

Smart Foreign Student Monitoring on AWS

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Abstract: The police department still work under manual system & paper work. To digitalize the police department proposed system developed. In existing system police station carry out on paper works & it will maintain in police station files/ledgers i.e., crime investigation details, evidence details are maintained in paper works, higher level influence chances of manipulation/modify data. So, crime investigation details need to secure. Along with maintain other country/foreigners study purpose enroll to college. Such a way that foreign students involved in crime cases like drug, smuggling, missing or any kind of crimes. Also, may be for foreign students any local persons give problem or any other things. It's helpful if we maintain/manage foreign student's details also to track passport details, local address there are currently stay in city. Now day's terrorist activity occurs more & more. Around 500 foreigners overstaying in Karnataka are facing criminal cases, while visas of 754 foreigners have expired. The State police registered 501 cases against foreign nationals, as of May 2023, for drug peddling, burglary, and other criminal offences.

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

I. INTRODUCTION

smart foreign student monitoring system using AWS cloud services to manage and track the activities of international students. The system integrates various stakeholders, including colleges, passport staff, police stations, and application managers. Colleges register foreign students and manage their course and passport details, while passport staff add and view student visa information and receive crime-related messages. Police stations add crime details linked to students and track visa statuses, facilitating area- wise monitoring. Application managers oversee the addition of states, cities, areas, police stations, and passport staff, as well as the approval of college registrations. The AWS cloud, specifically leveraging AWS S3 and MySQL servers, stores encrypted data, including PDF files and QR codes, ensuring secure and scalable data management. This comprehensive approach enables real- time monitoring and enhances the safety and compliance of foreign students by allowing rapid information sharing and crime prevention measures.

II. LITERATURE SURVEY

College foreign student's emergency evacuation is related to the stabilization, teachers' and students' lives and property. If it can be handled quickly and properly, the normal order of college will be safeguarded. Otherwise, it will seriously affect the foreign students learning and life. Further it will affect China's international reputation. In view of the existing problems of the present college foreign students emergency management, we all should improve the understanding and perfect management mechanism. Also, we should make appropriate plans, enhance the ability to cope with unexpected events and construct emergency management system of multiparty linkage. Emergency management system of foreign students includes the emergency starting system, organization system, early warning system, management system, communication system and post processing system, etc. [1]

The research on the information management of international students is an important foundation for understanding the system requirements and system analysis and system design. Student status management module. As a student management system, this is a basic function, you can achieve the registration of student information, login, modify and other functions. The system needs to enter the basic information such as the name, gender, nationality, date of birth, passport number, marital status, professional application and so on. Educational administration module can achieve the curriculum entry, test information entry, grade entry, student selection, student achievement inquiries and other information related to the management of education. Daily management module. It can achieve the daily management of the information on students' study and life related, mainly including asking for leave, participating in event, various notice management, reward and punishment management.AC interactive module is mainly used to send and receive short messages, questionnaires, provide file upload and other functions. According to the needs, the management subsystem can be divided to different rights for international students, teachers and administrators. System management module achieve the main authority of the administrator management, including add or delete users, modify user permissions, view the times of user login. There are also some auxiliary modules, system settings and data backup.[2]

III. METHODOLOGY

The proposed system employs the following methodology:

- **Requirement Analysis**

Description: Gather and analyze the requirements for the foreign student monitoring automation system, including user roles (Application Manager, Passport staff, Police officer, College) 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 Application Manager, Passport staff, Police officer, College.

- **Foreign Student Details generate**

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**

Deploy the application to a web server or cloud platform. Configure necessary settings for database connectivity, AWS services, and domain.

- **Maintenance**

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

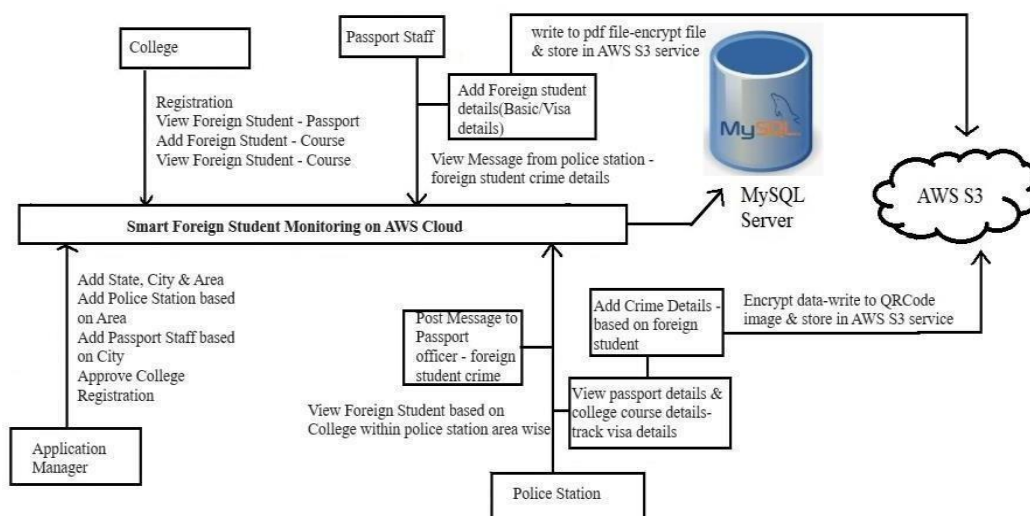


Figure: System Architecture

IV. RESULT AND DISCUSSION

To address the inefficiencies and vulnerabilities inherent in the current manual system of the police department, a digitalization proposal has been developed. The existing system's reliance on paper-based records for crime investigation details and evidence documentation leaves room for data manipulation and inefficiencies. The proposed digital system aims to secure these critical records, thereby reducing the risk of tampering and improving the accuracy of investigations. Additionally, the system will facilitate the management of foreign students' details who are enrolled in local colleges, providing a comprehensive tracking mechanism for passport information, local addresses, and their status within the city.

This is particularly relevant given the increasing involvement of foreign nationals in criminal activities such as drug peddling, smuggling, and other offenses. For instance, Karnataka has reported 501 cases involving foreign nationals in criminal activities as of May 2023, with 500 individuals overstaying their visas and 754 having expired visas. The new digital system will enhance the police department's capability to monitor and manage these cases effectively, thereby contributing to better law enforcement and public safety. By incorporating digital records, the system will also streamline processes, reduce administrative burden, and ensure timely and accurate data retrieval, ultimately leading to more efficient crime prevention and resolution.

1. Foreign Student can be viewed by the passport staff.



Foreign Student College 

- Dashboard
- System Management
- View FS Passport
- Add FS Course
- View FS Course

View Foreign Student Details

Foreign Student Passport No

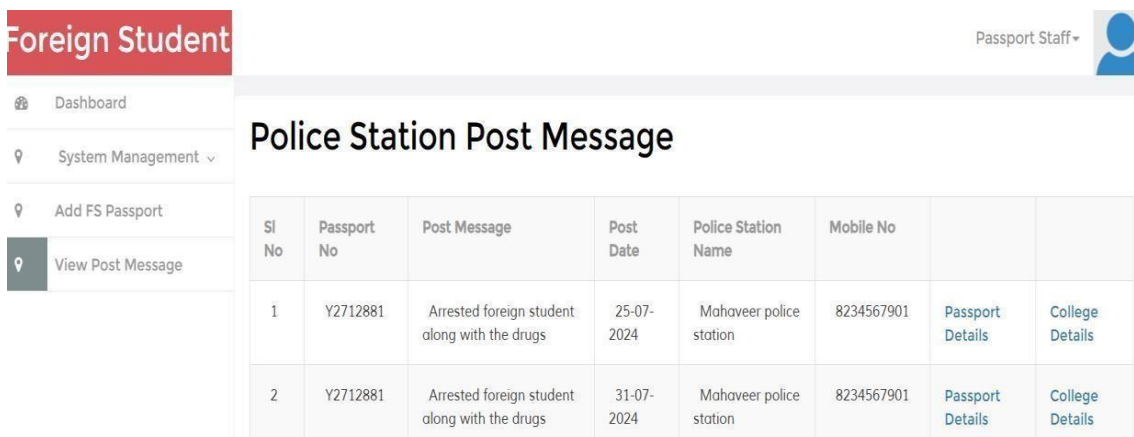
 Search




Passport Authority
(Government of India)



2. Police Officer post a message if a foreign student commits any crime



Foreign Student Passport Staff 

- Dashboard
- System Management
- Add FS Passport
- View Post Message

Police Station Post Message

Sl No	Passport No	Post Message	Post Date	Police Station Name	Mobile No		
1	Y2712881	Arrested foreign student along with the drugs	25-07-2024	Mahaveer police station	8234567901	Passport Details	College Details
2	Y2712881	Arrested foreign student along with the drugs	31-07-2024	Mahaveer police station	8234567901	Passport Details	College Details

**V. CONCLUSION**

A single application links the passport department, police department, and colleges to directly track and monitor foreign students' details. The proposed application is very helpful for tracking passport details of foreign students, including their current local address in the city and education/college details. If a foreign student is involved in criminal activities such as drug trafficking, smuggling, or missing persons cases, the police department can directly access the foreign student's passport and college details, as well as information about expired passports. The proposed system overcomes the existing problems faced by the police department. Foreign students' passport details are securely stored in AWS S3 Service.

Future Enhancement

- **Communication Between Passport Officer and Foreign Officers:** Integrate a secure messaging system within the application, allowing passport officers to send encrypted messages to their counterparts in the student's home country. Security Use end-to-end encryption to ensure that sensitive information about crimes or visa statuses is securely transmitted. Compliance Ensure this process complies with international data protection laws and regulations, such as GDPR.
- **Visa Expiry Notifications: Implementation:** Develop a notification system within the application that tracks visa expiry dates and sends automated SMS alerts to students as their expiry date approaches. **Integration:** Integrate with SMS gateway services to send notifications reliably. **User Preferences:** Allow students to manage their notification preferences, including opting in or out of SMS alerts.

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