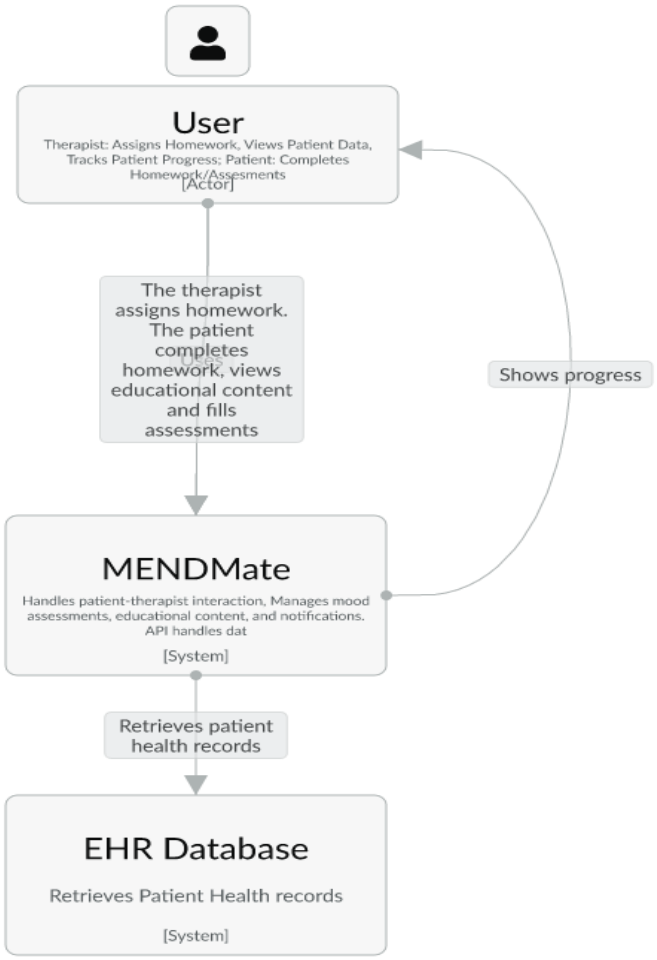
3. Vision and Scope

The vision and scope document is available here: URL.

4. Software Architecture

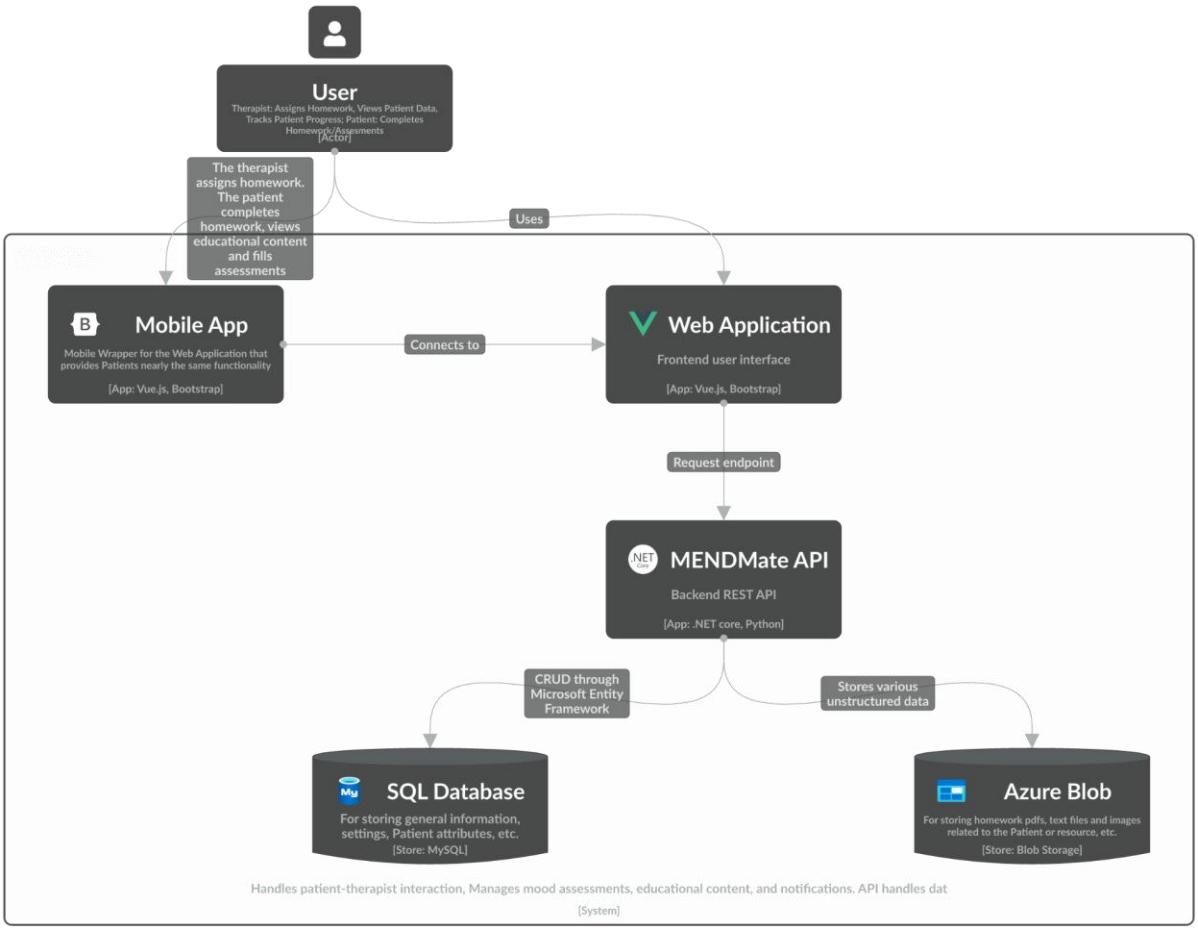
This section provides a high-level design of the system, outlining its structure and how its components interact.

4.1 System Context Diagram



The Level 1: Context Diagram for the MENDmate™ Pro system provides a high-level overview of its interactions with users and external systems. MENDmate™ Pro serves as the central platform, enabling therapists to assign homework, track and analyze patient engagement, while patients use it to complete homework, view educational content, and track their wellness and progress. The system integrates with the EHR database to retrieve patient health records for therapists and patients reference. This diagram highlights the roles of the therapist and patient as primary users, the central functionality of MENDmate™ Pro, and its reliance on the EHR database for health record reference, offering a clear picture of the system's operational scope and interactions.

4.2 Container Diagram



The Level 2: Container Diagram for MENDmate™ Pro provides a detailed view of its internal architecture, illustrating how the system components interact. The system is composed of five key containers: the **Mobile App**, the **Web Application**, the **MENDMate API**, the **SQL Database**, and **Azure Blob**. The **Web Application**, built with Vue.js, is delivered to users' browsers to provide a user-friendly interface for therapists to assign homework and track patient engagement, and for patients to complete homework, monitor their engagement and wellness, and access educational resources. The **MENDMate API**, implemented using C# and Microsoft's Entity Framework as well as Python and FastAPI, handles backend functionality, delivering dynamic web content, processing REST API calls, and managing interactions with the **SQL Database** and **Azure Blob** storage. The **SQL Database**, a relational database, stores critical data, such as user information, education resource details, patient information such as mood and patient journal entries, while CRUD operations are executed through the REST API. Additionally, the **Azure Blob** is used to store information such as worksheet PDFs for patients to complete. Here are the detailed steps:

1. User Accesses the System. A therapist or patient logs into the system through the **Web Application** or **Mobile App**.
2. Web or Mobile App Delivers the User Interface. The **Web Application** (built with **Vue.js and Vuetify**) provides the frontend interface. If accessed via the **Mobile App**, it serves as a wrapper for the web application, ensuring similar functionality.

3. Therapist Assigns Homework. The therapist uses the system to **assign therapy homework**, track patient progress, and provide educational resources. The assignment details are submitted via the **Web Application** or **Mobile App**, which then communicates with the **MENDMate API**.
4. **MENDMate API** Processes Requests. The **MENDMate API** (built with .NET Core and Python) receives the request and processes it accordingly. It determines the required action (e.g., storing homework assignments, retrieving patient progress data, or sending notifications).
5. Data Storage and Retrieval. If structured data (e.g., patient information, therapy assignments) is involved, the API performs CRUD operations with the **SQL Database** (MySQL) using Microsoft Entity Framework. If unstructured data (e.g., PDFs, text files, images) needs to be stored or retrieved, the API interacts with **Azure Blob Storage**.
6. Patient Completes Homework & Engages with Content. The patient accesses the assigned homework via the **Web Application** or **Mobile App**. The patient submits their completed assignments and engages with educational content.
7. System Tracks Progress and Sends Notifications. The API retrieves and updates patient progress within the **SQL Database**. If necessary, the system sends reminders and engagement notifications to the patient via the **Web Application** or **Mobile App**.
8. Therapist Monitors Patient Data. The therapist reviews patient progress and assessment data through the **Web Application**. Trends and insights may be displayed via dashboards, enabling better decision-making.

In general, Seamless Data Synchronization applies throughout a user's interaction with MENDmate™ Pro. Whether accessed through the **Web Application** or **Mobile App**, all user interactions and data modifications are **synchronized through the MENDMate API**, ensuring real-time updates.

Each step in this sequence of actions outlines how MENDmate™ Pro components collaborate to facilitate seamless functionality for the therapist and patient while ensuring efficient data management and interactivity.

4.3 Operating Environment

OE-1: The MENDmate™ Pro system shall operate correctly on the following web browsers: Google Chrome (latest version), Mozilla Firefox (latest version), Microsoft Edge (latest version), and Apple Safari (latest version).

OE-2: The MENDmate™ Pro Web Application shall be built using Vue.js and Vuetify and will be delivered to users through standard web browsers.

OE-3: The MENDmate™ Pro Mobile App shall serve as a wrapper for the Web Application, ensuring compatibility with Android (version 9 and above) and iOS (version 14 and above) smartphones and tablets.

OE-4: The MENDmate™ Pro API shall be implemented using C# (.NET Core) and Python (FastAPI) and will run on cloud-based infrastructure.

OE-5: The MENDmate™ Pro system shall interact with a relational SQL Database (MySQL) for structured data storage, including user information, patient data, and therapy assignments.

OE-6: The MENDmate™ Pro system shall use Azure Blob Storage for storing unstructured data such as worksheet PDFs, images, and text files.

OE-7: The MENDmate™ Pro servers and databases shall be hosted on Microsoft Azure cloud infrastructure, ensuring scalability and security.

OE-8: The MENDmate™ Pro system shall permit user access from:

- Standard web browsers via the internet.
- Mobile applications on Android and iOS devices.
- Secure connections from therapists' and patients' devices through encrypted API requests.

OE-9: The MENDmate™ Pro system shall ensure seamless data synchronization between the Web Application, Mobile App, API, and database, ensuring real-time updates for therapists and patients.

OE-10: The MENDmate™ Pro system shall coexist with other standard healthcare-related software and applications, provided they adhere to industry-standard data exchange protocols and security requirements.

OE-11: The MENDmate™ Pro system shall comply with HIPAA regulations to ensure the security and privacy of patient data.

OE-12: Any necessary infrastructure modifications or expansions required for the operation of MENDmate™ Pro shall be specified in a separate infrastructure requirements specification document, which will be created only when deemed necessary based on the technical needs of the system.

4.4 Design and Implementation Constraints

CO-1: The system shall use SQL Database to store structured data and Azure Blob to store unstructured data to ensure scalable and efficient data management.
CO-2: The system shall be built with JavaScript and Vue.js for the frontend and C# and Python for the backend, to ensure a dynamic, progressive and responsive web application.
CO-3: The system's user interface shall be mobile-first to ensure optimized performance and usability on mobile devices.
CO-4: The system shall comply with HIPAA privacy regulations to ensure the secure handling and protection of sensitive data.
CO-5: The system's user interface shall conform to MEND, LLC's branding guide to ensure the system's look is consistent with the company's brand.

4.5 Assumptions and Dependencies

AS-1: The MENDmate™ Pro system assumes the availability and reliability of third-party cloud services, specifically Microsoft Azure for hosting the SQL Database and Azure Blob Storage. Any downtime or service disruption from Azure could affect the system's availability and performance.

AS-2: The system assumes that users will have access to devices running supported versions of web browsers (Google Chrome, Mozilla Firefox, Microsoft Edge, Apple Safari) or mobile operating systems (Android version 9 and above, iOS version 14 and above) for accessing the Web Application or Mobile App.

AS-3: The system assumes that therapists and patients will have consistent internet access for real-time data synchronization between the Web Application, Mobile App, and backend systems.

DE-1: The operation of the MENDmate™ Pro system depends on the proper configuration and ongoing maintenance of Microsoft Azure cloud infrastructure for database storage, API hosting, and Blob Storage.

DE-2: The system depends on the correct operation of third-party libraries and components such as Vue.js and Vuetify for the Web Application frontend. Any updates or changes to these libraries may require corresponding updates to the system.

DE-3: The successful operation of the MENDmate™ Pro system depends on the cooperation and availability of therapists and patients for consistent usage and engagement with the system, particularly in assigning and completing homework, recording and monitoring wellness trends such as mood or anxiety, and viewing engagement metrics.

DE-4: The operation of the MENDmate™ Pro system depends on the correct operation of Microsoft's Entity Framework and MySQL for managing CRUD operations and ensuring data integrity within the SQL Database. Any issues with these technologies (such as compatibility or performance problems) could affect the system's ability to manage data effectively.

5. Functional Requirements

This section of the Software Requirements Specification details all functional requirements to enable development and testing.

5.1 Use Cases

The use cases are available here: URL.

5.2 Non-Use Case Functional Requirements

- When a user attempts to log in to MENDmate™ Pro, the system shall authenticate the user credentials using Multi-Factor Authentication (MFA) and grant access only if both authentication factors are verified.
- When a therapist assigns homework to a patient through the Web Application or Mobile App, the system shall store the homework assignment in the SQL Database and notify the patient via a text and email reminder.
- When a patient submits completed homework through the Web Application or Mobile App, the system shall update the patient's progress in the SQL Database and notify the assigned therapist of the completed task.
- When the system detects that a patient's homework is overdue, the system shall send a reminder notification to the patient via text and email according to the frequency set by the patient or therapist.
- When the system receives an API call to retrieve patient data, the MENDmate™ Pro API shall fetch the required data from the SQL Database and return it within 2 seconds.
- When a user's data is transmitted over the network, the system shall encrypt the data using industry-standard encryption methods for both data at rest and in transit.
- When the system is deployed, it shall be available on SMART Gallery and at least one other marketplace, allowing users to download and access the app.
- When the system detects a potential breach or unusual access patterns, it shall log the event in an audit log for compliance review and notify the system administrator.
- When the system interacts with Azure Blob Storage to store or retrieve unstructured data (e.g., PDFs or images), it shall ensure data integrity and return a success or failure response to the user interface.
- When AI processes user input data (e.g., patient mood or progress notes), the system shall generate an AI-powered summary and provide it to the therapist within the Web Application for review.

6. Business Rules

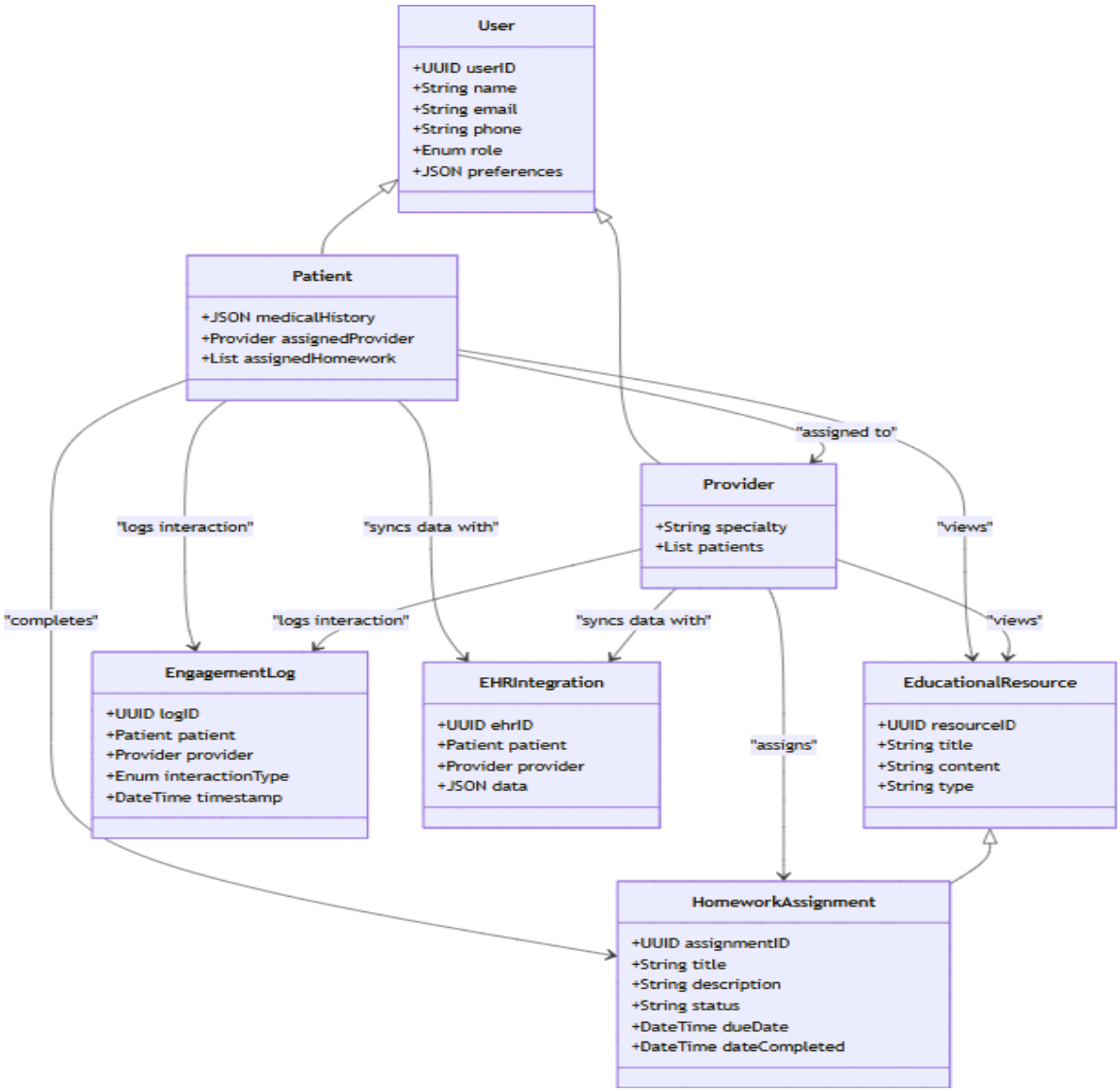
The business rules are available here: URL.

7. Data Requirements

This section describes various aspects of the data MENDmate™ Pro will consume as inputs, process in some fashion, or create as outputs.

7.1 Business Domain Model

The Business Domain Model represents the key concepts and relationships within the MENDmate™ Pro system, capturing its core logic and shared understanding of the problem being solved. This model provides an abstract view of the system's main entities and their interactions, rather than directly reflecting the actual data structures or entities used in the backend implementation.



The key entities in the model include Users, categorized as either Patients or Providers. Providers can assign Homework Assignments, which are a specialized form of Educational Resources, while patients may also access these resources independently. The system logs interactions through Engagement Logs and securely synchronizes patient data via EHR Integration to maintain interoperability with electronic health records.

By defining these abstractions, the domain model ensures that MENDmate™ Pro effectively supports remote therapeutic monitoring (RTM), structured patient-provider communication, and seamless integration with external systems, while maintaining compliance with security and privacy regulations.

7.2 Data Acquisition, Integrity, Retention, and Disposal

DI-1: The system shall acquire user data (e.g., patient information, therapy assignments) through secure web and mobile interfaces, ensuring all data is encrypted during transmission and while at rest in the database.
DI-2: The system shall validate all acquired data to ensure accuracy, with alerts triggered for any inconsistencies or errors in data entry.
DI-3: The system shall perform daily backups of critical data (e.g., patient records, homework assignments) and retain backups for a minimum of 30 days.
DI-4: The system shall implement real-time data mirroring for the SQL Database to ensure high availability and data consistency in the event of a server failure.
DI-5: Patient and therapist records shall be retained for a minimum of 7 years in compliance with HIPAA regulations.
DI-6: System logs detailing user and system activities shall be retained for at least 5 years to meet auditing and compliance requirements.
DI-7: The system shall securely delete personal user data, including patient records and homework assignments, within 30 days following user requests or patient discharge, ensuring data cannot be recovered.
DI-8: Residual data, including cached data and local copies, shall be securely erased within 24 hours after deletion of user data or session termination.
DI-9: Non-essential metadata, such as temporary or session-related data, shall be purged periodically in line with data protection and retention policies.
DI-10: Inactive data older than 7 years shall be archived for compliance purposes and stored securely for historical reference.

8. External Interface Requirements

This section provides information to ensure that the system will communicate properly with users and with external hardware or software elements.

8.1 User Interfaces

UI-1: The MENDmate™ Pro user interface shall conform to the company's branding guide, ensuring consistency in CSS styles, colors, typography, and layout.
UI-2: The system shall be a responsive web application, ensuring compatibility across desktop, tablet, and mobile devices.
UI-3: Standard UI elements, such as navigation menus, buttons, and input fields, shall follow the branding guide's general style for a cohesive experience.
UI-4: Each page shall provide a Help link or tooltip feature to guide users on functionality.
UI-5: The interface shall be designed for accessibility, supporting keyboard navigation and screen readers to meet WCAG 2.1 AA compliance.
UI-6: Standard error messages shall be displayed in a non-intrusive manner, clearly explaining input errors and required corrections.
UI-7: The system shall allow dark mode and light mode selection for user preference.
UI-8: All UI screens shall support multilingual text rendering, prioritizing U.S. English and Spanish.

8.2 Software Interfaces

SI-1: Electronic Health Records (EHR) System

- **SI-1.1**: The system shall integrate with at least one EHR system using **FHIR (Fast Healthcare Interoperability Resources)** standards.
- **SI-1.2**: The system shall support **SMART on FHIR** authentication for secure access to patient records.
- **SI-1.3**: The system shall allow reading patient data (e.g., demographics, diagnosis, treatment history) from the connected EHR.
- **SI-1.4**: The system shall allow writing progress notes and assigned tasks back to the EHR where applicable.

SI-2: Authentication & Security Services

- **SI-2.1**: The system shall use **OAuth 2.0/OpenID Connect (OIDC)** for authentication via external identity providers.
- **SI-2.2**: Multi-Factor Authentication (MFA) shall be enforced for provider logins.
- **SI-2.3**: All data transmissions between software components shall be encrypted using **TLS 1.2+**.

SI-3: Database & Data Storage

- **SI-3.1**: The system shall use **Azure SQL Database** for structured data storage.
- **SI-3.2**: The system shall store and retrieve educational resources, progress reports, and user-generated content in a structured format.
- **SI-3.3**: Audit logs shall be maintained for all data modifications to meet **HIPAA compliance**.

SI-4: Communication Services

- **SI-4.1**: The system shall integrate with an email/SMS service (e.g., **Twilio, SendGrid**) to send reminders and notifications.
- **SI-4.2**: Secure in-app messaging shall be supported between providers and patients.

SI-5: AI & Analytics Services

- **SI-5.1**: The system shall leverage **Azure AI Services** for generating patient progress summaries.
- **SI-5.2**: The system shall visualize user engagement trends via **interactive dashboards**.

SI-6: Deployment & Monitoring

- **SI-6.1**: The system shall be deployed on **Microsoft Azure** using **CI/CD pipelines via GitHub Actions**.
- **SI-6.2**: Application logs, error monitoring, and performance analytics shall be handled via **Azure Monitor** and **Application Insights**.

8.3 API Document

The API document is auto-generated from the backend. Please run localhost to see documentation at: http://localhost:5294/swagger/index.html.

8.4 Hardware Interfaces

No hardware interfaces have been identified.

8.5 Communications Interfaces

CI-1: The MENDmate™ Pro system shall send email, SMS and push notifications to users based on their communication preferences for engagement reminders, homework assignments, and system updates.
CI-2: The system shall use secure SMTP with TLS encryption for all email communications to ensure data privacy and compliance with HIPAA.
CI-3: SMS messages shall be sent through an integrated third-party messaging service (e.g., Twilio) to ensure reliable delivery and logging.
CI-4: The system shall allow users to configure notification preferences, including opting in or out of specific types of messages.
CI-5: MENDmate™ Pro shall implement FHIR-based API communication with EHR systems using OAuth 2.0 and SMART on FHIR authentication for secure data exchange.
CI-6: Web browser communication shall be secured using HTTPS (TLS 1.2 or higher) to protect all data transmitted between clients and the server.
CI-7: The system shall support real-time messaging between patients and providers, including the ability to attach files and share links securely.

CI-8: All communications shall be logged for auditing purposes, ensuring compliance with healthcare regulations while maintaining user privacy.
CI-9: The system shall not allow email attachments containing PHI unless encrypted and authorized by the provider.

9. Quality Attributes

9.1 Usability

USE-1: The system shall provide a consistent visual experience across different devices, ensuring that the layout and design are appropriately responsive for desktop, tablet, and mobile interfaces.

USE-2: 90% of new users shall be able to complete their first homework assignment and track their progress without assistance or errors on their first try.

USE-3: The system shall allow users to easily switch between light mode and dark mode, catering to user preferences for visual comfort.

USE-4: The user interface shall be intuitive, with clear labeling, consistent navigation, and logical task flow to reduce the learning curve for first-time users.

USE-5: The MENDmate™ Pro system shall provide a help tooltip on each page, ensuring users can quickly learn about the available features and their functions.

USE-6: The system shall ensure that users can access their personalized dashboard within three seconds of logging in.

USE-7: The system shall provide a user-friendly, step-by-step onboarding process for new users, ensuring that they understand how to use essential features effectively.

USE-8: The system shall allow users to easily edit and update their personal profile and communication preferences with minimal effort.

USE-9: The MENDmate™ Pro system shall support multiple languages, prioritizing U.S. English and Spanish, with easy switching between them.

USE-10: The MENDmate™ Pro system shall allow users to navigate through key features (e.g., homework assignments, progress tracking, and communication) with minimal clicks or interactions.

9.2 Performance

Performance Requirements

PER-1: The MENDmate™ Pro system shall scale to accommodate hundreds of thousands of users, leveraging Azure cloud scalability to dynamically adjust resources.
PER-2: 95% of webpages and content generated by the MENDmate™ Pro system shall load completely within 3 seconds from the time the user requests the page, over a 20 Mbps or faster Internet connection.
PER-3: The system shall display confirmation messages to users within an average of 2 seconds and a maximum of 4 seconds after the user submits information to the system.
PER-4: The system shall be able to process user-submitted data (e.g., homework assignments, medical updates) with a latency of no more than 5 seconds.
PER-5: 98% of all user authentication processes shall be completed within 5 seconds from the moment the user submits their credentials.

PER-6: The system shall be able to support real-time communication, such as notifications or reminders, with a maximum delay of 3 seconds between the triggering event and the user receiving the notification.
PER-7: During system updates or maintenance, the downtime should not exceed 4 hour per month, and any downtime should be scheduled and communicated to users in advance.

9.3 Security

SEC-1: All sensitive data, including personally identifiable information (PII), health records, and user communications, shall be encrypted in transit using TLS 1.2 or higher, and at rest using AES-256 encryption.
SEC-2: All users must authenticate via Multi-Factor Authentication (MFA) before accessing the MENDmate™ Pro system, ensuring secure access to user and provider data.
SEC-3: Only authorized healthcare providers and administrators shall have access to patient-specific data, such as medical records, treatment plans, and therapy history.
SEC-4: The system shall restrict access to users' personal data based on their role and permissions. For example, patients shall only be able to view their own progress, assignments, and records, while providers may access their patients' data.
SEC-5: All communication between users (patients, providers) and the system, including messaging, reminders, and updates, shall be securely stored and transmitted to comply with HIPAA regulations.
SEC-6: The system shall maintain audit logs for all user activities, including login attempts, data access, and changes to personal or medical records. Logs shall be retained for a minimum of 7 years to comply with regulatory requirements.
SEC-7: The system shall employ role-based access control (RBAC) to limit user access based on their role (e.g., patient, provider, administrator), ensuring appropriate data segregation and minimizing the risk of unauthorized access.
SEC-8: The MENDmate™ Pro system shall provide secure session management, with automatic logout after 15 minutes of inactivity to protect against unauthorized access.
SEC-9: All API calls that handle sensitive data shall be secured using OAuth 2.0 authentication and authorization to ensure that only valid, authenticated requests are processed.
SEC-10: The system shall conduct vulnerability assessments and penetration testing annually, ensuring that security gaps are identified and addressed proactively.
SEC-11: The system shall comply with HIPAA and any other relevant healthcare regulations to ensure that patient data is handled securely and with respect to privacy.
SEC-12: The system shall allow users to delete or request anonymization of their personal data in compliance with privacy regulations such as HIPAA and the GDPR (General Data Protection Regulation) if applicable.

9.4 Safety

SAF-1: The system shall ensure that all medical recommendations or treatment plans provided to patients are assigned or reviewed by a qualified healthcare provider before being shared with the patient to prevent miscommunication or harm.

SAF-2: The system shall include clear warnings or disclaimers to alert users when they are about to access sensitive medical information, ensuring that users understand the potential consequences of accessing or sharing such data.

SAF-3: The system shall provide a confirmation step before allowing users to delete any personal data or medical records, reducing the risk of accidental deletion or irreversible actions.

SAF-4: The system shall employ fail-safe mechanisms to ensure that no critical data (such as treatment history or medication information) is lost during system updates or failures.

SAF-5: The system shall comply with relevant healthcare and data protection safety certifications, including HIPAA (Health Insurance Portability and Accountability Act) for patient data security and safety.

SAF-6: The system shall prevent the ability to perform critical actions, such as altering or deleting medical records, without proper authorization or oversight, reducing the risk of accidental harm or malicious activity.

9.5 Availability

AVL-1: The system shall ensure that scheduled maintenance is communicated to users at least 48 hours in advance and performed during low-usage hours, with downtime not exceeding 4 hours per month.

AVL-2: In the event of unexpected downtime or system failures, the MENDmate™ Pro system shall provide real-time status updates and estimated recovery times to users.

AVL-3: The MENDmate™ Pro system shall be available at least 99.5% of the time between 6:00 A.M. and 10:00 P.M. local time and at least 95% of the time between 10:00 P.M. and 6:00 A.M. local time, excluding scheduled maintenance windows.

9.6 Robustness

ROB-1: If the connection between the user and the MENDmate™ Pro system is lost during the submission of a new homework assignment, the system shall enable the user to recover the incomplete assignment and continue working on it once the connection is restored.
ROB-2: The MENDmate™ Pro system shall provide clear error messages and guide the user on how to resolve issues if an action fails due to connectivity problems or incomplete data.
ROB-3: If a user's session expires while they are interacting with the system, the MENDmate™ Pro system shall allow the user to log back in without losing progress on current tasks, such as assignments or notes.
ROB-4: The system shall automatically save user progress in real-time to ensure that no data is lost in the event of unexpected interruptions or failures.

9.7 [Others as relevant]

This section will be updated in future revisions to detail specific product quality attributes including, but not limited to, availability, efficiency, installability, integrity, interoperability, modifiability, portability, reliability, reusability, robustness, scalability, and verifiability. These attributes will be defined with measurable and verifiable criteria, along with prioritization based on project needs and stakeholder requirements.

10. Deployment

The MENDmate™ Pro system will be deployed and maintained in a structured environment to ensure reliability, security, and scalability. The deployment strategy includes the following key components: Environments, Hosting & Infrastructure, Deployment Process, Scaling & Maintenance.

10.1 Environments

10.1.1 Development: Used for active development, testing, and debugging.

10.1.2 Staging: A pre-production environment that mirrors production for final validation before deployment.

10.1.3 Production: The live environment where users interact with the system.

10.2 Hosting & Infrastructure

10.2.1 Cloud Provider: Microsoft Azure will be used to host the application and manage infrastructure.

10.2.2 Database: MySQL, hosted on Azure, will store application data securely.

10.2.3 API & Backend: Developed using FastAPI and .NET Core, deployed via Azure App Services.

10.2.4 Frontend: The progressive web application will be hosted through Azure Static Web Apps or Azure App Services.

10.2.5 CI/CD Pipeline: Automated deployment processes will be managed using GitHub Actions and Azure DevOps.

10.3 Deployment Process

10.3.1 Code is committed to GitHub, where version control is maintained.

10.3.2 CI/CD pipelines automatically build, test, and deploy the application to the appropriate environment.

10.3.3 Deployment strategies include rolling deployment to ensure the latest version is always present, if tests passed.

10.3.4 Rollbacks can be triggered via GitHub Actions or Azure DevOps in case of deployment failures.

10.4 Scaling & Maintenance

10.4.1 Horizontal Scaling: Azure's cloud infrastructure allows for scaling based on traffic demands.

10.4.2 Monitoring: Azure Monitor and Application Insights will track system performance, errors, and usage.

10.4.3 Security & Compliance: Azure Security Center will be used for threat detection, and all data will be encrypted at rest and in transit.

10.4.4 Backup & Disaster Recovery: Regular database backups and a disaster recovery plan will be in place to prevent data loss.

11. Internationalization and Localization Requirements

The MENDmate™ Pro system is designed specifically for use within the United States and will adhere to U.S. localization standards. The system shall:

- Use U.S. English and Spanish for all text, labels, and communications.
- Format dates as MM/DD/YYYY and times in a 12-hour format with AM/PM.
- Format phone numbers in the (XXX) XXX-XXXX format.
- Follow U.S. address formatting, including state abbreviations and ZIP codes.
- Adhere to HIPAA regulations and other relevant U.S. healthcare compliance laws.
- Use imperial units (e.g., pounds, inches) where applicable.
- Allow time localization adjustments based on U.S. time zones.

Since MENDmate™ Pro is not intended for international use at this time, no additional localization efforts (such as broader multi-language support or foreign regulatory compliance) are required.

12. Other Requirements

No additional requirements, not previously covered in this document, have been identified at this stage.

13. Appendix A

[To be added in future revisions or as additional requirements arise.]