



## MOBILE APPLICATION FOR OUT-PASS GENERATION

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### Abstract

The issue of security is paramount in any organization, especially for the ladies. Though educational institutions have taken lots of measures to ensure the students welfare as much as possible, these measures are considered to be tedious and time consuming for more than 80% of the student community. The hostel students find it difficult to request for an out-pass because he/she has to run in search of the respective wardens who may be a teaching faculty of that particular organization. In such cases, the schedule or present location of the warden is non-predictable to the students who require their authorization in order to leave the campus. Secondly, every parent would prefer to know the whereabouts of their ward. The above issues motivates us to develop this automated system. In this work, developed a mobile application wherein the students can easily send their request for an out-pass which automatically gets approved if it contains valid reasons and eligible number of passes (assuming that every organization has an out-pass limit per month/year). Once the request is approved, the parent will be intimated regarding the student's availability within the campus via auto mail. The student's entry and exit to and from the campus is monitored with the help of a fingerprint scanner at the security guard desk. This interface has efficiently been provided with search functions to improve the functionality of the mobile application and make it more user-friendly. This work intends to make things easier for both the organization as well as the students and it will also ensure that both of the needs are not forsaken.

**Index Terms:** Mobile Application, Firebase (Google's Cloud Database), Android Studio, Fingerprint Scanner.

### I. INTRODUCTION

The general protocol to get an out-pass in any organization is to get a manual written letter from the student requesting an out-pass signed by the respective warden in-charge of the student. This process can become quite tedious when the campus size is large. As the students will have to go in search of the wardens in person. Also, in most cases the warden in-charges might be a teaching faculty who find the authorization procedure to be intruding in their professional work times. Time is an important factor playing here affecting both student and the warden.

#### Issues:

##### i) Student-side:

1. The students have to search for the warden who may be teaching faculty throughout the vast-spread campus.
2. The student has to carry the letter around for providing proof when enquired.

##### ii) Warden-side:

1. The wardens may be teaching faculties, research assistants, office staff etc. They might find the time that the student chooses to get his/her authorization very nagging.
2. They find it very difficult to keep a manual record of the attendance in the hostel.
3. They have to take more effort and thoroughly monitor students to ensure extreme security.

##### iii) Parent-side:

1. The parents may find it non-comforting to not know about the whereabouts of their children.

2. They might have to live in constant concern about their child's safety.

To overcome all the above issues, it is proposed to develop a mobile application that automates the hostel activities like out-pass generation, attendance maintenance, student monitoring using finger print scanner, intimation to parents etc is proposed. The paper is organized as follows: Section II encompasses the design methodology of the "Student Out-pass Generator", which has a detailed description of the implementation of each block. Section III contains the results of the experiments performed to show the performance of the various blocks of the "Student Out-pass Generator". Section IV has the concluding remarks of the work.

## II. PROPOSED SYSTEM

In this paper, it is proposed to simplify the procedures involved in acquiring an out-pass for the hostel students, while at the same time maintain paramount and for-sure security methodologies. We wish to do the above by means of a mobile application[6]. This application will allow students to send out-pass requests with just a button click. Also, it simplifies all the processes of hostel management, including attendance maintenance at regular intervals. The pass is approved automatically by the system if the requested student has eligible number of pass credits of that current month. However, if the passes exceeds the monthly limit or request is raised during working hours, the system forwards the request to the warden. As the request gets approved, the parent of the ward will be intimated with the exit time of the student at guard desk. A list containing the student's details and their out-pass status will be updated to the warden and the security guard at regular intervals. The student's entry and exit to and from the campus is monitored with the help of a fingerprint scanner at the security guard desk. The overall flow of the system is shown in Figure 1.

It addresses the following objectives:

1. Warden gets easier access of the details of the students under them.
2. Warden is informed of the number of students in the hostel (under his in-charge).

3. Students can easily request for out-passes.
  4. The warden and the student will be able to clearly identify the number of remaining out-passes available (for that particular student).
  5. The parents will be intimated about their ward's movement from the campus.
- Easier access at the security desk as the interface has been provided with search options.

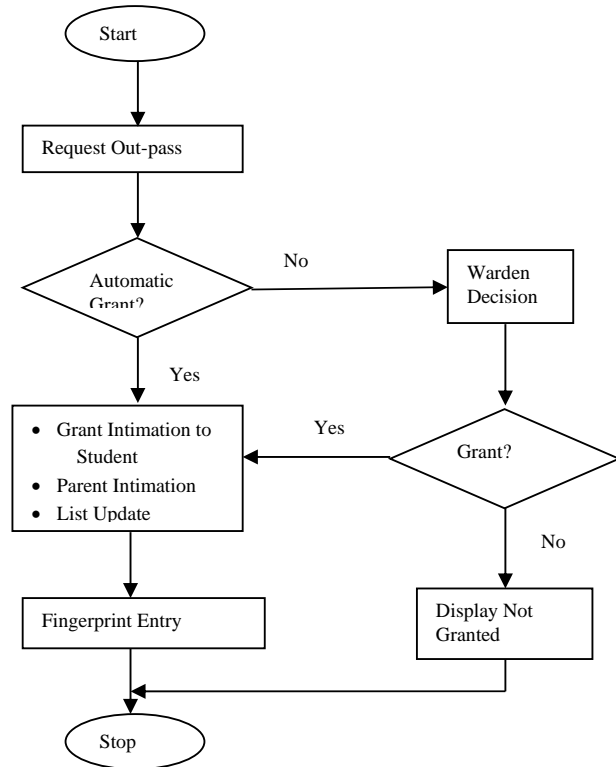


Figure 1. Conceptual Flow of Proposed System

### A. Student Interface:

The student interface has the following layout with the following features:

1. Number of out-passes in credit.
2. Buttons to proceed/undo the request for out-pass.
3. Reason for out-pass.

When the passes exceeds the monthly limit or request raised during working hours, the system forwards the request to the warden, wherein the warden can decide either to accept/decline the request or send an intimation to the student to meet in person based on the reason for the out-pass.

### B. Warden Interface:

The warden interface has the following layout with the following features:

1. Number and details of student whose out-pass have been auto-approved.
2. Number and details of student requesting beyond their limit.
3. Number and list of students present and not present in hostel at bed time.

C. *Guard Interface:*

The guard module layout has the following features and procedure is shown in Figure 2:

1. Displays the list of all the students who have been granted the out-pass.
2. Thus the students need not bring an out-pass letter as traditional way.
3. Exit and Entry time of students are collected using fingerprint scanner[1-3] and maintained in the database[4].

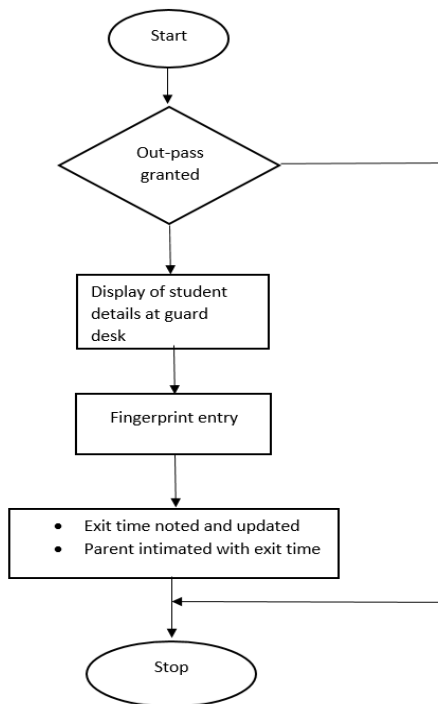


Figure 2. Guard Access Flow of the Proposed System

III. IMPLEMENTATION AND RESULTS

A. *Technical Background:*

Android Studio [8](an IDE for android platform development) is utilized for developing the Front end and Firebase [6-7] (NoSQL cloud database) for Back end. A fingerprint scanner is used to check the authenticity of the out-pass being used. This ensures that our proposed solution is as foolproof as possible.

B. *Database Creation:*

The database [4] (Firebase[6-7], Google’s cloud console) currently has 55 members who are

active users. Each user is given the following fields : Department Name, In time, Out time, Type (indicating if the person using it is a student/faculty/Security), Name, Mail ID of parents (incase if the user type is student), Parent Phone number (incase if the user Type is student), Year of study in college, Register number ( incase if the user is student), Request status (granted/not granted), Number of out-passes left (incase if the user is a student). Sample record is shown in Figure 3.

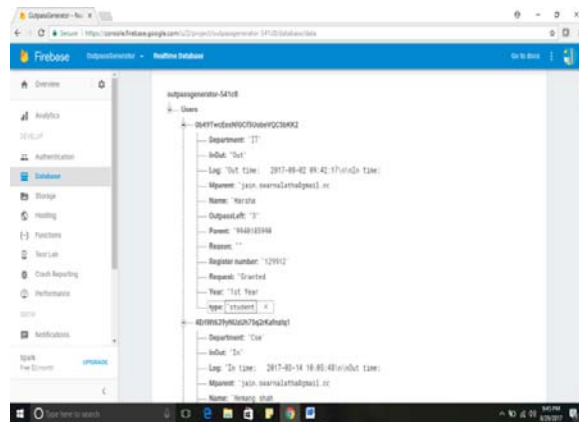


Figure 3. Sample record entry of student profile in the Database

C. *Interfaces:*

The interfaces of various modules like student and warden are shown in Figure 4 and 5. The security guard interface and the fingerprint scanner used for monitoring the student entry and exit is shown in Figure 6. Monitoring of student's attendance based on his/her entry and exit time is differentiated with green and red color in the warden interface to indicate whether the student is present or absent in the campus, which is shown in Figure 7. Sample student's entry and exit time maintained in database is shown in Figure 8. Once the student is granted an out-pass, intimation mail to the respective parent gets auto generated and sent whose sample screenshot is shown in Figure 8.

The system developed is tested with different set of student entries in database [4] involving all kind of request for short or long leave, grant for one day outing, home visit, etc. The results obtained with respect to fingerprint recognition [1-3] during entry and exit of campus and execution time of the system for granting an out-pass is given in Table 1.

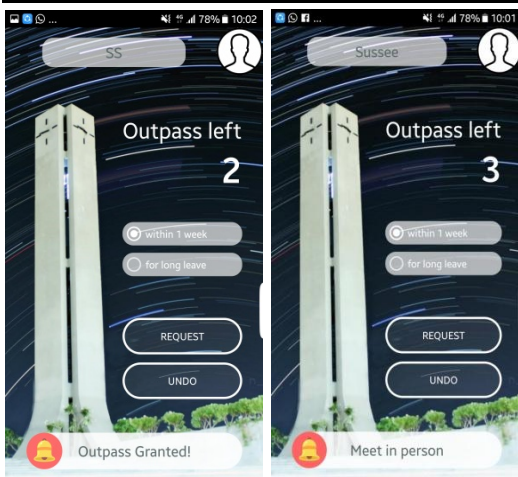


Figure 4. Screenshots of Student Interface



Figure 5. Warden Interface screenshots

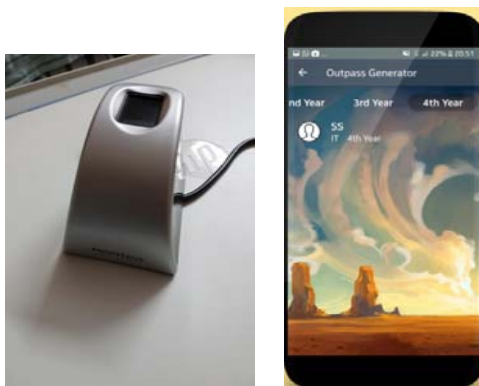


Figure 6. Fingerprint Scanner and Security Guard Interface Screenshot

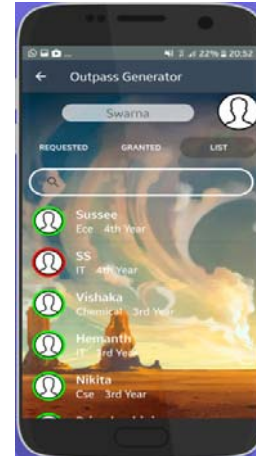


Figure 8. Monitoring Student's Attendance based on entry and exit time

Table 1. Performance Measures of the Proposed system

No. of entries in database	Fingerprint Recognition rate (%)	Execution time of fingerprint match	Execution time for Auto Approval of request (milliseconds)
20	100	9ms	20ms
40	100	15ms	33ms
55	100	19ms	42ms

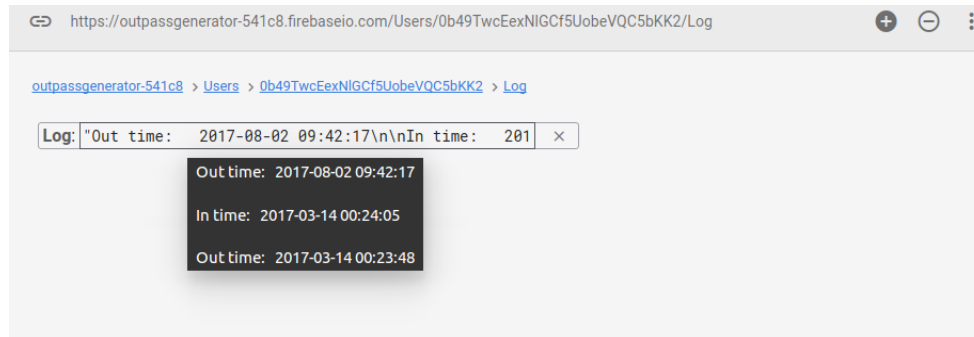


Figure 7. Sample Screenshot of Student exit and entry time maintained in database

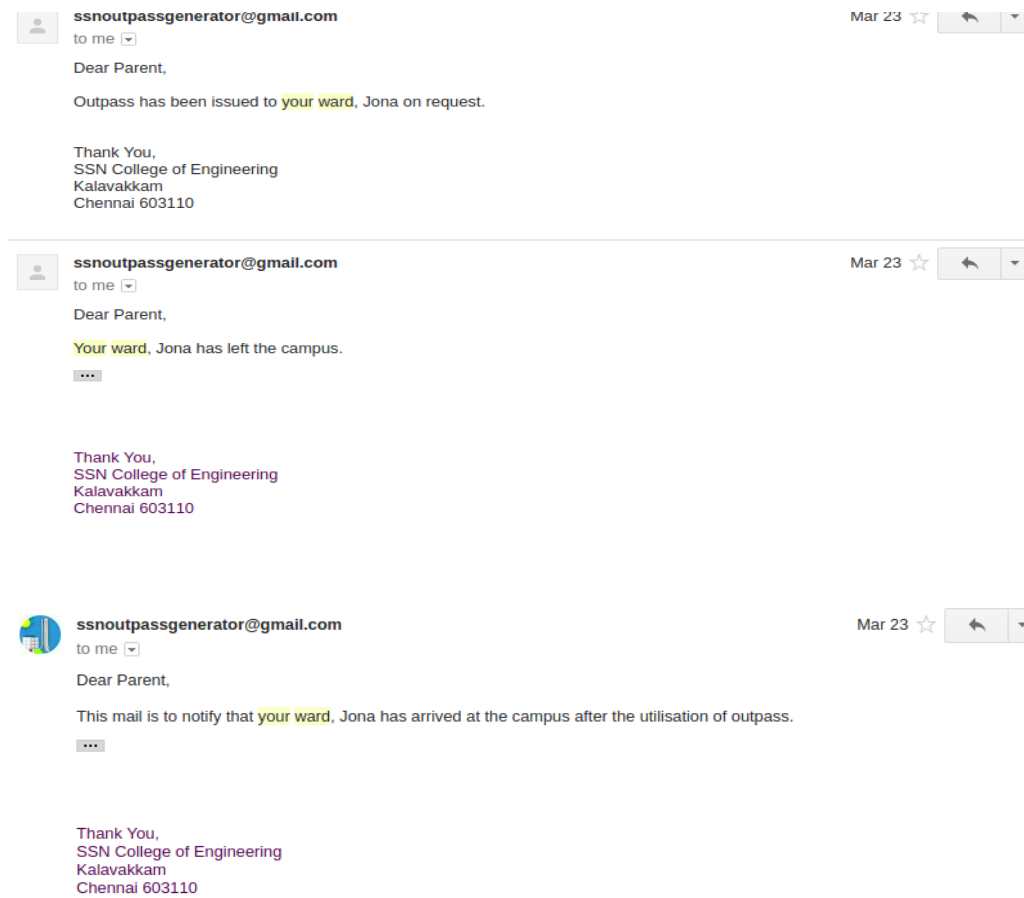


Figure 9. Screenshot of Auto Generated Parent Intimation Mail

#### IV. CONCLUSION

This mobile application thus ensures maximum security and removes all the manual work involved in hostel management activities and eases the monitoring of students movement staying in hostel. This mobile application [6] can also be further customized to use in different environments such as **corporate industries** to decide the number of days an employee can **take off from work without loss in pay**. Technology that makes things easier are the technologies

which are widely looked around for. “Student Out-pass Generator” is definitely one among them.

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