

Approbation of Leaves with QR Code



Praharsh Gowrishetty, Arepalli Gopi

Abstract: *The objective and scope of the project are to record the details and grant leave permission to the students and faculty in an institution in a secured way by eliminating the present system. Usually, leave permission is granted by giving the physical gate pass and this is a time taking process and the paper gate pass can be manipulated very easily. In this project, the paperwork is eliminated and a highly secured electronic version of the paper gate pass is provided in the form of a QR Code. Here in the project, only the administrator or HoD is approving the user with a QR Code, if they want to allow the student to leave the college premises. Appropriate training is provided to the user which suit their specific needs. When a student or a faculty need a leave, they can approach the concerned authorities, the credentials like unique ID, leaves left, etc are checked and then leave is granted in form of a QR Code. This QR Code is scanned by the security guards before allowing a person to leave the campus. The security guards have to be trained with scanning of QR Code which is a simple task. The system is intuitive and user-friendly. It simplifies the task and eliminates the paperwork. This project enables free, secured, fast and easy leave approval.*

Keywords : *QR, Quick Response Code, Model View Controller, Client-Server Application.*

I. INTRODUCTION

In educational institutions, the approval of leaves is a tedious work to the superior authorities. In places such as colleges, universities, a paper slip is issued to a student by an official which can easily be forged. So, a secured electronic version of gate pass in the form of a QR Code can be used instead of traditional paper slips. A Quick Response Code (QR Code) is a two-dimensional barcode, which has fast readability and greater storage capacity. A QR Code can be read by an imaging device such as a camera and then be processed. This system simplifies the process of granting permission to students and staff in an institution and eliminates paperwork. It also eliminates the workload and human effort by automatically displaying the number of leaves left for an employee and attendance percentage for a student in a college in the webpage so permission can be easily granted based on those factors. And once when the permission is granted and leave is approved, a unique QR code is generated.

The QR Code when scanned by the security at an exit point, displays the permission of approval, student/staff name, unique ID, time stamp and validity of the leave. This QR Code can be a secure way to restrict students from leaving the college without proper approval and enhances security. "Approbation of Leaves" is Client-Server application software[1]. It uses the concept of MVC (Model View Controller) to implement the application. The main objective of this system is to upgrade the existing system by increasing its efficiency and effectiveness by reducing manual work. This project improves the working methods by replacing the existing manual system with the computer-based system. This project aims to complete atomization of the manual system to the computerized system.

QR Code is used because interacting with it is simple enough and intuitive[1]. A single scan can perform the programmed action. On scanning a QR code, the required data is extracted from the patterns that are present in both horizontal and vertical components of the image. Also, QR codes are easy to use, secured, fast readable and can store a large amount of information.

II. PROBLEM STATEMENT

In educational institutions, colleges and workplaces leave permission is granted by giving a physical gate pass. It is a time taking process and this leave slip can be manipulated very easily and hence is unsecure. So, this project aims to provide an electronic version of the gate pass in the form of a QR Code and eliminate the paperwork. This project's goal is to secure the system and increase the efficiency and effectiveness by reducing manual work[2].

III. EXISTING AND PROPOSED SYSTEM

Currently, in most of the schools and colleges, leave permission is a step by step lengthy time taking tedious process. A student/faculty has to approach a superior faculty like an HoD for permission. Then the HoD looks after the attendance of the student in the student profile and then issues a paper slip. Then the paper slip has to be filled by the student and all the details are verified by the Head or incharge and then attested. This paper slip is again verified and collected by the security at the exit point[2]. This is a very tedious process. In the proposed system initially, a superior employee has to Login or sign up to approve the leave. The type of leave to be approved has to be selected i.e leave permission for a Faculty or a Student. Then the unique Identification number of the Student/Faculty has to be entered. If the credentials are matched, then his/her details are displayed.

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The details such as his/her unique ID, number of leaves taken this month, attendance percentage, number of leaves leftover (in case of a faculty) are displayed. If all the credentials are met then a gate pass is granted if not the permission for leave is rejected. A unique QR code is generated at every time of approval. This QR code is later scanned by the security at the exit point and tells about the approval of leave[3].

IV. LITERATURE SURVEY

Table 1: Literature Survey for Approbation of Leaves with QR Code.

S.No.	Name of Author	Title of Paper	Technique	Advantages	Disadvantages
[1]	Noriyoshi Anbai	Gate Management System	Biometrics based	Simple and secured biometric system.	Management of biometrics is tedious process.
[2]	Shoji Suzuki, Hiroshi Hanyu, Fumio Enmei	Smart Security System	Sensor network security system SNS	Highly secured system.	No backup measures at time of a failure.
[3]	Rida M. Hamza, David W. Meyers	System for Gate Access Control	RFID Vehicle Tag Reader, Personal Tag Reader and Facial Detection and Recognition System	Pre-verification and post-verification techniques.	Facial detection can be a problem due to lighting constraints.
[4]	Kwon, Ki-Hyeon, Lee Hyung-Bong	Gate Management System by Face Recognition using Smart Phone	Face Recognition using a smartphone	Easy and intuitive facial detection.	Hardware capabilities are only upto a certain extent.

V. SYSTEM ARCHITECTURE AND FLOWCHART

In Figure 1, the administrator communicates with the help of the World Wide Web (WWW). He does the entire activity of logging in and granting of gate pass as a QR Code by using Apache Tomcat Server and MySQL Database. The backend is done by using PHP[7]. The front end is developed by using HTML, Bootstrap and CSS.

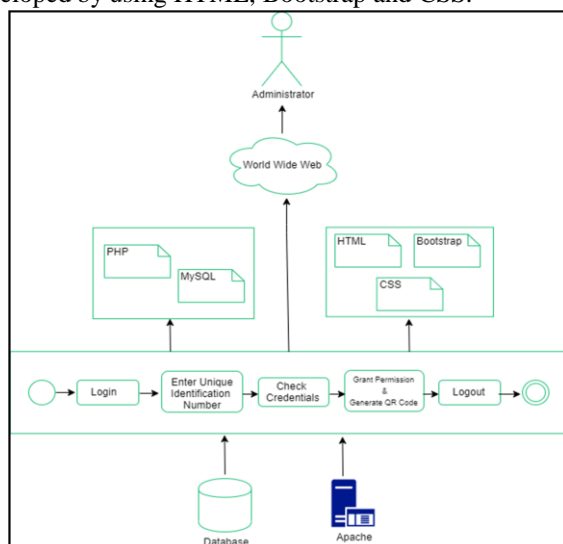


Fig. 1: Software Architecture of Proposed System.

In Figure 2, initially, a superior employee has to Login to approve the leave. The type of user has to be selected either a Faculty or a student. Then the unique Identification number has to be entered. If the credentials are matched, then his/her details are displayed. The faculty/student details are displayed. The details such as Picture of student/faculty, his/her unique ID, number of leaves taken

this month, attendance percentage, number of leaves leftover are displayed. If all the credentials are met then a gate pass is granted. A unique QR code is generated which is scanned by the security at the exit point. The QR Code when scanned displays Name, ID, timestamp, date and Permission Granted.

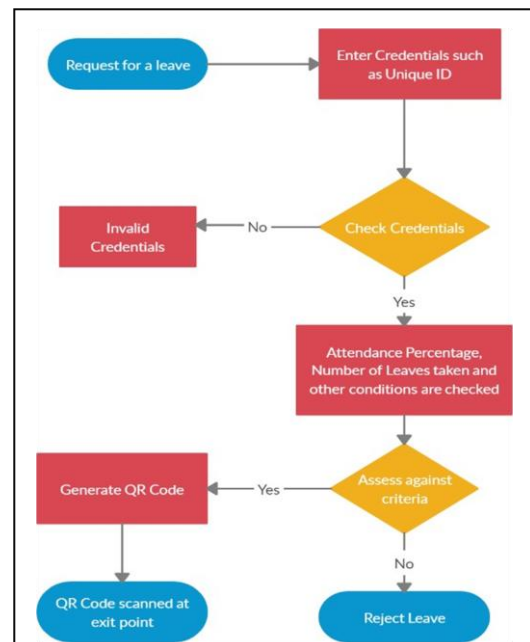


Fig. 2. Flowchart depicting the working of the system.

VI. FEATURES

Few important features of this project are:

- No approval for leave permission for 2nd time within a gap of 15 hours is integrated.
- A student/faculty cannot be granted multiple leave permissions within a time gap of 15 hours. That indicates that a student/faculty cannot be granted a leave for two times in a single day.
- Monthly reset of the number of leaves taken by faculty/student and the limited number of permissions a year.

At the beginning of every month, the number of leaves taken by every student and faculty is reset to zero so that the monthly number of leaves taken by a student and faculty can be monitored. Also, only a certain number of permissions are given every month.

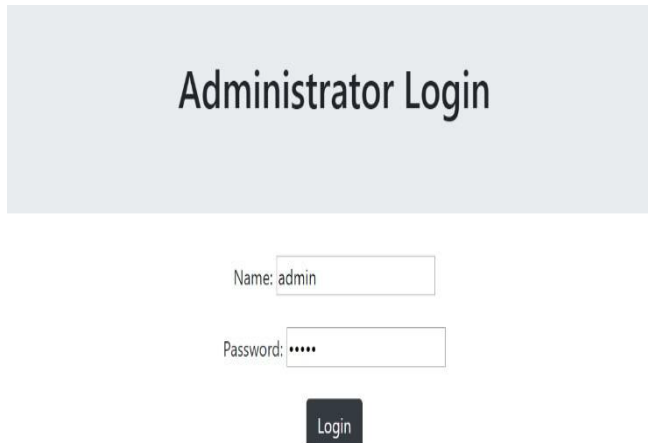
- Change of attendance percentage after every leave request approval for students[3].

Once when a leave request is approved for a student, then the student's attendance percentage is changed accordingly.

- The monthly add-on of the number of permissions for a faculty.

Every month the number of permissions add on for a faculty. By default, for every faculty 2 number of permissions are added. If no number of permissions are taken then two number of additional permissions are added to the existing number.

the Faculty Page for granting of leave permission. The Administrator has to select the particular option based on the need whether for a student or a faculty. If a student requests for a leave request then, the administrator chooses the Student Portal button. If a faculty requests the administrator for leave or permission then, the In Figure 3, when the web application is launched, the home page appears where the Administrator has to login with his credentials i.e the username and password.



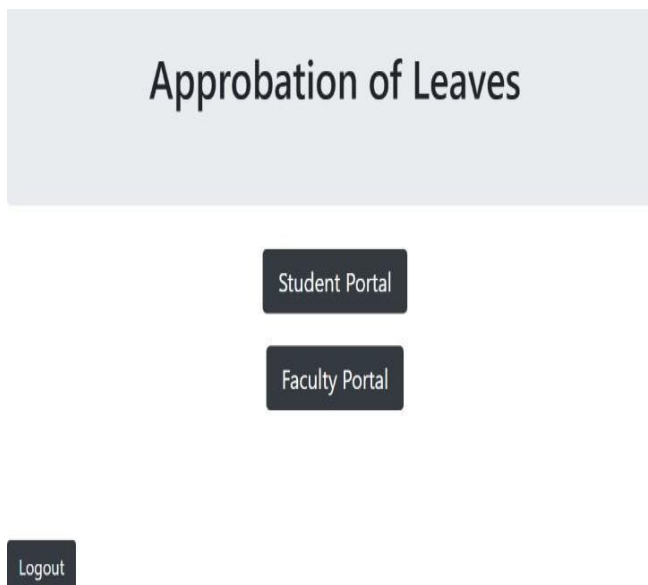
Administrator Login

Name:

Password:

Fig. 3: Administrator Login.

If the Administrator username and password are correct and match with the ones in the database then the web page navigates administrator to the Home Page i.e Approbation of Leaves page. If the two fields i.e name and password are left empty then an error message, "Please fill out details" is raised. If the details are incorrect then an error message, "Invalid Admin credentials" is raised. In Figure 4, if the Administrator credentials are matched, then the web page is navigated to this home page. In this home page, we have two buttons namely, Student Portal and Faculty Portal. These buttons act as the links to Student and

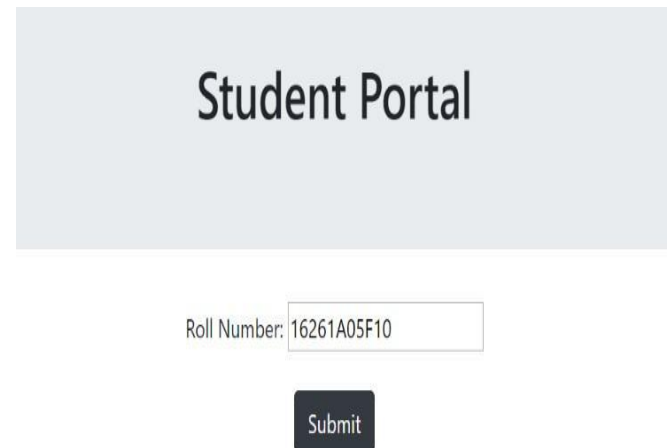


Approbation of Leaves

Fig. 4: Home page.

administrator chooses the Faculty Portal. The administrator can log out at any time after granting the leaves with help of clicking on the logout button.

VII. RESULTS

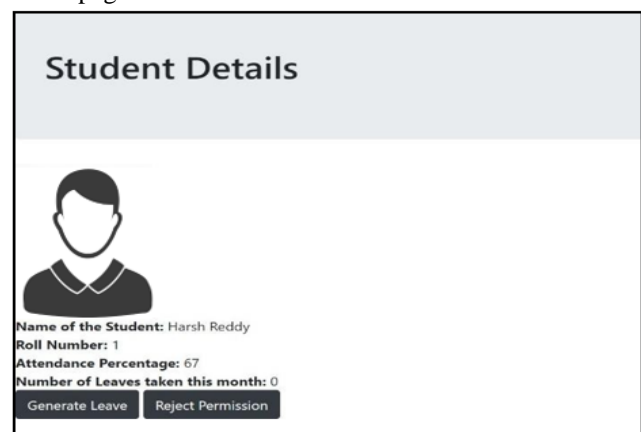


Student Portal


Roll Number:

Fig.5 Student Portal.

In the above Figure 5, if a Student requests administrator for leave permission, then the Administrator chooses the Student Portal. Then the administrator enters the Student unique Roll Number and clicks the submit button. If the roll number field is left blank, then a message, "Fill out the details is displayed". If the student details are not found then a message, "Student details not found is displayed". If the roll number of Student is correct and found in the database, then the web page gets navigated to the student details page.



Student Details



Name of the Student: Harsh Reddy
Roll Number: 1
Attendance Percentage: 67
Number of Leaves taken this month: 0

Fig.6: Student Details.

In the above Figure 6, the Student Roll Number is checked in the database and then if found, the Student details are displayed. The details of the student along with the name, image, roll number, attendance percentage and number of leaves taken in the respective month are displayed. When the student is granted leave permission, his/her's attendance percentage a decreases for taking the missing the rest of the day. Also, the Administrator can reject the leave request raised by the student at times due to reasons like low attendance percentage or when some irrelevant reason is stated for the leave request.



Fig. 7: QR Code generated for Student.

In the above Figure 7, if the Administrator wishes to grant the leave to the Student, then on clicking the Generate Leave button a unique QR Code is generated[6].

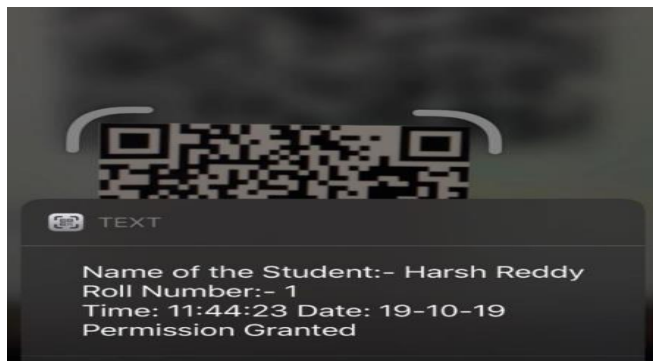


Fig. 8: QR Code of Student when scanned.

In the above Figure 8, this QR Code when scanned at the exit point by the security through an imaging device like a mobile phone, then the details are displayed as above.

Faculty Portal

Faculty ID:

Fig. 9: Faculty Portal.

In the above Figure 9, if a Faculty requests for leave or permission, then the Administrator chooses the Faculty Portal. Then the administrator enters the unique Faculty Identification Number and clicks submit button.

If the unique faculty id field is left blank, then a message, “Fill out the details is displayed”. If the faculty details are not found then a message, “Faculty details not found is displayed”. If the Faculty ID of faculty is correct and found in the database, then the web page gets navigated to the faculty details page.

Faculty Details

Name of the Faculty: BN Reddy

Unique ID: A1

Permissions Left : 2

Leaves taken this month: 0

☐ Permission
☐ Leave

Fig. 10: Faculty Details.

In the above figure 10, the Faculty Id is checked in the database and then if found, the Faculty details are displayed. The details of faculty name, image, faculty id, number of permission left and number of leaves taken in the respective month are displayed.

A faculty has two kinds of leave requests i.e a Leave and Permission. For every faculty 2 permissions are provided every month and they cannot exceed this value. They can add on to the next month if not utilized in the current month. The maximum permissions in a year are 24.

A faculty can take any number of leaves per month. The number of leaves taken by him/her per month is also displayed. And the value increments after every leave is



Fig. 11: QR Code generated for Faculty.

granted. Also, the Administrator can reject the leave or permission request raised by the faculty at times due to some reasons. In Figure 11, if the Administrator wishes to grant the leave or permission to the Faculty, then on clicking the Generate Permit button a unique QR Code is generated[6].

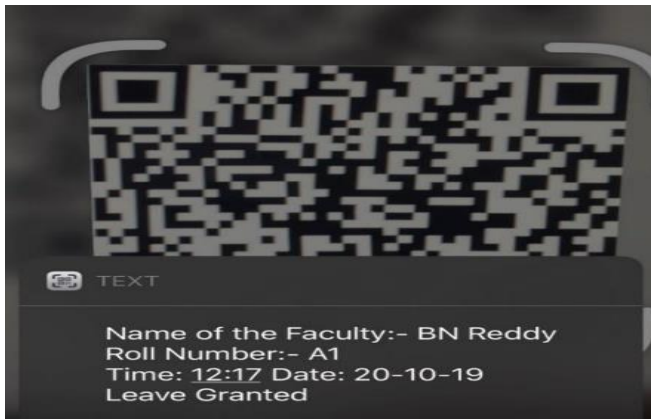


Fig. 12: QR Code of Faculty when scanned.

In the above Figure 12, the QR Code when scanned at the exit point by the security through an imaging device like a mobile phone, then the following details are displayed as above.

VIII. CONCLUSION

The ultimate goal of this paper is to increase the level of security enforced on the college premises. This project enables free, secured, fast and easy leave approval. This project reduces the burden and eliminates paperwork, computerized records give better management and manipulation of data, through searching, with the help of QR Code the manipulation of a gate pass is really tough and this project is easy to maintain and use. The installation of the project is simple and does not require any professionals for implementation or handling. It gives reliable and efficient security protection on which college can rely. Hence, it can be concluded that this system is user-friendly and intuitive and would prove to be an efficient system to obtain a Gate Pass in any organization.

IX. FUTURE SCOPE

The present project can also be extended by incorporating the following additional features such as a mailbox with the student details. If a parent wants to communicate, he/she can write a mail requesting for leave permission by stating the necessary reasons. This furthermore enhances additional security. Work can also be done on automating the entire process. There are plans to automate the entire process by using sentimental analysis in the sorting of mails and then directly generate a gate pass without consulting any incharge and once when gate pass is generated the faculty gets a notification of student leaving the college.

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