Solving for India

(Amity University Raipur)

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Project Name - MedLink

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1. Project Plan

Objectives

The objective of MedLink is to create a platform that will offer seamless scheduling, record access, personalized healthcare recommendations, and interactions with healthcare providers and will also connect medical professionals from all around. The goal is to eliminate traditional healthcare inefficiencies and provide easy booking, location-based availability, and database management. The main purpose consists of :

Connecting medical professionals: The platform would provide a way for doctors, nurses, and other medical professionals to connect with one another. This could be through a social network-like interface, where they can connect with colleagues, share information and collaborate on projects.

Making doctors available for emergency patient conditions: One of the key features of the platform would be to make doctors available for emergency patient conditions. This could involve setting up a system where doctors can be notified of emergency situations and quickly respond to them, providing medical advice or assistance as needed.

Offering news and updates on the medical industry: The platform would also provide news and updates on the medical industry. This could include information on new treatments or procedures, changes in regulations or policies, and other relevant news.

Overall, the purpose of the platform is to create a centralized hub for medical professionals to connect, collaborate, and stay up-to-date on the latest developments in their field. By providing a range of tools and resources, the platform could help improve patient outcomes, promote

knowledge-sharing and innovation, and enhance the overall quality of healthcare.

Intended Audience

The intended audience for the networking platform would be medical professionals, medical aspirants, and pharmacists in India, totaling around 2 million people.

Medical professionals would include doctors, nurses, surgeons, and other healthcare professionals who are currently practicing in India. These individuals would be the primary users of the platform, as it would provide them with a way to connect with other professionals in their field, share knowledge and resources, and collaborate on projects.

Medical aspirants would include individuals who are currently studying to become healthcare professionals, such as medical students, residents, and fellows. The patients and other users also can use the platform in order to schedule appointments, and also in the case of emergency. It happens many times that there's an emergency and doctors are not available in time. This problem is very common in India. We want to facilitate the user so that they can know who's the available doctor beforehand. For these individuals, the platform could serve as a valuable learning tool, providing access to educational resources, mentorship opportunities, and connections with experienced professionals in the field.

Pharmacists would also be an important audience for the platform, as they play a critical role in the healthcare ecosystem. By providing them with access to the latest news and updates in the medical industry, the platform could help them stay informed and up-to-date on the latest trends and developments.

Overall, the intended audience for the networking platform is a diverse group of individuals who are united by their interest in the medical industry.

By bringing together these individuals on a single platform, the aim is to foster collaboration, knowledge-sharing, and innovation in the field of healthcare, ultimately leading to better patient outcomes and a healthier society.

Scope

MedLink is a platform built using Node.js, React, and MongoDB that allows medical professionals, aspirants, and pharmacists to connect with each other. The platform will provide the following features (features include the present and future features that'll be added later on):

- A feature that allows users to search for and connect with doctors who are available for emergency patient conditions.
- News and updates about the medical industry, including the latest research, medical breakthroughs, and industry trends.
- A blogging platform that enables medical professionals to share their knowledge and experiences with others in the medical community.
- An interactive platform that facilitates discussion and collaboration between medical professionals.
- Telemedicine capabilities enable patients to have virtual consultations with healthcare providers.
- A user-friendly interface that makes it easy to navigate and find information on the platform.
- A symptom checker that will help patients assess their symptoms and determine whether they need to seek medical attention.
- Patients can schedule appointments with healthcare providers.
- It'll provide educational content on various health topics such as nutrition, exercise, and disease prevention.
- Patients can request prescription refills and receive notifications when their prescriptions are ready.
- In future, it would offer telepsychiatry services to connect patients with mental health professionals, providing access to care for those who may have difficulty accessing in-person services.

- It would offer a health marketplace where patients can purchase health products, services, and devices directly from vendors.
- In coming time, MedLink would offer a voice-enabled health assistant that allows patients to interact using voice commands, making it easier to use for those with mobility or vision impairments.

Also, many more features will be added in the future to make it a one-pack destination for health sector related needs, whether it's the patient or the medical professional.

Timeline

The project was completed in six weeks, with the following milestones:

Week 1: Requirements gathering and analysis
Week 2: Design and architecture
Week 3-4: Development
Week 5: Debugging
Week 6: Last go-through and checking for the mistake

2. Requirements Document

Introduction

The MedLink platform aims to address the challenge of accessing quality healthcare services by offering a platform that provides seamless scheduling, record access, personalized healthcare recommendations, and interactions with healthcare providers. This document outlines the functional and non-functional requirements for the platform, as well as the data requirements and user classes as well.

Functional Requirements

User Management

The platform should provide the following user management features:

- User registration and login
- User profile management
- User authentication and authorization
- User access control to health records
- User feedback and ratings

Booking Management

The platform should provide the following booking management features:

- Scheduling appointments with healthcare providers
- Real-time availability of healthcare providers
- Location-based search for healthcare providers
- Notification of appointment reminders
- Cancellation and rescheduling of appointments

Record Access

The platform should provide the following record access features:

- Secure and authorized access to health records
- Real-time access to health records

- Access to patient history and records of healthcare providers

Healthcare Recommendations

The platform should provide the following healthcare recommendation features:

- Personalized healthcare recommendations based on user data
- Automated health checkups and reminders

and many more….

Non-functional Requirements

Performance

The platform should provide a fast and responsive user interface with minimal latency. The platform should handle a large number of users and healthcare providers with no performance degradation.

Security

The platform should provide secure and encrypted communication between users, healthcare providers, and the platform. The platform should comply with industry standards for data privacy and security.

Usability

The platform should provide a user-friendly and intuitive user interface with clear and concise information. The platform should provide accessibility for users with disabilities.

Compatibility

The platform should be compatible with different devices and platforms, including desktops, laptops, tablets, and smartphones. The platform should be compatible with different web browsers and operating systems.

Google Cloud Platform and AMD instances

Medlink will employ AMD instances on GCP to meet its computing demands, whether it's reading the most recent healthcare news or

engaging with healthcare specialists. The instances will be prepared to run algorithms for data analytics and machine learning. GCP will also supply the cloud-based services infrastructure for Medlink, guaranteeing high availability and dependability for its consumers.
Overall, Medlink will be able to provide its users with faster and more accurate medical suggestions because of the deployment of AMD instances on GCP.

Data Requirements

Data Models

The platform should store the following data:
User data, including personal information, health history, and preferences
Healthcare provider data, including professional information and availability
Health record data, including diagnosis, treatments, and medications

User Classes and characteristics

While there are numerous networking platforms available, they do not cater specifically to the requirements of the medical profession. Therefore, medical professionals require a platform that serves the purpose of networking and provides useful information relevant to the medical industry.

This highlights the significance of having a specialized networking platform for medical professionals. Such a platform could provide access to a range of resources, including the latest medical research, best practices, and other relevant information. By accessing these resources, medical professionals would be better equipped to provide top-quality care to their patients.

Overall, the statement emphasizes the importance of considering the unique needs of medical professionals when developing networking

platforms. Doing so will enable creating a platform that is not only beneficial for networking but also supports the continuous professional development of medical professionals.

It'll cater to the needs of the patients also by allowing them to check symptoms, shop for health supplies, schedule appointments, consult doctors, get Electronic prescriptions and most importantly the emergency patient condition feature.

Conclusion

This requirements document outlines the functional and non-functional requirements, and the user classes for the MedLink platform. These requirements will guide the design, development, and testing of the platform to ensure that it meets the needs of the users and healthcare providers while providing a seamless user experience.

3. Business Model

Revenue Generation

These are the revenue models that would apply to MedLink:

Subscription or Membership Model: Users will have to pay a monthly or yearly fee to access premium features such as personalized health recommendations, exclusive content, etc..

Transaction Fees: MedLink will charge transaction fees on purchases made through the platform. For example, if a user books a telemedicine consultation, personalized health coaching, or online therapy session with a doctor through MedLink, the platform will take a percentage of the consultation fee.

Advertisements and Sponsorships: MedLink can partner with health-related companies to promote their products or services to its user base. This revenue model would require MedLink to have a substantial user base and offer advertisers a targeted audience for their products or services and can be implemented.

Partnerships with Health Insurance Companies: MedLink will partner with health insurance companies to offer its platform as a value-added service to their members. The insurance companies would pay MedLink for access to its platform, and their members would receive discounted or free access to the platform.

Affiliate Marketing: MedLink will promote health-related products or services through affiliate marketing. If a user clicks on an affiliate link and makes a purchase, MedLink would earn a commission on the sale.

Data Licensing: MedLink can sell anonymized user data to health researchers or pharmaceutical companies.

4. Test Plan

Introduction

The purpose of this test plan is to ensure that the MedLink platform is reliable, efficient, and provides a positive user experience. This plan outlines the testing process, test cases, and test scenarios for the platform.

Testing Process

The testing process for MedLink consists of the following phases:

- Test Planning
- Test Design
- Test Execution
- Test Reporting

Test Planning

In this phase, the testing objectives and scope are defined. The test plan is created, which outlines the testing process, test cases, and test scenarios.

Test Design

In this phase, the test cases and test scenarios are designed. The test cases are created based on the requirements and design document for the platform.

Test Execution

In this phase, the test cases are executed. The platform is tested to ensure that it meets the requirements and provides a positive user experience.

Test Reporting

In this phase, the test results are documented. Any defects or issues are reported, and the testing process is evaluated.

Test Cases

The test cases for MedLink are as follows:

User Management

Test case: User Registration
Test scenario: User provides valid information and is able to register successfully.
Expected result: User is registered and can login to the platform.

Test case: User Login
Test scenario: User provides valid login credentials and is able to login successfully.
Expected result: User is logged in and can access the platform.

Test case: User Profile Update
Test scenario: User updates their profile information and saves the changes.
Expected result: User profile information is updated and can be viewed on the profile page.

Booking Management

Test case: Healthcare Provider Search
Test scenario: User searches for healthcare providers based on location and specialty.
Expected result: Healthcare providers are displayed based on the search criteria.

Test case: Booking Appointment
Test scenario: User selects a healthcare provider and books an appointment.

Expected result: Appointment is booked and the user receives a confirmation message.

Test case: Appointment Update

Test scenario: User updates the appointment details and saves the changes.
Expected result: Appointment details are updated and can be viewed on the booking page.

Record Access

Test case: Health Record Access
Test scenario: User accesses their health record information.
Expected result: Health record information is displayed.

Test case: Health Record Update
Test scenario: User updates their health record information and saves the changes.
Expected result: Health record information is updated and can be viewed on the record access page.

Healthcare Recommendations

Test case: Health Checkup Reminder
Test scenario: User sets a health checkup reminder.
Expected result: Reminder is set and user receives a notification.

Test case: Personalized Healthcare Recommendations
Test scenario: User views personalized healthcare recommendations.
Expected result: Personalized recommendations are displayed based on user data.

Conclusion

This test plan outlines the testing process, test cases, and test scenarios for the MedLink platform. The test cases cover user management, booking management, record access, and healthcare recommendations. The testing process consists of four phases: test planning, test design, test execution, and test reporting. The goal is to ensure that the platform is reliable, efficient, and provides a positive user experience

5. User Manual

Introduction

Welcome to MedLink, this user manual will guide you through the process of using the platform to access quality healthcare services.

Getting Started (For patients)

To get started with MedLink, follow these steps:

- Register for an account on the MedLink platform as a patient(Select patient as your role).
- Login to the platform using your email and password.
- Update your user profile information, including your personal details and health information.
- Search for healthcare providers based on location and specialty.
- Book an appointment with your preferred healthcare provider.

User Profile

Your user profile is where you can update your personal information and health information. To update your user profile, follow these steps:

- Click on your profile picture in the top right corner of the screen.
- Select "Profile" from the dropdown menu.
- Update your personal information, including your name, email address, and phone number.
- Update your health information, including any medical conditions and medications you are taking.
- Click "Save" to save your changes.

Booking Management

Booking an appointment with a healthcare provider is easy with MedLink. To book an appointment, follow these steps:

- Click on "Book Appointment" on the home screen.

- Search for healthcare providers based on location and specialty.
- Select your preferred healthcare provider.
- Choose an available date and time for your appointment.
- Confirm your appointment details.
- Click "Book Appointment" to confirm your appointment.

Record Access

Accessing your health record information is easy with MedLink. To access your health record, follow these steps:

- Click on "My Records" on the home screen.
- Select the type of record you want to access, such as medical history or test results.
- Your record information will be displayed.

Healthcare Recommendations

MedLink provides personalized healthcare recommendations based on your health information. To view your healthcare recommendations, follow these steps:

- Click on "Recommendations" on the home screen.
- Your personalized recommendations will be displayed.

Conclusion

This user manual has provided an overview of the MedLink platform and how to use it to access quality healthcare services. By following these simple steps, you can easily manage your healthcare needs and interact with healthcare providers on the platform

6. Maintenance Manual

System Requirements

To maintain the MedLink platform, you will need the following system requirements:

- A computer or server with a modern web browser installed
- An internet connection with sufficient bandwidth

Maintenance Procedures

The following maintenance procedures should be performed regularly to ensure the optimal performance of the MedLink platform:

Software Updates

MedLink uses Node.js, React, and MongoDB technologies. It is important to keep these technologies up to date to ensure the platform is running on the latest versions of the software.

- Check for software updates for Node.js, React, and MongoDB.
- Install the updates as recommended by the software providers.
- Test the platform to ensure it is functioning properly after the updates have been installed.

Database Management

MedLink uses MongoDB as its database management system. It is important to maintain the database regularly to ensure it is running efficiently and to prevent data loss.

- Perform regular backups of the MedLink database.
- Monitor the size of the database and take steps to optimize its performance.

- Perform regular maintenance tasks such as index optimization and database repair.

Security

MedLink stores sensitive healthcare information, so it is important to maintain strong security measures to protect user data.

- Regularly review and update security measures such as firewalls, antivirus software, and intrusion detection systems.
- Keep up to date with the latest security threats and vulnerabilities.
- Regularly test the platform for vulnerabilities using penetration testing tools.

Conclusion

This maintenance manual has provided an overview of the procedures required to maintain the MedLink platform to ensure its optimal performance and user experience. By following these maintenance procedures, you can ensure that the platform is running smoothly and securely for all users