MEDPOCKET

technical report

Idea overview

introduction :

The Medical Health Application is a comprehensive platform designed to enhance the interaction between healthcare providers and patients. The application serves two primary actors: doctors and patients. This report outlines the key functionalities and features of the application, focusing on user interactions, data management, and health monitoring.

Actors :

1. Doctors

Doctors play a crucial role in managing patients and their medical information through the application. Key functionalities for doctors include:

Patient Management:

- - Ability to add, edit, and remove patient profiles.
- - Access to detailed medical folders for each patient.
- - Medical Folder Management:
- - Update patient records with health operations information.
- - Track patient allergies and daily medication.

2. Patients
 - Patients interact with the application to monitor their health, access medical folders, and communicate with their healthcare providers. Key functionalities for patients include:
  - - Sign-up and Login:
  - - Secure account creation for new patients.
  - - Login functionality for existing patients.
 - Health Monitoring:
  - Integration with smartwatches to monitor heart rate, blood sugar, and oxygen levels.
  - Real-time tracking of health statistics.
  - Medical Folder Access:
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  - View detailed medical folders containing health operations, allergies, and daily medication information.

Smartwatch Integration :

Smartwatch Integration
Patients benefit from smartwatch integration, allowing for continuous monitoring of vital health metrics. The smartwatch tracks the following parameters:
- Heart Rate Monitoring:
  - Provides real-time heart rate data for ongoing health assessment.
- Blood Sugar Levels:
  - Monitors blood sugar levels to assist in diabetes management.
- Oxygen Rate Monitoring:
  - Tracks oxygen levels to ensure respiratory health.

Smartwatch Components

ESP32 Microcontroller :

The ESP32 serves as the main processing unit for the smartwatch.
Responsible for managing sensor data, connectivity, and user interface.

Health Monitoring Sensors :

Heart Rate Sensor:
Measures the user's heart rate continuously.
Blood Sugar Sensor:
Monitors blood sugar levels for users with diabetes.
Oxygen Rate Sensor:
Measures oxygen levels in the blood for respiratory health.

Display :

An OLED or TFT display provides a visual interface for the user.
Displays health metrics, notifications, and user interface elements.

User Interface :

- Physical buttons or a touchscreen for user input.
- Intuitive menus for navigation and interaction.

Connectivity:

- Physical buttons or a touchscreen for user input.
- Intuitive menus for navigation and interaction.

Connectivity:

Wi-Fi:

- Allows for over-the-air updates and synchronization with the cloud.

Battery :

- A rechargeable battery powers the smartwatch.
- Battery life should be optimized for continuous monitoring.

System Flow :

Sensor Data Acquisition:

Health sensors continuously monitor heart rate, blood sugar, and oxygen levels.

Collected data is processed by the ESP32 microcontroller.

User Interface Interaction:

Users interact with the smartwatch through physical buttons or a touchscreen.

Access menus, view health metrics, and navigate the user interface.

Data Display:

Health metrics such as heart rate, blood sugar, and oxygen levels are displayed on the screen in real-time.

Historical data may be accessible through the user interface.

Connectivity:

Wi-Fi connectivity supports over-the-air updates and cloud synchronization.

Alerts and Notifications:

The smartwatch can provide alerts for abnormal health readings or remind users to take medication.

Notifications for calls or messages may also be displayed.

Battery Management:

The smartwatch optimizes power consumption to extend battery life.

Charging is done via a USB or wireless charging mechanism.

Mobile Application Integration :

The smartwatch can sync data with a dedicated mobile application.

Users can access detailed health reports, set health goals, and receive insights.

The mobile app may provide additional features such as historical data analysis and sharing health metrics with healthcare providers.

Mobile Application Components

User Authentication :

- Users can create an account or log in securely.
- Authentication ensures the privacy and security of health data

Dashboard :

- A central dashboard displays a summary of the user's health metrics.
- Quick access to vital information, such as heart rate, blood sugar, and oxygen levels.

Health Reports :

- Detailed health reports provide historical data and trends.
- Graphical representations help users understand their health progression.

Notifications :

- Users receive notifications for abnormal health readings or medication reminders.
- Customizable alert settings enhance user engagement.

Smartwatch Connectivity:

- Allows users to control smartwatch settings through the mobile app.

Medication Management :

- Users can input and track their daily medication schedule.
- Reminders for medication intake are integrated into the app.

conclusion :

The Medical Health Application is a comprehensive and user-friendly platform that facilitates effective communication between doctors and patients. By incorporating smartwatch technology, patients can actively participate in monitoring and managing their health, while doctors can efficiently oversee patient care. The application aims to improve overall health outcomes and enhance the patient-doctor relationship through seamless information exchange.