

Student Utility Smart Card

Kumari Kirti¹ Aditi Khandelwal² Mr.Pankaj Garg³

^{1,2}Student ³Assistant Professor

^{1,2,3}Department of Information Technology

^{1,2,3}Maharaja Agrasen Institute of Technology, India

Abstract— Student Utility smart card is a project which aims towards building a system/application which would allow students to have multiple benefits using a single smart card issued to them.

- The project involves a card which contains a rfid which is nothing but a unique card that is assigned to the student. This card can be recharged as and when required by the student with the help of admin.
- This card can be used for attendance using the rfid system in every classroom and as a gate entry passes for each and every student.
- This card is useful for the student in places like cafeteria, parking and stationary shops. When the card is inserted or scanned using the rfid scanner, the unique id stored is scanned and accordingly cash is deducted.

The student can use this card in library to pay fine and the amount of fine will be calculated accordingly to the information stored which is retrieved with the help of an ID stored in the card. Same way in case of stationary shop where the cash amount is deducted from the student's account and same way in case of canteen. Thus the student just needs to carry the portable card. Thus this card is very beneficial for a student and makes many of its work easy.

Key words: ID, Multiple, Utility Smart Card, RFID

I. INTRODUCTION

Student Utility Smart Card would be giving all services and making data processing and data transfer more efficient and secure. This card is useful for the student in places like cafeteria, parking and stationary shops.

It can also be used in Time and Attendance Management system in various organizations and educational institutes. The system records details such as arrival and departure of students besides maintaining information regarding their personal, official profiles.

The smart cards play a vital role in today's life. There are different smart cards for different purposes. For example- credit cards, debit cards, voting cards, Aadhar cards(in INDIA), etc. These different cards are to be carried by the people wherever they go, for different purposes.

A. Modules Description

1) User Login-

In this module, users can enter their username and password and user type to authenticate themselves to access their account panel modules."

2) Admin Module-

"In this module, admin can add users, view users, recharge account."

3) Cafe User Module-

"In this module, user can add items, view items, generate bill, change password, view transactions, verify users."

4) Library User Module-

"In this module, user can add books, view books, issue book, return book, change password, view transactions, verify users."

5) Parking User Module-

"In this module, user can add student vehicles, view vehicle details, check-in, check-out, change password, view transactions, verify users."

6) Student User Module-

"In this module, user can view balance, change password, view transaction history, and fund transfer to other student can be done here in this module."

II. SMART CARD



A student utility smart card is a device that includes an embedded integrated circuit. The card connects to a reader with direct physical contact or with a remote contactless radio frequency interface. A student utility smart card is a special type of card like device which contains an integrated circuit chip embedded on it. In other words, a student utility smart card is the card with which we can exchange the data, store it and manipulate data.

Student smart card can be used for attendance using the RFID system in every classroom and as a gate entry passes for each and every student.

This card is useful for the student in places like cafeteria, parking and stationary shops. When the card is inserted or scanned using the RFID scanner, the unique id stored is scanned and accordingly cash is deducted.

A. RF-ID System

RFID stands for Radio-Frequency IDentification. The acronym refers to small electronic devices that consist of a small chip and an antenna. The chip typically is capable of carrying 2,000 bytes of data or less.



RFID is a technology that is been referred as a automatic identification and data capture (AIDC).This technology automatically collects data about them, identify objects and those data directly into the computer system with little or no human involvement.

III. SMART CARD READER-WRITER

A Student utility smart card reader is a device to which the smart card can be connected either directly or indirectly using radio frequency communication. It interfaces with the PC or a microcontroller using USB port or RS232 serial ports. It can be a contact or contactless reader.

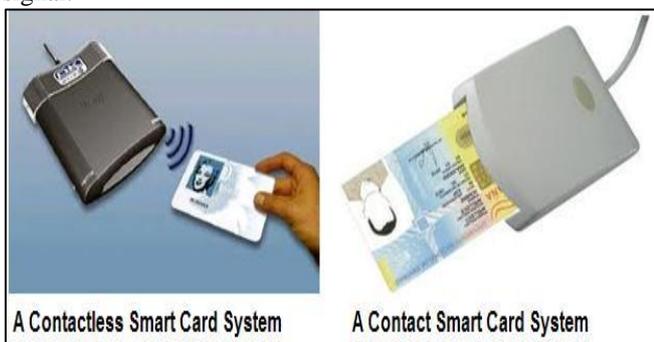
A. Types of Smart Card based on Connection to the Smart Card Reader

1) Contact:

Under this category of smart card it consists of electrical contacts which are been used to connect to the card reader where the card is inserted. The electrical interactions are deployed on a conductive gold plated coating present on the card surface.

2) Contactless:

This type of smart card communicates with the reader without any physical contact. Rather it consists of an antenna with which it is used to communicate using Radio Frequency band with the antenna on the reader. It usually receives power from the reader via the electromagnetic signal.

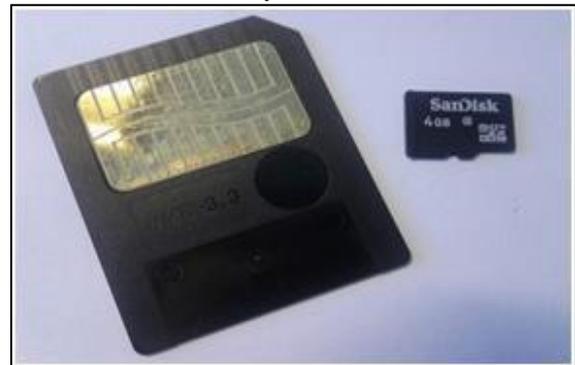


B. Types of Smart Cards based on their Functionalities and Configuration

1) Memory:

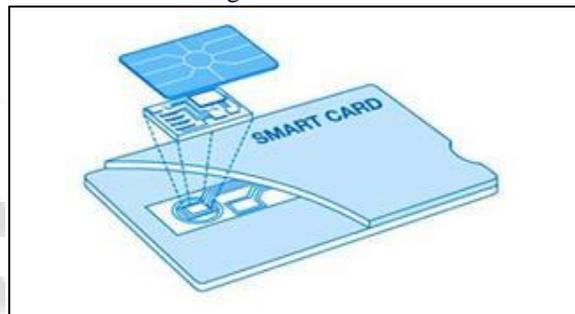
This type of card consists of memory circuits. It can only store, read and write data to a particular location. The data cannot be processed or manipulated. It can be a straight memory card which is only used to store data or a protected

memory card with a restricted access to the memory and which can be used to write data. This type of card also be a rechargeable or a disposable card which contains memory units which can be used only once.



2) Microprocessor:

These cards consist of microprocessor embedded onto the chip in addition to the memory blocks. It also consists of specific sections of files with each file associated with a particular function. The data in files and the memory allocation is managed via an operating system which can be a fixed operating system or dynamic operating system. It allows for data processing and manipulations and can be used for multifunctioning.



IV. FEATURES & BENEFITS

A. Attendance Management

By using smart cards as ID cards, it is easy to take attendance as it make easier for the teacher to take attendance hence avoiding paper pen work.

B. Security

Students' smart card is tamper-resistant and information stored on the smart card is only accessed using unique code. This is very useful as the tracking takes place in real time, which can be of help during emergency situations

C. Ease of access

The Student doesn't have to carry its document always; all it needs to carry is the portable card.

D. Electronic Payment

There is no need for the student to carry cash. It just needs to recharge its card via admin.

E. Intuitive User friendly Interface

The in house developers and designers are very much aware that even the most functional software can be rendered useless if it doesn't have an intuitive interface. Hence they take utmost care while building the software to provide a seamless user experience.

V. SMART CARD APPLICATIONS

Student Utility Smart cards can be used to grant different kinds of access, which could be incredibly useful on a campus. Physical access allows students to access particular buildings and restrict access to others, such as staff areas. Not only is this good for safety and security of where students are, but also means that students have access to the facilities that they need to complete their course.

A. Attendance

Under this feature the students can make their attendance respectively only by authenticated with their unique code.

B. Access Control System (ACS)

Card will be used as entry/exit pass for the college entrance

C. Library

Identification of user and self issue/return- A person can be authenticated with a unique smart card. Once this has been done, then the person is been allowed to issue / return books without assistance from staff .

D. Canteen/Cafeteria

Students can easily place their order for food and beverages thereby making their payment with the help card and hence no need to carry cash.

VI. CONCLUSION

Student smart card is a project which aims towards building a system/application which would allow students to have multiple benefits using a single smart card issued to them.

The project involves a card which contains a id which is nothing but a unique card that is assigned to the student. This card can be recharged when required by the student with the help of admin.

A computerized Student Smart Card system has been developed and the system was tested with sample data.

The system results in regular timely preparations of required outputs. In comparison with manual system the benefits under a computer system are considerable in the saving of man power working hours.

The entire project runs on windows environments. The system can be used to increase student faculty interaction and also increase their involvement with the college.

REFERENCES

- [1] The Smart Cards Planning Guide
- [2] www.tutorialspoint.com
- [3] worksecurity/securesmartcards/default.aspx
- [4] <http://search.technet.microsoft.com/search/default.as>
- [5] The Smart Card Deployment Cookbook
- [6] Student UtilitySmart Card System Using Smart Card Technology previous projects and IEEE papers
- [7] <https://netbeans.org/features/>
- [8] Aditya Bodake, Viraj Baviskar, Ashwini Bodake, Shital Bhoite, Prof. N. J. Kulkarni, "On multipurpose smartcard system, International Journal of Advanced Research in Computer Engineering & Technology (IJARCET) Volume 1, Issue 9, November 2012