

Smart And Effective Medical Certificate

Nayana V¹, Bhavya B M²

PG Scholar, Department of MCA, PES College of Engineering, Mandya, Karnataka, India¹

Assistant Professor, Department of MCA, PES College of Engineering, Mandya, Karnataka, India²

Abstract: A medical certificate, often known as a doctor's certificate, is a document attesting to the findings of a patient's medical examination that is prepared by a doctor or another medically competent health care professional. It can be used as proof of a medical condition or as a sick note or fit note, which indicates that an employee is not well enough to work. Sometimes you need a medical certificate for taxation, legal procedures, insurance claims, or to receive specific health benefits from your work. Medical certifications are used to show that an activity is eligible, such parking for the disabled. Medical certifications can also be used to explain a person's condition, like blindness. To attest that a person is clear of communicable diseases, drug addiction, mental illness, or other health concerns, medical certificates are frequently utilized. When submitting an application for something, such an eye exam to obtain a driver's license, health requirements are frequently necessary. At times, medical requirements are self-reported by the applicant in a self-evaluation, without the assistance of a physician or access to their medical history. Certain jobs have specific health requirements or require a medical history. One type of fraud is the falsification of a medical certificate. Jurisdictions have different laws regarding the fabrication or forging of medical certificates; however, those who use fake credentials risk legal trouble as well as health risks. There have been arguments about whether or not an employee can be fired for providing a fake medical certificate.

Keywords: AWS S3 Integration, Cloud Deployment, PDF Generation, Encryption and Decryption.

I. INTRODUCTION

A health record serves as a crucial piece of evidence, carrying immense weight and importance. It serves as a formal record of an individual's health status, which is essential in various contexts, such as educational enrollment, job applications, and legal proceedings. This official document, issued by healthcare professionals like doctors or certified practitioners, attests to a person's fitness or unfitness based on a thorough medical examination. Healthcare providers are bound by ethical and legal obligations to provide an accurate and truthful assessment, as any misrepresentation or falsification can result in severe consequences for both the issuer and the recipient.

Medical documents can take various forms, from general health assessments to more specialized ones related to fitness or illness. General health certificates typically confirm that a person does not have contagious diseases or severe medical conditions. Fitness certificates declare that an individual is physically capable of engaging in a particular activity, job, or sport. These medical documents are vital, as they are issued by certified healthcare providers, affirming a person's health status. Physicians, registered doctors, and other recognized medical professionals typically have the authority to issue these certificates. The authenticity and legitimacy of medical certificates are paramount, with many incorporating security measures or verification methods to prevent fraudulent use. Attempting to use forged or falsified medical certificates can result in serious legal consequences.

II. LITERATURE SURVEY

The proposed framework leverages the decentralized and secure features of blockchain technology to safeguard the sensitive health data of IoT-connected patients. By harnessing the distributed ledger, this architecture ensures the confidentiality and integrity of medical information, while enabling seamless data exchange within the healthcare ecosystem. The proposed architecture generates, and maintains medical certificates securely, maintains transparency, and enhances performance. The performance evaluation of the proposed architecture is measured based on various parameters, such as transaction latency, throughput, processing time, and computation time, for medical certificates. The proposed application helps to prevent fraud by issuing and maintaining user's medical certificates, such as birth, death, and sick leaves.[1]

In the health care sector, different applications developed using blockchain technology. The proposed system is for medical certificates to maintain in blockchain purpose issued by the health care centers.

This framework implementation supports public blockchain, which reduces fraud in holds medical certifications like birth, death, sick etc. Only Registered hospitals will be allowed to authorize the medical certificates of users or patients. Every medical certificate needs to approve by a concerned authority from the hospital. Whether it may be birth or death or sick leave purpose certificate. Moreover that certificate needs to get approval from the central regulatory authority after verifying all the user or patient records. [2]

Research studies have examined the efficient use of blockchain in healthcare. Blockchain can add value in key areas like electronic medical records management and privacy protection. The MedRec project demonstrates a decentralized blockchain-based approach for handling electronic health records, providing a case study on blockchain's potential in healthcare. Additionally, MedShare offers a trustless method for sharing clinical data among various providers using blockchain. The research community has thus identified distinct ways to securely access records through blockchain technology. [3]

The medical records of patients are considered highly sensitive, and there is a pressing need to safeguard this information securely. To address this concern, the storage, sharing, and management of medical records can be carried out through secure methods. Several mechanisms, such as authentication schemes, have been proposed to meet the requirements of efficient and secure access, manageability, and other safety needs for medical reports. These solutions have been useful in providing various protection necessities under preferred healthcare scenarios. However, the current healthcare technology is no longer sufficient, as patients have been exploited by different entities without their consent. Therefore, it is crucial to explore security solutions based on blockchain-based healthcare approaches. [4]

III. METHODOLOGY

The proposed system employs the following methodology:

- **Requirement Analysis**

Description: Gather and analyze the requirements for the medical certificate automation system, including user roles (Admin, Head Staff, Doctor, Employee, Candidate) and their respective functionalities.

- **Project Setup**

Set up the development environment using Visual Studio for ASP.NET MVC project. Install necessary packages including AWS SDK for .NET.

- **Database Design**

Design the database schema to store user information, medical certificates, job applications, and other relevant data. Use SQL Server or any other relational database.

- **User Authentication and Authorization**

Implement user registration and login functionality using ASP.NET Identity. Define roles and permissions for Admin, Head Staff, Doctor, Employee and Candidate.

- **Medical Certificate Generation**

Develop functionality for generating medical certificates in PDF format.

- **AWS S3 Integration**

Integrate AWS S3 for storing and retrieving medical certificates. Implement file upload and download functionality with encryption and decryption.

- **Testing**

Conduct unit testing, integration testing, and system testing to ensure the application functions correctly. Write test cases and automate testing where possible.

- **Deployment**

Publish the application on a web-based platform or cloud environment. Adjust the required configurations for database linkage, AWS tools, and website domain.

- **Maintenance**

Monitor the application for performance and security issues. Perform regular updates and maintenance to ensure smooth operation.

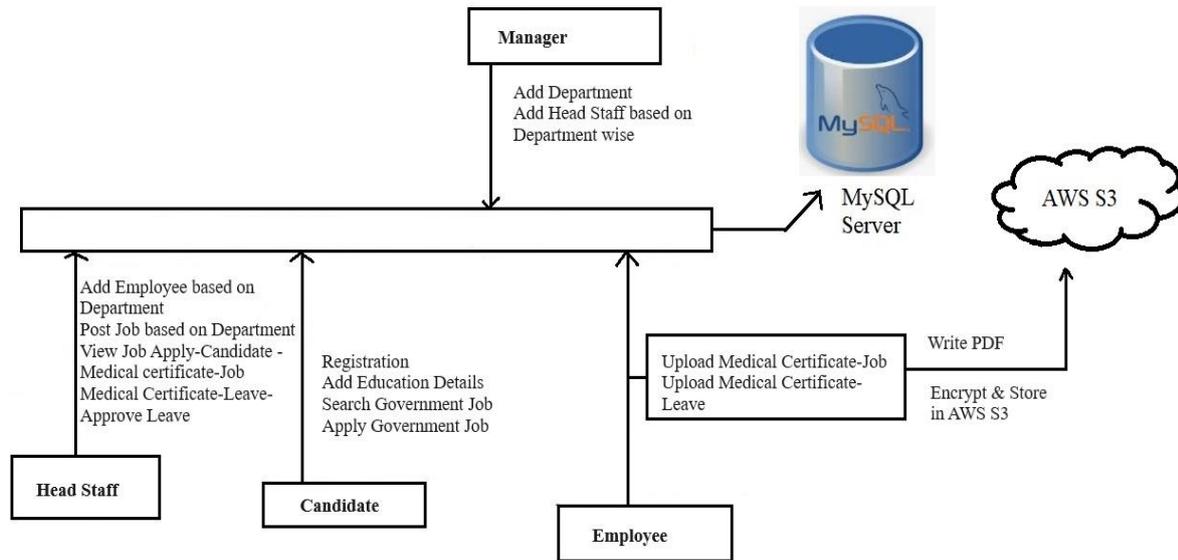


Figure: System Architecture

IV. RESULT AND DISCUSSION

The project successfully developed a Smart & Effective Medical Certificate System, aiming to automate the medical certificate process through a web application incorporating encryption techniques and AWS S3 services. This system addresses the need for secure and efficient management of medical certificates, which are essential for various purposes such as job applications, school admissions, and legal permissions.

The application features encryption and secure storage of medical certificates in PDF format on AWS S3, ensuring the protection of sensitive information from unauthorized access. It includes specific roles for Application Managers, Head Staff, Doctors, and Candidates, each with distinct functionalities that streamline the workflow. System testing demonstrated the application's functionality and reliability, with all test cases passing successfully.

Future enhancements could include integration with other healthcare systems, additional security measures like multi-factor authentication and biometric verification, the development of a mobile application for on-the-go access, and ensuring compliance with international healthcare standards.

This system significantly reduces the time and effort required to issue and manage medical certificates, enhances security, and improves user management. Expanding integration, enhancing security measures, and developing mobile accessibility will further strengthen the system's utility and user experience.

Overall, the Smart & Effective Medical Certificate System offers a secure, efficient, and user-friendly solution for managing medical certificates, with potential for future improvements to enhance its effectiveness and accessibility.

1. Candidate details and Medical Certificate can be viewed by Head Staff .

- Home
- Add Employee
- Post Job
- Candidate Apply Job
- Employee Leave Approval
- Logout

Govt Job Details:

Job Name	Post Date	Description	
Govt Doctor	06/10/2024	Govt Doctor	Candidate Apply
Govr Doctor	07-24-2024	Govt dr with Degree of 5 yrs	Candidate Apply
Govr Doctor	07-24-2024	Govt dr with Degree of 5 yrs	Candidate Apply

Candidate Details

Candidate Name	MobileNo	Address	ApplyDate		
Kiran	6363133019	#67,7nd main,1th cross,TK Layout,Mysuru	15/07/2024	Education Details	Medical Certificate
Naveen	8073757650	Bng	24-07-2024	Education Details	Medical Certificate

Candidate Education Details

School/College Name	Education	Year Pass	Percentage

2. Medical Certificate of a Candidate.

Medical



Candidate Id:305503
 Candidate Name:Kiran
 MobileNo:8050850147
 Address:#10,2nd cross,4th main,JP Nagar,Mysuru

Date : 08/05/2024 12:09:35 PM

V. CONCLUSSION

The proposed web application for automating medical certificate generation streamlines the process for healthcare and employee departments, ensuring efficiency, privacy, and security. By integrating the medical and employee departments within a single application, the system simplifies the management of employee details, medical records, and higher officer’s oversight. The generation of medical certificates in PDF format, coupled with encryption and secure storage in AWS S3, guarantees the protection of sensitive information from unauthorized access. This innovative approach not only enhances operational transparency but also fortifies the confidentiality of medical data.

Future Enhancement

- Integration with Other Healthcare Systems: Expand the system to integrate with various healthcare providers, enabling seamless access to medical records and certificates across different institutions.
- Enhanced Security Measures: Implement additional security layers, such as multi-factor authentication and biometric verification, to further protect sensitive information.
- Mobile Application Development: Develop a mobile application counterpart to provide users with on-the-go access to medical certificates and other related functionalities.



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