PREFACE

This report covers all information about working of the project and their benefits. In the introduction chapter all the information about the project is given. This chapter also inform about the platform on which the project has been developed Data base Architecture chapter describes the layout and structure of the database with their constraints and data types System analysis describes existing system, proposed system according to the needs and the feasibility System testing informs about the testing module of the system has been tested after testing implementation describes how the user will interact with the system. In the input/output screen layout input and the output are given which is important to ensure that the result obtained from this project are correct and reliable.

ACKNOWLEDGEMENT

It is a matter of pleasure of acknowledgement by indebtedness to our teachers and also our wellwishers who have helped us for completion of this project successfully. We wish to express our sincere gratitude to Ms Arathi Mam for her consistent help and encouragement to complete this project. We express our deep sense of gratitude to our respected Supreethi , In Charge Head of the Department of Computer Engineering, JNTUH who helped us in every step of our project work despite of his busy schedules. We want to express our deepest thankfulness to all the individuals and faculty, who helped us a lot in finalizing this project. Finally, words are not sufficient to express our gratitude to all our friends and family for helping us directly or indirectly in completion of the project.

INDEX

Introduction

In today's digital age, efficient management of hostel facilities is crucial for ensuring smooth operations and enhanced security. Traditional logbooks are often inefficient and prone to errors, prompting the need for a digital solution. The Hostel Digital Logbook System aims to modernize and streamline the management of hostel activities, offering real-time data access, improved accountability, and enhanced security measures.

The proposed system is a comprehensive digital logbook application designed for hostels, which enables the tracking of student entries and exits using QR codes. Each student receives a unique QR code, and wardens use a scanner link (website) to scan these codes. The system redirects to a Google Form where student details, including their name, roll number, department, hostel room number, date, and time of entry or exit, are displayed. This data is then stored in a Firebase backend. The system offers a seamless user experience by combining QR code technology, real-time data submission, and a robust backend infrastructure.

Literature Survey

Previous studies highlight the shortcomings of traditional logbooks in hostel management systems. These include issues such as illegible entries, difficulty in tracking entries in real-time, and lack of integration with other administrative tasks. Digital logbook systems have emerged as a solution to these challenges, offering features like automated entry recording, integration with access control systems, and analytics for improved decision-making.

Existing System

Existing systems for hostel entry and exit logging primarily rely on manual methods, such as physical logbooks or basic electronic systems that require manual entry. These methods often lack accuracy and are prone to human error. They do not provide real-time data updates and are inefficient for large hostels with many students. Additionally, current systems often fail to provide secure data storage and easy access to log information, which can be crucial for managing hostel security and tracking student movements. As a result, the user experience is often subpar, and the applications lack the comprehensive functionality needed for efficient and reliable hostel management.

Advantages:

- It is easy, simple and it is very cost efficient
- There is no need to have a well Trained Personnel

Disadvantage:

In some QR code-based systems, all individuals are assigned the same QR code to scan and enter their details themselves. This approach is unreliable, as it can lead to malpractice with individuals using someone else's identity to enter the hostel. Consequently, such systems cannot ensure accurate and secure logging of entries and exits.

Proposed System

The proposed system is an advanced digital entry logbook application for hostels. It addresses the limitations of existing solutions by integrating modern technologies and methodologies. The system utilizes QR codes to uniquely identify each student. Wardens use a scanner link (website) to scan these QR codes, which redirects to a prefilled Google Form displaying the student's information. The form allows the warden to log the date, time, and entry or exit status. This information is then sent to a Firebase backend for secure storage and easy access.

The system includes the following features:

- QR Code Generation: Unique QR codes are generated for each student, containing their details.

- Scanner Link (Website): A user-friendly web interface for wardens to scan QR codes and log entries/exits.
- Google Form Integration: Prefilled forms ensure quick and accurate data entry.
- Firebase Backend: Secure storage of log data with easy retrieval for administrative purposes.
- Admin Panel: A web-based interface for wardens to view and manage log data efficiently.

By utilizing these advanced technologies, the proposed system ensures high accuracy, real-time data updates, and a seamless user experience, making it an ideal solution for hostel management.

The main benefit of our proposed system over existing system is that there is an individual qr code for every individual so that no error occurs.

SOFTWARE REQUIREMENT SPECIFICATION

Purpose: The proposed project is an advanced hostel digital logbook system designed to streamline the process of logging student entries and exits. Each student is assigned a unique QR code that, when scanned by the warden using a web-based scanner, redirects to a pre-filled Google Form displaying the student's details and manual entry for the entry or exit status . The logged data is stored securely in a Firebase backend, providing real-time updates and easy access for hostel management.

Scope: The scope of this project involves developing, deploying, and maintaining a comprehensive digital logbook system made for hostel entry and exit management. It aims to deliver a secure, efficient, and user-friendly solution by leveraging advanced technologies in QR code generation, web development, and cloud-based data storage. Key components include generating unique QR codes for each student that embed personal details like name, roll number, department, and hostel room number to prevent identity misuse. A web-based interface enables wardens to scan QR codes, directing them to pre-filled Google Forms for accurate entry logging. Automated data entry through Google Forms minimizes errors, capturing essential information such as date, time, and entry/exit status. The system securely stores all data in Firebase, ensuring real-time updates and integrity, accessible via an admin panel equipped with tools for monitoring movements, generating reports, and enhancing overall hostel security and management efficiency. .

Detailed Scope

- **QR Code Generation:**
    - **Generate unique QR codes:** Ensure each student receives a unique QR code embedded with their personal details.
    - **Security:** Prevent misuse by ensuring that each QR code is tied specifically to the individual student's identity.
- **Web Based Scanner (Website):**
    - **Web-based interface:** Enable wardens to use a web-based scanner for logging entries and exits.
    - **Google Form redirection:** Redirect to a Google Form displaying the student's details, allowing for quick and accurate logging.
- **Google Form Integration:**
    - **Pre-filled forms:** Automatically populate forms with student details to streamline data entry.
    - **Accurate data capture:** Ensure that all relevant information is accurately logged, including name, roll number, department, hostel room number, date, time, and entry/exit status.
    - Here the warden can manually enter the date,time and entry or exit status>
- **Firebase Backend:**

    - **Secure data storage:** Store all log data securely in Firebase, ensuring data integrity and security.
    - **Real-time updates:** Provide real-time updates to the log data, allowing for immediate access and analysis.
- **Admin Panel:**
    - **Web-based management:** Develop a user-friendly admin panel for wardens and administrators.
    - **Data analysis tools:** Offer tools for monitoring, reporting, and analyzing log data to enhance hostel security and management efficiency.

GENERAL DESCRIPTION

This project is a comprehensive digital logbook system designed for hostel entry and exit management. It utilizes QR codes, a web-based scanning system, and secure cloud storage to streamline the logging process and enhance security. The main objective is to create an efficient, accurate, and user-friendly system for managing hostel entries and exits.

1. **QR Code Generation**
    - **Use:** This module generates unique QR codes for each student, embedding their details such as name, roll number, department, and hostel room number.
    - **Function:** Ensures that each student can be uniquely identified through their QR code, preventing unauthorized access and identity misuse.
2. **Scanner Link (Website)**
    - **Use:** A web-based interface used by wardens to scan QR codes and log entries/exits.
    - **Function:** Provides a user-friendly and accessible platform for scanning QR codes and accessing the Google Form for data entry. It facilitates real-time logging and immediate data validation.
3. **Google Form Integration**
    - **Use:** Prefilled Google Forms are used to capture student details and log entry/exit times.
    - **Function:** Ensures quick and accurate data entry by automatically filling in student details from the QR code. Wardens only need to input the date, time, and entry/exit status.
4. **Firebase Backend**
    - **Use:** Securely stores all logged data and provides easy access for administrative purposes.
    - **Function:** Maintains a comprehensive database of all entries and exits, ensuring data integrity and security. Allows for easy retrieval and analysis of log data.
5. **Admin Panel**
    - **Use:** A web-based interface for wardens and administrators to view, manage, and analyze log data.
    - **Function:** Provides tools for monitoring student movements, generating reports, and identifying patterns. Enhances overall hostel security and management efficiency.

FUNCTIONAL REQUIREMENTS

- Ensure QR codes are dynamically generated and securely linked to individual student identities.
- Provide a web interface for wardens to scan QR codes.
- Automatically redirect to a Google Form pre-filled with student details upon scanning.
- Capture and load date, time, and entry/exit status for each scan accurately.
- Ensure real-time updates to logged data for immediate access and analysis.
- Develop a user-friendly web interface for administrators to manage log data.
- Provide tools for monitoring student movements, generating reports, and enhancing hostel security.

Interface Requirements

User Interfaces:

- **Front-End Software:** HTML , CSS , Java
- **Back-End Software:** firebase data base

Hardware Interfaces:

- Windows
- Web Browser

Software Interfaces:

- Chrome

Non-Functional Requirements

1. **Prformance:**
    - Ensure the system can handle simultaneous scanning and logging without delays.
2. **Security:**
    - Implement robust security measures to protect student data and prevent unauthorized access.
3. **Usability:**
    - Design a user-friendly interface accessible to wardens with varying technical expertise.
4. **Reliability:**
    - Backup data regularly to prevent loss and ensure data integrity.
5. **Scalability:**
    - Design the system to accommodate future growth in student numbers and data volume.
    - Ensure scalability of both hardware and software components to handle increased load.

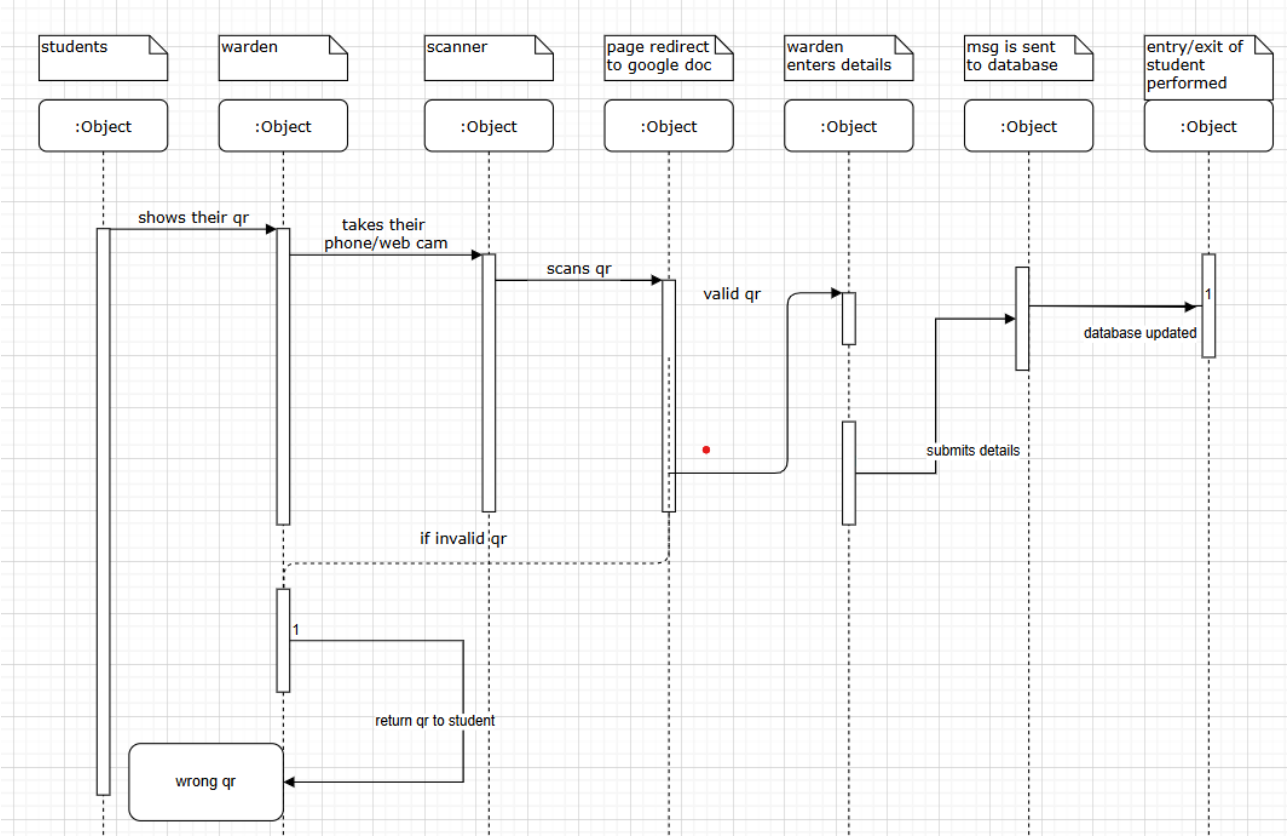
Hardware and Software Requirements

Hardware Requirements:
• Android 8 or above with a web browser
• Having a camera 4mp or Web cam
• Windows 7 with chrome version

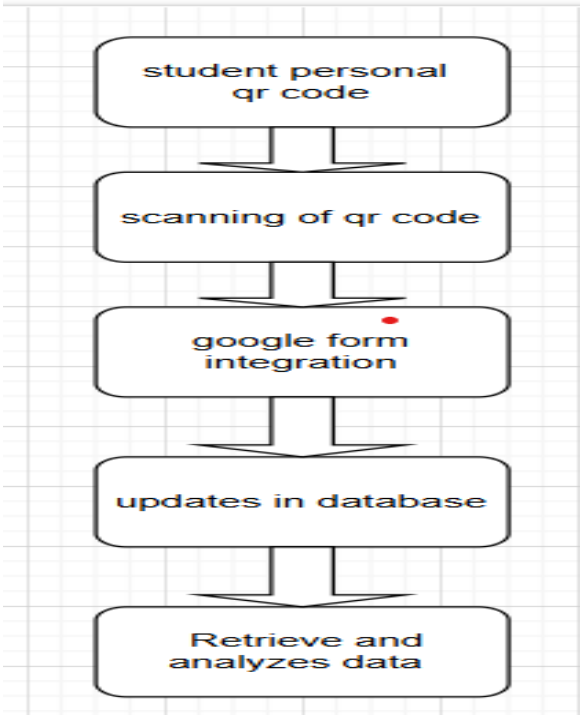
Software requirements:
• Vs code editorS
• Chrome
• Firefox

SYSTEM ARCHITECTURE:

SEQUENCE UML diagram:



Data flow diagram



Implementation

Implementation

1. QR Code Generation: Ensure each QR code is saved and distributed to the respective students.
2. Scanner Website
   - - Develop a web-based interface using HTML, CSS, and JavaScript.
   - - Integrate a QR code scanning library to enable QR code reading through the device's camera.
   - - Upon scanning, redirect to a Google Form prefilled with the student's details from the QR code.
3. Google Form Integration
   - Create a Google Form with fields for name, roll number, department, date, time, and entry/exit status.
   - Ensure that the Google Form is linked with the Firebase backend for real-time data storage.
4. Firebase Backend
   - Use Firebase Authentication to manage user access and ensure data security.
5. Admin Panel
   - - Integrate Firebase to retrieve and display log data in real-time.
   - - Ensure the admin panel provides tools for monitoring student movements and managing hostel security effectively.

Workflow

1. Student Registration and QR Code Distribution:
   - Register each student in the system and generate a unique QR code with their details.
   - Distribute the QR codes to students.

2. Entry/Exit Logging:
   - When a student enters or exits the hostel, the warden scans the student's QR code using the web-based scanner.
   - The system redirects to a prefilled Google Form displaying the student's details.
   - The warden confirms the entry/exit status and submits the form.
3. Data Storage and Retrieval:
   - Submitted form data is sent to the Firebase backend in real-time.
   - The admin panel provides wardens and administrators with tools to view and manage this data.

4. Monitoring and Reporting:
   - The admin panel allows authorized personnel to monitor student movements, search and filter log data, and generate necessary reports.

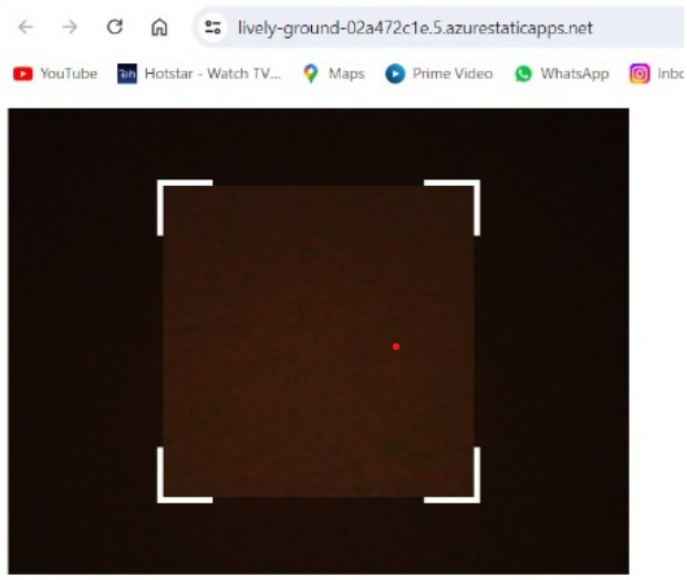
Modules

- QR code generation
- Scanner website
- Google doc integration
- Firebase Panel

• Admin Panel

Student QR’S:(*example*);

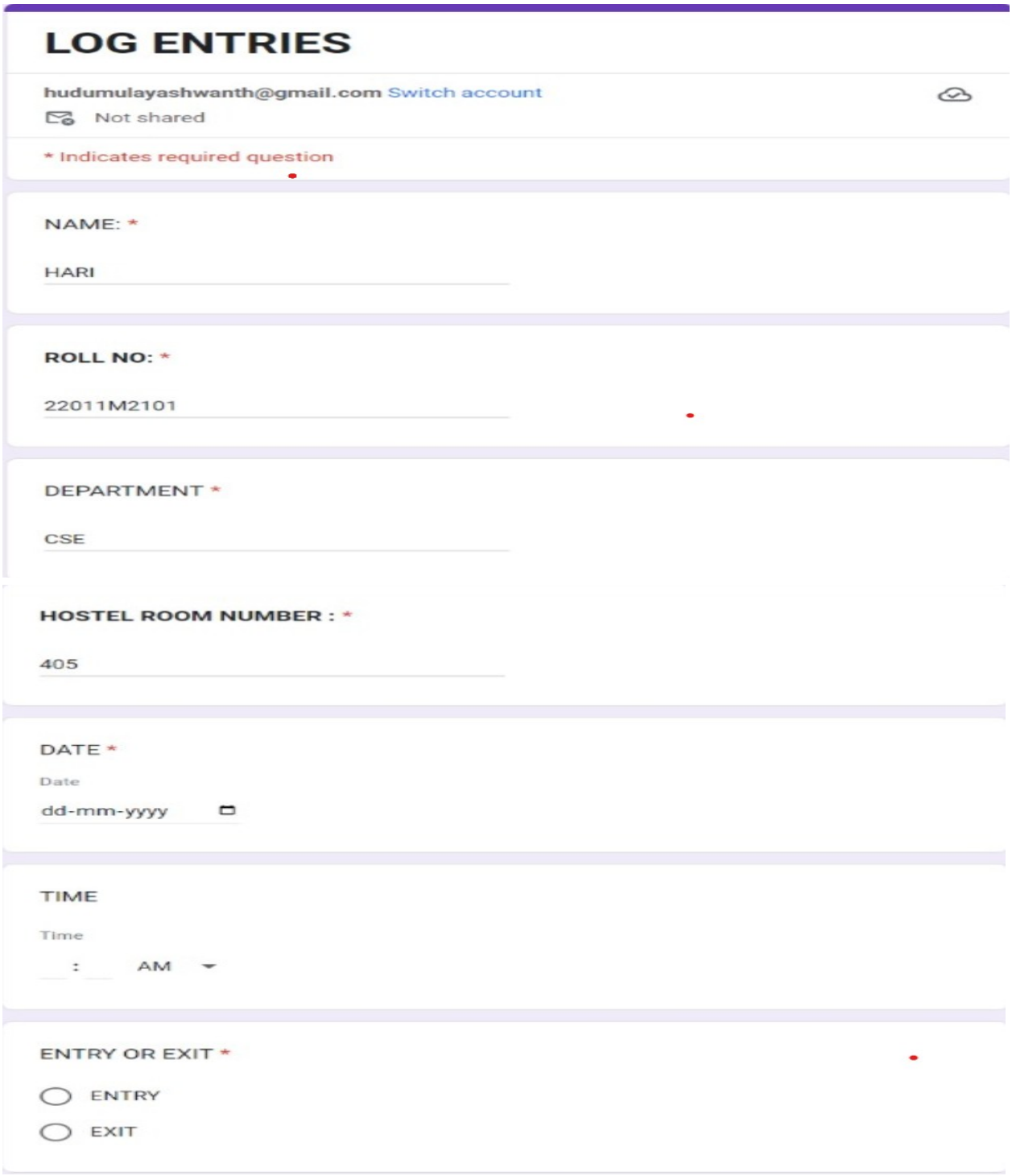
Web Based Scanner (to scan qrs of students):



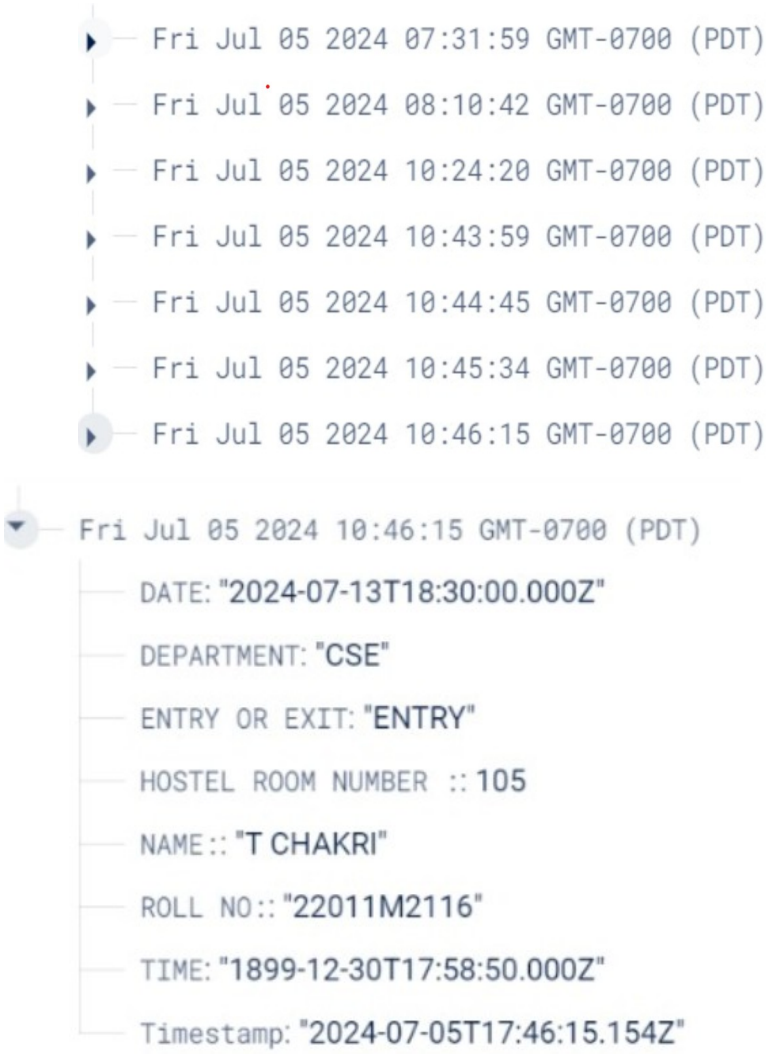
it redirects to the google docs ;

Test Cases:
Results and Screenshots:

Google Doc integration**:-**



Backend(database:):-



Conclusion:

The proposed digital logbook system for hostel offers efficient solution for managing student entries/exits by QR code technology, web-based scanning, Google Form automation, and Firebase backend, the system addresses the limitations of traditional manual methods and existing electronic systems. It ensures high accuracy, real-time data updates, and secure data storage, thereby significantly enhancing the user experience for both students and hostel wardens. The admin panel facilitates efficient management and contributing to improved hostel security and streamlined administrative processes. Overall, this comprehensive digital logbook system represents a significant advancement in hostel management, promoting a more reliable and effective approach to tracking student movements.

FUTURE WORK:

Future work for an online QR code hostel verification system includes several key enhancements. First, enhanced security measures can be achieved by using encrypted QR codes to prevent unauthorized data access and leveraging blockchain technology to create a tamper-proof log of verifications. Advanced analytics and reporting can be developed by creating a dashboard to track usage patterns and implementing real-time monitoring to detect unauthorized access attempts. Integration with other systems, such as linking the verification system with university databases and allowing students to store their QR codes in mobile wallets, can streamline operations. User experience can be improved by developing an offline verification mode, providing multilingual support, and continuously refining the user interface.

REFERENCES:

Scanner: https://lively-ground-02a472c1e.5.azurestaticapps.net/

Google Docs: https://docs.google.com/forms/u/0/

Google sheet backup link : https://docs.google.com/spreadsheets/d/1gcNd4Ft7cQTch-7f8NXyMfyGu6CJhlxB3kimTbwiVns/edit?usp=sharing

fierbase: https://idd-5-90ea4-default-rtdb.asia-southeast1.firebasedatabase.app/