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Multipurpose Student Smart Card

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ABSTRACT

Smart cards have been around for a while now, it has institutes and makes use of the current 'Digital India' movement. There is a need for students to carry a separate identification card and a different library card while all stored in that particular card. This student card system can be usable in the educational, retail sector. The smart card will he this could be combined into one single card with the entire detailed information of an individual student is used as means for identification and cash. From there we can see the potential and power of smart describes the overall versatility, practicality and usability.

KEYWORDS: *Database, Wi-Fi module, RFID*

INTRODUCTION

Smart Cards have been around the world for a while and seem to be under wide usage. When we talk about ID cards, we still have institutions where we are using different cards for various purposes for e.g. a college uses a different Identification card, Library card and extra activity cards. So firstly, what we are doing is making a single digital card which is multi-purpose. This combines all the various cards into a single card. Since this world is looking forward towards digitalization, there are some more features that are added to this card keeping in mind a better future scope. This card is digital hence linked with an administration data base server. This server provides facility of debit payment methods to avoid queue at Canteens, Library Penalties, Stationary stores and also administrative works with the help of the card. The Administrating database handles the student's data at the server including Identity, Documents, Debit balance, Library data and other if any. This card has a Unique ID and hence no chances of misguiding.

Thus, this smart card is very student as well as institution friendly reducing the load of both the ends by creating a single data base where student's details will be available and will be accessible only over students or administration's choice. This Single card will also take care of the payment queues at the canteens, stationary stores etc. which can be upgraded/refilled with the administration's help as and when needed. This Smart card will not only make the institution and student relation cleaner but also give a structured understanding of the work flow at the institution.

LITERATURE

Radio Frequency Identification technology Implementation has brought some services improvements which are automated handling of security, materials, high-speed inventory in libraries in a developing country like which are automated handling of security, materials, high-speed inventory in libraries in a developing country like India and moved beyond security to become tracking systems that combine security with more efficient tracking of materials throughout the library, records updates, enhanced customer service, and reduced the data entry errors. In this paper we are trying to assess the potential with their aspects when the RFID technology is implemented and as revealed in the reported literature covering the concerned Indian libraries, the slow influx of the technology has responsible factor. We are hoping than this study have ability which help to improve the long term security of the library along with the Librarians and Library professionals.

BLOCK DIAGRAM

RFID reader and Wi-Fi module are connected with the microcontroller. When the RFID card is scanned, it will ask for the password. And Wi-Fi Module controls the access of data.

Data that is needed to access that will be on the local server. The local server has three sections which are Database, Homepage and Verifier.

Verifier: Verification is done, when the RFID is scanned.

Homepage: It gives the pathway to database. For eg: When we click on the student's section, it will ask for the verification. Then student can update their profile.

Database: It will have all the information about every student who is using an RFID card

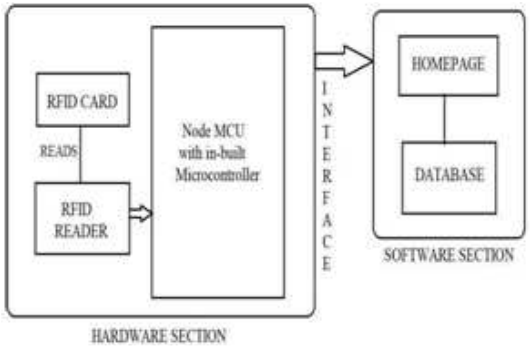

Fig 1: Block Diagram

HARDWARE USED

A. NodeMCU

The ESP8266 Wi-Fi Module has SoC that is integrated with TCP/IP protocol stack .Wi-Fi network can be access through this therefore it is access point device. The main feature of Uno WiFi is support for OTA (over-the-air) programming, either for transfer of Arduino sketches or WiFi firmware. Arduino IDE can be used to do program of NodeMCU.

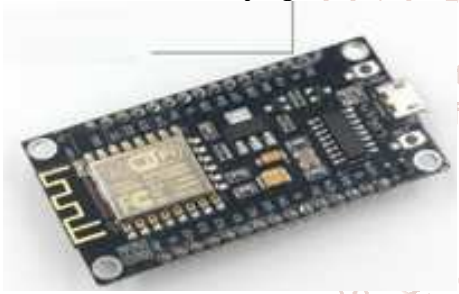

Fig2: NodeMCU

B. RFID

It has the RFID reader module that reads the ID information stored in tags . It contains two part one is rfid tag and rfid reader, our aim in this project is to transmit the data of rfid tag when its read by the rfid reader. We can use RFID card as identity card for attendance purpose. We can also use this card as a debit card for transaction purpose.

Fig 3:RFID

SOFTWARE USED

A. Webpage –

A web page is web resource which is suitable on the World Wide Web. It is one of the type of document that can be accessed with the help of a web browser. It can be displayed on a monitor or mobile device as web page.

B. Database-

It is real a time database. We can use this to control the data access. It is software for adding, accessing and managing content in database. We are using this to create database which contain all the information of the user which includes user's profile, documents and transaction details

WORKING MODEL

The initial login page is available at all the sessions of users for example, admin, canteen, library and student. This login page requires login credentials from the user. Each user is assigned an ID and password which includes the college personnel and student. Once the login is done and the credentials are matched with that of data stored in the database then the dedicated page could be accessed.

When the admin logs in the system, the admin page can be accessed by them. At this page the admin would have the detailed display of the entire student details database on it. The admin would click on the recharge toggle button to go to the recharge page where the student scans the card and the details are displayed in the form and then the recharge amount is inserted by the user and that would be added directly to the database via the connection. The admin can create a new user using the admin form where all the student details needs to filled in and this information is stored in the database. Similarly, the admin has the authority to change the student details once the student scans their RFID for verification. When the canteen personnel logs in, the canteen page can be accessed by them. In this canteen page the RFID card of the student is scanned and the student information is seen on the screen and then the canteen personnel will input the amount that is to be charged on the student and the deducted amount is updated in the database.

When the librarian logs in, the library page can be accessed. The librarian would have the access of the database which contains the information of books which a student has issued and what fine amount is due by the student. The student would scan the RFID card and the student details would appear on the interface. This information would contain the student name and its PID number. The name of the books issued and the amount that would be charged would be added to it and this would get updated in the database.

When the student logs in, the student page can be accessed. When the student page is open the student can view the details filled during registration and can even recharge through it. Because of this the student need not go to the admin for recharge and can simply recharge wherever they are.

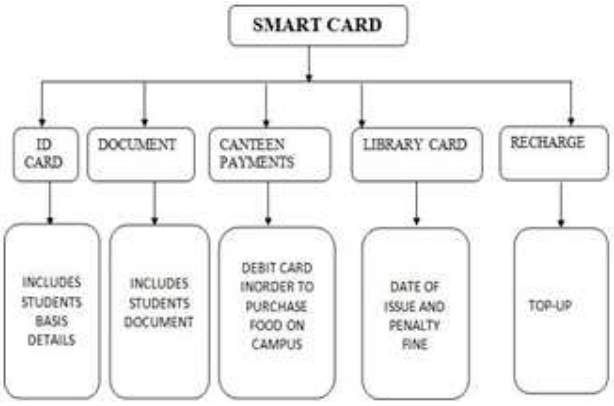

Fig 4: WORK FLOW

APPLICATIONS

1. There is now a single Smart card for all the institutional purposes.
2. The Student do not have to carry document always, all it needs to carry is the portable card.
3. There is no need for the student to carry money. It just needs to refill its card via administration.
4. The student's records are now properly available to the administrator.
5. It is secured with the students' biometric data.
6. Has a lot of future scope if extended towards web or mobile platforms.
7. Is very easy to use and scalable as per the institutions needs.

FUTURE SCOPE

1. The smart card future is looking bright. There are many benefits and existing smart card. It has to offer both the public and the private sectors of the industry raise the interests of many large corporations.
2. By adding more images and variable poses of the students to make recognition full proof the Facial recognition database can be improved
3. The Web based architecture can be utilized further by maintaining the databases on a remote server and the application will be accessible via the Internet.
4. Biometric verification can be added for security reasons.

CONCLUSION

The student's digital card system was designed using WiFi Module and RFID. Thus, we can conclude that the project aims at developing a quality focused system for the institution to make it easy for students and administrator. Financial and documenting services puts the chain at ease as generation is transiting form the primitive paper-based methods to the digital paperless world. This concept will take the normal system to digitalized system which is more scalable, structured, and fast and user friendly.

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