

A

Preliminary Project Report

on

**DiG-Pass: Enhance and Secure Solution for
Gate-Pass using QR code**

Submitted for the Course of BE in Computer Engineering by

Mr. Omkar Arun Jadhav [B191204289]

Mr. Parag Rajendra Shirsat [B191204327]

Mr. Abhishek Ninad Soundankar [B191204332]

Mr. Om Sugandh Suryawanshi [B191204334]

Under the guidance of

Prof. M. P. Gangawane



Department of Computer Engineering
**Guru Gobind Singh College of Engineering and
Research Center**

Nashik-422009

2023-24

**GURU GOBIND SINGH COLLEGE OF
ENGINEERING AND RESEARCH CENTER**

Nashik-422009

2023-2024

Department of Computer Engineering



CERTIFICATE

This is to certify that the PRELIMINARY PROJECT REPORT entitled

**DiG-Pass: Enhance and Secure Solution for
Gate-Pass Using QR code**

is submitted as partial fulfilment of the
Project Examination BE in Computer Engineering

BY

Mr. Omkar Arun Jadhav [B191204289]
Mr. Parag Rajendra Shirsat [B191204327]
Mr. Abhishek Ninad Soundankar [B191204332]
Mr. Om Sugandh Suryawanshi [B191204334]

Prof. M. P. Gangawane
Project Guide

Prof. P. K. Bachhav & P. C. Patil
Project Coordinator

Prof. S. G. Shukla
Head of the Department

Dr. N. G. Nikam
Principal

SAVITRIBAI PHULE PUNE UNIVERSITY



CERTIFICATE

This is to certify that,

Mr. Omkar Arun Jadhav [B191204289]

Mr. Parag Rajendra Shirsat [B191204327]

Mr. Abhishek Ninad Soundankar [B191204332]

Mr. Om Sugandh Suryawanshi [B191204334]

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AND RESEARCH CENTER**

Nashik-422009

2023-2024

Internal Examiner

External Examiner

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Mr. Omkar Arun Jadhav

Mr. Parag Rajendra Shirsat

Mr. Abhishek Ninad Soundankar

Mr. Om Sugandh Suryawanshi

Abstract

In an increasingly digital and security-conscious world, the "DiG-Pass: Enhance and Secure Solution for Gate-Pass using QR code" emerges as a versatile solution for access control, visitor management, and event ticketing across various industries. This innovative mobile application leverages the ubiquity of Android devices and the efficiency of QR codes to streamline access procedures while enhancing security and convenience. This project harnesses the power of QR codes to generate digital gate passes that serve as secure credentials for individuals seeking entry into diverse environments. Whether managing visitors in corporate offices, regulating access to educational institutions, or facilitating seamless entry at events and tourist attractions, this application offers a flexible and scalable solution. Key features of this project include pass generation and real-time access validation. The application gives administrators the tools to create and distribute QR code passes effortlessly, ensuring that only authorized individuals gain entry. It also records entry and exit times, aiding in tracking, auditing, and compliance reporting.

Keywords:- *DiG-Pass, Secure Solution, Gate-Pass, QR Code, mobile application, streamlined, security, pass generation, exit times, tracking, auditing.*

Abbreviation

Sr No.	Abbriviation	Full Form
1	MVC	Model View Controller
2	CSV	Comma-Separated Values
3	QR	Code- Quick Response code
4	UML	Unified Modeling Language
5	DFD	Data Flow Diagram
6	API	Application Programming Interface
7	DiG-Pass	Digital Gate-Pass

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Chapter 1

Introduction

The security of individuals has become a top priority for businesses and organizations across all industries in recent years. The welfare of the students is the responsibility of the learning institution. Thus, in order to maintain security, authorization is needed in order to enter or exit a campus. The entire process of obtaining permission hasn't changed all that much in the past few decades. The party in question drafts a letter of request, which is then submitted for processing.

After manual verification, a written permit that can be used at entry and exit points is given out. The cloud database that is kept up to date for that purpose guarantees that the concerned faculty can, upon request, view any specific student's record of any gate pass that has been issued to her. There may be multiple stages of human verification in the process. There is a lot of physical labor involved in this tiresome process. The goal of this project is to automate and put this system online. Both sides will save a variety of resources by doing this. Additionally, this project lessens disagreements and upholds openness between the warden, student, and student coordinator. Creating student gate passes is a crucial part of making sure that any educational facility is secure. The manual processes used in traditional gate pass generation methods take time and are prone to error. Our proposal is to create a new gate pass generation system that utilizes a QR code to overcome these obstacles. Nothing can use a unique QR Code.

1.1 Project Idea

Create a mobile application that integrates with the DiG-Pass system to enhance security and convenience further. This app would allow users to generate their gate passes with QR codes on their smartphones, enabling them to unlock and access secure gates equipped with smart locks. The project would involve developing the app, ensuring compatibility with various smart lock systems, and providing a user-friendly interface for easy gate access using QR codes.

1.2 Motivation of the Project

The motivation behind this project is to enhance the security of college campuses by controlling who enters and exits the campus, reducing the risk of unauthorized exits from the campus, and providing safe environments for students and staff. This project will replace the lengthy and traditional gate pass process and eliminate the work of administrative staff. This project allows for faster and more efficient provision of the gate pass to users within a short amount of time in an emergency situation. This project reduces the cost of printing the gate pass.

Chapter 2

Literature Survey

DiGintry-Securing gated premises using QR-code

Authors: [Ms. Ashwini Jarali, Ms. Snehal Kodikar, Mr. Siddharth Patel, Mr. Shubham Tondare, Mr. Ganesh Kudale] (June 2020)

DiGintry is an Intelligent Security Management for Gated Premises that digitizes manual undertakings at the primary gates[1]. The system begins with client registration under an organization's administrator, generating time-limited QR codes. Clients enter by scanning their QR codes, which validate their entry in real-time. Administrators scan codes upon exit, storing entry and exit details in temporary and permanent databases. This dual-database approach facilitates client tracking, and unrevealed exits trigger communication with the administrator.

Authenticated Gate-Pass Generating Application Using QR-Code

Authors: [Akshay ET, Afsal M, Abhinav R, Rahul C, Prof. Mohammed Mailk CK, Ass. Prof. Haseena M] (April 2023)

Generating gate passes for students is an essential aspect of ensuring the safety and security of any educational institution[2]. The System Generates the QR code. Using a QR code generating tool, generate a unique QR code for each student, print it on paper, and deliver it to all the students. Then, the admin can monitor and track each gate pass holder.

Implementation of Smart and Secure Gate Pass System using QR Code

Authors: [Deepanshu Jaiswal, Devansh Singh, Ms.Aarushi Thusu] (Feb 2023)

The scope of the proposed work that is automated gate pass system is to record the arrival and departure of the students in institution[3]. The process of identifying an individual on the basis of Mail ID and Password. Students have to fill out the online form mentioning details like Name, Roll Number, Room No, Mail, Branch, and Reason. After the submission of the form by a student the warden has rights either to accept or to reject the request. On rejection, a mail would be sent to the student with a reason for rejection. The student needs to get the code scanned by the scanner installed at the exit gate.

Face Recognition Based Gate Pass System

Authors: [Dr. Sunil Bhutada, Dr. Sreenivas Mekala, Mayukhi Gandham, Rishika Bhat, Ruchitha Upadhyayula] (June 2022)

It is a software-based web application based on face recognition. Students can generate the gate pass by entering their Roll Number, Name, Address, Class, etc. After the generation of gate pass, when a student arrives to leave the campus, his/her face will be compared with the stored images in the database. If it is valid, then it allows students to leave the campus. The Face Recognition based Gate pass system assists both the organization and the guest in managing their Gate passes[5].

Gatepass Generation and Management System Using QR Code

Authors:[Abhijit Alane, Shrinivas Chalikwar, Ganesh Pekam, Padmavati Sarode, Pranav Pekam] (May 2022)

In this paper, students have to register with a valid email ID and details like Name, Class, and Roll Number. Then they can login to the app and generate the QR code for Gate Pass. The guard will scan the QR code generated by visitors, then that guard will scan it to mark users as in or out, if the QR code is valid, then our entry and exit are automatically saved in the database. One of the main advantage of using this system is maintain all the entry and exit record of a person is saved and we can easily access it[6].

Gate Pass System

Authors: [V. Sellam, Medha Shree, Shreya Chopdar, Shambhavi] (Dec 2019)

The objective of this work is to make the hectic process of getting a gate pass easier and less stressful[4]. An Application is designed for hostel students to get gate passes for going outside the hostel. The user will get a unique Username and Password for accessing the application. The request is first sent to the class in charge. If they approve, then the request is sent to the coordinator. After the approval of the coordinator, the warden gets a notification for permission and the warden issues a gate pass to students.

A Cloud-Based Smart Expiry System Using QR Code

Author: [Tareq Khan] (2018)

The system uses barcodes to track product expiration dates, creating a CSV file and QR code receipt at checkout. Customers scan the QR code, download CSV file, and receive notifications based on expiry dates. Data is stored in Firebase cloud storage and allows user customization of notification settings. Compared with other works, the proposed method does not need tedious manual entry of each product name and expiration date into the smartphone app, rather scanning a single QR code will be sufficient[7].

E-Gatepass System

Authors: [Chaitanya Lengure, Laxmikant Kakde, Mamta Bargat, Saachi Jambhulkar, Prof. Ashish Palandurkar, Prof. Hemant Wade] (March 2018)

“E-Gatepass System” is a Client-Server application software. It uses the concept of MVC (Model View Controller) to implement the application[8]. In this paper, the authorized clerk may provide the gate pass to the legal student. Students will fill in details like Name, Branch, Mobile Number, and Reason. The administrator can enable or disable unauthorized users from the system. The guard will get a notification about gate passes. They will allow students to leave the campus if they have a legal gate pass.

2.1 Conclusion From Literature Survey

After conducting the literature survey on our project topic we found that there is a need to replace the traditional gate-pass system with a new digital gate-pass system. In this digital era, the traditional gate pass system demands a lot of administrative and paperwork. By designing the digital gate-pass system, we are going to reduce administrative burden, paperwork, time, and security personnel. By using a QR code, we are going to eliminate duplicate gate passes. By conducting a literature survey, we got a deep understanding of the gate-pass system and how the traditional way is inefficient in the current era.

Chapter 3

Problem Definition and Scope

3.1 Problem Statement

To develop an Android application that provides an Online Gate Pass for students and staff within a shorter amount of time.

3.1.1 Goals and objectives

The objective of implementing this project is to enhance college campus security by efficiently managing access control of gate pass process. This app aims to issuing digital gate passes for students and staff. It also reduces the paperwork and time required for process of traditional gate pass issuing process. It also ensures the gate pass history of every user of the college, enhances emergency response capabilities, and offers user convenience through digital gate pass requests.

3.1.2 Statement of scope

The scope of the project includes the development of an Android mobile application that allows students and faculty to generate QR codes for access control within the college campus. This system will streamline exit procedures and replace traditional paper gate passes with digital QR codes. Key features include an easy-to-use Android app, secure QR code generation and validation through the in-app security guard login module, integration with university management systems, and privacy compliance with the aim of improving security, efficiency, and user experience at the same time to protect the environmental effects of paper-based systems.

3.2 Software Context

1. **Android application (client):** The core component is the Android application installed on the user's mobile devices (e.g. smartphones or tablets). This app allows users to generate QR codes for gate passes and scan QR codes.
2. **QR Code Generation Module:** This module is responsible for generating unique QR codes for gate passes. It may use libraries and algorithms to create secure, scannable QR codes.
3. **QR code scanning module:** The app contains a module for scanning QR codes displayed at exit points. It uses the device's camera to capture and process the QR code data.
4. **Backend Services:** Backend services are hosted on servers or cloud platforms and handle tasks such as user authentication, QR code validation, access control, and data storage. These services often use web APIs to communicate with the Android app.
5. **Administrative Dashboard:** An administrative dashboard allows authorized personnel to monitor and manage the gate pass system. It provides access to user management, access control rules, and system configuration.
6. **Notification System:** The Android app can be configured to send notifications to users regarding the status of Gate-Pass requests.

3.3 Major Constraints

1. **Security and Privacy Concerns:** Ensuring the security and privacy of user data and access control is a key concern. Any security breaches or data leaks can lead to serious issues.
2. **Network Connectivity:** The system relies heavily on network connectivity for QR code generation, validation and data synchronization. Poor or unreliable network connections can affect the functionality of the system.
3. **Scalability:** As the college grows, the system should be able to manage a large number of users and devices. Ensuring scalability can be challenging.

3.4 Methodologies of Problem Solving and Efficiency Issues

Methodologies of Problem Solving are:

1. **Requirements Analysis:** Start by clearly defining the requirements of the DiG Pass system and its integration with QR codes. Understand the specific needs of users and the industries it serves.
2. **Security Assessment:** To protect against unauthorized access, carry out a thorough security assessment to find any possible vulnerabilities in the QR code system.
3. **User Testing:** Involve users in testing the application to identify and address any user experience issues. Iterate on the design and functionality based on user feedback.
4. **System Design:** Create the backend services, database, and Android app as well as the system architecture.
5. **Algorithm Design:** Develop algorithms for generating and validating QR codes efficiently. Ensure that QR codes are unique, secure, and can be processed quickly.

Efficiency Issues are:

1. **QR Code Generation Efficiency:** Quickly and efficiently generating QR codes, especially during peak hours, is critical. Inefficient code generation can cause delays in user access.
2. **Scanning and Validation Speed:** The Android app should be optimized for scanning and validating QR codes quickly. Delays can lead to congestion at exit points.
3. **Security and Authentication Overheads:** Ensuring the security of the system is critical, but overly complex security measures can result in excessive overhead. It is important to find a balance between security and efficiency.

3.5 Outcome

1. **Enhanced Security:** QR codes can be generated with unique information, making it difficult for unauthorized individuals to replicate gate passes. Access to the college premises can be tightly controlled, reducing the risk of security breaches.
2. **Reduced Paper Usage:** A QR-based system eliminates the need for physical paper gate passes, contributing to a more environmentally friendly approach.
3. **Real-time Tracking:** The system can provide real-time data on who is exiting to the college, which can be valuable for monitoring security.
4. **Mobile Convenience:** Students and staff can use their Android devices to generate and display QR codes, reducing the likelihood of losing physical gate passes.
5. **Notifications:** The Android app can be configured to send notifications to users regarding the status of Gate-Pass requests.

3.6 Applications

1. **Visitor Management:** Managing visitors in corporate offices, government buildings, educational institutions, and manufacturing plants by issuing QR code-based gate passes for streamlined entry and visitor tracking.
2. **Employee Access Control:** Providing employees with QR code-based gate passes for secure entry into restricted areas within a workplace, such as server rooms or confidential office spaces.
3. **Student Access Control:** Managing student access to campus facilities like dormitories, libraries, labs, and recreational areas using QR code passes.
4. **Visitor Tracking:** Recording entry and exit times of visitors for security and compliance purposes, and generating reports for auditing.
5. **Educational Institutions:** Managing access to classrooms, labs, libraries, and other facilities within educational institutions using QR code passes for students, faculty, and staff.

3.7 Hardware Resources Required

Computer system with

1. 64-bit Microsoft® Windows® 8/10/11
2. 4 GB RAM or more
3. 8 GB of available disk space minimum (IDE + Android SDK + Android Emulator)

3.8 Software Resources Required

1. Android Studio IDE
2. Java Development Kit (JDK)
3. Database: Firebase

Chapter 4

Software Requirement Specification

4.1 Introduction

4.1.1 Purpose and Scope of Document

The Software Requirements Specification (SRS) document for this project outlines the purpose, features, and constraints of the system. Its primary purpose is to provide a clear and unambiguous description of the system's requirements, ensuring a shared understanding among stakeholders, guiding the development process, and serving as a basis for quality assurance and change management. The scope of this document encompasses system functions, non-functional requirements, user interfaces, database specifications, external interfaces, and change control procedures, ultimately defining the project's boundaries and ensuring the successful development of a user-friendly and efficient gate pass system.

4.1.2 Overview of responsibilities of Developer

A developer tasked with "DiG-Pass: Enhance and Secure Solution for Gate-Pass using QR Code" is responsible for a comprehensive set of tasks. These responsibilities include gathering and analyzing project requirements, designing the system architecture, writing and maintaining the code using Android Studio, managing the database in Firebase, and implementing security measures to safeguard sensitive data using QR code. Additionally, they must create user-friendly interfaces for generating and validating QR codes and user registration. Integrate external systems and APIs, and conduct various testing activities.

4.2 Functional Requirements

4.2.1 User Roles and Authentication

Identify the various user roles (e.g., students, admin, security guard) and define authentication methods.

4.2.2 Gate Pass Request

Enable students to send a request for a gate pass by providing the purpose, date, time, and duration.

4.2.3 Gate Pass Approval Workflow

Define a workflow for gate pass approval, involving relevant stakeholders (e.g., security personnel, administrators). Implement approval/rejection mechanisms, notifications, and alerts.

4.2.4 QR Code Generation

The App will automatically generate a unique QR code for each gate pass after approving the request from the admin. QR code contains essential information such as user's name, purpose, and validity.

4.2.5 QR Code Scanning

Equip security guard with the ability to scan QR codes using mobile devices or dedicated scanners. Verify the authenticity and validity of gate passes then permit to exit from campus.

4.2.6 User Notifications

Send notifications to users via email, SMS, or mobile app alerts about the status of their gate pass requests (approved, rejected, pending).

4.3 External Interface Requirements

4.3.1 User Interfaces

1. **Android Application:** The main user interface for generating and scanning QR codes is the Android mobile application, which has to be simple to use and intuitive. It should give users feedback and clear instructions.
2. **Administrative Dashboard:** To control and keep an eye on the system, an administrative interface is needed. It should have features for user management, configuring access control rules, and system reporting, and it should only be accessible by authorized personnel.

4.3.2 Hardware Interfaces

1. **Android devices:** The system must communicate with various Android devices, including smartphones and tablets, used by students and staff to generate gate passes.

4.3.3 Software Interfaces

1. **Backend Services:** The Android app should interact with backend services that manage data storage, access control, user authentication, and QR code validation. For this interaction, web APIs or other communication protocols are needed.
2. **Database:** In order to store and retrieve user data, access logs, and other information, the system needs to communicate with a database system. It should support the required query language and database management system.

4.3.4 Communication Interfaces

1. **Network Protocols:** The Android app and backend services should communicate securely over network protocols (e.g., HTTPS) to protect data in transit. Secure socket layer (SSL) or Transport Layer Security (TLS) may be employed for encryption.
2. **Push Notifications:** In order to notify users via push notifications about the status of gate-pass requests, communication interfaces might be required.

4.4 Non Functional Requirements

4.4.1 Performance Requirements:

In order to guarantee prompt access, performance requirements outline how quickly the system must generate and validate QR codes. They discuss scalability to keep the system responsive as the college expands, as well as the system's ability to manage large volumes of requests during peak times.

4.4.2 Safety Requirements:

Safety requirements focus on data integrity, ensuring that user information and access logs are protected from unauthorized access or tampering. They also include redundancy measures to guarantee system operation during failures and provisions for emergency access during crises.

4.4.3 Security Requirements:

User authentication mechanisms are emphasized by security requirements in order to confirm users' identities. They also cover access control procedures to stop unauthorized access to restricted areas and data encryption techniques for safe data transmission and storage.

4.4.4 Availability:

Requirements for availability specify the acceptable amount of system downtime as well as interruption-minimization techniques. They consist of redundant systems to guarantee high availability and dependability and maintenance scheduling during low activity periods.

4.4.5 Functionality:

The system's essential features, such as the creation of QR codes, scanning, user management, and system integration with college systems, are outlined in the functionality requirements.

4.5 System Requirements

4.5.1 Database Requirements:

1. **Data Schema Design:** Define a clear and well-structured database schema that includes tables for users, gate passes, access logs, and any other relevant data entities. This schema should be designed to accommodate the specific data needs of the gate pass system.
2. **User Profiles and Access Permissions:** Maintain a database for user profiles and access permissions which contains information pertaining to students, faculty, and visitors. This database should include fields for user profiles, access permissions, and unique identifiers. Implement the necessary user roles and access levels.
3. **Gate Pass Data Storage:** Store Gate pass data, including the information embedded in the codes such as user details, access privileges, and timestamps.
4. **Gate Pass Validation History:** Maintain a record of Gate Pass validations, tracking when and where each QR code was scanned and Gate Pass is validated. This information can be useful for security and auditing purposes.
5. **Data Redundancy and Backup:** Implement data redundancy and regular backups to prevent data loss due to hardware failures or other unforeseen events. Backup strategies should be robust and routine.

4.6 Analysis Models: SDLC model to be applied

1. Requirement Gathering and Analysis:

The project team gathers and examines requirements for the "DiG-Pass" system during this phase. In order to understand the needs and expectations of stakeholders, including administrators, staff, and students at the college, engagement is necessary.

2. System Design:

In the System Design phase, the project team creates a detailed blueprint for the "DiG-Pass" system based on the gathered requirements. This includes designing the user interfaces for the Android application used for generating and scanning QR codes. It also encompasses planning the database schema, specifying the system's architecture, and identifying integration points with other systems.

3. Implementation:

Implementation involves turning the design and requirements into a functional system. The Android app, backend services, and system management dashboard are being developed by developers.

4. Integration and Testing:

The "DiG-Pass" system is assembled from the developed system's component parts. Several testing tasks are included in this phase:

- a) Unit Testing: Individual components are tested for correctness.
- b) Integration Testing: The interactions between different system elements are verified.
- c) System Testing: The overall functionality of the system is validated.
- d) User Acceptance Testing (UAT): Stakeholders, including college staff and administrators, test the system to ensure it meets user requirements and expectations.

5. Deployment:

In the Deployment phase, the "DiG-Pass" system is prepared for rollout. It can be installed and configured in a production or testing environment. The Android app is distributed to the user's devices, backend services are deployed, and database systems are set up. After receiving proper training, the system is made operational for both administrators and end users.

6. Maintenance:

The Maintenance phase involves ongoing monitoring and support. The system is continuously checked for performance and security. Any issues or bugs reported by users are addressed and resolved in a timely manner. Technical support is provided as needed. This phase ensures the long-term success and sustainability of the "DiG-Pass" system.

Chapter 5

System Design

5.1 System Architecture

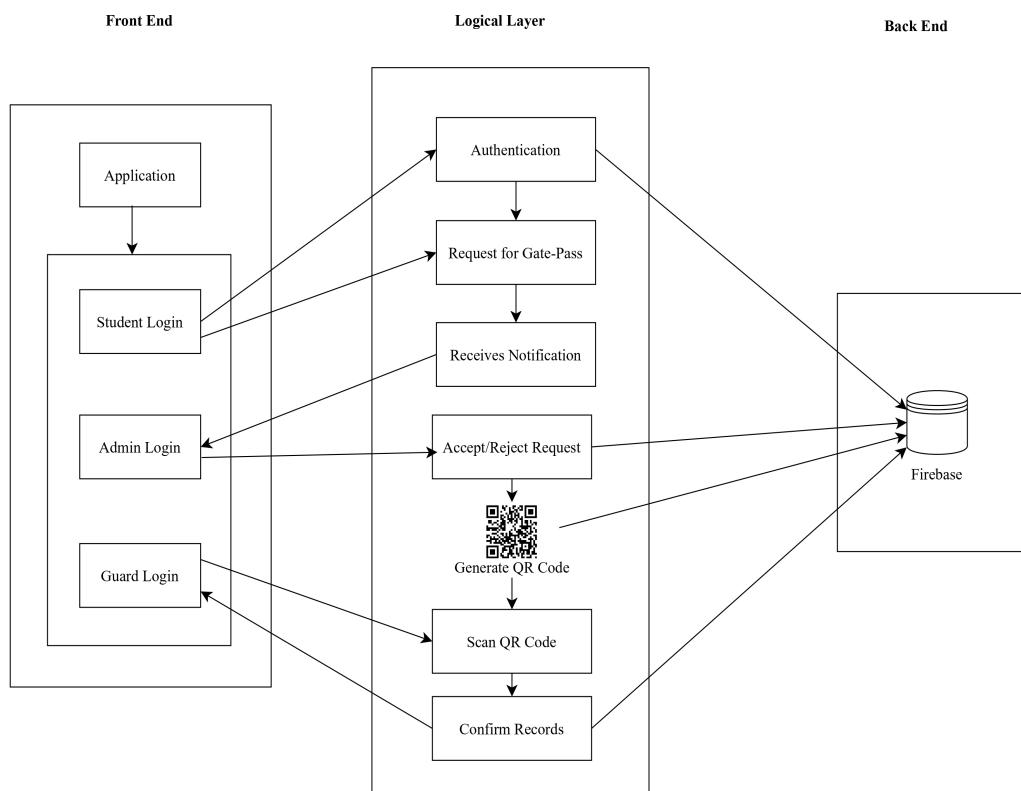


Figure 5.1: System Architecture

Initially, the user will login to the DiG-Pass application. The user will send the request for a gate pass to the admin. The admin will get notified about the request for a gate pass. The user will approve or reject the request. If the admin approves the gate pass request, then the user will get a notification of the approval of the gate pass, and a QR code will be generated for verification of the gate pass. At the end, the security guard will scan the QR code and validate the gate pass. If the QR code is valid, then the guard will allow the user to leave the college campus; otherwise, the user will be denied.

5.2 Data Flow Diagrams

DFD Level 0

A Data Flow Diagram (DFD) Level 0 is the highest-level view of a system's data flow. It provides an overview of the entire system, showing how data enters and exits the system, as well as the main processes or functions within the system.

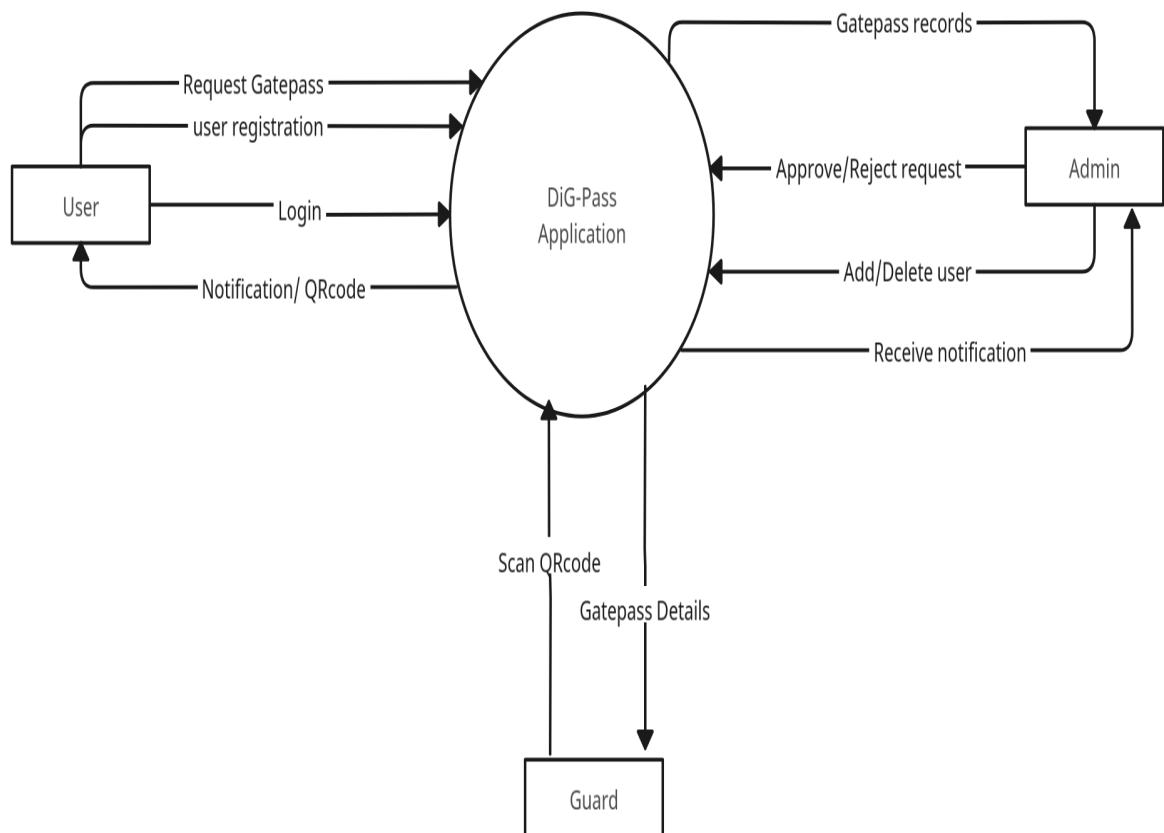


Figure 5.2: DFD Level 0

DFD Level 1

A Data Flow Diagram (DFD) Level 1 is the next level of decomposition in the DFD hierarchy, following the DFD Level 0. It provides a more detailed view of the system by breaking down the high-level processes of the Level 0 DFD into smaller sub-processes. DFD Level 1 typically includes several processes, data stores, and data flows, allowing for a more granular understanding of the system's functionality.

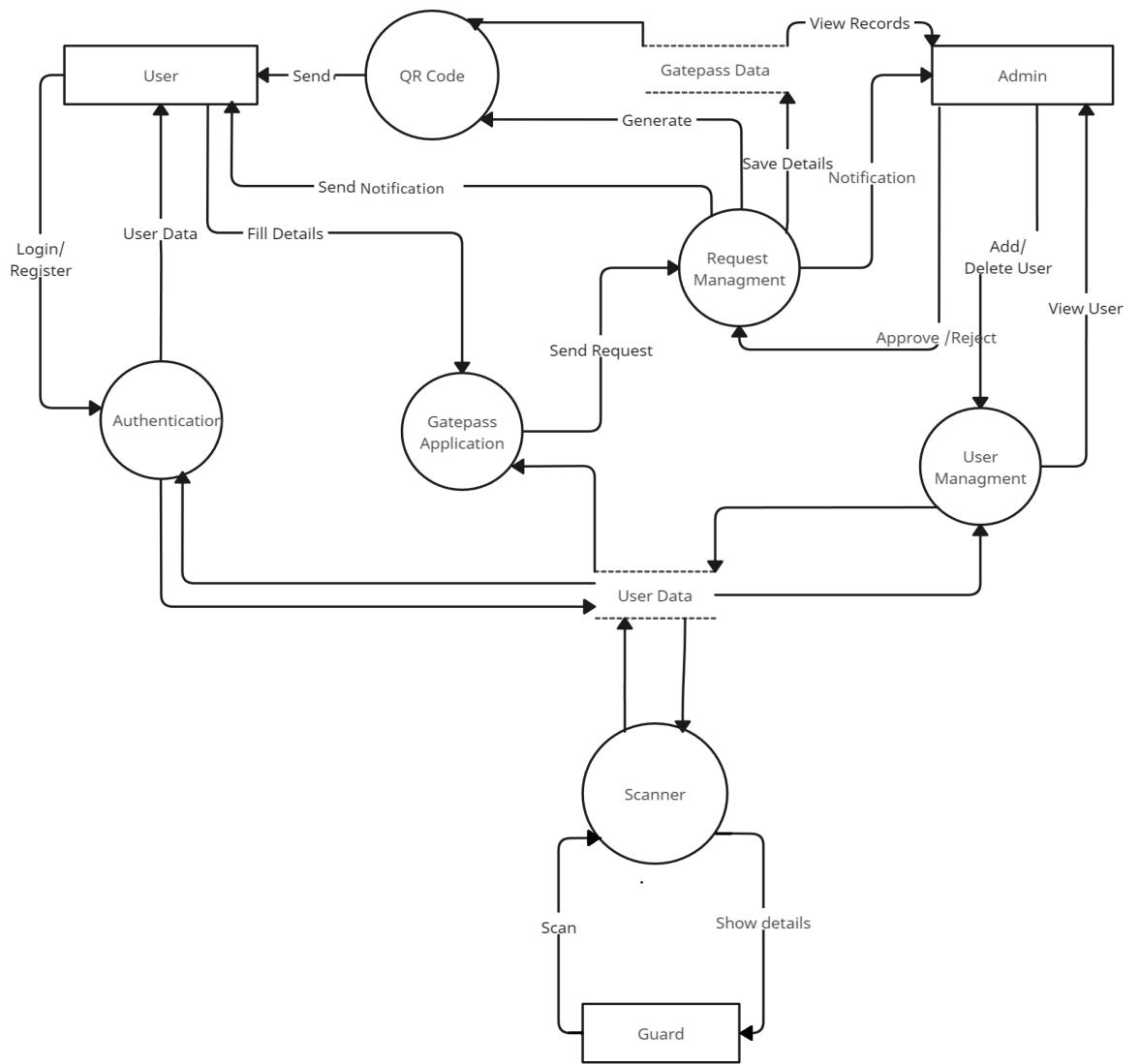


Figure 5.3: DFD Level 1

DFD Level 2

A Data Flow Diagram (DFD) Level 2 is the next level of decomposition in the DFD hierarchy, providing even more detailed insights into the processes, data flows, and data stores of a system.

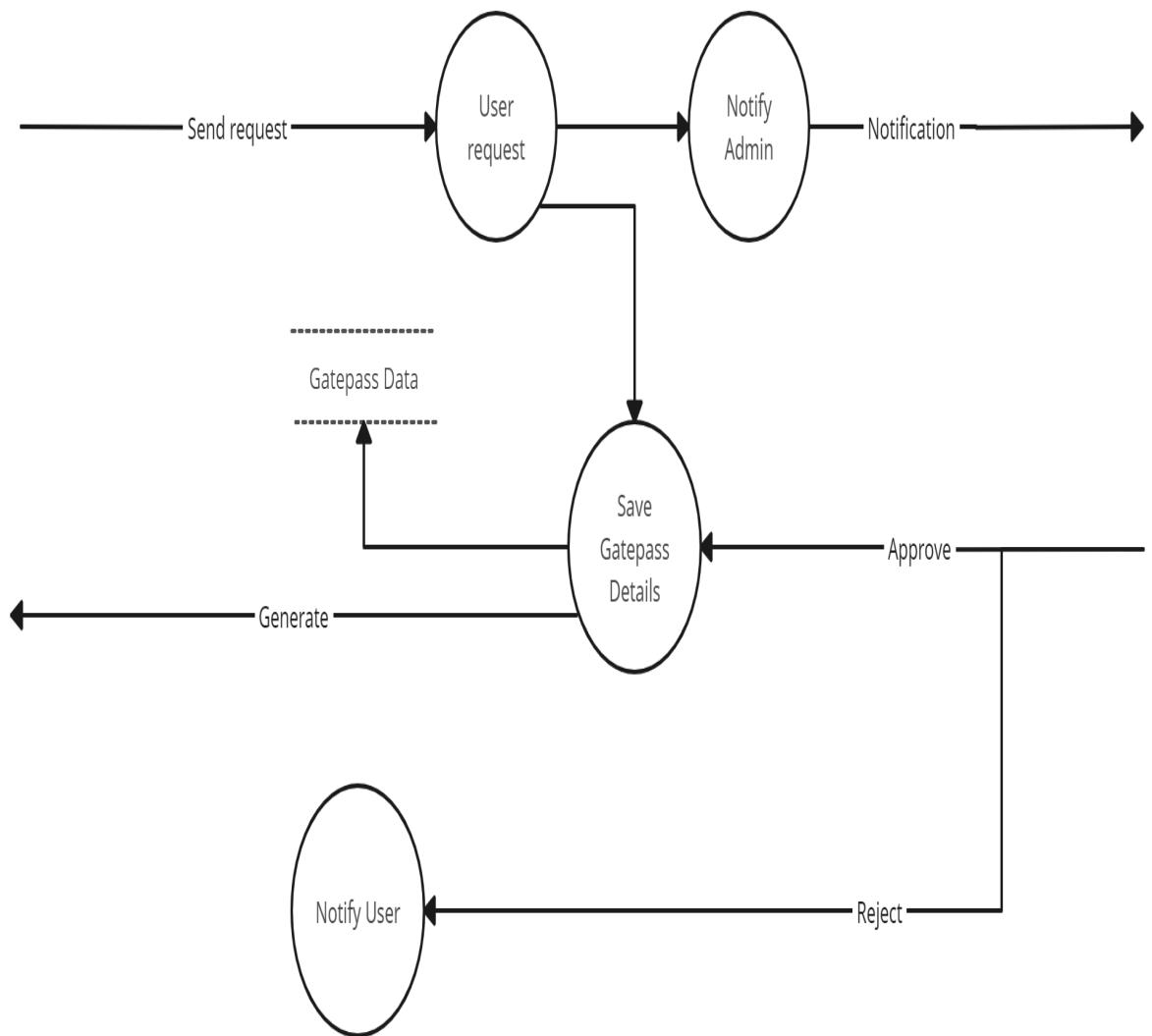


Figure 5.4: DFD Level 2

5.3 Entity Relationship Diagrams

5.3.1 Entity Relationship Diagram

An Entity-Relationship Diagram (ERD) is a visual representation of the data model that represents the structure and relationships of data within a system, typically a database.

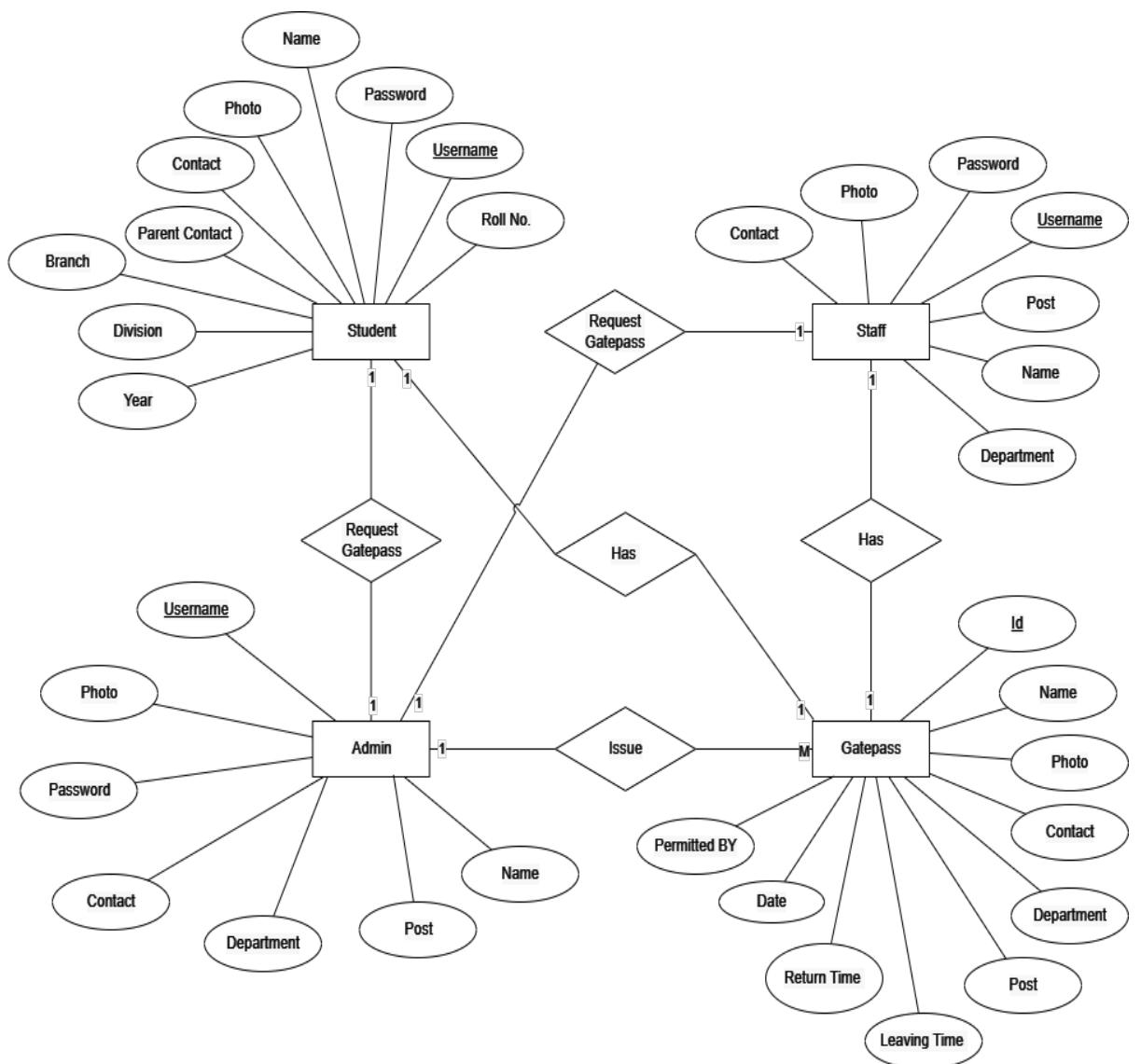


Figure 5.5: ER Diagram

5.4 UML Diagrams

5.4.1 Activity Diagram

An Activity Diagram is a type of UML (Unified Modeling Language) diagram used in software engineering to visually represent the workflow and activities within a system or a business process.

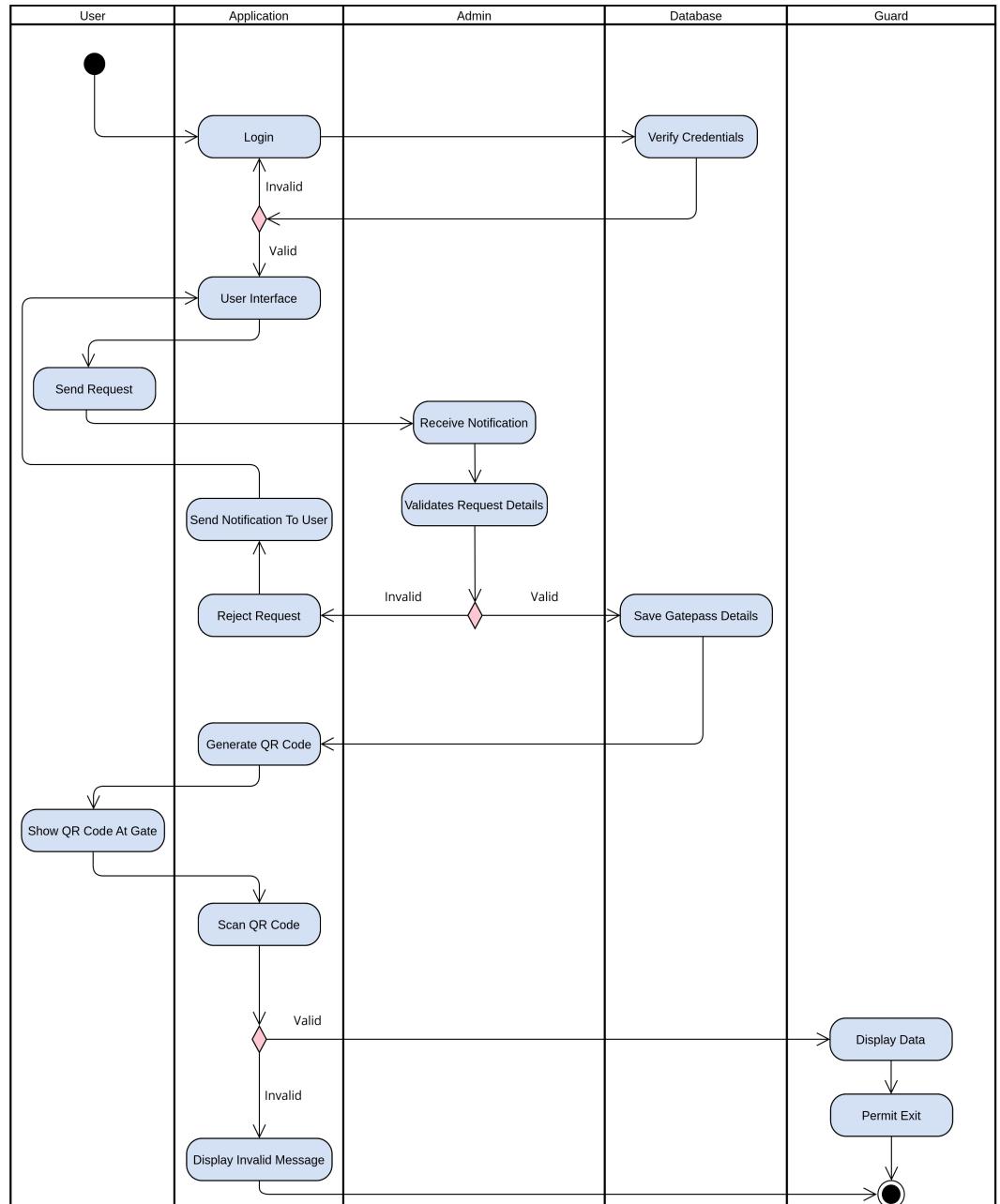


Figure 5.6: Activity Diagram

5.4.2 Use Case Diagram

A Use Case Diagram is a type of UML (Unified Modeling Language) diagram that is used to visualize the functional requirements and interactions of a system from the perspective of its users or external entities. It focuses on depicting the various use cases (individual functionalities or features) of the system and how users or actors interact with those use cases.

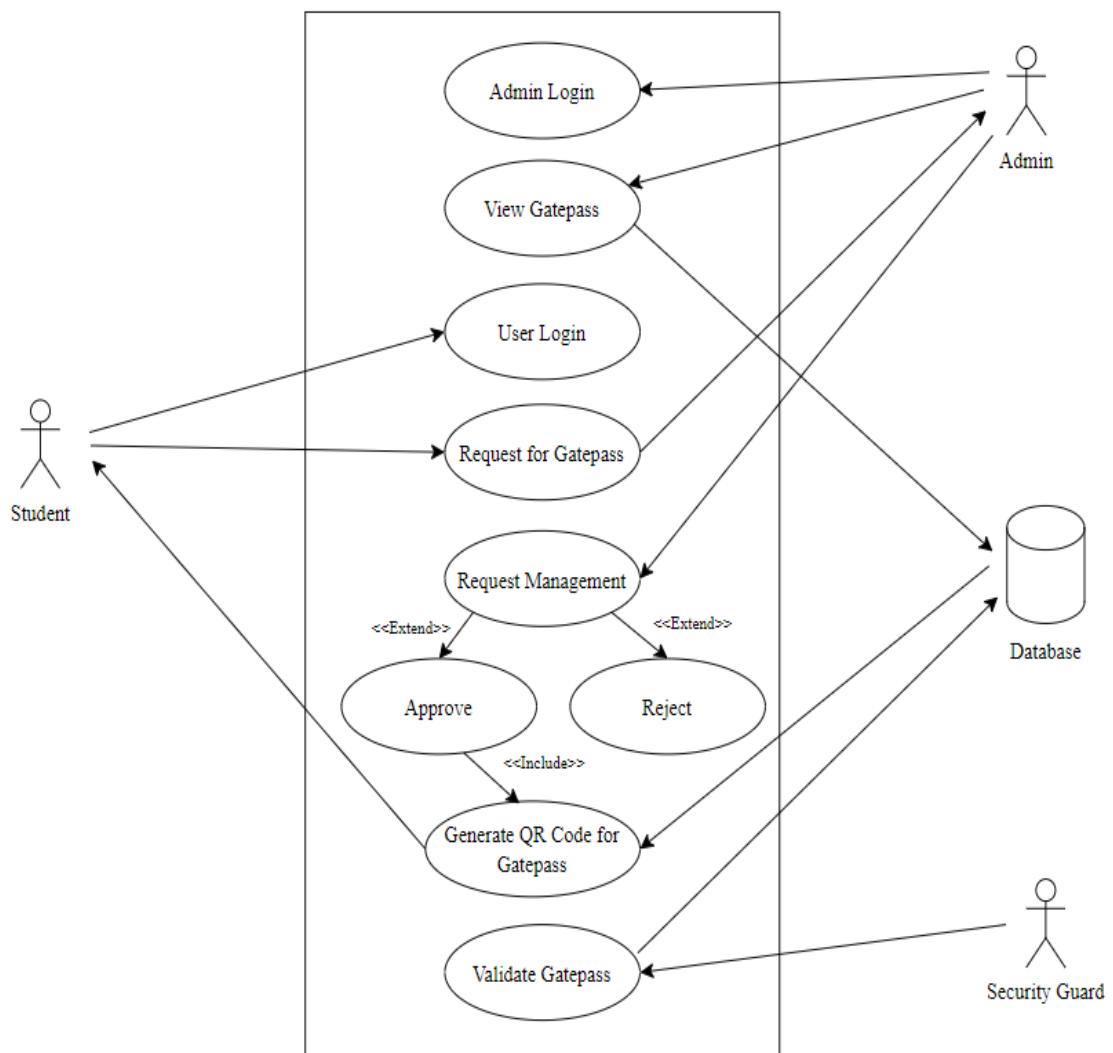


Figure 5.7: Use Case Diagram

5.4.3 Class Diagram

The most widely used UML diagram is the class diagram. It is the building block of all object-oriented software systems. We use class diagrams to depict the static structure of a system by showing the system's classes, their methods, and attributes. Class diagrams also help us to identify the relationships between different classes or objects.



Figure 5.8: Class Diagram

5.4.4 Sequence Diagram

A Sequence Diagram is a type of UML (Unified Modeling Language) diagram that illustrates the interactions and the sequence of messages or actions between objects or components in a system over a specific period of time. These diagrams are commonly used to depict the dynamic behavior of a system and to visualize the flow of control and data between various elements.

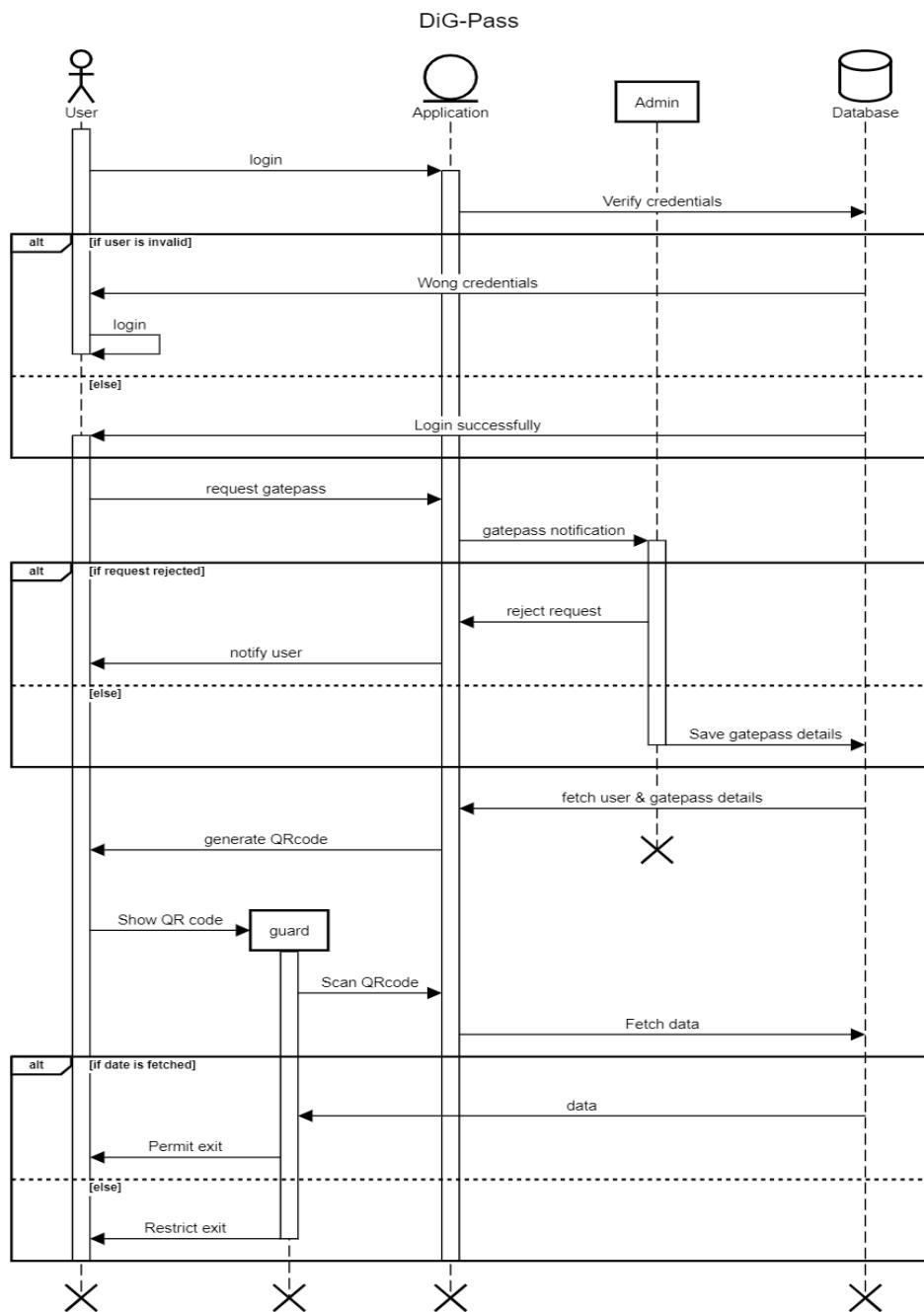


Figure 5.9: Sequence Diagram

5.4.5 Component Diagram

A Component Diagram is a type of UML (Unified Modeling Language) diagram used in software engineering to depict the organization and structure of the components that make up a system or software application. Components can represent software modules, libraries, classes, subsystems, or even physical components in a system. These diagrams help in visualizing the high-level architecture and relationships between components.

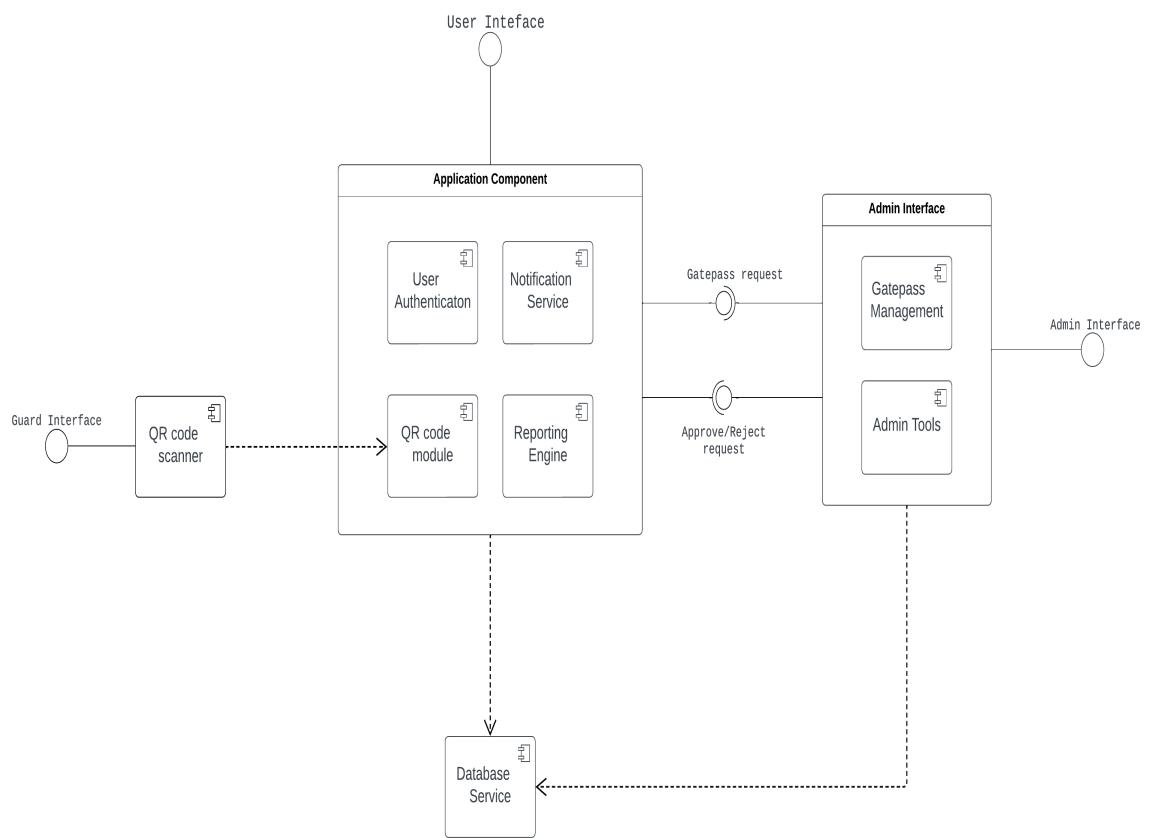


Figure 5.10: Component Diagram

5.4.6 Object Diagram

An Object Diagram is a type of UML (Unified Modeling Language) diagram that provides a snapshot or instance-level view of a system, emphasizing the specific objects and their relationships at a particular moment in time.

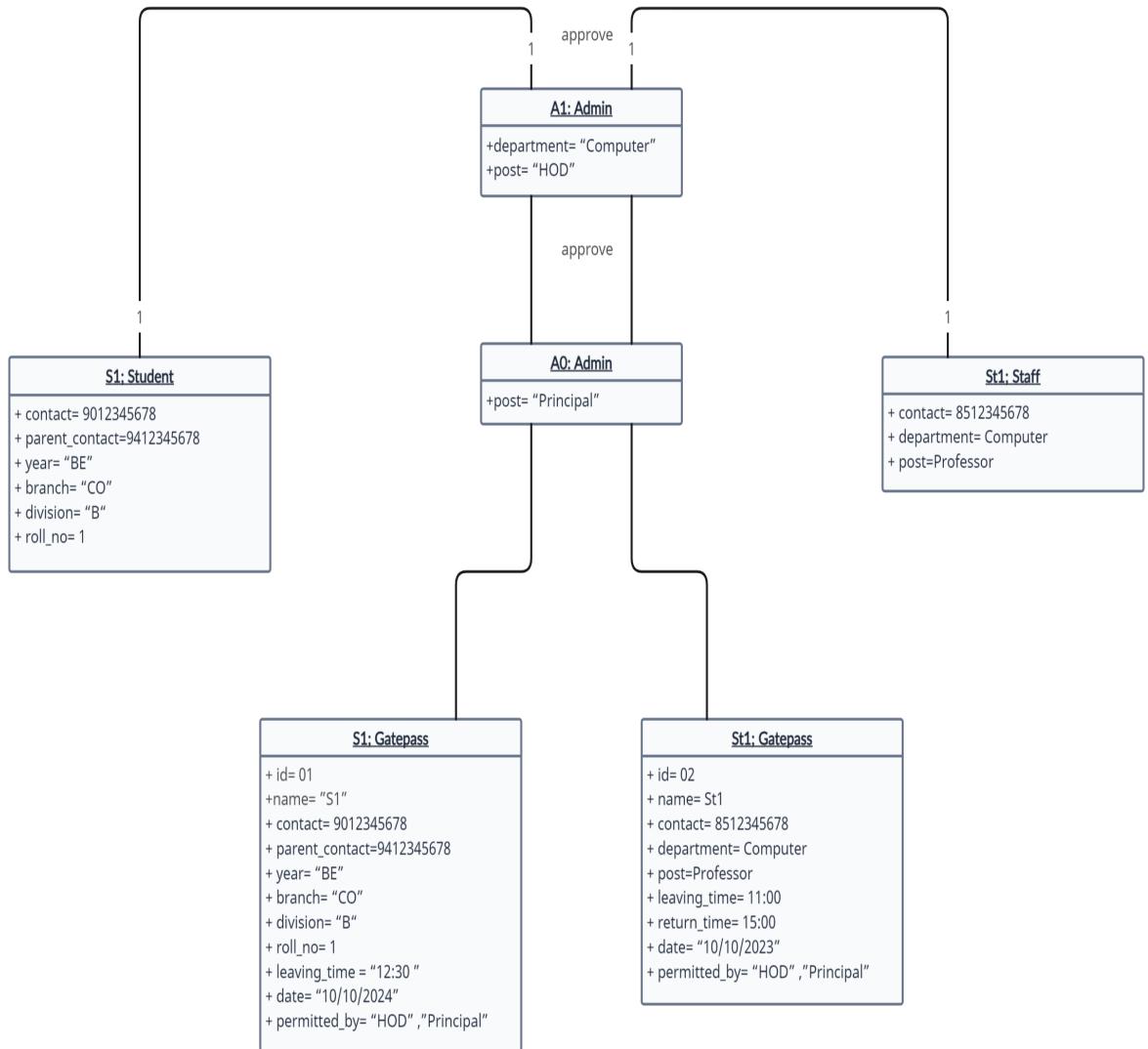


Figure 5.11: Object Diagram

Chapter 6

Other Specifications

6.1 Advantages

1. **Access Control:** This project can help enforce strict access control, ensuring that only authorized individuals gain entry to the college campus.
2. **Gate Pass Validation:** By generating QR codes or using other verification methods, the app can help security personnel quickly validate gate passes, reducing the risk of unauthorized exit from the college campus by students.
3. **Faster and Efficient:** Automating gate pass requests and approvals through the app eliminates the need for manual paperwork and reduces administrative workload.
4. **Real-Time Notifications to Users and Admin:** Admin will receive instant notifications about the request for gate pass, and students will get instant notifications about the status of their gate pass.
5. **Usability:** Students and staff can request gate passes from their smartphones, making the process more convenient and accessible.
6. **Reduced Administrative Costs:** By automating the issuance of gate pass processes, the app can help reduce paperwork, printing, and manual processing costs.

6.2 Limitations

1. **Device Compatibility Issues:** Not all Android devices, especially those with older hardware or outdated operating systems, may be incompatible with the app. This may restrict certain users' access to it.
2. **Poor Internet Connectivity:** The app may require a stable internet connection for functionality, which can be a limitation in areas with poor network coverage or during network outages.
3. **Technical Issues:** Like all software, this project may encounter technical issues, such as bugs and crashes with certain Android devices.

6.3 Applications

1. **Visitor Management:** Managing visitors in corporate offices, government buildings, educational institutions, and manufacturing plants by issuing QR code-based gate passes for streamlined entry and visitor tracking.
2. **Employee Access Control:** Providing employees with QR code-based gate passes for secure entry into restricted areas within a workplace, such as server rooms or confidential office spaces.
3. **Student Access Control:** Managing student access to campus facilities like dormitories, libraries, labs, and recreational areas using QR code passes.
4. **Visitor Tracking:** Recording entry and exit times of visitors for security and compliance purposes, and generating reports for auditing.
5. **Educational Institutions:** Managing access to classrooms, labs, libraries, and other facilities within educational institutions using QR code passes for students, faculty, and staff.

Chapter 7

Project Plan

7.1 System Implementation Plan

Sr.No	Task	Start Date	End Date	Status
1	Introduction and Problem Definition	03/07/2023	12/09/2023	Completed
2	Synopsis Documentation	15/09/2023	29/09/2023	Completed
3	Literature Survey	03/10/2023	12/10/2023	Completed
4	System Requirement Analysis	01/10/2023	10/10/2023	Completed
5	System Design	05/10/2023	03/11/2023	Completed
6	Conclusion	29/10/2023	04/11/2023	Completed

Table 7.1: System Implementation Plan

7.2 Gantt Chart

A Gantt chart is a project management tool that illustrates work completed over a period of time in relation to the time planned for the work. Gantt chart typically includes two sections: the left side outlines a list of tasks, while the right side has a timeline with schedule bars that visualize work weekly.

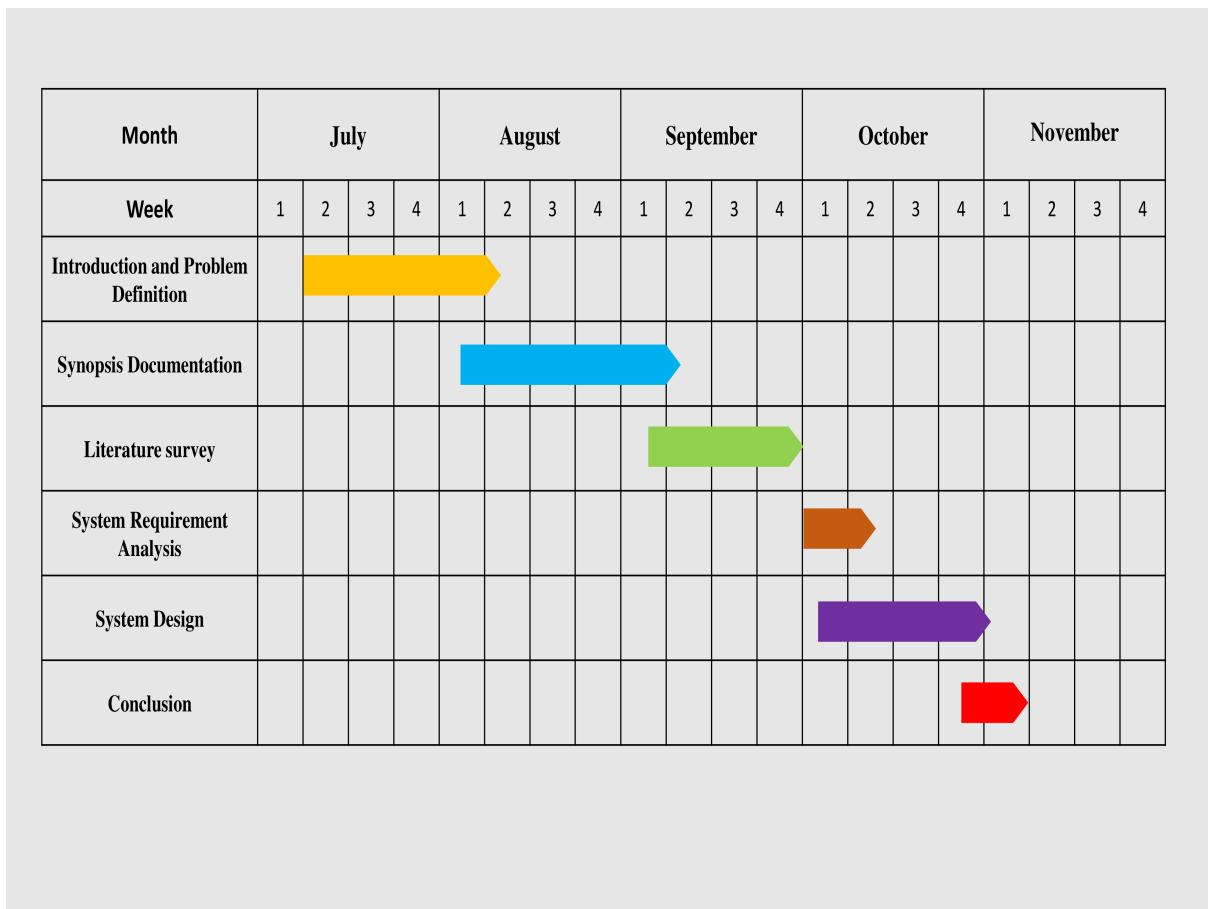


Figure 7.1: Gantt Chart

Chapter 8

Conclusion

DiG-Pass will provide a faster and more efficient gate pass issuance system through the app, reducing the manual paperwork and administrative burden. This system will replace the lengthy traditional gate-pass process. This system will ensure that only authorized persons can exit the college campus. DiG-Pass will provide the solution for validating the gate pass by generating a single-use QR code. By using a QR code, students can't make a duplicate gate pass. A separate gate pass will be generated for each student. No one can add the name to the gate pass, unlike in the traditional gate pass process. Students and staff can easily request the gate pass from their smartphone devices. The app provides real-time data on exits and monitors access points. It stores the record of gate passes student-wise in the database, and admins can easily analyze the history of gate passes.

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Annexure A

Plagiarism Report

1. Abstract

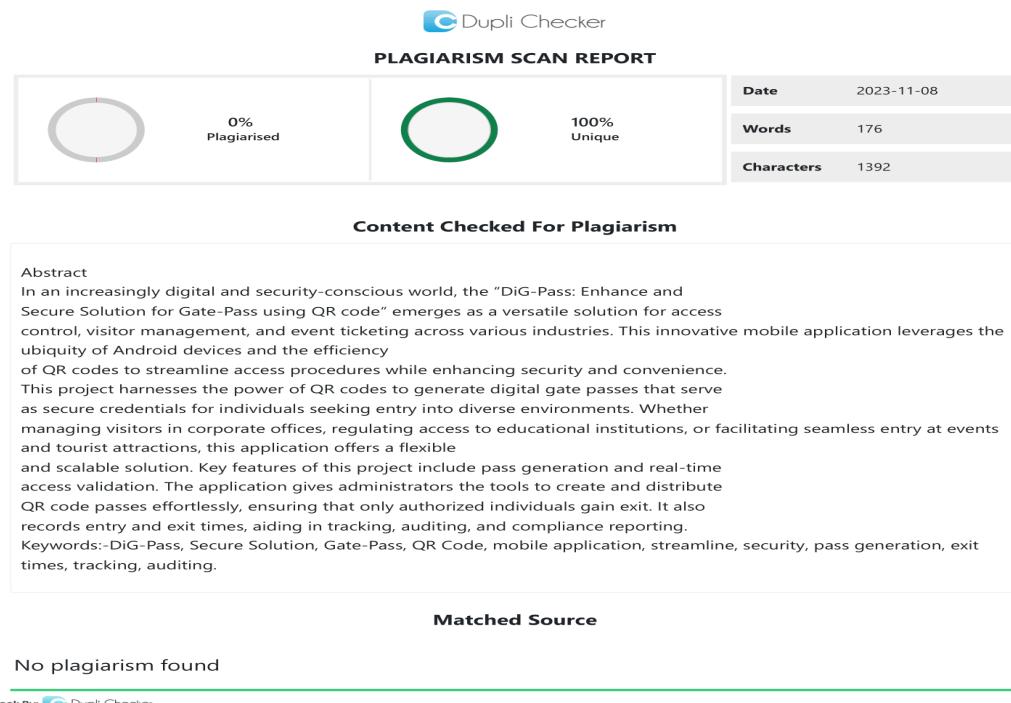


Figure 8.1: Abstract

2. Introduction

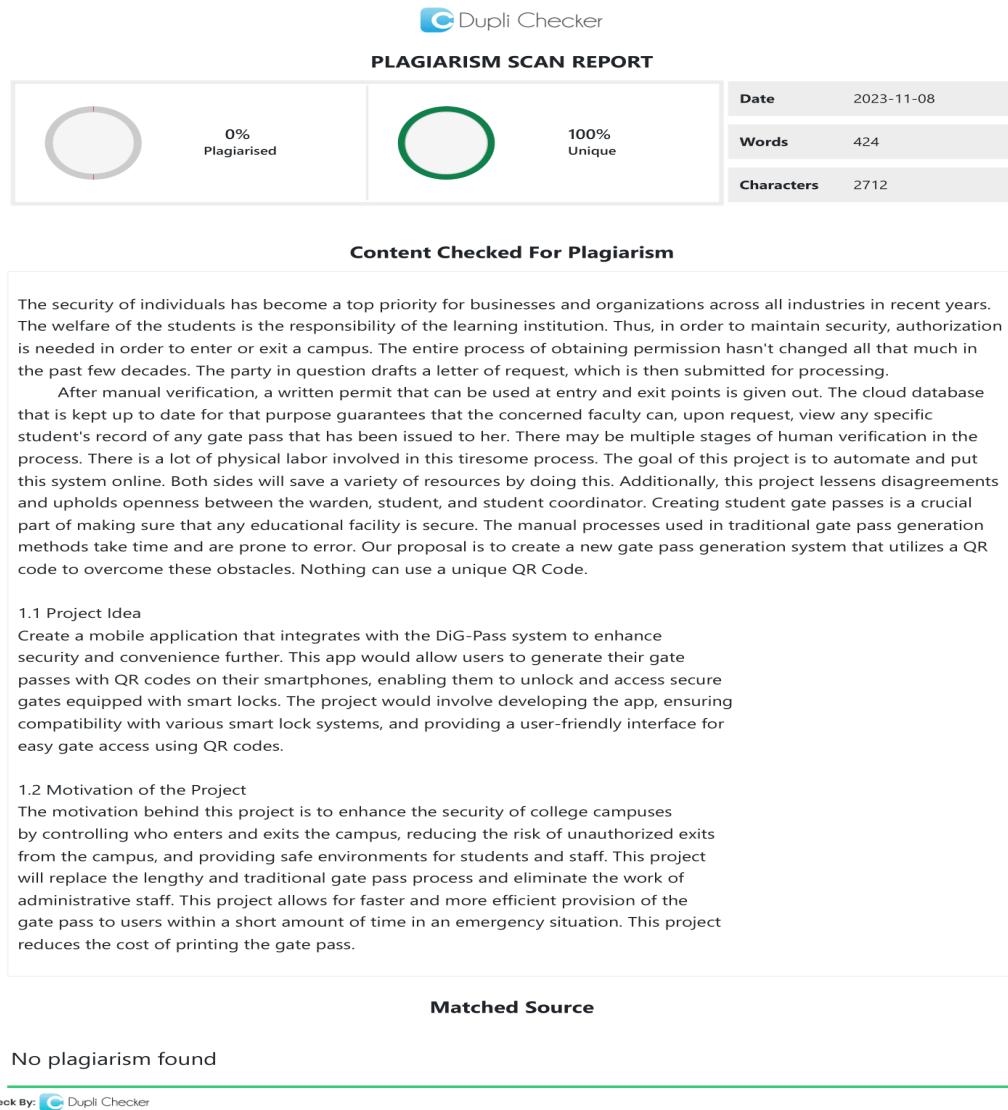


Figure 8.2: Introduction

3. Problem Definition and Scope

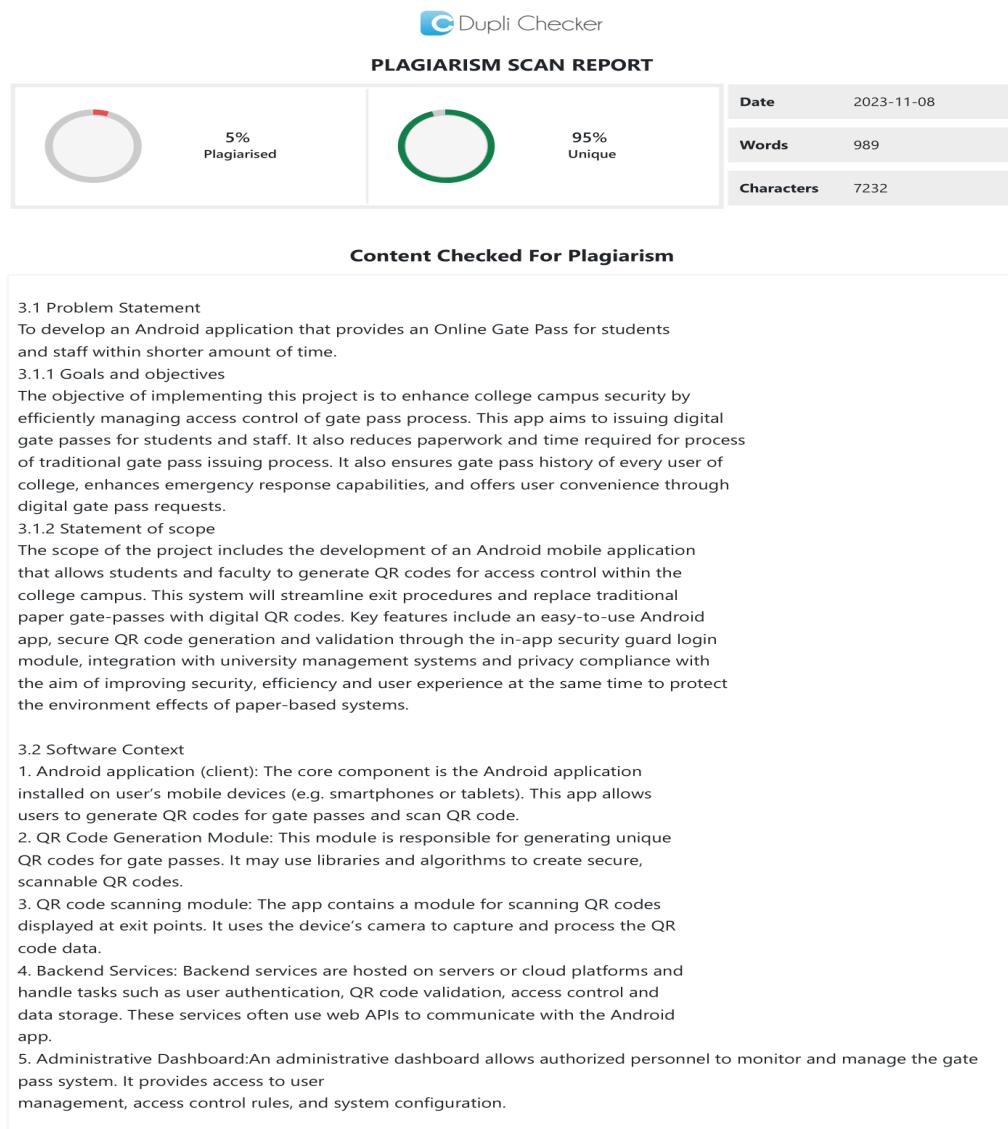
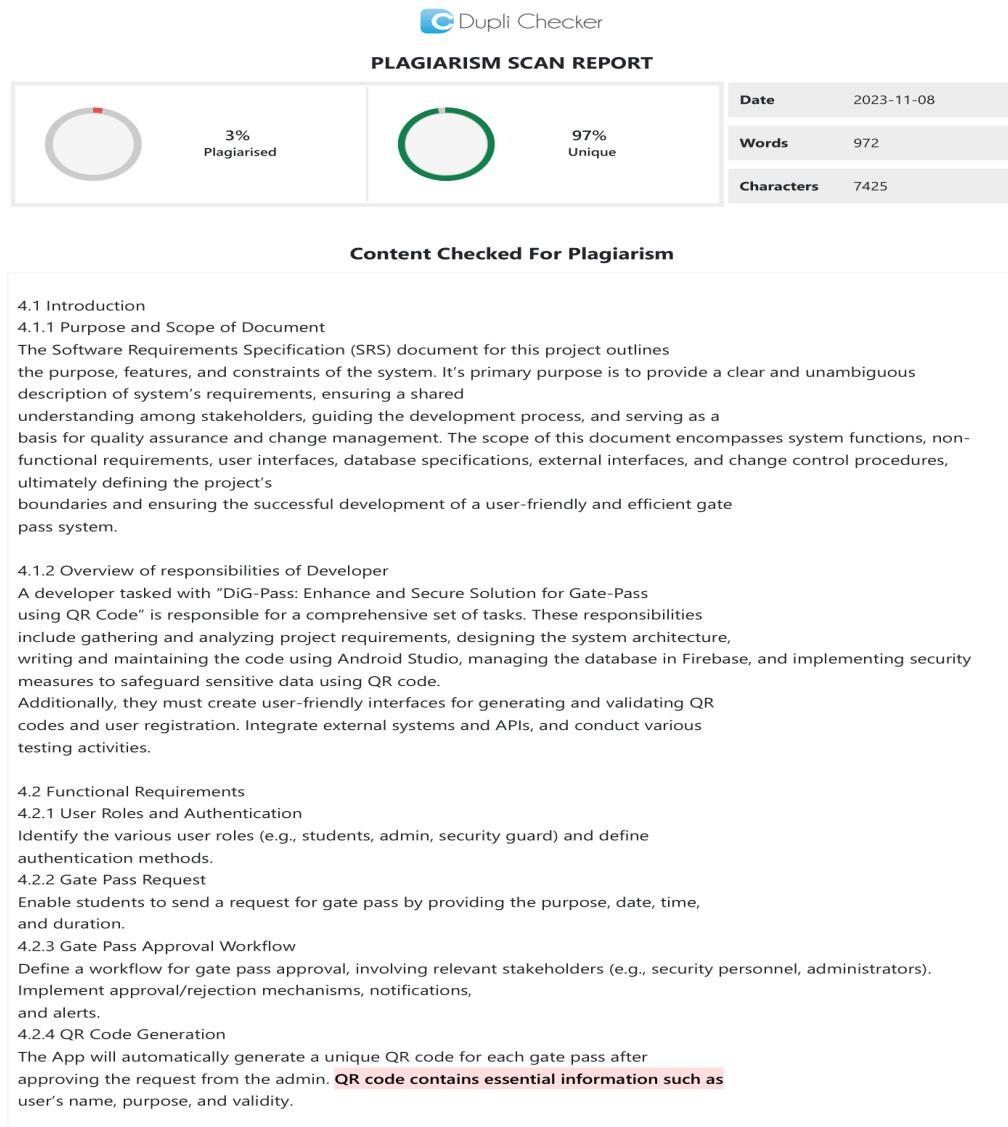


Figure 8.3: Problem Definition and Scope

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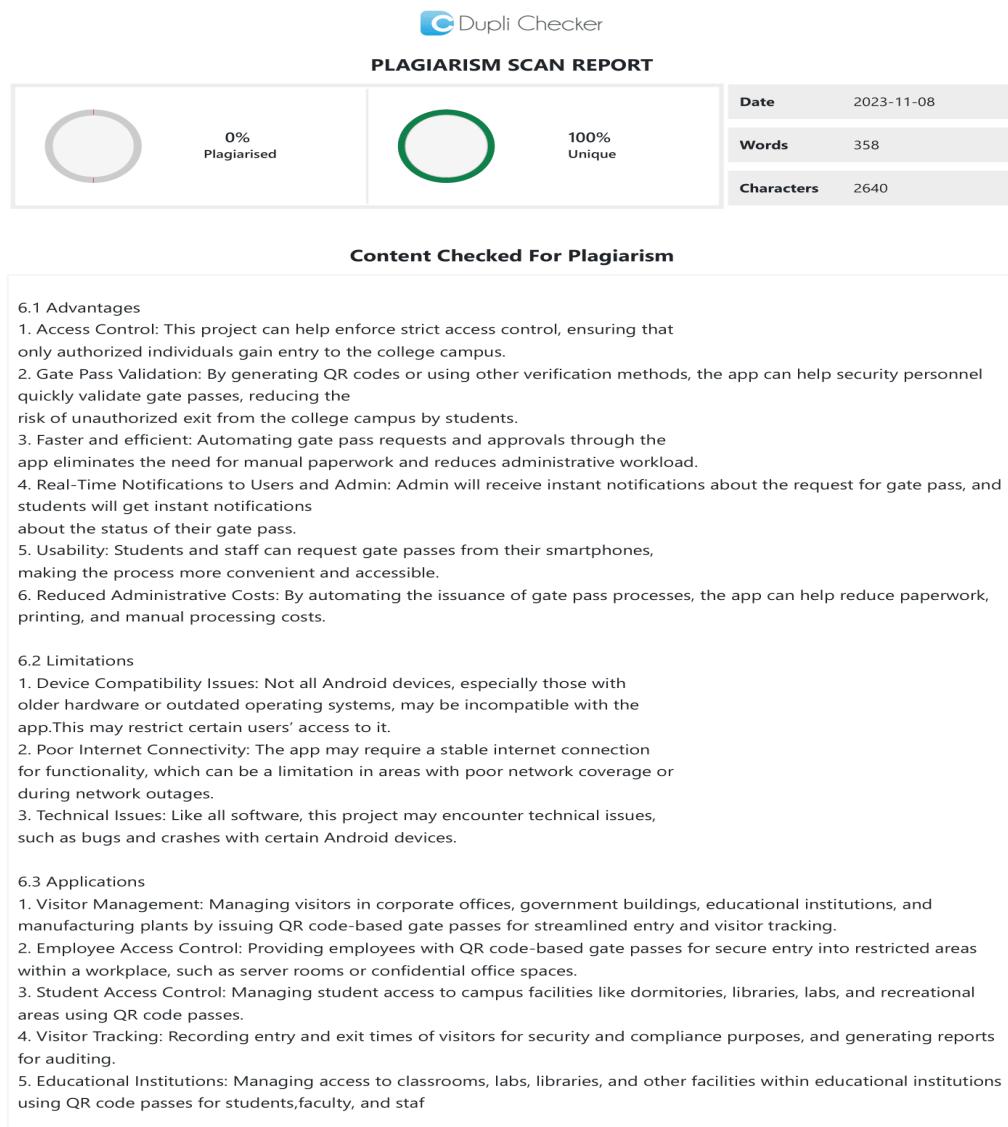
4. Software Requirement Specification



Page 1 of 3

Figure 8.4: Software Requirement Specification

5. Other Specifications



Page 1 of 2

Figure 8.5: Other Specifications

6. Conclusion

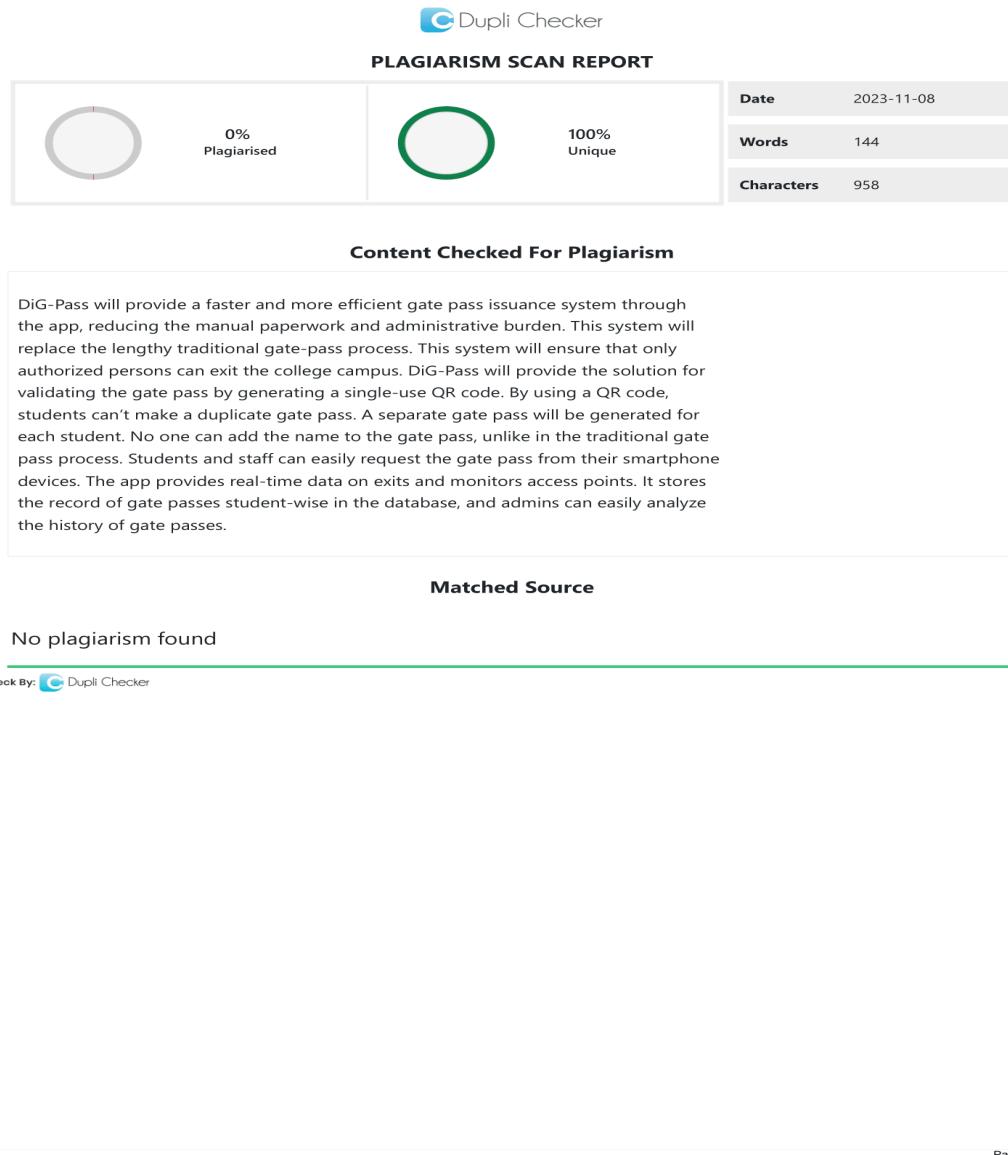


Figure 8.6: Conclusion