Final Year Design Project System Requirements Specification

Mom N Baby SmartCare

Final Year Design Project SRS

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Mom N Baby SmartCare

Executive Summary

Mom N Baby SmartCare is a mobile application of managing health of mothers and babies. This Software Requirements Specification document describes all the requirements of the system necessary to write the application. It states the purpose of system, user characteristics and requirement identification strategy. It goes ahead to state functional requirements in detail like user registration and login, profile management, mother and baby health tracker, reminders, notifications, records with graphs, settings and logout. It also defines non-functional requirements such as usability, performance, reliability, security, availability, backup and compatibility. It has external interface requirements, use case analysis, and storyboards that explain how the user interacts with the system, system behavior and flow of the screen. The SRS is a complete and structured source of information on designing and implementation of the Mom N Baby SmartCare application.

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3.1 Requirements Analysis:

This section provides a detailed analysis of the requirements for the Mom N Baby SmartCare application. The system helps mothers take care of their own health and their babies. Users can create an account, log in, and update their profile. The app tracks health information for mother and baby. It records baby milestones and sets reminders for appointments and vaccinations. The app shows health trends in simple charts. All personal information is kept safe. The system should be easy to use, reliable, and work well on mobile devices. It also gives timely notifications to users.

3.1.1 User classes and characteristics:

Mom N Baby SmartCare app is designed for one primary user: the **Mother**. She is the central user of the system and interacts with all features shown in the use-case diagram. The table below explains the user class and its characteristics in a clear and simple way.

User Class	User Characteristics
Mother	The mother is the main user of the Mom N Baby SmartCare app. She wants a simple, organized way to take care of her health and her baby's daily needs. The app should be easy to use and help with basic tasks like signing up, logging in, and updating her profile. Every day, she relies on reminders, notifications and a clear home screen to stay organized. She also needs a simple way to record and manage health information for herself and her baby with the ability to view, update, or delete records and log out safely.

3.1.2 Requirement Identifying Technique:

Mom N Baby SmartCare uses a use case based requirement identifying technique to define system requirements. This approach helps in understanding how a mother uses the app in her daily routine and what features the system needs to support.

Use Cases:

Use cases describe the main actions performed by the mother, such as registration, login, profile management, setting reminders, receiving notifications and tracking health information for both mother and baby. The use case diagram shows these interactions clearly, while detailed use case descriptions explain each process step by step.

Storyboards:

Storyboards are used to visually show the flow of screens and user actions within the app. They explain how the mother navigates through different features like the home screen, health trackers and reminders, making the app flow easy to understand.

3.2 Functional Requirements:

The functional requirements of the Mom N Baby SmartCare system explain what the system will do. The requirements are organized by system features. Each functional requirement is uniquely identified to ensure clarity and consistency.

1. Registration:
- The system shall allow the mother to register using a username, email, and password.
- The system shall verify the email before completing registration.
- The system shall require the user to confirm the password to ensure correctness.
- The system shall display an error message for invalid or already registered email.

2. Login:
- The system shall allow the mother to log in using email and password.
- The system shall validate credentials and provide an error message for incorrect email or password.
- The system shall provide a forgot password option if login fails.

3. Forgot Password:
- The system shall allow the mother to reset the password by entering the registered email.
- The system will send an email verifying the reset request.
- The system shall allow the mother to set a new password after verification.

4. Reminder Management:

- The system shall allow the mother to add, edit, view and delete reminders.
- The system shall notify the mother on the basis of scheduled reminders.

5. Mom N Baby Profile:

- The system shall allow the mother to add, edit and view her profile and the baby's profile.
- The profile shall include mother's name, age, baby's name, and baby's date of birth.

6. Records & Graphs:

- The system shall allow the mother to add, edit, view and delete health records.
- The system shall track and display record or graphs for glucose level, blood pressure, weight, and digestion info.

7. Health Schedule:

- The system shall allow the mother to view, select and deselect health schedule.

8. Settings:

- The system shall allow the mother to change password, theme and email.
- Changing password shall require entering old password and confirming the new password.

9. Mother Health Tracker:

- The system shall allow the mother to track her glucose level, blood pressure, weight, and digestion info.
- The system shall allow adding, updating, viewing and deleting health records.

10. Baby Health Tracker:

- The system shall allow the mother to track the baby's weight, milestones, allergies, and medical records.
- The system shall allow adding, updating, viewing and deleting baby health records.

11. Notifications:

- The system shall allow the mother to receive notifications about selected health schedules.

- The mother shall be able to view and mark notifications as read.

12. Logout:

- The system shall allow the mother to log out securely from the app.

3.2.1 Functional Requirements X:

Identifier	FR-1
Title	User Registration
Requirement	The mother shall be able to register an account by providing a username, valid email address, password, and confirmed password. The system shall validate the inputs and send an email verification link upon successful submission.
Source	Project stakeholder
Rationale	Allows secure registeration of users and ensures authenticity of the registered email address.
Business Rule (if required)	One email address can be registered with only one account
Dependencies	None
Priority	High

Table 1: Function Requirements Specification

Identifier	FR-2
Title	Email Verification
Requirement	Upon registration, the system shall send a verification email to the user and shall

	activate the account only after successful email verification.
Source	Security requirements
Rationale	Ensures account security and prevents unauthorized access.
Business Rule (if required)	Verification link must expire after a defined time period.
Dependencies	FR-1
Priority	High

<div align="center">**Table 2: Function Requirements Specification**</div>

Identifier	FR-3
Title	User Login
Requirement	The registered mother shall be able to log in using a verified email and password. The system shall authenticate credentials and redirect the user to the home screen upon successful login.
Source	Verified Email
Rationale	Provides secure access to the application features.
Business Rule (if required)	Invalid credentials shall result in an error message.
Dependencies	FR-2
Priority	High

<div align="center">**Table 3: Function Requirements Specification**</div>

Identifier	FR-4
Title	Forgot Password
Requirement	The mother shall be able to reset her password by entering her registered email address. The system shall send a verification link and allow password reset after successful verification.
Source	Registered Email
Rationale	Enables account recovery in case of forgotten credentials.
Business Rule (if required)	Password reset must follow email verification.
Dependencies	FR-2
Priority	High

Table 4: Function Requirements Specification

Identifier	FR-5
Title	Manage Mother Profile
Requirement	The mother shall be able to add, view, edit, and delete her personal profile information including name, age, and basic details.
Source	Mother
Rationale	Allows personalization and accurate health record maintenance.
Dependencies	FR-3
Priority	High

Table 5: Function Requirements Specification

Identifier	FR-6
Title	Manage Baby Profile
Requirement	The mother shall be able to add, view, edit, and delete the baby's profile information including baby name and date of birth.
Source	Mother
Rationale	Enables accurate identification of baby-related health records.
Business Rule (if required)	Baby date of birth must be a valid past date.
Dependencies	FR-3
Priority	High

Table 6: Function Requirements Specification

Identifier	FR-7
Title	Mother Health Tracker
Requirement	The system shall allow the mother to add, view, update, and delete her health data including blood pressure, glucose level, weight, and digestion information.
Source	Mother
Rationale	Helps mothers monitor and maintain their health over time.
Dependencies	FR-3, FR-5
Priority	High

Table 7: Function Requirements Specification

Identifier	FR-8
Title	Baby Health Tracker
Requirement	The system shall allow the mother to add, view, update, and delete baby health data including weight, allergy information, milestone tracking, and medical records.
Source	Mother
Rationale	Supports systematic monitoring of the baby's growth and health.
Dependencies	FR-3, FR-6
Priority	High

Table 8: Function Requirements Specification

Identifier	FR-9
Title	Reminder Management
Requirement	The mother shall be able to add, edit, view, and delete reminders for medicines, feeding schedules, vaccinations, and other care activities.
Source	Mother
Rationale	Ensures timely completion of important health and care tasks.
Dependencies	FR-3
Priority	High

Table 9: Function Requirements Specification

Identifier	FR-10
Title	Records and Graphs
Requirement	The system shall display health records and generate visual graphs for mother and baby health data to show trends over time.
Source	Mother
Rationale	Helps users understand health progress through visual representation.
Dependencies	FR-7, FR-8
Priority	Medium

Table 10: Function Requirements Specification

Identifier	FR-11
Title	Health Schedule
Requirement	The system shall allow the mother to view, select, and deselect health schedules related to baby care and mother health routines.
Source	Mother
Rationale	Assists in organizing daily and periodic health activities.
Dependencies	FR-3
Priority	Medium

Table 11: Function Requirements Specification

Identifier	FR-12
Title	Notifications
Requirement	The system shall send notifications to the mother for reminders, schedule updates, and important health-related alerts.
Source	Mother
Rationale	Keeps the user informed in real time.
Dependencies	FR-9, FR-11
Priority	High

Table 12: Function Requirements Specification

Identifier	FR-13
Title	Settings Management
Requirement	The mother shall be able to manage application settings including change email, change password, and change theme. Email and password changes shall require email verification.
Source	Use case diagram
Rationale	Allows secure and personalized account management.
Dependencies	FR-2, FR-3
Priority	Medium

Table 13: Function Requirements Specification

Identifier	FR-14
Title	Logout
Requirement	The mother shall be able to securely log out of the application, and the system shall terminate the active session.
Source	Use case diagram
Rationale	Protects user data when the application is not in use.
Dependencies	FR-3
Priority	High

<p align="center">Table 14: Function Requirements Specification</p>

3.3 Non-Functional Requirements:

Mom N Baby SmartCare defines quality requirements that explain how the application will work smoothly, safely, and reliably. These requirements focus on system behavior, performance, and user experience rather than features.

Reliability:

Mom N Baby SmartCare will work reliably during normal use with very few failures. The app shall run for at least 30 days without major failure. If a failure occurs, the system will recover within 5 minutes. Health records, reminders, and profiles will be protected from loss during crashes or unexpected shutdowns. User data shall be backed up automatically once every week, ensuring at least 95% data accuracy and integrity.

Usability:

Mom N Baby SmartCare will be easy to learn and easy to use for mothers with basic mobile phone knowledge. A new user shall complete registration and login within 5 minutes. Frequent tasks, such as adding baby health information, creating reminders, or accessing records, will be completed with 4 or fewer taps. The interface shall be simple, clear, and designed to reduce user mistakes.

Performance:

Mom N Baby SmartCare will perform smoothly during normal operations. Actions such as login, data entry, viewing profiles, and opening health records shall be completed within 3 seconds under normal mobile internet conditions. The app shall run without freezing or noticeable delays during regular use.

Response Time:

Mom N Baby SmartCare will respond quickly to user actions. Opening screens, saving data, updating settings and viewing graphs shall take 2 to 3 seconds. Reminders and notifications will be delivered at the correct time in less than 1 minute.

Security:

Mom N Baby SmartCare will protect user data from unauthorized access. Only registered and logged in users shall access personal and health information. Important actions such as changing passwords or email addresses will require email verification. User data shall remain private and secure at all times.

Backup:

Mom N Baby SmartCare will automatically back up user data after 24 hours.

Availability:

Mom N Baby SmartCare will be available 99% of the time. Users shall be informed in advance if the system is temporarily unavailable.

Maintainability:

Mom N Baby SmartCare will be built in a modular way so updates, bug fixes and new features shall be added easily without affecting existing functions like health tracking and reminders.

Compatibility:

Mom N Baby SmartCare will work properly on common Android devices and shall support different screen sizes, ensuring a consistent and smooth user experience.

3.4 External Interface Requirements:

Mom N Baby SmartCare defines external interface requirements to ensure that the application communicates correctly with users and any external software, hardware, or communication services. These requirements describe how users interact with the system and how the system connects with external components.

3.4.1 User Interface Requirements:

- Mom N Baby SmartCare provides a simple, clean, and user-friendly interface designed for mothers with basic smartphone knowledge. The application follows standard mobile user interface guidelines to ensure consistency and ease of use.

- Mom N Baby SmartCare uses clear fonts, readable text size, simple icons, and meaningful button labels. The color scheme is soft and comfortable for long usage and images are relevant and easy to understand.

- Mom N Baby SmartCare supports common screen sizes and resolutions, ensuring proper layout on different Android devices. Standard navigation elements such as home, back, save and logout options are available where needed.

- Mom N Baby SmartCare displays clear messages for actions such as successful login, data saved, errors or reminders. Error messages are simple and guide users on how to fix mistakes.

- Mom N Baby SmartCare designs screen layouts in a consistent way to support future localization and easy understanding. The interface considers accessibility by using readable fonts and clear contrast for better visibility.

3.4.2 Software Interfaces:

- Mom N Baby SmartCare interacts with external software components to support its functionality. The application connects with a backend server and database to store user profiles, baby information, health records, reminders and notifications.

- Mom N Baby SmartCare runs on the Android operating system and uses standard Android libraries and services. It can be combined with notification services to provide users with reminders and alerts.

3.4.3 Hardware Interfaces:

Mom N Baby SmartCare operates on standard Android smartphones and tablets. The application uses device hardware such as touch screens for user input and internal storage for temporary data handling. Normal operation does not require any external special hardware.

3.4.4 Communication Interfaces:

- Mom N Baby SmartCare uses internet connectivity through mobile data or Wi-Fi to communicate with servers for authentication, data storage, backup and notifications.

- Mom N Baby SmartCare supports email communication for user verification, password recovery, and important system messages. Standard web and network protocols are used to ensure secure and reliable communication.

3.5 Use Case Analysis:

Mom N Baby SmartCare use case analysis explains how users interact with the system to achieve specific goals. Each use case describes the purpose, flow, and conditions of a particular system function.

Use Case #1: User Registration and Login

UC Identifier	UC1
Requirements Traceability	FR-Registration, FR-Login, FR-Email Verification
Purpose	Mom N Baby SmartCare allows a mother to create an account and log in to use the application.
Priority	High
Preconditions	User has a valid email address and internet connection.
Postconditions	User is logged in and redirected to the home screen.
Actors	Mother
Extends	Forgot Password
Includes	Verify Email
Main Success Scenario	1. Mother opens the app. 2. Mother chooses Register or Login. 3. Mother enters email and password.

	4. System verifies the details.
	5. System logs in the user and shows home screen.
Alternate Flows	User chooses Forgot Password.
Exceptions	Invalid email, wrong password, no internet.

<div align="center">Table 15: Use Case Description for Registration and Login</div>

Use Case #2: Forgot Password

Item	Description
UC Identifier	UC2
Requirements Traceability	FR-Forgot Password
Purpose	Mom N Baby SmartCare allows the user to reset a forgotten password.
Priority	High
Preconditions	User is registered and has access to email.
Postconditions	Password is successfully updated.
Actors	Mother
Extends	None
Includes	Verify Email
Main Success Scenario	1. Mother selects Forgot Password.
	2. Mother enters email.
	3. System verifies email.
	4. Mother enters new password.
	5. System updates password.
Alternate Flows	Email verification delayed.
Exceptions	Invalid email, verification failed.

<div align="center">Table 16: Use Case Description for Forgot Password</div>

Use Case #3: Manage Mom and Baby Profile

UC Identifier	UC3
Requirements Traceability	FR-Profile Management
Purpose	Mom N Baby SmartCare allows the mother to view and edit mom and baby profile details.
Priority	High
Preconditions	User is logged in.
Postconditions	Profile information is saved successfully.
Actors	Mother
Extends	None
Includes	View Profile, Edit Profile
Main Success Scenario	1. Mother opens profile section. 2. System displays mom and baby details. 3. Mother edits information. 4. System saves updated profile.
Alternate Flows	Mother only views profile.
Exceptions	Missing required data.

Table 17: Use Case Description for Manage Mom N Baby Profile

Use Case #4: Mother Health Tracking

UC Identifier	UC4
Requirements Traceability	FR-Mother Health Tracker
Purpose	Mom N Baby SmartCare allows the mother to record and track her health details.
Priority	High
Preconditions	User is logged in.
Postconditions	Health data is saved and viewable.
Actors	Mother
Extends	None
Includes	Add, View, Update and Delete Health Data
Main Success Scenario	1. Mother opens Mother Health Tracker. 2. Mother adds health details (weight, BP, glucose). 3. System saves data.
Alternate Flows	Mother edits or deletes existing data.
Exceptions	Invalid data entry.

Table 18: Use Case Description for Mother Health Tracking

Use Case #5: Baby Health Tracking

UC Identifier	UC5
Requirements Traceability	FR-Baby Health Tracker
Purpose	Mom N Baby SmartCare allows the mother to manage baby health records.
Priority	High
Preconditions	User is logged in and baby profile exists.

Postconditions	Baby health data is saved.
Actors	Mother
Extends	None
Includes	Allergy Information, Weight, Milestones, Medical Records
Main Success Scenario	1. Mother opens Baby Health Tracker. 2. Mother adds health information. 3. System saves records.
Alternate Flows	Mother updates or deletes records.
Exceptions	Missing or incorrect data.

Table 19: Use Case Description for Baby Health Tracking

Use Case #6: Reminder Management

UC Identifier	UC6
Requirements Traceability	FR-Reminders
Purpose	Mom N Baby SmartCare allows the mother to manage reminders.
Priority	Medium
Preconditions	User is logged in.
Postconditions	Reminder is saved or updated.
Actors	Mother
Extends	None
Includes	Add, Edit, Delete Reminder
Main Success Scenario	1. Mother opens reminders. 2. Mother adds reminder. 3. System schedules notification.
Alternate Flows	Reminder edited or deleted.
Exceptions	Invalid date or time.

Table 20: Use Case Description for Reminder

Use Case #7: Notifications

UC Identifier	UC7
Requirements Traceability	FR-Notifications
Purpose	Mom N Baby SmartCare notifies the mother about reminders and updates.
Priority	Medium
Preconditions	Notifications are enabled.
Postconditions	Notification is shown or marked as read.
Actors	Mother
Extends	None
Includes	View Notification
Main Success Scenario	1. System sends notification. 2. Mother views it. 3. Mother marks it as read.
Alternate Flows	Notification ignored.
Exceptions	Notification delivery failure.

Table 21: Use Case Description for Notifications

Use Case #8: Settings Management

UC Identifier	UC8
Requirements Traceability	FR-Settings
Purpose	Mom N Baby SmartCare allows the mother to change app settings.
Priority	Medium
Preconditions	User is logged in.
Postconditions	Settings are updated successfully.
Actors	Mother

Extends	None
Includes	Change Password, Change Email, Change Theme
Main Success Scenario	1. Mother opens settings. 2. Mother updates preferences. 3. System saves changes.
Alternate Flows	User cancels changes.
Exceptions	Wrong old password.

<p align="center">Table 22: Use Case Description for Settings</p>

Use Case #9: Logout

UC Identifier	UC9
Requirements Traceability	FR-Logout
Purpose	Mom N Baby SmartCare allows the mother to safely exit the application.
Priority	Low
Preconditions	User is logged in.
Postconditions	User session ends.
Actors	Mother
Extends	None
Includes	None
Main Success Scenario	1. Mother selects logout. 2. System ends session.
Alternate Flows	None
Exceptions	None

<p align="center">Table 23: Use Case Description for Logout</p>

3.6 Use Case Diagram:

Use Case Diagram will show the functionalities and use cases of application.
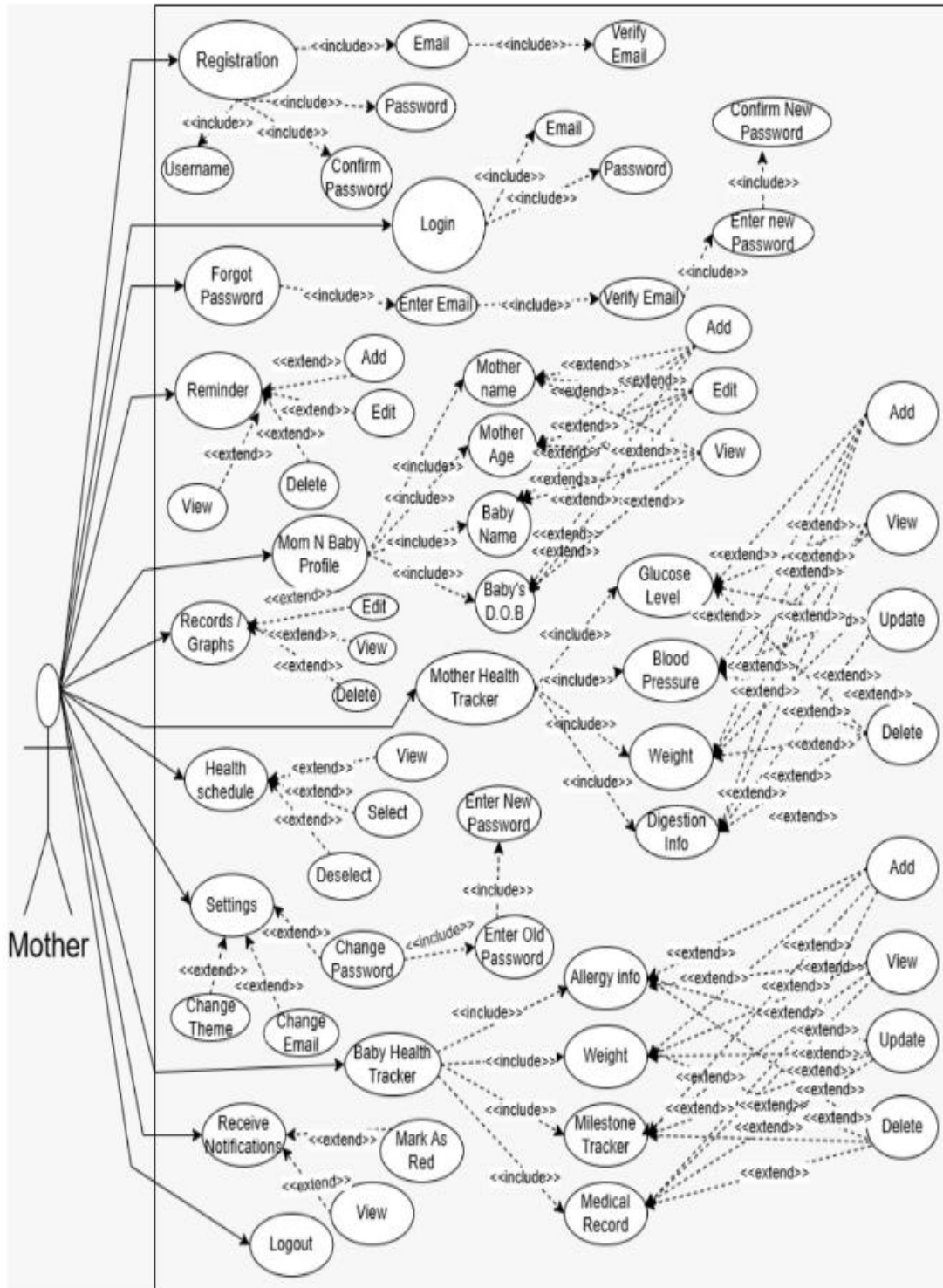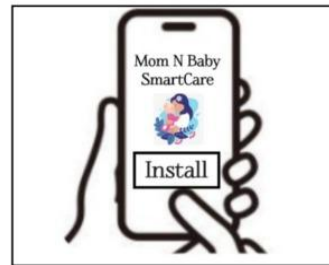

Figure 1: Use Case Diagram

3.7 Storyboards:

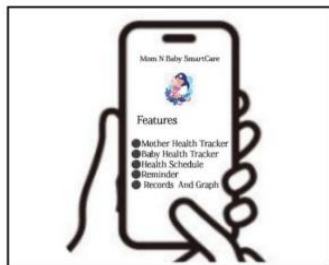## Storyboard 1

A mother feels anxious about managing her own health and her baby's daily care.	She looks for a digital solution to track health records and reminders efficiently.	She discovers Mom N Baby Smart Care, an app designed for mothers and babies.
She reads about the app features such as health tracking and reminders.	She decides to use the app and opens the app store.	She downloads and installs the application on her smartphone.

Figure 2: App Awareness & Installation

Storyboard 2

The mother launches the app for the first time.	She selects the Register option on the welcome screen.	She enters username, email, and password details.
The system verifies her email and confirms the password.	Registration is completed successfully.	She logs in using her registered credentials.

Figure 3: Registration & Login
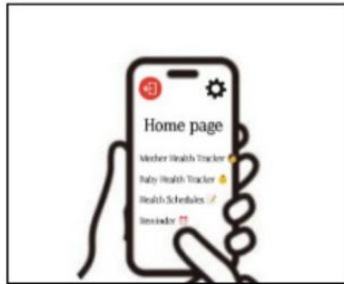
Storyboard 3

After login, the home dashboard is displayed.

She sees options for mother and baby profile, reminders, and health trackers.
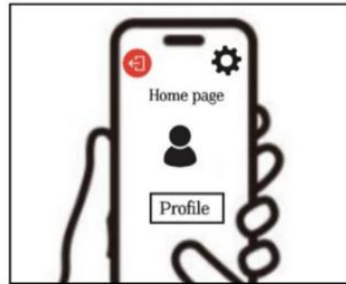
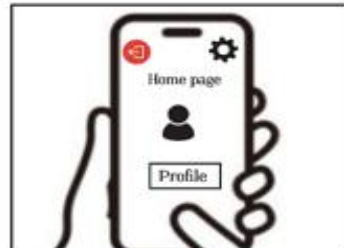The app shows a clean and user friendly interface.

She navigates through modules.

The dashboard provides quick access to health features.

She selects a profile to begin setup.

Figure 4: Home Dashboard Access

Storyboard 4

She opens the Profile section from the app.
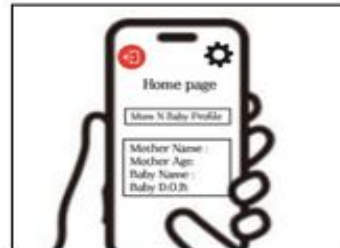
The app displays a form for Mother and Baby details.

She enters Mother's name and age.

She enters baby's name and date of birth.

The system validates all entered information and saves the profile

Mother and Baby profile appear on the home screen.

Figure 5: Mom N Baby Profile Creation

Storyboard 5

She opens the Mother Health Tracker module.	Health options (Weight, Blood pressure, glucose) are displayed.	She enters her health readings.
The system stores the health data securely.	Health records and graphs are generated.	She reviews her health progress visually.
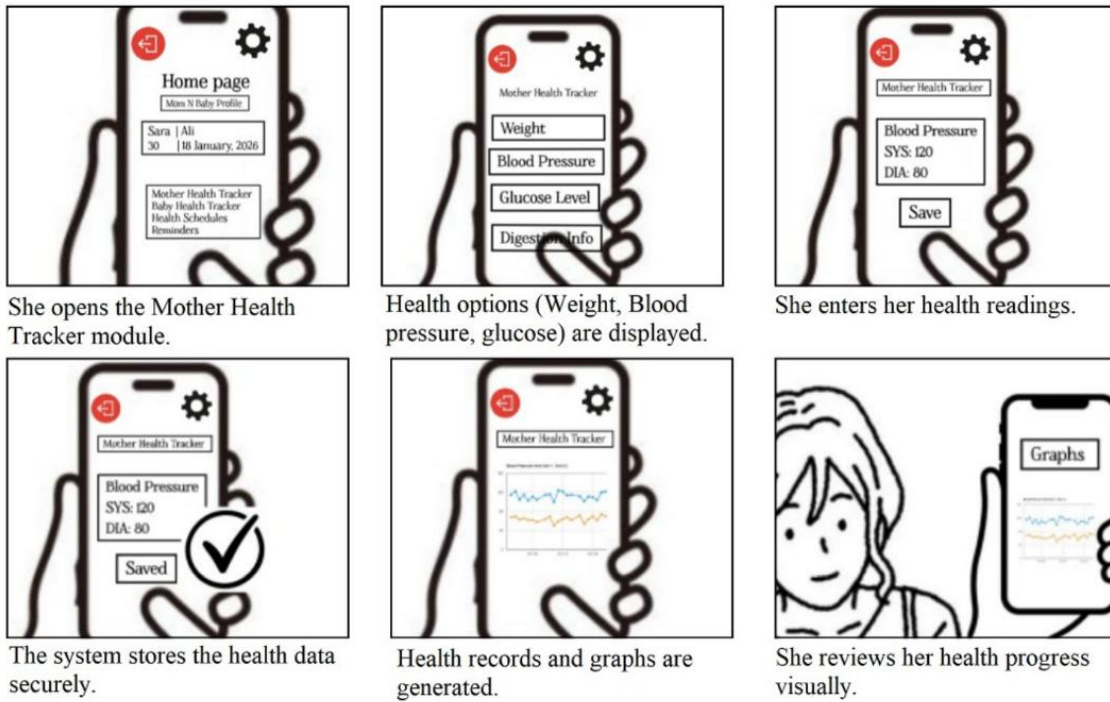
Figure 6: Mother Health Tracking

Storyboard 6

She navigates to the Baby Health Tracker.	Options for weight, allergy Info and milestones etc are shown.	She adds baby health details.
The system updates baby health records.	Health Records are saved successfully.	The baby's health history is displayed clearly.

Figure 7: Baby Health Tracking

Storyboard 7

She opens the Reminder section.

She adds reminders for medicines and checkups.

The system saves the reminder.

She receives reminders at the correct time.

She selects health schedule options.

Notifications are scheduled automatically.
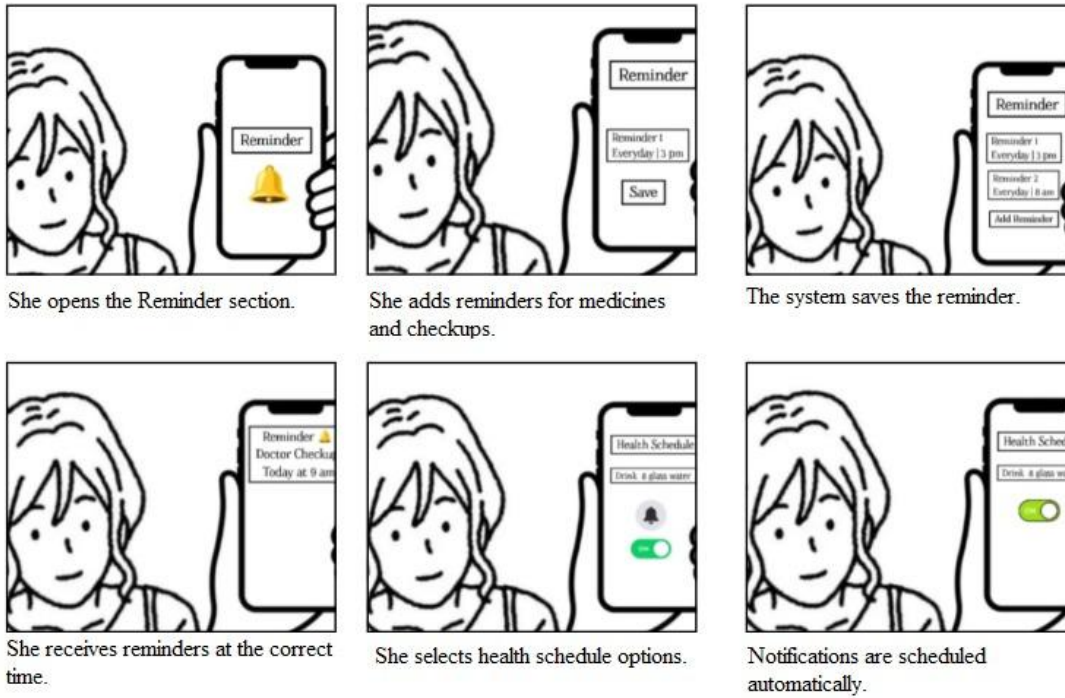
Figure 8: Reminders & Health Schedule

Storyboard 8

She accesses the Settings module.

Options for password email, and theme are displayed.

She changes her password.

She updates her email or theme preference.

The system confirms the changes.

Security settings are successfully updated.
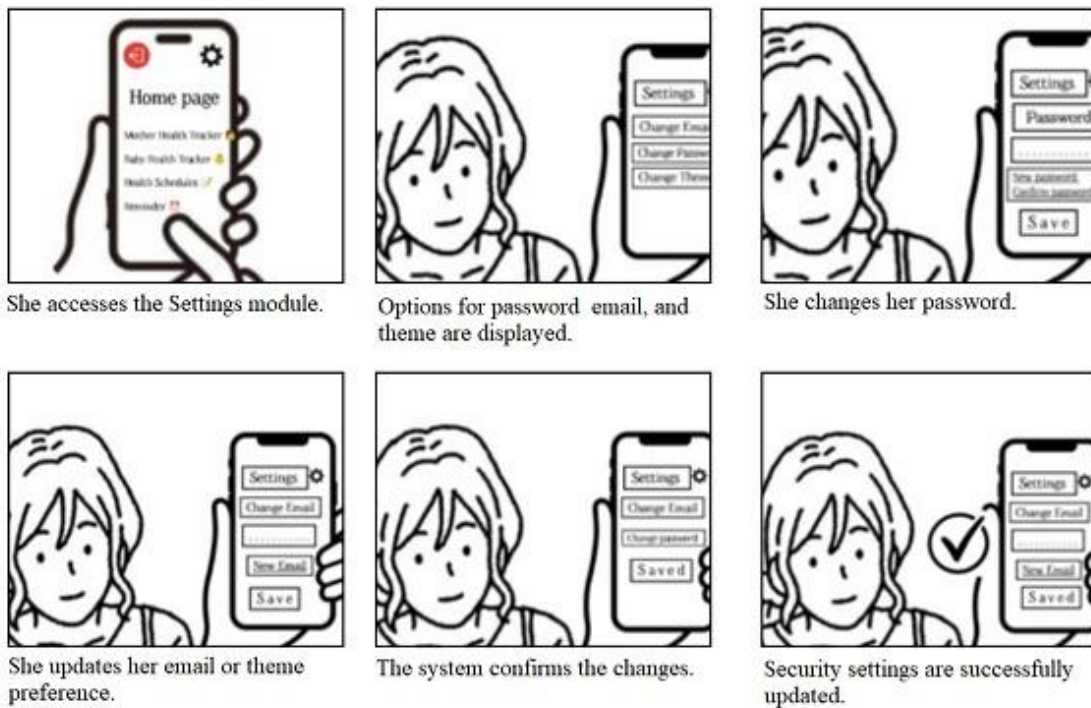
Figure 9: Settings Management

Storyboard 9

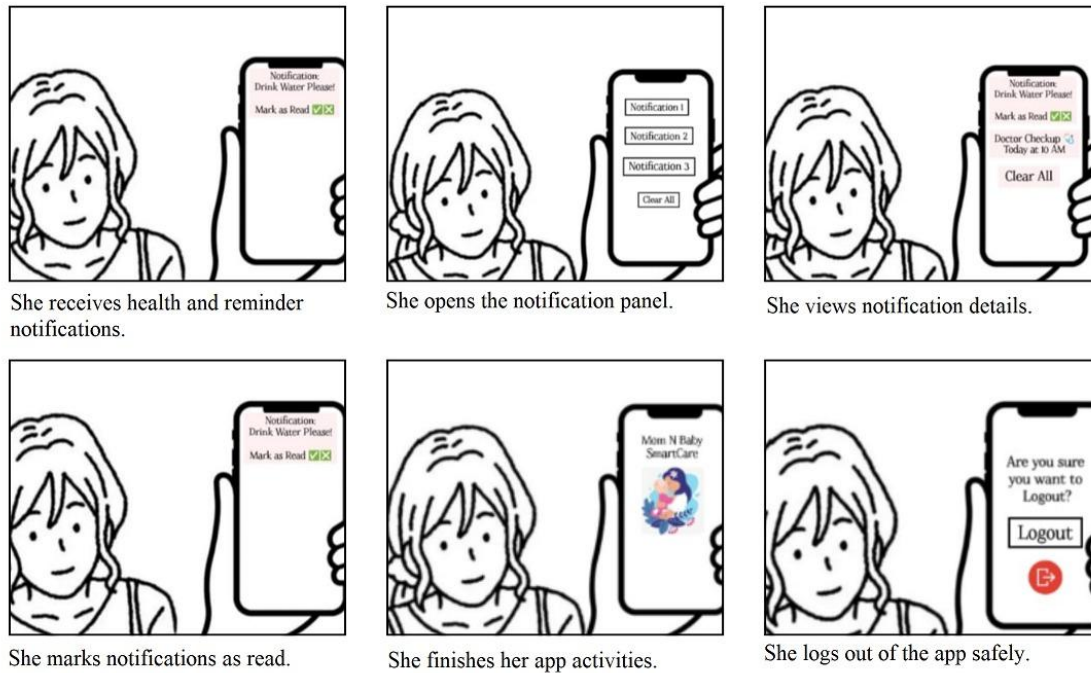Figure 10: Notifications & Logout

3.8 Summary:

Mom N Baby SmartCare SRS describes the requirements of a mobile application that supports mothers in managing their own health and their babies' health in a single platform. It explains system features such as user registration, secure login, profile management, mother and baby health tracking, reminders, notifications, records with graphs, and settings management. The document also defines non-functional requirements, including usability, performance, reliability, security, and availability, to ensure smooth and safe operation of the application. Use cases and storyboards are included to clearly show user interactions and system behavior, providing a strong foundation for developing a simple, organized, and dependable health management application for mothers and babies.

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