Lifescope Health Management System

Project Title: Lifescope Health Management System

Internship Program: Galgotias University Internship Program

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Project Link: http://Lifescope-env.eba-jrxg3p4c.ap-south-1.elasticbeanstalk.com

1. Project Summary:

The Lifescope Health Management System is a web-based platform developed during an internship with Galgotias University. It enables real-time health monitoring for patients by allowing them to input critical health data like blood pressure and symptoms. The system sends automatic notifications to physicians when abnormal health data is detected, who can then prescribe medications, reviewed by pharmacists before reaching the patient. The project also proposes future integration of wearable devices to automate patient data collection and communication.

3. Introduction

The healthcare industry faces challenges in real-time monitoring of patient health, which often relies on manual reporting. This can lead to delayed diagnoses and treatments, especially in cases of critical health issues like high blood pressure. Lifescope aims to automate the process of health data monitoring and improve communication between patients, physicians, and pharmacists.

The Lifescope system provides an easy-to-use platform where patients can enter their health data, triggering real-time notifications to healthcare providers. This solution aims to ensure timely intervention by healthcare providers.

4. Internship Requirements

Internship Program: Galgotias University, Software Engineering Internship.

Project Timeline: July 2024 – August 2024.

Technologies Required: HTML, CSS, JavaScript (frontend), Node.js, MongoDB, AWS, GitHub

Project Objective: Develop a scalable web application that allows patients to submit health data, automate notifications to physicians, and ensure the timely prescription of medications through pharmacist validation.

5. Problem Statement

Current healthcare systems lack real-time patient data monitoring, leading to potential delays in critical diagnoses and treatments. Manual data entry by patients can be error-prone and time-consuming, especially for continuous health conditions like high blood pressure. Physicians may not always be immediately alerted to deteriorating patient conditions, which can affect timely medical intervention.

6. Proposed Solution

The Lifescope Health Management System automates the patient data reporting process, particularly for patients suffering from chronic conditions like high blood pressure. When a patient enters data exceeding certain health thresholds (e.g., a high blood pressure reading), the system sends real-time alerts to the physician.

Future Automation: The Lifescope system will integrate wearable health-monitoring devices like watches that automatically measure vital statistics such as blood pressure. These devices will feed data directly into the system, ensuring the physician is alerted when critical levels are detected without manual input from the patient.

7. System Architecture

Patient Section:

Patients can enter health data such as blood pressure, symptoms, and medical history via a web form.

The system automatically analyzes the data and generates alerts based on predefined thresholds.

Physician Section:

Physicians receive notifications when patient data crosses critical levels, allowing them to intervene quickly.

The physician can prescribe medications based on the patient's condition.

Pharmacist Section:

Pharmacists verify and validate the physician's prescription before it is given to the patient.

This step ensures that prescriptions comply with medical standards and are appropriate for the patient's condition.

8. Technology Stack

Frontend:

HTML/CSS: Used for creating structured and styled web pages.

JavaScript: Adds dynamic functionality and interactivity to the website.

Backend:

Node.js: Used to handle the server-side operations and manage data flow between the system components.

MongoDB: NoSQL database used to store patient, physician, and pharmacist data.

GitHub: Used for version control, ensuring that project development is streamlined and trackable.

AWS: For hosting and managing cloud-based services, ensuring scalability and performance of the Lifescope platform.

9. **Use Case Scenarios**

Scenario 1: High Blood Pressure Alert

A patient suffering from hypertension logs into Lifescope and submits their blood pressure reading.

If the reading exceeds the critical threshold, the system triggers an immediate alert to the physician.

The physician reviews the patient's records and prescribes medication based on the current condition.

The pharmacist reviews the prescription, and upon approval, the medication is provided to the patient.

Scenario 2: Future Wearable Device Integration

A patient wears a smartwatch that continuously monitors blood pressure.

The watch automatically sends readings to the Lifescope system.

If the data reaches a dangerous level, the system sends an automatic alert to the physician.

The physician receives real-time updates and can respond accordingly without waiting for manual input from the patient.

10. **Conclusion and Future Work**

The Lifescope Health Management System offers a scalable and automated solution to healthcare challenges by streamlining patient data entry, real-time notifications, and a secure medication workflow. In the future, integration with wearable devices will further automate the process, allowing physicians to monitor patients continuously without manual intervention. This project has the potential to improve healthcare delivery, providing quicker, more accurate

medical responses.

Future work includes:

Full integration with wearable health-monitoring devices.

Expansion of the system to handle other health parameters such as heart rate and blood glucose levels.

11. **Acknowledgements**

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