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Smart ID

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***Abstract*—**Today students are burdened with the task of carrying wallets, library cards, receipts and various documents during the course of their lifetime. We aim to reduce the load on their young minds with the help of the Smart ID. Smart card is the youngest and cleverest one in the family of identification cards. This paper aims to showcase the capacity of the student smart card system designed for the purpose of identification, security and cash payments. We would hereby be able to see the scope, potential and viability of this smart card.

***Keywords*—** C#; microsoft visual studio; SQL; WPF.

I. INTRODUCTION

The underlying aim of this paper is to exploit the functionality of smart cards to the fullest. A smart card ID can combine several ID technologies, including the embedded chip, visual security markings, magnetic stripe, barcode and/or an optical stripe. By combining these various technologies into a smart card ID token, the resulting ID can support both future and legacy physical and logical access applications. They can also support other applications that have traditionally required separate ID processes and tokens. Smart cards can provide personal identification, authentication, data storage, and application processing. An android based application was created for user interactions, i.e. the students as well as the administrators in charge of the systems and databases. Robustness and simplicity were the basis of the system's values which is visible through use of the Smart ID. Smart ID consists of two main modules: 1. Student Module & 2. Administrator Module; under which there are other sub modules for carrying out various transactions in the canteen, library etc. as well as for the purpose of identification & so on. Students with a Smart ID have capacity to carry out e-transactions, library-transactions as well as use this card as an identity proof. We are creating new avenues for exploration in the education space.

II. IMPLEMENTATION OF DESIGN

APC/SC (short for "Personal Computer/Smart Card") is a specification for smart-card integration into computing environments. This is the basic platform upon which sits the Smart ID application. Each system would be unique to that particular college/school. Implementation in schools and colleges too would be extremely hassle free due to the low hardware cost which only requires a single procurement. Each card too will hold a unique identity in the system bringing a level of security to the system. The code implementation was done using Microsoft Visual Studio. C# being object oriented and developer friendly was used to create the application. Windows Communication Foundation(WCF) deals with communication (in simple terms - sending and receiving data as well as formatting and serialization involved).this Microsoft's unified programming model for building service-oriented applications. It enables developers to build secure, reliable, transacted solutions that integrate across platforms and interoperate with existing investments. Windows Presentation Foundation.(WPF) deals with presentation (UI).provides a unified framework for building applications and high-fidelity experiences in Windows Vista that blend application UI, documents, and media content. WPF offers developers 2D and 3D graphics support, hardware-accelerated effects, scalability to different form factors, interactive data visualization, and superior content readability. The application being under 1 GB would be able to run on all machines with modern configuration and running on the Windows platform. Distinctive Student & Administrator Modules makes the user experience simplified while giving maximum importance to the users. Machines may be able to run different modules upon them. Users are given unique id's so as to maintain the ACID properties in the system. Users can logout at the end of their transactions. SQL is used for connecting the remote databases in the system. According to ANSI (American National Standards Institute), it is the standard language for relational database management systems.

III. STUDENT MODULE

The student should be able to easily access the system as it has been created while keeping their needs in mind. They no longer are required to carry a lot of hard cash or a library card to access books in the library.

A. Canteen Module

The canteen module has a typical menu based GUI with the balance displayed on the top left of your screen. The dishes can be checked or unchecked as per the wishes of the user. The flowchart for the use of this module is displayed through figure 1.

B. Stationary Module

Similar to the canteen module wherein the students can order the stationary they require to be procured. The appropriate amount is deducted from the balance on success of the transaction.

C. Information Display

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General information about the card & system is displayed through this module. This is a very generalized module that gives a sense of authenticity to the system.

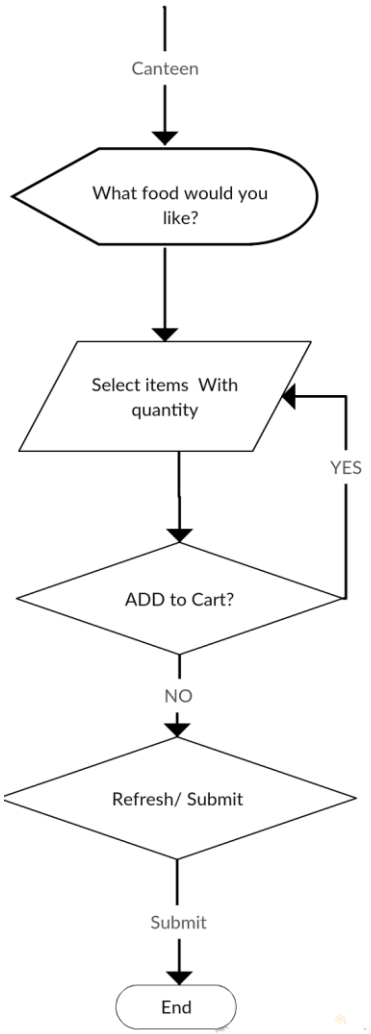

Fig. 1. Canteen module.

D. *Library Module*

The library module is used by students to pick up books using their unique ID. They no longer need to be at the mercy of librarians and carry out the transaction seamlessly.

IV. Administrator Module

The Administrator has been bestowed certain rights and responsibilities so that the system works smoothly. Adding new users, refilling balances and viewing card details are some of the activities that the administrator has to carry out. A gist of the activities have been explained.

A. *New User*

The exclusive rights of adding new users to the system rests with the administrator alone. On correct information input, the system would be able to generate a unique ID for that particular user. This is the initial phase of the ID generation.

B. *Library Module*

The library module is basically for viewing transaction history of defaulters on book returns. A suitable fine would be levied upon the defaulter by deducting or cancellation of the id. Also books can be added or deleted depending on their availability as such. This module makes the librarian's job extremely easy.

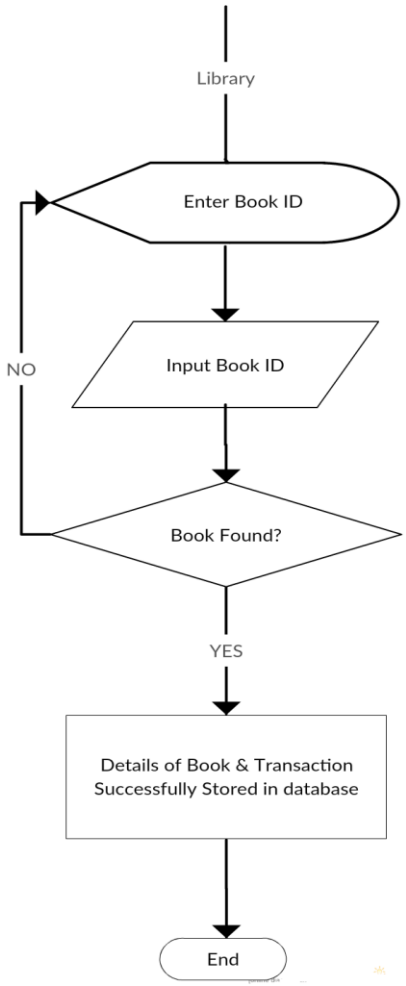

Fig. 2. Library module.

C. *Card Refill Module*

The card may be needed to be refilled from time to time which can be done by the administrator in a very straightforward process.

D. *Transaction History*

All the transactions of the user can be viewed through the transaction history. If any discrepancies arise, the same can be solved by going through the user's transaction history. Can be useful for studying student demographics as well.

V. Conclusion

The project has successfully made use of the smart card functionality to bring an air of ease and comfort to the lives of students. They no longer need to complicate their everyday transactions & instead just use the card for one and all purposes. Furthermore, progress can be carried out to refine

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the card's purpose and use, to suit the characteristic needs of students. Student behavior can also be studied using in the future.

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