Software Requirements Specification
For
ElderEase

Prepared By:

1. Eqra Rahman - 2221835042
2. Mohammad Wasique Iqbal - 2222510042
3. Md. Siam Hossain - 2121436642
4. Nazib Riasat - 2221393642

1. Introduction

1.1 Purpose: The purpose of the ElderEase project is to design and develop a software platform that streamlines the management of in-home caregiving services for elderly individuals. This system aims to bridge the gap between families and caregivers by offering an efficient, transparent, and user-friendly solution tailored to the unique needs of elderly care.

Through dedicated portals for both families and caregivers, ElderEase facilitates seamless communication, smart scheduling, real-time tracking, and service monitoring. The platform will automate key processes such as caregiver matching, billing, emergency alerts, and health tracking, ensuring that caregiving is not only effective but also secure and compassionate.

Ultimately, the goal is to build a scalable, reliable, and intelligent system that supports caregivers in delivering high-quality services while giving families peace of mind about their loved ones' well-being. ElderEase represents a step forward in using technology to improve the quality of life for elderly individuals and those who care for them.

1.2 Intended Audience:

1. Developers
2. Testers
3. Project Managers
4. Sales and Marketing Teams
5. Future Maintenance Teams
6. Investors

1.3 Intended Use:

1. Developers

Developers are responsible for designing, coding, and implementing the ElderEase platform based on the requirements outlined in this SRS. They will use this document to understand the system architecture, data structures, user flows, and feature specifications. The SRS provides developers with a clear and structured roadmap to build a reliable, scalable, and secure system.

2. Testers

Testers will utilize the SRS to create comprehensive test cases and verify that the software behaves as intended. This document helps them understand the expected system inputs, outputs, constraints, and error handling mechanisms. Testers play a critical role in ensuring the platform's functionality, usability, and performance meet quality standards before deployment.

3. Project Managers

Project Managers use the SRS to define the project scope, set timelines, allocate resources, and monitor progress throughout the development lifecycle. By referring to this document, they ensure that all features and requirements are addressed, milestones are met, and the project stays aligned with business and user goals. It serves as a blueprint for planning and decision-making.

4. Sales and Marketing Teams

The Sales and Marketing teams may refer to the SRS to gain a thorough understanding of ElderEase's capabilities, features, and target user groups. This helps them effectively communicate the product's value proposition to potential clients, prepare marketing materials, and align promotional strategies with the actual functionality of the platform.

5. Future Maintenance Teams

After deployment, Future Maintenance Teams will use the SRS as a reference guide for maintaining, debugging, and upgrading the system. It provides them with the necessary context on system design, data flow, and functionality, enabling smooth transitions, efficient problem-solving, and informed decision-making during future development cycles or enhancements.

6. Investors

Investors may use the SRS to evaluate the technical feasibility, scalability, and market readiness of the ElderEase platform. By understanding the system's core functionalities, target users, and innovative features, investors can assess the product's potential for commercial success and long-term impact in the elder care industry. This document also provides insights into the development approach, planned deliverables, and competitive advantages, helping investors make informed decisions regarding funding and strategic support.

1.4 Product Scope:

The ElderEase platform is a web-based software solution designed to streamline the management of in-home caregiving services for elderly individuals. The primary objective of this product is to connect family members with qualified caregivers, facilitate efficient care delivery, and provide real-time oversight through a user-friendly and data-driven system.

Multi-User Portal System

- **Family Member Portal**: Allows users to search for caregivers, schedule services, view care logs, receive emergency alerts, track billing, and monitor their elderly loved one's well-being.
- **Caregiver Portal**: Enables caregivers to manage schedules, update availability, log care activities, view patient information, and receive alerts.
- **Administrator Dashboard**: For managing user accounts, verifying caregivers, monitoring care quality, and ensuring system functionality.

Caregiver Matching and Scheduling

- Smart matching algorithm based on availability, skills, and preferences.
- Calendar and task management system to ensure organized and conflict-free scheduling.

Health Monitoring and Emergency Alerts

- Caregivers can record health updates and vital signs.
- Real-time alert system to notify family members and administrators of emergencies.

Care Logs and Activity Tracking

- Detailed daily care logs maintained by caregivers.
- Family members can access historical records and monitor care consistency.

Billing and Payment Management

- Automatically calculate costs based on hours worked and caregiver rates.
- Generate invoices and integrate with secure payment gateways.

Reporting and Insights

- Generate reports on caregiver performance, health trends, service hours, and billing history.
- Useful for families, caregivers, and administrators to make informed decisions.

User Authentication and Role-Based Access

- Secure login system with differentiated access rights for families, caregivers, and admins.
- Data privacy and protection for sensitive medical and personal information.

2. Overall Description

2.1 User Classes and Characteristics

1. Elderly Individuals
2. Family Members
3. Caregivers
4. Administrators
5. Developers and Technical Team

1. Elderly Individuals

- End recipients of caregiving services.
- Often require assistance with daily living, health monitoring, and emotional support.
- May not use the platform directly, but their care preferences, medical needs, and schedules are central to the system.

- Intended Benefit: Receive consistent, reliable, and personalized in-home care that respects their dignity and well-being.

2. Family Members

- Primary users of the Family Portal.
- Act as decision-makers and coordinators of caregiving services for their elderly loved ones.
- Use the platform to:
    - Search for and hire suitable caregivers.
    - Monitor real-time caregiving activities and health updates.
    - Receive emergency alerts and generate care reports.
    - Manage billing and track service hours.
- Intended Benefit: Peace of mind, control, and transparency over the care their loved ones receive.

3. Caregivers

- Users of the Caregiver Portal.
- Professional or part-time caregivers are responsible for delivering in-home care.

- Use the platform to:
    - Manage their schedules and tasks.
    - Log care activities and updates.
    - Track hours for accurate billing.
    - Maintain accountability and communication with families.
- Intended Benefit: A structured, efficient system for providing care and documenting their work professionally.

4. Administrators

- Oversee and manage the entire ElderEase system.
- Responsible for:
    - Managing user accounts (families, caregivers).
    - Approving caregiver profiles and qualifications.
    - Ensuring data accuracy, system security, and operational integrity.
    - Updating the system based on user feedback.

- Intended Benefit: Maintain a trustworthy, secure, and smooth-running caregiving platform.

5. Developers and Technical Team

- Responsible for **designing, building, and maintaining** the ElderEase platform.
- Work on:
    - Implementing database structures, interfaces, and backend logic.
    - Ensuring scalability, performance optimization, and security.
    - Integrating real-time tracking, scheduling, billing, and emergency systems.

- **Intended Benefit:** Gain hands-on experience in full-stack software development and build a socially impactful, user-centered solution.

2.2 User Needs

2.2.1 Family Members

- Caregiver Discovery: Families need an intuitive way to search for and select caregivers based on qualifications, availability, and preferences.
- Real-Time Monitoring: Families expect to track caregiving activities in real-time and receive emergency alerts or critical health updates.
- Health Information Access: They need access to the elderly individual's health records, care logs, and caregiver reports.
- Billing and Payments: Families require a transparent, easy-to-use system for viewing invoices, tracking service hours, and making payments.
- Communication Tools: Families expect to have communication channels for interacting with caregivers if necessary.

2.2.2 Caregivers

- Schedule Management: Caregivers need tools to view, manage, and update their daily schedules.
- Activity Logging: They require an interface to log care activities, health updates, and service hours for the elderly individuals they are assigned to.
- Profile Management: Caregivers need to manage their own profiles, including skills, availability, and work preferences.
- Performance Tracking: Caregivers expect to have access to summaries of their service records and performance history.

2.2.3 Administrators

- User Management: Administrators require access control to manage both caregiver and family member accounts.
- System Oversight: They need tools for monitoring all system activities, ensuring service quality, and maintaining data integrity.
- Billing and Reporting: Admins require functionality for reviewing billing details, generating reports, and overseeing payment processing.
- Emergency Response Management: Administrators should be able to monitor emergency alerts and coordinate responses as needed.

2.3 Operating Environment

2.3.1 Hardware Environment

- Server-Side:
  - Web server with support for PHP or Node.js runtime environments.
  - Minimum 8 GB RAM and 100 GB storage for database and application hosting.
- Client-Side:
  - Any standard desktop, laptop, or mobile device capable of running modern

web browsers.

2.3.2 Software Environment

- Database Management System:
  - MySQL (Version 8.0 or higher)
- Backend Framework:
  - Node.js with Express.js (or PHP with Laravel, based on final implementation choice)
- Frontend Framework:
  - React.js with Tailwind CSS for responsive user interfaces.

2.3.3 Network Environment

- Internet connectivity with standard HTTP/HTTPS protocols.
- Real-time features (such as caregiver tracking and alerts) will require WebSocket or similar real-time communication protocols.

2.3.4 Operating System Support

- Server OS:
  - Linux (Ubuntu 20.04 or higher) or Windows Server
- Client OS:
  - Windows, macOS, Android, and iOS (via web browsers)

2.3.5 Browser Compatibility

- Google Chrome (Latest version)
- Mozilla Firefox
- Microsoft Edge

- Safari (for iOS users)

2.4 Constraints

- Technological Constraints:
  - The system must be developed using MySQL as the database backend, as specified by the course instructor.
  - Web-based user interfaces must be compatible with commonly used browsers and devices.

- Performance Constraints:
  - The platform must support real-time data retrieval for caregiver tracking and emergency alerts.
  - The database queries need to be optimized for fast access, especially under load.

- Resource Constraints:
  - The development team consists of only two members, limiting the manpower available for rapid feature expansion.
  - Deployment will be done in a limited university project environment, not on a full-scale commercial server.

- Security Constraints:
  - Sensitive user data, including health records and billing information, must be protected with basic encryption and authentication measures.

- Time Constraints:
  - The project must be completed and fully operational within the university semester timeframe (as per the project submission deadline).

- Regulatory Constraints:
  - Since this is an academic project, full compliance with real-world health data regulations (e.g., HIPAA, GDPR) is not mandatory, but data privacy principles should still be considered.

2.5 Assumptions

The Assumptions for our system are:

- Assumes that, Families & Users are comfortable with home-care for the elderly person members instead of taking services by staying at old age Home or Hospitals.
- Assumes that, Families, Users & Caregivers have the access to high speed of internet & know to use Computer, Laptop, smartphones.
- Assumes that, Administrators have the required skills to manage all aspects of the ElderEase system for providing a smooth & better service to all the stakeholders.
- Assumes that, Caregiving tasks are trackable.
- Assumes that, Caregiving tasks are strongly confined by scheduling.
- Assumes that, Caregivers know how to maintain a well-planned & productive schedule for giving assistance to various Users.
- Assumes that, Families want to monitor the Caregiving tasks.
- Assumes that, Families understand basic English.
- Assumes that, Families can understand the real time Emergency Alert types & Alert messages included in the Alerts being sent to them.
- Assumes that, Family members will response properly after getting Emergency Alerts.
- Assumes that, Families usually trust new Caregivers.
- Assumes that, Families are agreed to pay Caregivers on mutually agreed terms.
- Assumes that, Family members know how to do online payment gateways & are familiar with the billing system of online transactions.

- Assumes that, Elderly aged persons have reliable Emergency contacts.
- Assumes that, the information provided in the SRS accurately aligns with the objectives and expectations of all the stakeholders in this ElderEase system.

3. Requirements

3.1.1 Elderly Person

As a user

Elderly Person

I want to be able to receive a personalized caregiving service totally tailored to my own needs and wants

so that I can ensure my very own well-being, while maintaining my freedom and feel supported throughout my day.

Confirmation-

- After I successfully setted up my care preferences I will receive a notification confirming my profile is updated accordingly.
- When I successfully put in a caregiver request I will be notified that my request has been enlisted .
- When a caregiver is assigned to me I will receive a confirmation of my caregiver and their profile,qualifications and schedule of tasks to be performed according to time frame.
- After completion of my task or activities by the caregiver I will receive an update on the activity to ensure my care plan is being executed properly.
- Once a caregiver logs a health update or care activity I will be notified and the information will also be available to be reviewed by my family.
- In case of emergency I will immediately receive an alert that my family and healthcare providers are notified and an emergency response is in progress.

Failures-

- If I fail to completely update every required field of my profile I will receive a notification stating which field I have failed to comply with.
- In case of caregiver not being able to follow the agreed upon terms due to unforeseen circumstances I want to be notified in explanation why the terms were not able to be followed and be reassured that the system will reschedule or assign a replacement caregiver to ensure continuity of care and that I am supported appropriately.
- If health updates aren't logged properly I will receive an error notification explaining the issue and prompting a retry to ensure immediate response.

3.1.2 Family Member

As a
Registered Family Member,

I want
To monitor the caregiving services being delivered to my elderly relative,

So that
I can ensure the caregiver is performing assigned duties, track health updates, and receive timely emergency alerts to respond appropriately when needed.

Confirmation:

By successfully logging into the platform, the Family Member can:

- Access the caregiver's profile, including qualifications, availability, and assigned caregiving tasks.
- Access real-time caregiving activity logs submitted by the assigned caregiver.
- Receive timely emergency alerts and view health updates through the Family Member dashboard.
- Navigate to a care history section to view previously submitted caregiving logs and health records.

The system shall:

- Deliver emergency alerts and health updates through the family portal in real-time.
- Present caregiving logs and summaries in a structured, accessible format.

Failure:

- If the Family Member's login fails due to incorrect username or password the system shall display a message: "Invalid username or password. Please try again."
- If the Family Member's login fails up to 3 consecutive attempts, after which the system shall display a message: "Too many failed attempts. Please wait and try again after 5 minutes."
- If the Family Member's account is inactive, unverified, or not authorized the system shall restrict access to the caregiving monitoring features and display a message: "Access denied. Please contact the Admin."
- If caregiving logs are not submitted by the caregiver, the Family Member is shown a message indicating "No updates available."
- If an emergency alert is sent but not acknowledged by the Family Member, the system may send a repeated alert after a fixed interval.

3.1.3 Caregiver

As a caregiver,
I want to view and manage my daily care schedule,
so that
I can efficiently plan and deliver care to elderly individuals.

Confirmations:

- The caregiver can select days and time slots for availability.
- The system only matches caregivers with available time slots.
- Set an appointment
- The schedule is displayed in a calendar or list format.
- Tasks for each assigned elderly individual are shown with time and priority.
- Caregivers can mark tasks as completed.
- The system automatically logs time spent per assignment.
- Notifications are sent for upcoming or overdue tasks.
- A weekly/monthly summary is available.

Failures:

- If the caregiver has no assigned tasks, a message shows: “No tasks scheduled for today.”
- If the caregivers' schedule does not match with any client shows “Match not found”
- If the system is down, the caregiver receives an error message and can retry later.
- If the caregiver tries to update availability overlapping with current assignments, the system shows a warning.
- If time data is inconsistent, a flag is shown to the caregiver and admin.
- If report generation fails, the system offers to try again later.

As a caregiver,
I want to log the care activities I perform for each patient,
so that
family members and administrators are aware of the services delivered.

Confirmations:

- The caregiver can select the elderly individual and enter details like task performed, time, notes, and vitals.
- A detailed profile is available for each patient, including medical history, medications, and special needs.
- Update health info
- A log entry is saved and timestamped.
- Send a security alert to a family member.

Failures:

    - If the internet connection fails, logs are saved locally and synced later.
- If mandatory fields are empty, the system prompts: “Please fill in all required information.”

3.1.3 Administrator

As an administrator,
I want to manage and update user profiles (both families and caregivers) through the admin dashboard,
so that
I can ensure only authorized and verified users can access the platform.

Confirmations:

- Admin can view a list of all registered users (family members, caregivers, other admins).
- Admin can approve, reject, or deactivate user accounts.
- Admin can edit user roles and permissions.
- Admin can search users by name, email, or role.

Failures:

- Admin will see an error notification if a user account fails to update.
- If a user tries to log in after deactivation, they will get an “Account Deactivated” error.

- Billing and Payments Oversight

As an administrator,
I want to
review and manage billing and payment summaries for all family users,
so that
I can ensure accurate invoicing and track pending payments for services provided.

Confirmations:

- Admin can generate monthly billing reports for all families.
- Admin can filter billing data by date range, caregiver, or family member.
- Admin can view payment status (Paid, Pending, Overdue) for each user.
- Admin can export billing reports as CSV or PDF for documentation.

Failures:

- If payment data fails to load, admin will receive a database error alert.
- If invoice generation fails, admin will get an error message with retry option.

3.2 Non Functional Requirements

3.2.1 Performance Requirements

- **Response Time:** The system should provide quick and responsive interactions for users by utilizing efficient database design, indexing, and query optimization techniques.
- **Scalability:** The system must be able to scale over time to accommodate more users, caregivers, and care data, ensuring stable operation during real-time caregiving processes, sending emergency alerts, and increasing data volume.

3.2.2 Safety Requirements

- **User Data Protection:** The system must implement strong safeguards to ensure the confidentiality and integrity of sensitive data, such as health information, family members and user identity.
- **Transaction Integrity:** In case of system interruption or failure, the platform should support mechanisms to preserve the integrity of ongoing

operations, such as billing, through recovery procedures or rollback features.

3.2.3 Security Requirements

- **User Authentication:** All users (family members, caregivers, and administrators) must log in through secure authentication mechanisms, ensuring only authorized access to the system.
- **Data Encryption:** Sensitive data, including health updates, schedules, and billing information, must be protected through secure transmission and storage, following data protection best practices.
- **Access Control:** The system should enforce role-based access control, limiting user permissions based on whether the user is a family member, caregiver, or administrator.

3.2.4 Software Quality Attributes

- **Usability:** The platform should feature an user-friendly interface tailored to the digital skill levels of family members and caregivers, enabling easy navigation and efficient task management.
- **Reliability:** The system should be consistently available, especially for critical features like real-time tracking and emergency alerts, to support dependable caregiving service.
- **Maintainability:** The architecture of the system should support ongoing updates and improvements, reflecting user feedback and evolving requirements over time.
- **Portability:** The system should be accessible across different devices (e.g. smartphones, laptops, and desktops) & Operating systems (Windows,

Linux, macOS, iOS, and Android), allowing flexible access through various browsers for all users.