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ABSTRACT

To create a system capable of making payments without involving the use of physical money. The system has been designed to make payments inside IIT Campus anywhere like in Canteens, Nesci, Library, Stationery Shops etc. Here in the campus, the accounts running in canteen store transactions in pen and paper and there is almost no authentication in making such payments, as the student making the purchase just uses his roll number as identity which can very easily be faked by someone else. Also this involves a lot of paperwork on the side of the mess/canteen worker, and may also lead to some calculation errors on their part due to the human involvement in making bills. There are also problems related to change of money and the usual paperwork method is also time consuming. So we decided to use technology to solve these problems at once, and the idea for the project was born.

ACKNOWLEDGEMENT

This proposal describes the research and development that was done to accomplish the project. The project was carried out under Electronics Section, Indian Institute of Technology, Roorkee.

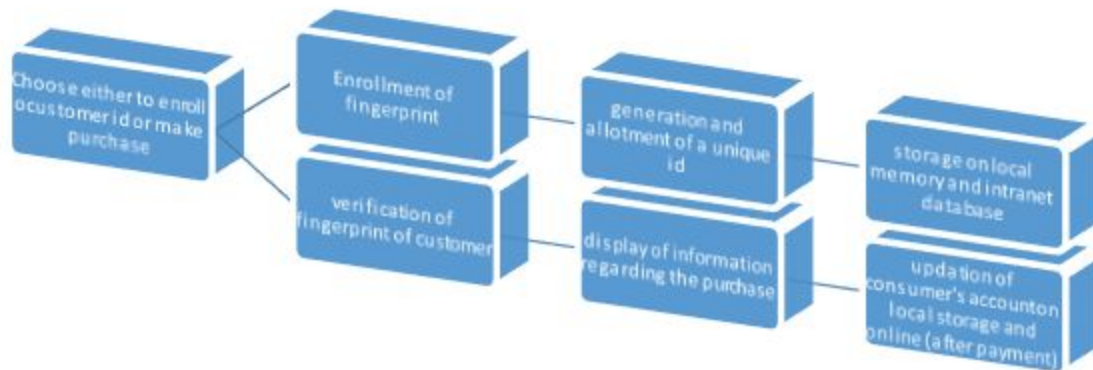
First of all, we would like to thank Mr. Kamal Singh Gotyan for his guidance and support. His knowledge and ideas have given us a lot of inspiration. Secondly, we would like to thank our mentors, Padmanabh Pande , Rahul Ratan Mirdha and Gaurav Waghmare for their ideas and suggestions.

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INTRODUCTION

The first main problem with this project was to find a suitable authentication process that would allow the user to confirm identity, enquire costs and availability, and finalize purchase. This authentication was done using a fingerprint scanner which allows them to make the necessary transactions after one-time enrollment. For the purpose of making payment, the vendor needs a device created by us. The customer needs to verify his/her identity using his/her fingerprints via fingerprint sensor. On successful authentication, the payment will be made. The details of the transaction are stored on the sd card inside the machine which will then be synchronized with the internet database which is the central database containing the combined information of all the canteens/mess.

BASIC OVERVIEW



The payment process is simple and involves two major steps:

1. Enrollment of consumer.
2. Purchasing and payment.

ENROLMENT

Every user who is using this facility is required to get themselves registered using this enrollment process. In this, the user is enrolled using a fingerprint scanner which assigns him/her a unique id which will help him/her to make purchases throughout the campus. The details like enrollment no, name etc. of the user are stored locally on sd card inside the machine itself as well as on the internet central database. Its main advantage is the user needs to register only once to make purchase throughout the campus from any vendor.

PURCHASE PROCESS

Firstly the user needs to verify his/her identity using fingerprint sensor after which the unique id is fetched internally which is then matched against all the enrolled users. Once the id is matched all the information regarding the user matched with the id is displayed. Further the user account is modified locally and on internet based on the purchase made by user. After Successful transaction, the user receives a confirmation message regarding his transaction details.

DATABASE

Database is the backbone of this project. Our aim was to maintain a database where we would store balance, transaction details etc with encryption. But as of now we have stored only basic details like name, balance and the user ID. We are synchronizing our local database with the server database. The database of every canteen/mess will be stored locally and the combined database of all of them will be synchronised to the central database, so that the user need not to enroll at every canteen. Transactions can be done without internet and the information on the server will get updated once the device gets connected to the internet. We would like to further extend our database to store more details and to make it more secure.

COMPONENT LIST:

- Fingerprint Reader R305 TTL UART
- Arduino UNO
- Raspberry pi2
- A Touch Screen (Currently working on a PC Screen)

LIMITATIONS

1. This project doesn't have any secure method of making transaction. If the idea of this project is accepted on large scale then an agreement can be made with any already operating online wallet providing sites such as paytm, mobikwik. These websites provide highly secure payment gateways.
2. It would be expensive to operate on large scale and the reason for that is each vendor must have his own machine, but it is only a one-time investment.

FUTURE SCOPE

Initially just limited to purchasing canteen and mess items, we will see its potential and then extend it to be a cashless payment system, to be used anywhere in our campus.