AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH

Assignment Title:	HealthSync Hub		
Assignment No:	01	Date of Submission:	7 November 2013
Course Title:	SOFTWARE ENGINEERING		
Course Code:	CSC3112	Section:	J
Semester:	Spring 2023-24	Course Teacher:	TONNY SHEKHA KAR

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Project Title: *HealthSync Hub*

Problem Statement:

Nowadays, most of us lead very busy lives. On weekends, we seek rest, making it challenging to visit the doctor, undergo tests at diagnostic centers, and revisit the doctor for updated prescriptions. Doctors also face challenges such as not knowing a patient's medical history, including past medications and tests. This lack of information consumes time and prevents us from prioritizing our health. As a result, minor ailments can develop into serious conditions. Additionally, we may forget medication schedules and fail to track physical activity and calorie burning, as recommended by doctors. To address these issues, we introduce HealthSync Hub, a software solution. This platform features an AI-based chat for users to describe their symptoms and receive preliminary advice and first aid suggestions. HealthSync Hub also analyzes test reports, recommends suitable doctors, and facilitates online and offline appointment bookings. It stores all treatment backgrounds, making it easier for doctors to access relevant information during consultations. Doctors can prescribe medication through the software, set medication reminders, and provide exercise and calorie burn recommendations. Users can also request home sample collection from diagnostic centers through the app. Once reports are ready, they are sent home and shared digitally with the designated doctor, with the patient's permission. This approach saves time and streamlines healthcare management for users.

Literature Review:

Medical software has become an increasingly critical component of health care [1]. Artificial intelligence (AI), particularly its subset Machine learning (ML), has the potential to improve health care systems worldwide, for example, by optimizing workflows in hospitals, providing more accurate diagnoses, and bringing better medical treatments to patients [2]. Some AI/ML-based SaMD have already received marketing authorization in the U.S., including IDx-DR in 2018, the first AI/ML diagnostic that provides a screening decision for the eye disease diabetic retinopathy, which its maker claims are the "first ever autonomous AI system cleared by the FDA to provide a diagnostic decision [3, 4]. Numerous medical software applications can now help with tasks ranging from information and time management to clinical decision-making at the point of care [5]. But in the perspective, this is very rear case of use software in our healthcare.

Sometimes all prescribed medicines are not available in local Pharmacies therefore people need to go to other areas to buy the medicines. It is very time consuming, and people need to spend money as well for this. In our country, traffic jams are a very big problem. People waste longer time on the road due to traffic jams. Here most of the pharmacies are closed at nighttime but sometimes in an emergency medicine is very essential [6]. Addressing these issues requires innovative solutions that streamline healthcare management and enhance accessibility for all individuals. By leveraging advanced technologies and tailored features, such as medication tracking and telemedicine capabilities, new software solutions have the potential to bridge gaps in healthcare delivery and improve patient outcomes.

Functionalities:

1. **AI-Based Symptom Description and Advice:**
   - Users can describe symptoms through an AI-based chat interface.
   - HealthSync Hub provides preliminary advice and first aid suggestions based on the symptoms described.

2. **Test Report Analysis:**
   - The platform analyzes uploaded test reports, offering insights and recommendations based on the results.

3. **Doctor Recommendations:**
   - HealthSync Hub recommends suitable doctors based on user symptoms and medical history.
   - Users can access information about doctors' specialties, ratings, and availability.

4. **Appointment Booking:**
   - Users can seamlessly schedule doctor appointments online or offline through the platform.

5. **Medical History Storage:**
   - HealthSync Hub securely stores users' treatment backgrounds and medical history, facilitating comprehensive consultations.

6. **Prescription Management:**
   - Doctors can prescribe medication directly through the platform.
   - Users receive medication reminders and dosage instructions to ensure adherence.

7. **Exercise and Calorie Burn Recommendations:**
   - HealthSync Hub provides personalized exercise and calorie burn recommendations.
   - Users receive notifications and progress tracking features to monitor fitness goals.

8. **Home Sample Collection:**
   - Users can request home sample collection for diagnostic tests.
   - Reports are sent digitally to designated doctors for review.

9. **Secure Data Sharing:**
   - The platform ensures secure data sharing between users and healthcare providers.
   - Users control data privacy and can grant permission for sharing reports with designated doctors.

10. **User-Friendly Interface:**
    - Intuitive UI allows easy navigation and interaction via mobile devices and desktop computers.

11. **Emergency Medicine Access:**
    - Users can access essential medication information and request urgent assistance during emergencies.

12. **Online Diagnostic Test Requests and Report Retrieval:**
    - Users can request diagnostic tests and access test reports online.
    - Reports are securely stored and easily shared with healthcare providers.

13. **Report Sharing and Doctor Review:**
    - Users can digitally share diagnostic test reports with designated doctors.
    - Doctors review reports, provide updates, and adjust treatment plans directly through the platform.

Target User:

1. **Busy Professionals:** HealthSync Hub streamlines healthcare management, allowing busy professionals to schedule appointments, track medications, and access medical records conveniently via their mobile devices. This eliminates the need for time-consuming in-person visits and reduces scheduling conflicts.

2. **Chronic Disease Patients:** For individuals managing chronic conditions, HealthSync Hub provides medication reminders, tracks symptoms, and facilitates communication with healthcare providers. This ensures adherence to treatment plans and enables timely intervention, improving overall health outcomes.

3. **Elderly Population:** HealthSync Hub addresses the challenges faced by the elderly by offering easy-to-use interfaces, medication reminders, and appointment scheduling assistance. Additionally, the platform's ability to share medical information with caregivers ensures seniors receive timely support and assistance when needed.

4. **Family Caregivers:** Family caregivers benefit from HealthSync Hub's features by having access to their loved ones' medical records, appointment schedules, and medication adherence data. This facilitates better coordination of care and enables caregivers to provide support remotely.

5. **Technology-Proficient Users:** HealthSync Hub empowers tech-savvy users by providing a centralized platform for managing their health data, accessing medical resources, and communicating with healthcare providers. The platform's intuitive design and interactive features enhance user engagement and promote active participation in healthcare decision-making.

Conclusion:

HealthSync Hub revolutionizes healthcare management by providing a comprehensive solution for diverse needs. With features like AI-based symptom analysis, test report examination, doctor recommendations, appointment booking, and medication management, it addresses challenges faced by various user groups. By streamlining communication, facilitating secure data sharing, and offering tailored features for medication adherence and appointment scheduling, HealthSync Hub promotes holistic health management. It empowers users to take proactive steps towards well-being, transcending age, lifestyle, and technological proficiency. As technology reshapes healthcare, HealthSync Hub exemplifies innovation, enhancing care quality and promoting patient autonomy. It represents a new era of accessible healthcare, empowering individuals to navigate their health journeys confidently and effortlessly.

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