ABSTRACT

The project fingerprint-based hall-ticket management system has been done in the aim of eliminating the fuzzy process of student verification and assigning booklet to the corresponding student. That is, the student verification and eligibility is done through a simple fingerprint processing of each student, and the booklet data is stored for the corresponding student via a barcode scanner. The barcode data and attendance data are wholly sent to a centralized account of Exam Evaluation Department for paper evaluation.

Acknowledgement

We are pleased to present **"Android Graphical Password"** project and take this opportunity to express our profound gratitude to all those people who helped us in completion of this project.

We thank our college for providing us with excellent facilities that helped us to complete and present this project. We would also like to thank the staff members and lab assistants for permitting us to use computers in the lab as and when required.

We express our deepest gratitude towards our project guide for her valuable and timely advice during the various phases in our project. We would also like to thank her for providing us with all proper facilities and support as the project co-coordinator. We would like to thank her for support, patience and faith in our capabilities and for giving us flexibility in terms of working and reporting schedules.

We would like to thank all our friends for their smiles and friendship making the college life enjoyable and memorable and family members who always stood beside us and provided the utmost important moral support. Finally, we would like to thank everyone who has helped us directly or indirectly in our project.

OBJECTIVES AND SCOPES:

We provide a simple and efficient way of student attendance marking and hall-ticket management using biometrics.

The project reduces the time of student validation, hall-ticket verification and attendance marking. Hence, it has a great scope in the cases of examination and student verifications purposes.

In future, it can be further developed to mark attendance in the classrooms and wherever it is required.

WORKING METHODOLOGY:

Enrolment, verification and booklet assignment are the three important stages in this system.

In the first stage, admin assigns the fingerprint data of each student with the profile and adds the course examination details one by one or totally import a bulk amount of student profile data from an Excel sheet or a tab coded notepad (.txt) file through a desktop application by the administrator.

As the second stage, the verification of the fingerprint has been done and attendance for the student will be marked.

1. When the fingerprint surface is pressed, feature set is created which tells the unique features of the person.
2. The field containing the fingerprint information is retrieved from the database.
3. One to N comparisons are performed to match the feature set with any one of the fingerprint information retrieved from the database.
4. If the match is found, the value in the particular field should be automatically updated as '1' else if the match is not found, it should be automatically updated as '0'.

Each person's fingerprint is scanned, analysed and then stored in the coded form in the database.

In the second stage, the scanner takes the fingerprint and checks it against all the fingerprints in the database stored during enrolment.

One way of scanning the fingers is Optical scanner. The following steps are involved in the working of optical scanner:

1. When the finger is pressed LED scans the bright light at the surface of the glass.
2. The quality of the image depends upon the way of pressing, light level of the hall, how clean the finger and the surface is.

3. Reflected light bounces back from the finger to CCD (Charged Couple Device) or CMOS image scanner through the glass.
4. The longer the image-capture process takes place, the brighter the image formed on the image sensor.
5. If the image is too bright, areas of the fingerprint won't appear in a clear manner. And if the image is too shady, the areas of the fingerprint will appear in black colour.
6. An algorithm checks if the image is too bright or too shady and indicates it with sound or LED indicator light and we go back to step 1 and try again.
7. If the image is accepted, another algorithm tests the fingerprint by counting the number of ridges and make sure that the images is clearly visible. If the algorithm fails go back to step 1 and try again.
8. Once after the images passes the testes of above two algorithms, the scanner signals that the image is OK to the operator, the image is then stored in the flash memory and transmitted to the host computer.
9. The host computer either store the image on the database if it is first time loaded or compare it against all the other fingerprints to find a match for the purpose of verification.

The above methodology uses sophisticated pattern matching software to turn the image into code. The algorithms used in the above methodology will find and store the information like where the ridges and lined end, how are the whorls, curves and loops present in the finger of the particular person. These distinctive features are collectively called as Minutiae, which is considered in the process of matching and result returns either true or false.

If the fingerprint is matched, then the student data is compared with the student's profile for eligibility of attending the examination. If it is true, then it will mark the attendance for the student as present and displays valid in the LED connected to the module. Else if the fingerprint gets matched and the student is not

eligible and if the fingerprint doesn’t get matched, and the student will not be allowed to attend the exam.

Then a random booklet is given to the student, and the barcode present in the booklet will be scanned to the barcode reader connected with the module and the barcode data will be assigned to the corresponding student in the database.

MODULES:

The project mainly consists of 5 modules, namely:

- Profile creation
- Fingerprint data assignment
- Hall ticket data assignment
- Verification
- Booklet Assignment

I. Profile Creation:

In this module, the profile of each student is collected and added into a structured database through a Web app, which will be maintained by an authorized admin. The profile data can be added into the database using "one at a time" forms or bulk importing of overall data from an Excel Sheet or a structured text document. It uses HTML, CSS, Bootstrap in the front of the Web app designing and Django running in the backend for Web app working and MySQL as the storage medium aka database.

II. Fingerprint data assignment:

The fingerprint data is assigned to every student's profile from a Fingerprint reader and stored in a separate table in the same database, which will be retrieved from the database during the fingerprint verification.

III. Hall ticket data assignment:

The Hall ticket data contains the subjects to be written by each student, which will be loaded into the student's profile in to the database. The data is used as a hall ticket which lets invigilators to authorize the student.

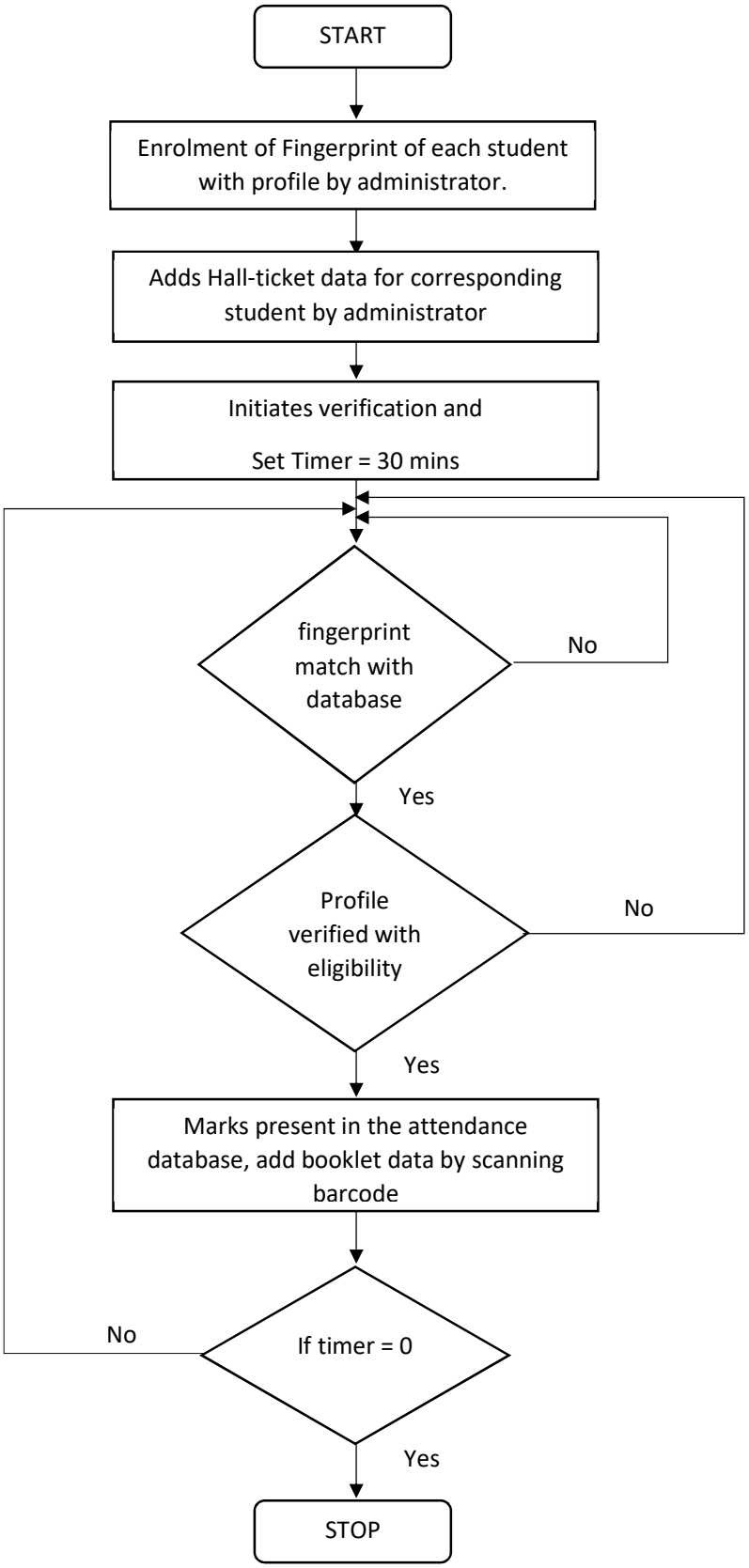
IV. Verification and attendance:

If the student ID is verified and is eligible to write the particular exam from the hall-ticket data, the student will be marked present in the database and allowed to write the exam. Else, the student can't write the exam.

V. Booklet Assignment:

After the student is marked present in the attendance database, the student will be given a answer booklet, the booklet will be introduced to a barcode scanner, the barcode data will be assigned to the corresponding student.

FLOW DIAGRAM:



FEASIBILITY REPORT:

Feasibility Study is a high-level capsule version of the entire process intended to answer a number of questions like: What is the problem? Is there any feasible solution to the given problem? Is the problem even worth solving? Feasibility study is conducted once the problem clearly understood. Feasibility study is necessary to determine that the proposed system is Feasible by considering the technical, Operational, and Economical factors. By having a detailed feasibility study the management will have a clear-cut view of the proposed system.

The following feasibilities are considered for the project in order to ensure that the project is variable and it does not have any major obstructions. Feasibility study encompasses the following things:

- Technical Feasibility
- Economic Feasibility
- Operational Feasibility

In this phase, we study the feasibility of all proposed systems, and pick the best feasible solution for the problem. The feasibility is studied based on three main factors as follows.

❖ Technical Feasibility

In this step, we verify whether the proposed systems are technically feasible or not. i.e., all the technologies required to develop the system are available readily or not.

Technical Feasibility determines whether the organization has the technology and skills necessary to carry out the project and how this should be obtained. The system can be feasible because of the following grounds:

- All necessary technology exists to develop the system.
- This system is too flexible and it can be expanded further.
- This system can give guarantees of accuracy, ease of use, reliability and the data security.
- This system can give instant response to inquire.

Our project is technically feasible because, all the technology needed for our project is readily available.

Operating System	**:**	Linux Ubuntu - 16.04 or higher
Languages	**:**	Python
Hardware	**:**	Raspberry Pi model 3b+, switches, LEDs, Handheld Barcode Scanner
Framework	**:**	Django
Database System	**:**	MySQL
Documentation Tool	**:**	MS - Word 2013

❖ Economic Feasibility

Economically, this project is completely feasible because it requires no extra financial investment and with respect to time, it's completely possible to complete this project in 6 months.

In this step, we verify which proposal is more economical. We compare the financial benefits of the new system with the investment. The new system is economically feasible only when the financial benefits are more than the investments and expenditure. Economic Feasibility determines whether the project goal can be within the resource limits allocated to it or not. It must determine whether it is worthwhile to process with the entire project or whether

the benefits obtained from the new system are not worth the costs. Financial benefits must be equal or exceed the costs. In this issue, we should consider:

- The cost to conduct a full system investigation.
- The cost of h/w and s/w for the class of application being considered.
- The development tools.
- The cost of maintenance etc...

Our project is economically feasible because the cost of development is very minimal when compared to financial benefits of the application.

❖ Operational Feasibility

In this step, we verify different operational factors of the proposed systems like man-power, time etc., whichever solution uses less operational resources, is the best operationally feasible solution. The solution should also be operationally possible to implement. Operational Feasibility determines if the proposed system satisfied user objectives could be fitted into the current system operation.

- The methods of processing and presentation are completely accepted by the clients since they can meet all user requirements.
- The clients have been involved in the planning and development of the system.
- The proposed system will not cause any problem under any circumstances.

Our project is operationally feasible because the time requirements and personnel requirements are satisfied. We are a team of four members and we worked on this project for three working months.

CONCLUSION

The main aim of developing this biometric based verification system is to provide more security to prevent student fraudulent and many other illegal activities in examinations.

This provides an extra level of security and exam booklet management in a whole key, the data in the databases are securely maintained through CSRF token.

This was our project of System Design about "**FINGERPRINT BASED HALLTICKET MANAGEMENT SYSTEM**" application is based on Python and Raspberry Pi. Development of this System takes a lot of efforts from us. We think this system gave a lot of satisfaction to all of us. Though every task is never said to be perfect in this development field even more improvement may be possible in this application. We learned so many things and gained a lot of knowledge about development field. We hope this will prove fruitful to us.