A
Project Report on

STUDENT SMART CARD SYSTEM USING IOT

Submitted to the partial fulfillment of the requirement for the award of the degree of

BACHELOR OF TECHNOLOGY
IN
COMPUTER SCIENCE & ENGINEERING

Submitted by:
Mahima Vinayak (RA1511003030208)
Pratyancha Dhaka (RA1511003030232)
Prateek Kumar (RA1511003030243)

Supervised by:
Ms. Neha Ahlawat
Assistant Professor

SRM Institute of Science and Technology
(Deemed to be University u/s of UGC Act, 1956)
NCR Campus, Modinagar
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BONAFIDE CERTIFICATE

This is to certify that project Report entitled “Student Smart Card System Using IOT”, which is submitted by Mahima Vinayak (RA1511003030208), Pratyancha Dhaka (RA151100303232) and Prateek Kumar (RA1511003030243) in the partial fulfillment of the requirement for the award of degree B.Tech (CSE) of SRM Institute of Science and Technology, NCR Campus, Modinagar, Ghaziabad is a record of the candidate own work carried out by them under my own supervision.

…….....
(Signature)
Dr. R. P. Mahapatra
HOD (CSE)

….....
(Signature)
Ms. Neha Ahlawat
Supervisor
Assistant Professor

INTERNAL EXAMINER

EXTERNAL EXAMINER

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Mahima Vinayak (RA1511003030208)

Pratyancha Dhaka (RA1511003030232)

Prateek Kumar (RA1511003030243)

DECLARATION

We, Mahima Vinayak (RA1511003030208), Pratyancha Dhaka (RA1511003030232) and Prateek Kumar (RA1511003030243) hereby declare that the work which is being presented in the project report "Student Smart Card System Using IOT " is the record of authentic work carried out by us during the period from January '19 to May '19 and submitted by us in partial fulfillment for the award of the degree "Bachelor of Technology in Computer Science and Engineering" to SRM IST, NCR Campus, Ghaziabad (U.P.). This work has not been submitted to any other University or Institute for the award of any Degree/Diploma.

Mahima Vinayak (RA1511003030208)

Pratyancha Dhaka (RA1511003030232)

Prateek Kumar (RA1511003030243)

ABSTRACT

The project is aimed at Student Smart Card System Using IOT. Recently, RFID based student monitoring system have been considered as one of the crucial elements or issues that reflects the academic achievements and the performance contributed to any university compared to the traditional methods that impose time-consuming and inefficiency. Diverse automatic identification technologies have been more in vogue such as Radio Frequency Identification (RFID). An extensive research and several applications are produced to take maximum advantage of this technology and bring about some concerns. RFID is a wireless technology which uses to a purpose of identifying and tracking an object via radio waves to transfer data from an electronic tag, called RFID tag or label to send data to RFID reader. The current study focuses on proposing an RFID based Student Monitoring System(SMS) and also information service system for an academic domain by using RFID technology in addition to the programmable Logic Circuit (such as Arduino), and web-based application. The proposed system aims to manage student's attendance, library, canteen, parking system and as well as document upload system. Based on the results, the proposed information system is time-effective and it reduces the documentation efforts as well as, it does not have any power consumption. Besides, RFID based student monitoring system have been proposed are also analyzed and criticized respect to systems functionalities and main findings.

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CHAPTER 1
INTRODUCTION

1.1 Introduction

RFID based Student Smart Card System is an emerging technology that eliminates the problems faced in manual attendance system or the system related to student monitoring system. Radio Frequency Identification is an IOT based application which is wireless technology and uses radio waves to identify and track the objects and extract information about objects on which RFID tag is been embedded. It also helps in uniquely identifying a person or an object. An RFID consists of RFID tag and RFID reader. RFID reader contains of an antenna and a transceiver, whereas RFID tag consists of electromagnetic information stored in it. There have been further two types of RFID tags which are Active tags and Passive tags. Active tags consist of a battery due to which it can be operated hundred of metres from RFID reader. And Passive tags do not have the power source due to which they collect the energy from a nearby RFID reader radio waves. The reader continuously senses its range of operation and whenever a RFID tag enter in its field, then it transmits electromagnetic waves to communicate with the RFID tag`s antenna. The data from the reader is received in the tag and then reader`s transceiver receives the data and it is then passed to controllers.

Student Smart Card System is a way of maintaining student`s personal record that is attendance, library, parking, cafeteria and many more. This system helps in reducing the manual work as much as possible and increasing the use of digital work. It also helps in increasing the efficiency rate which is reduced sometimes due to manual or human errors. This boosts up the concept of digital India.

1.2 History

RFID history started when development of radio took place and then, when radio waves were used to uniquely identify any object. It started when Sir Robert Watson – Watt has performed some experiments and he invented radar. In this system, a high power signal was used and then the small amount of the radio energy was reflected back and it was received back by radar. Radar was only used to identify an object uniquely but was unable to dive some information related to it. Due to this Sir Watson used the concept of IFF that is Identification Friend or Foe. A transponder was used on each flight and on ground station, which was used to verify it with a code. This is the basis of RFID development. Student management system which was used earlier was very time consuming and produce low efficiency. Earlier the student management system consists of manual work. All pen and paper work was used there. As, the technology evolved developments used to take place in every field including this one. Now a days concept of digital India is taking place which helps every field to get digitalized. Due to which manual work is reduced to a large extend and the efficiency has increased. This system helps in overcoming the drawbacks of the previous system used. Hence, evolvement in every field is required to be done.

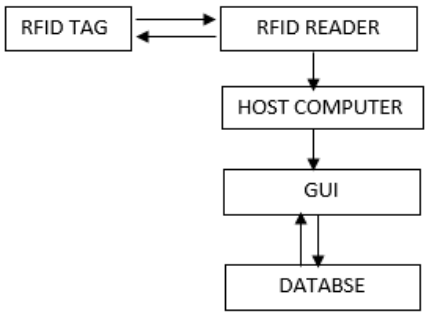

Fig 1.1 Components of RFID tag

1.3 Methodology

The method used to carry out this project is that the principle of serial communication in collaboration with embedded systems. This project has a RFID BASED STUDENT MONITORING SYSTEM, which uses RFID readers, which is the latest technology used for identifying the student and performing various required operations.

Basically, this project has two RFID components which are: RFID reader and RFID tag. When a particular student scans his RFID tag with an RFID reader and then, the login details if correct then the student is able to access the information and perform necessary actions which are required. This system covers almost all the fields of students and helps in performing operations in every field required.

1.4 Applications Description

Various applications used are mentioned below:

1. User Login

   In this module, user can enter their username, password and the user type to authenticate themselves to access their account panel modules. It allows to access different modules and can also perform different operations based on the requirement.

2. Admin Module

   This is one of the most important entity of the entire project. This module helps in performing the major operations.

   In this module, we can add users that is students, we can add different type of user based on the different fields like library users, cafeteria users, parking users and we can also add teachers from this module.

Another feature of this module is to view the user list. We can view any user list using this module. Recharge account can be done using this module. This feature has been added in this module is due to the security reasons. So, that misuse of this feature cannot be done in anyways.

3. Café User Module

In this Module, user can add items, view items, generate bill, pay bill, change password, view previous transactions and can also change password. One more feature of this module is to verify users.

4. Library user Module

In this Module, users can add books, view books, issue books, return books, change password, view transactions and verify users.

5. Parking User Module

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

6. Student user Module

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

7. Teacher user Module

In this module, a teacher can take attendance and can also view attendance of it students. This module is been built so that no discrepancy occurs while taking attendance of students.

CHAPTER 2

LITERATURE SURVEY

2.1 Approach

A literature review is an objective, through summary and critical analysis of the relevant available research and non-research literature on the topic being studied (Hart, 1998). It is the summary of resources but it has an organized manner and combines summary and synthesis Its goal is to bring the reader up-to –date with current literature on a topic and form the basis for another goal, such as justification for future research in the area. It gives a new birth to the old material and help to be converted into a new material or combine with old material to form new material.

It is important and necessary to do a literature review because if we have limited time to conduct research, literature reviews can give us an overview or act as a stepping stone. Research has been always playing a vital role in the development and success of all projects. During this conscientious period of study of Word Online the main source of references includes journals, web sites, newsgroup and guideline from the supervisor.

In order to design or develop any system developer needs to consult spectrum of magazine or journals or whitepapers or newsgroup or websites so as to meet end user requirement and move on to detailed research phase. This process of getting technology and meeting end user requirement is called as literature review.

2.2 Case Studies

Various organizations are actively using RFID based systems applications like attendance library system etc. After studying various researches done on RFID technology we come across various facts and information in using RFID tag. The authors focused on the development of an attendance management system to monitor the attendance to reduce the tedious work of manual attendance taking system.

Before the implementation of RFID System bar codes are used to generate identification codes but it is noticed that the bar code may fade away with time can is not for long time use. RFID provides applications that provide batch access, storage mass data and reprogramming. In solving the problems of lack of storage in barcodes, one of the best solutions found is IC chips found in memory cards, smart cards and Metro Cards. The authors elaborate the working and usage of RFID tag and making a secure campus. A brief introduction is given on the usage of RFID technology by tracking students with Smart Cards their activities and locations. RFID reader scans tags and then forwards the information to the backend database. In the backend, a well-defined interface with appropriate database can be used for storing information.

RFID is better than barcode as it provides applications that provide batch access, storage mass data and reprogramming. In this paper the authors focuses on the implementation of RFID in Library Management System Based on IOT. In solving the problem of insufficient storage in barcodes, one of the better solutions is the IC chip, such as a memory card or a smartcard, to store and identify information.

RFID reader acknowledge the sensor-based technology that senses the RFID chip and set for the record inside the database. Helped us to understand the implementation of RFID tag as a plastic money – SMART CARD.

Radio frequency identification (RFID) has been used in a number of practical applications, such as improving supply chain management, tracking household pets, accessing office buildings, and speeding up toll collection on roadways. RFID is used to automatically identify people, objects, and animals using short range radio technology to communicate digital information between a stationary location (reader) and a movable object (tag).

Ensuring the safety of each and every student in a university has been a challenging factor all throughout the world. Using our idea of Monitoring Systems, we will be able to strengthen the safety aspects of students in a university. Students bypass university rules by finding loopholes in the system. The students are tracked using passive Radio Frequency Identification Devices (RFID) which will be placed in the student's ID card. The authors emphasised on spreading the RFID technology in schools and colleges to make sure that each student in secure and safe inside the Institute premises.

The paper introduces a new method in the automatic identification and diagnosis of the road infrastructure on site. This method is based on RFID technology, that offers many attributes like an increased data capacity, wide-range readability, and the ability to manage data in real-time. However, despite all these positive attributes, RFID technology is still in early adoption phase.

There are many systems which provide security to the school children. The use of RFIDs makes it easier to maintain and usage, but could not give the certain formation about the situation in the bus i.e. this system is it does not provide any information when children are in dangerous situations

2.3 Goal

The aim of the project is to utilize RFID system in a different and developmental side. We all know that RFID is used in each and every industrial and manufacturing field. Our major focus is to utilize this tool towards the residents and commercial users especially the old and disabled ones. This form of system is called RFID system which focuses on making it possible for the elderly and disabled to remain at school, safe and comfortable. The system offers greater levels of user friendliness combined with greater processing speed. Therefore, the cost of maintenance can be reduced.

2.4 Objectives

- To study the requirement of cashless campus
- To track student activities.
- To build a safe environment and get rid of parent's fear.
- Enhance the recent technologies and start with a smart change.
- To establish a high level, detailed but flexible, specification for a student tracking system.

CHAPTER 3

FEASIBILITY STUDY

It can be defined as an investigation into a project or proposed plan in order to determine whether and how the proposed project can successfully and profitably. It is performed in order to measure whether the project is feasible. Developer of the proposed system carefully conducted feasibility by keeping in mind with considerations of two important factors time and resource. Developer of the proposed system has to go through several stages for the successful accomplishment of the project and here feasibility study becomes important, in order to make sure that the software is built according to its specification. Conducting feasibility study is considered as a good business practice. There are different types of feasibility study but the developer divided the feasibility study in four major types. They are as follows:-

- Technical Feasibility
- Schedule Feasibility
- Operational Feasibility
- Economic Feasibility

Developer of the proposed system carefully carried out research and study on all these types in order to determine whether it is feasible to carry out the development of the proposed system.

3.1 TECHNICAL FEASIBILITY

Developer of the proposed system carried out technical feasibility in order to determine the requirements of technologies for the current system. It is very much essential and necessary for the developer to determine that the current technological resources are sufficient to develop the proposed system or there is need to upgrade the technological resource. There is a need carefully conduct this study because it is considered as one of the most important study in all aspects. Developer needs to answer few things in order to conduct technical feasibility study. These are:-

- Is proposed technology or solution practical?
- What kind of technology will developer need?
- Is the required technology available “in house”?

3.2 SCHEDULE FEASIBILITY

This feasibility is related is used to determine the time factor related to current system. It is very much necessary for the developer to define deadlines for the project. Only defining is not important but also there is a need to accomplish the work on due time. There is a need to build a System/ Solution in time which is useful. Also there is need to answer few questions during and after the development in order to acquire accuracy and usefulness.

- • What are the consequences of delay?
- • Any Constraints on schedule?
- • Can these constraints be met?

As developer knows the fact that most of the project fails due to delay in project deadline. Answering above mentioned questions will help the developer to eradicate problems in schedule feasibility. Developer has maintained a Gantt chart for defining

task with deadline dates. This will help developer to evaluate project development process.

3.3 OPERATIONAL FEASIBILITY

Developer of the proposed system carried out operational feasibility study to make sure that if the proposed system is developed, will it be used. It is very much necessary to conduct because there is a need to determine that the proposed system which is going to be developed can satisfy and meet user requirements and expectations. It is very much necessary to analyse user requirement and to what level the proposed will meet the expectations. Developer will perform a competitive analysis of the available systems in the market. This will help in getting a closer view to the features of similar systems available in market and to focus on features which are going to be supplied with the proposed system. After conducting competitive and comparative analysis developer concluded that it is feasible to build the proposed system. Several testing will be performed for ensuring quality of the proposed system.

3.4 ECONOMIC FEASIBILTY

It is the most important feasibility study used to evaluate the effectiveness of the candidate system i.e. proposed system. The effectiveness should be in term of Cost effectiveness and Benefits (Tangible/ Intangible). It is very important to determine tangible and intangible benefits associated with the proposed system, since the degree of success of proposed system depends a lot upon this factor. Identifying benefits associated with the proposed system has a greater impact on the development and usefulness of the desired output. So, developer identified tangible and intangible benefits of the proposed system which will be discussed in next chapter.

3.5 BEHAVOURAL FEASIBILITY

People are inherently resistant to change and computer has been known to facilitate changes. An estimate should be made of how strong the user is likely to move towards the development of computerized system.

These are various levels of users in order to ensure proper authentication and authorization and security of sensitive data of the organization.

CHAPTER 4

PROBLEM DESCRIPTION

4.1 EXISTING SYSTEMS

Radio Frequency Identification technology enables items, animals or persons to identify themselves by means of wireless communication. A small tag containing microchip and antenna is applied to commercial products, animals or human Beings. There are different kinds of tags which differ in shape, size, storage capability, frequency range and can be active, semi-active or passive. An active chip is equipped with its own energy cell for broadcasting whereas a semi active chip is also battery-assisted but the energy is used for the power supply of the microchip's circuitry but not for broadcasting the chips information. Therefore the battery life of semi-active chips is longer compared to the life of an active chip. The passive tag on the other hand does not have a battery cell at all. It uses the power carried in the readers signal to emit its data.

RFID systems are designed to operate at a number of designated frequencies, depending on the application requirements and local radio-frequency regulations. Four main frequency ranges exists:

• Low Frequency (125 kHz)

• High Frequency (13.56MHz)

• Ultra High Frequency (860-960 MHz)

• Microwave (2.45 GHz)

The RFID reader sends a pulse of radio energy to the tag and listens for the tag's response. The tag detects this energy and sends back a response that contains the tag's serial number and possibly other information as well. Historically, RFID readers were

designed to read only a particular kind of tag, but so-called multimode readers that can read many different kinds of tags are becoming increasingly popular.

RFID tags can also be found in the automobile industry and are used as an anti-theft device. In public libraries, anti-theft devices is also an important application. As a solution all books are provided with RFID chips to protect them from unauthorized thievery. In addition these chips can be used to relieve the employees of a library, so they can focus on assisting visitors, automate the bool rental or to maintain book sorting devices and conveyer for logistic purposes.

4.2 PROPOSED SYSTEM

The automation of the attendance, parking, cafeteria, and library will be presented in this section. The academic attendance software has been integrated into the client(s) device, as well as into the server device. Therefore, all the requirements were standard in wireless communication (TCP/IP), reasonable reading range, and fast identification time for the RFID reader. The proposed automated system uses reader (RFID tag reader) and so, the software toolkit is used to derive the planned equipment's. The system can access all the required information through the database (student, staff, administrator, parking, etc.).RFID's supplies build-in functions to communicate with readers and collect data when any events have taken place. The following steps describe RFID features and events handling:

- "Reader data" will be initiated as an instance by using RFID

  Main class.
- "IP address" will be handled using set and get methods

- Reader’s port number, and location; can be recognized using get and set methods. So, antenna can be specified and the proposed system will know which antenna is being used.
- “Tag List” of students’ attendance is represented as array of tag information.

4.3 SOFTWARE ENGINEERING PARADIGM APPLIED

- The basic objective of software engineering is to: develop methods and procedures for software development that can scale up for large systems and that can be used to consistently produce high quality software at low cost and with a small cycle time. That is, the key objectives are consistency, low cost, high quality, small cycle time, and scalability.
- The basic approach that software engineering takes is to separate the development process from the software. The premise is that the development process controls the quality, scalability, consistency, and productivity. Hence to satisfy the objectives, one must focus on the development process. Design of proper development process and their control is the primary goal of the software engineering. It is this focus on the process that distinguishes it from most other computing disciplines. Most other computing disciplines focus on some type of the product-algorithms, operating systems, databases etc. while software engineering focuses on the process for producing products.
- To better manage the development process and to achieve consistency, it is essential that the software development be done in phases.

CHAPTER 5

HARDWARE AND SOFTWARE SPECIFICATION

5.1 HARDWARE SPECIFICATIONS: -

- **Processor** Intel Pentium IV Processor
- **Monitor** 15.0” XGA TFT LCD.
- **RAM** 1 GB RAM
- **Speed** 3.0 GHz HT
- **Mouse** Optical
- **Free Space** at least 20GB
- **Accessories** Pen Drive (for transferring the data externally) and CD’s/DVD’s.
- Graphic Card Intel Extreme Graphic with 64MB

5.2 SOFTWARE SPECIFICATIONS: -

- **Operating System** Microsoft Windows any version
- **Front End** Core Java
- **Programming Language** Java
- **Front End IDE** NetBeans 8.0
- **Back End Support** MySQL

CHAPTER 6
IMPLEMENTATION

6.1 Algorithm of the proposed system

Below given diagram explains the algorithm through which we are going to adopt to arrive at the conclusion. Algorithm are set of rules or a process that is used for problem solving purposes in order to solve a particular given problem.

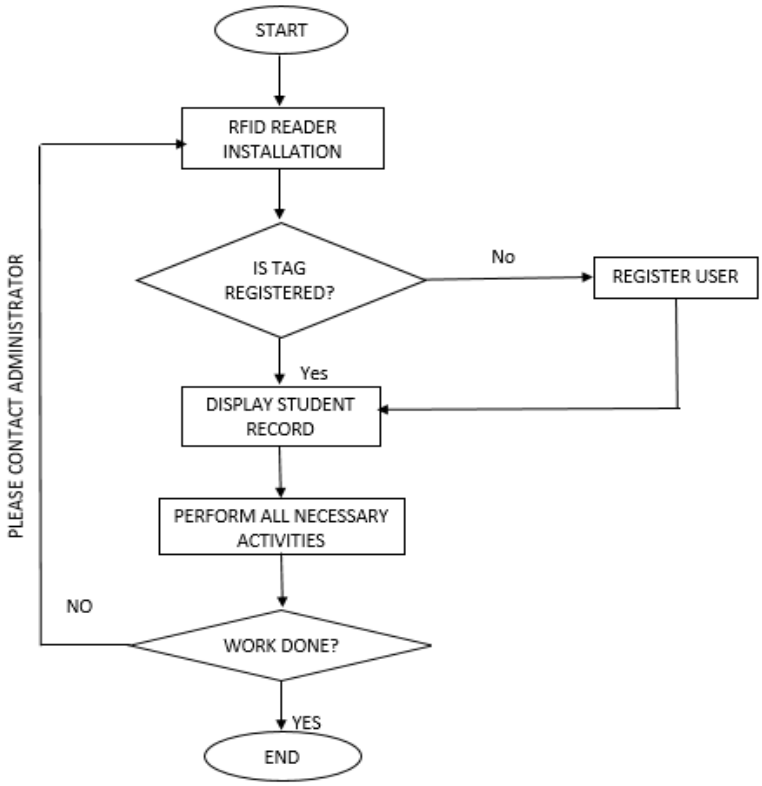

Fig 6.1 Algorithm Diagram

This system explains that after the RFID reader has been installed successfully. After that, tag is registered which is been scanned with the help of a reader. If yes, then we will move forward to display the particular student record. If not, then the user have to

register himself or herself. After that, whatever operations has to be performed will be performed based on the student`s requirement. At last, if the work is done, we will end the process. If we face some difficulty then contact the administrator department.

6.2 Architecture of the proposed system

Architecture diagram is a set of concepts or graphical representation that are part of an architecture which includes their principles, documents and elements. In the following given diagram, it helps to define the whole concept of the system in just one graphical representation.

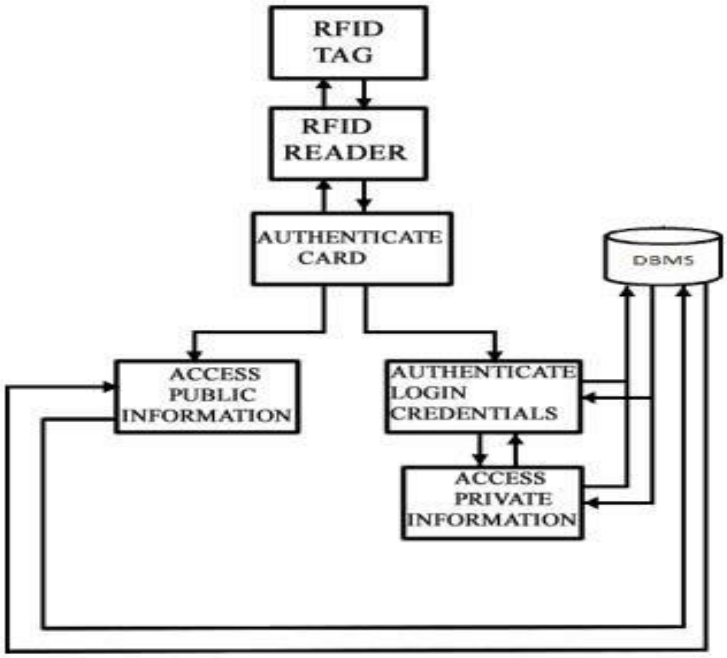

Fig 6.2 Architecture Diagram

Above given is the architecture diagram of student smart card system. It helps to define the proposed system graphically. In this system, RFID tag is been scanned using reader.

Then the RFID card is been authenticated and after that there are two type of information that is public information that can be seen by anyone and then there was private information which can be accessed only by using login credentials. If the login is successful than we can access the private information with the help of database and can perform required operations.

6.3 Data Flow Diagram of the proposed system

A data flow diagram is process of representing flow of the data of a process or a system. The data flow diagram is also used to represent the inputs and outputs involved in the process or involved in each entity. Data flow diagram does not include any control flow, any loops or any decision rules.

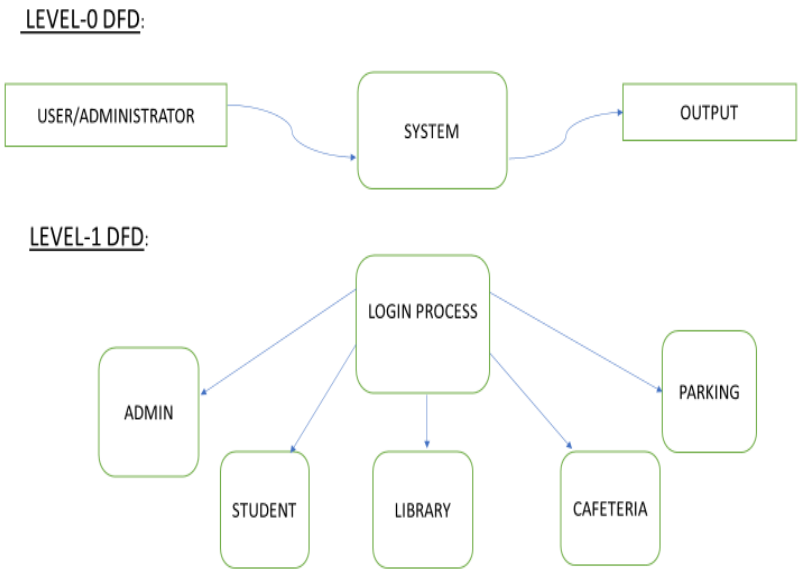

Fig 6.3.1 Level 0 and 1 of Data Flow Diagram

The data flow diagram has been divided into different levels. Level 0 is used to represent the overall function of the system defining the input, output and the main system. Level 1 DFD is used to elaborate a given process into its different functionalities. In this system, we have elaborated the login process and explained who all can login that is it may be admin, student, library, cafeteria and parking.

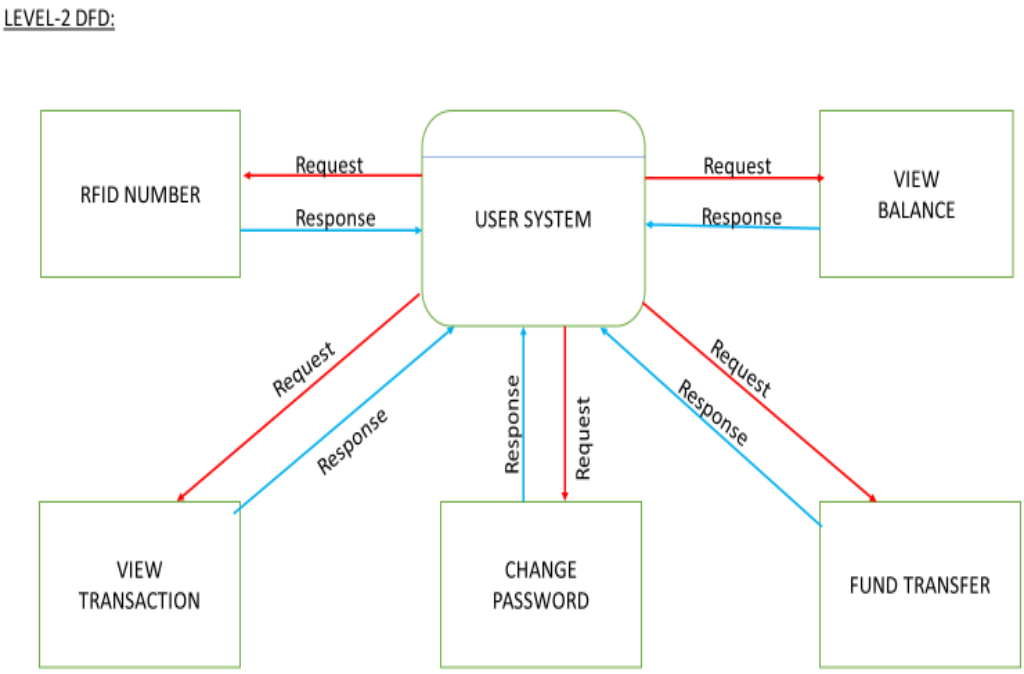

Fig no 6.3.2 Level 2 of Data Flow Diagram

Level 2 DFD is again used to define a process more specifically. In the above given process we have define that after the login process if we go to the user system than what are functionalities there that we can access. For accessing a particular functionality we have to request for that and after that we will get the response to that problem. We can access RFID number, view balance, view history of transactions, can change password and can perform the operation of fund transfer.

6.4 Use Case Diagram of the proposed system

A use case diagram is a graphical representation of the interactions among the different elements involved in the system. This diagram is also used to identify, clarify and organize the system requirements. Use case diagram is employed in UML (Unified Modelling Language). It is a standard notation used for used for modelling of real-world systems and objects.

Fig 6.4 Use Case Diagram

The above use case diagram has two types of actors: Primary actors and secondary actors. Primary actors are the major component of the system whereas secondary actors are not a major component of the system they provide additional assistance to the system. Primary actors are admin and student. Admin have various functionalities like add user, view user list, make payment and recharge account. Student can access all the

functionalities of the admin as well as they can view attendance and can also view transaction. Secondary actors are library, parking, teacher and canteen. They can access some functionalities like issue books or return books, check in and check out from parking a lot and can also view vehicles. This is all about use case diagram.

6.5 Entity Relationship Diagram of the proposed system

Entity Relationship Diagram is also known as ERD, ER diagram or ER model. It is used in database design for structural diagram. Entity Relationship Diagram contains different notations and symbols. They can help in various important information: the major entities within scope of the system and the inter-relationship among entities. It is a graphical representation between different entities and relationship among places, objects and concepts within a particular system.

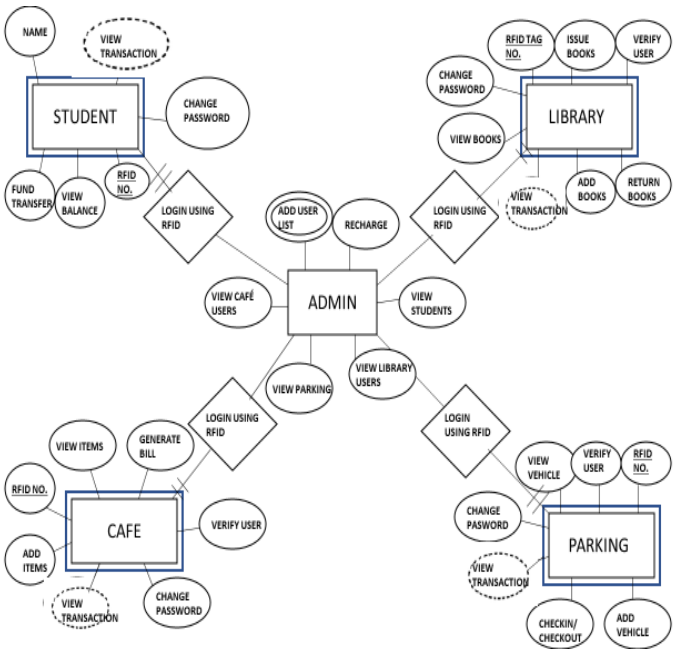

Fig 6.5 Entity Relationship Diagram

Above E-R diagram, it is used to represent relationships between different entities. In the above diagram, different entities involved are admin, student, library, café and parking. All these entities are accessed using login with help of RFID. Every entities have various different number of attributes which are connected in some or the way to the entity. Attributes are basically fabricated into two different types. One of them is strong attribute which is directly connected to the entity and the other one is weak is which is not directly dependent on the entity. This is the Entity Relationship Diagram of the proposed system.

CHAPTER 7
TESTING

7.1 TESTING

It should be clear in mind that the philosophy behind testing is to find errors. Test cases are devised with this purpose in mind. A test case is a set of data that the system will process as normal input. However, the data are created with the express intent of determining whether the system will process them correctly. For example, test cases for inventory handling should include situations in which the quantifies to be withdrawn from inventory exceed, equal and are less than the actual quantities on hand. Each test case is designed with the intent of finding errors in the way the system will process it. There are two general strategies for testing software: Code testing and Specification testing. In code testing, the analyst develops that cases to execute every instructions and path in a program. Under specification testing, the analyst examines the program specifications and then writes test data to determine how the program operates under specific conditions. Regardless of which strategy the analyst follows, there are preferred practices to ensure that the testing is useful. The levels of tests and types of test data, combined with testing libraries, are important aspects of the actual test process.

7.2 Levels of Testing

Systems are not designed as entire systems nor are they tested as single systems. The analyst must perform both unit and system testing.

7.2.1 Unit Testing

In unit testing the analyst tests the programs making up a system. For this reason, unit testing is sometimes called program testing. Unit testing gives stress on the modules independently of one another, to find errors. This helps the tester in detecting errors in coding and logic that are contained within that module alone. The errors resulting from the interaction between modules are initially avoided. For example, a hotel information system consists of modules to handle reservations; guest checking and checkout; restaurant, room service and miscellaneous charges; convention activities; and accounts receivable billing. For each, it provides the ability to enter, modify or retrieve data and respond to different types of inquiries or print reports. The test cases needed for unit testing should exercise each condition and option.

Unit testing can be performed from the bottom up, starting with smallest and lowest-level modules and proceeding one at a time. For each module in bottom-up testing a short program is used to execute the module and provides the needed data, so that the module is asked to perform the way it will when embedded within the larger system.

7.2.2 System Testing

The important and essential part of the system development phase, after designing and developing the software is system testing. We cannot say that every program or system design is perfect and because of lack of communication between the user and the designer, some error is there in the software development. The number and nature of errors in a newly designed system depend on some usual factors like communication

between the user and the designer; the programmer's ability to generate a code that reflects exactly the systems specifications and the time frame for the design.

Theoretically, a newly designed system should have all the parts or sub-systems are in working order, but in reality, each sub-system works independently. This is the time to gather all the subsystem into one pool and test the whole system to determine whether it meets the user requirements. This is the last change to detect and correct errors before the system is installed for user acceptance testing. The purpose of system testing is to consider all the likely variations to which it will be subjected and then push the system to its limits.

Testing is an important function to the success of the system. System testing makes a logical assumption that if all the parts of the system are correct, the goal will be successfully activated. Another reason for system testing is its utility as a user-oriented vehicle before implementation.

7.2.3 Program Testing

A program represents the logical elements of a system. For a program to run satisfactorily, it must compile and test data correctly and tie in properly with other programs. it is the responsibility of a programmer to have an error free program. At the time of testing the system, there exists two types of errors that should be checked. These errors are syntax and logic. A syntax error is a program statement that violates one or more rules of the language in which it is written. An improperly defined field dimension or omitted key words are common syntax errors. These errors are shown through error messages generated by the computer. A logic error, on the other hand, deals with incorrect data fields out of range items, and invalid combinations. Since the logical

errors are not detected by compiler, the programmer must examine the output carefully to detect them.

When a program is tested, the actual output is compared with the expected output. When there is a discrepancy, the sequence of the instructions, must be traced to determine the problem. The process is facilitated by breaking the program down into self-contained portions, each of which can be checked at certain key points.

CHAPTER 8

RESULTS

The above chapter gives us the interface of the project that has been created. This chapter includes various outputs (screenshots) of the different intermediate results obtained.

Fig 8.1 Welcome Page

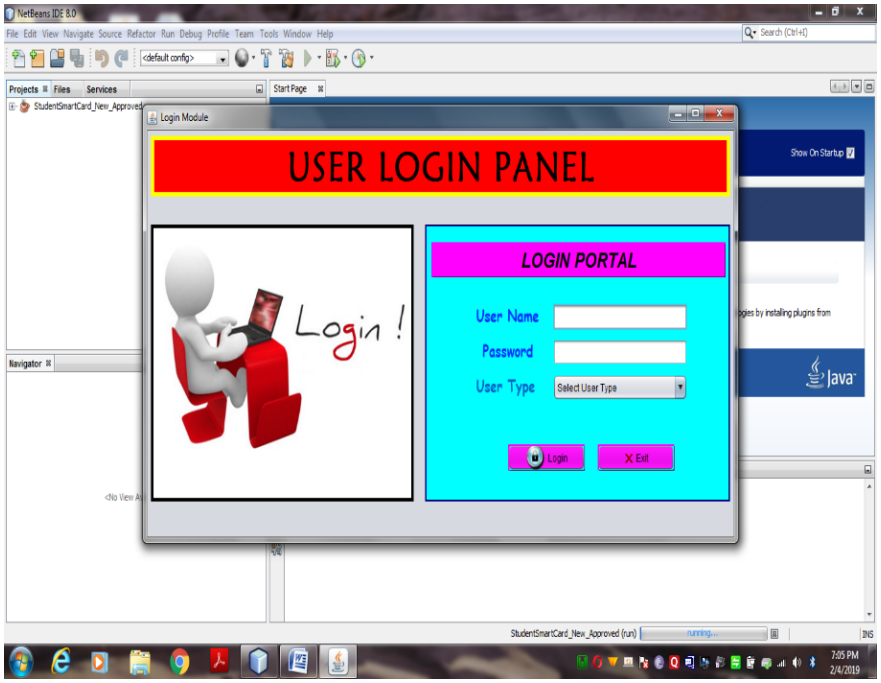

Fig 8.2 Login Page

Fig 8.3 Admin Module

Fig 8.4 Add user list

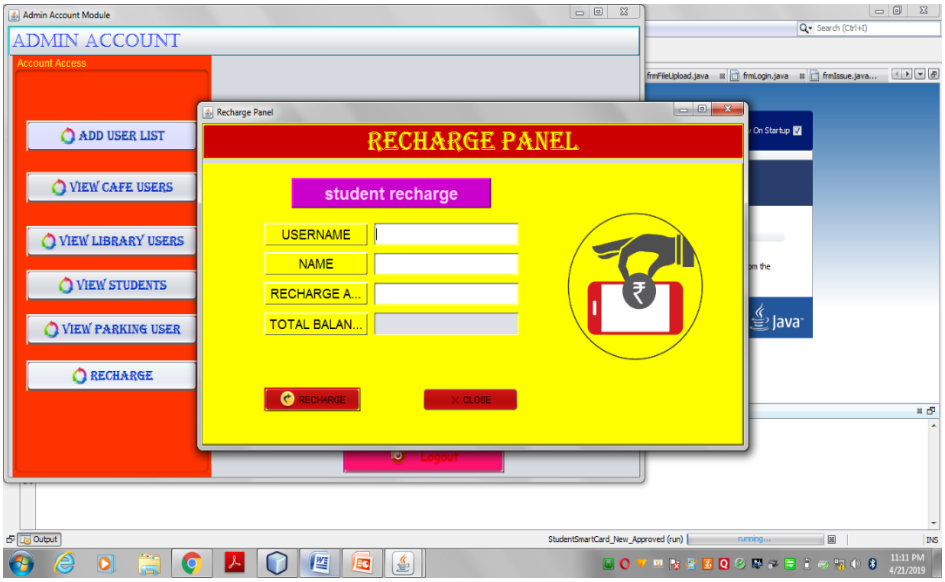

Fig 8.5 Recharge Panel

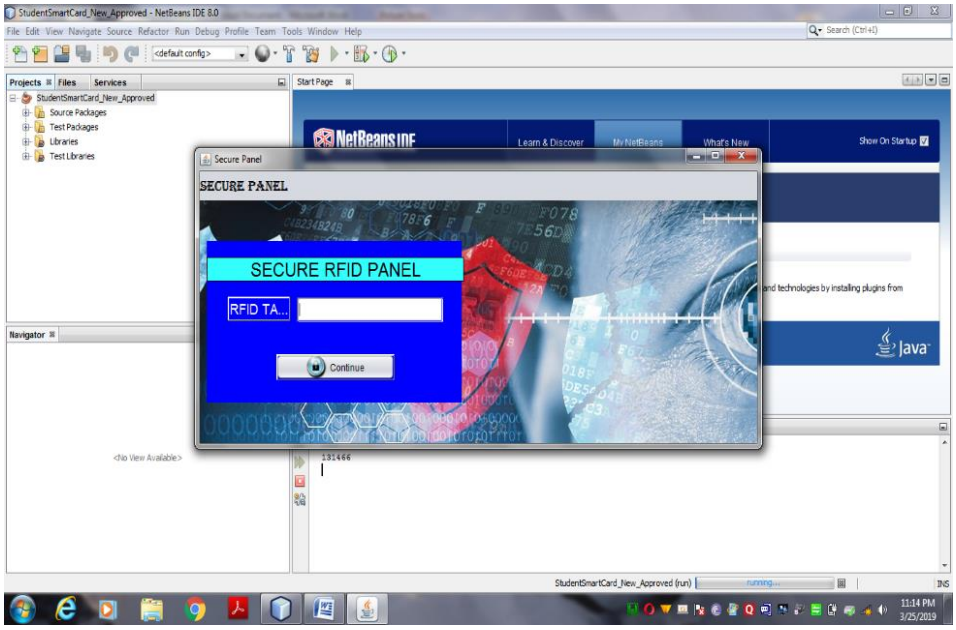

Fig 8.6 User login

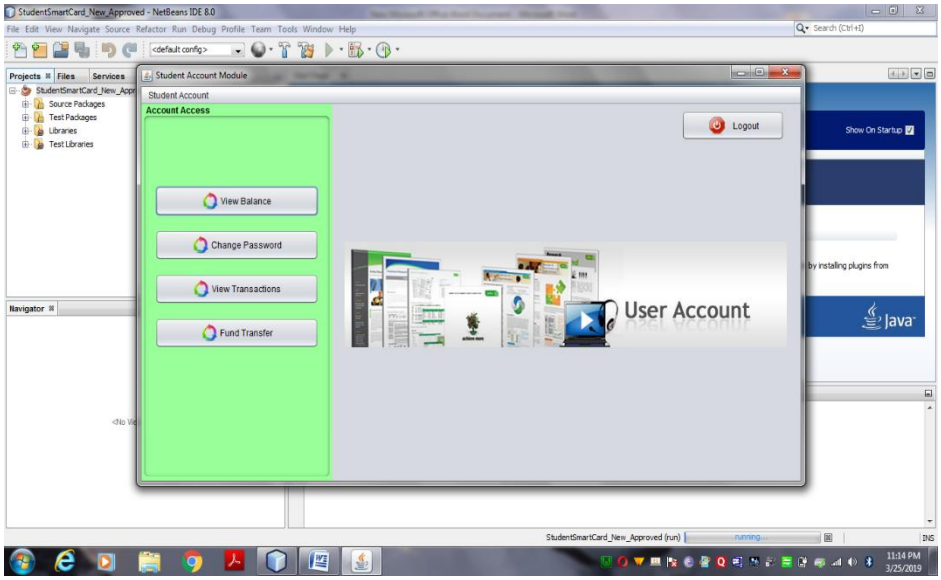

Fig 8.7 Student Module

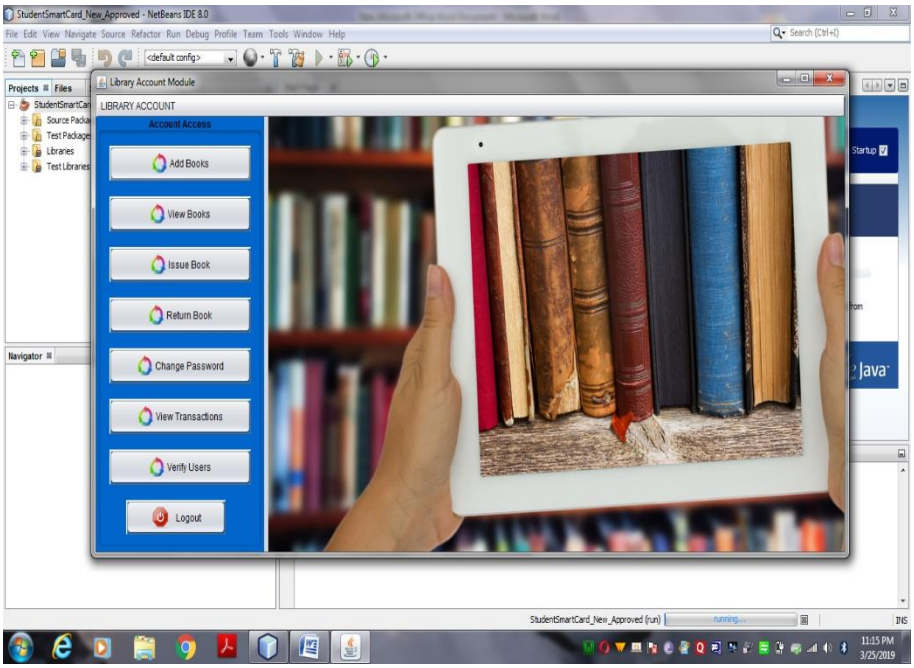

Fig 8.8 Library Module

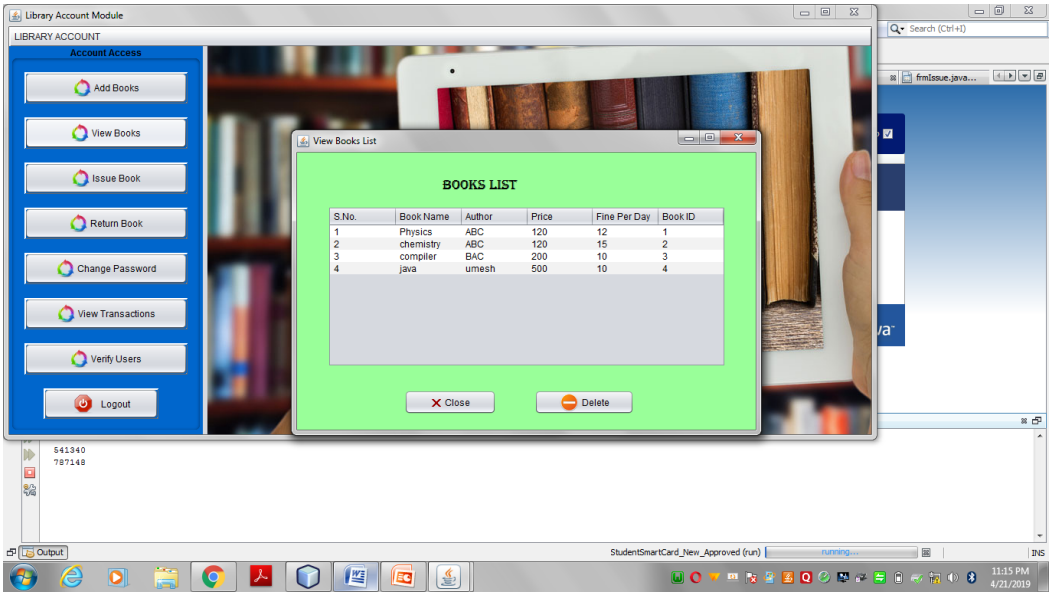

Fig 8.9 Books list

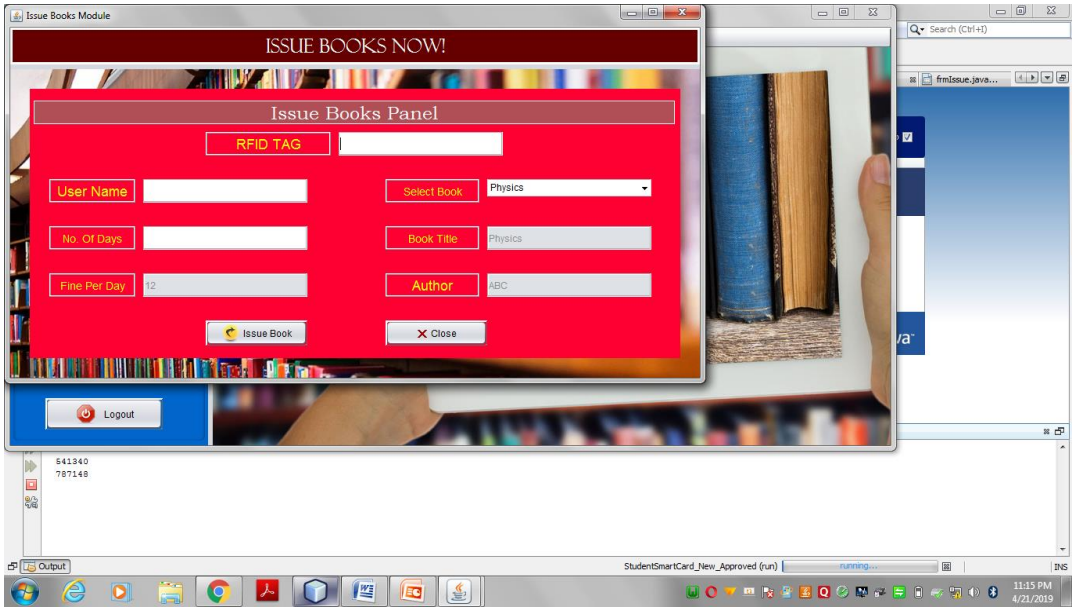

Fig 8.10 Issue books

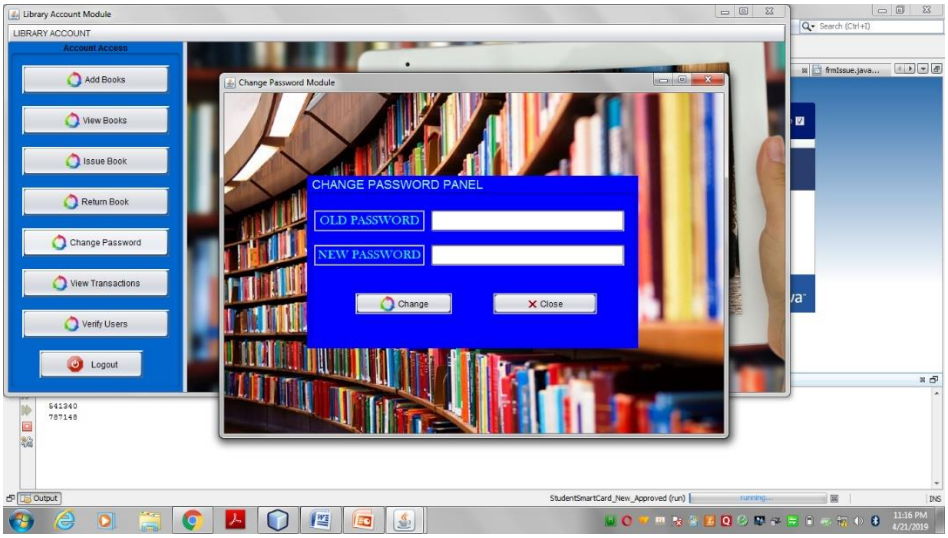

Fig 8.11 Change Password Module

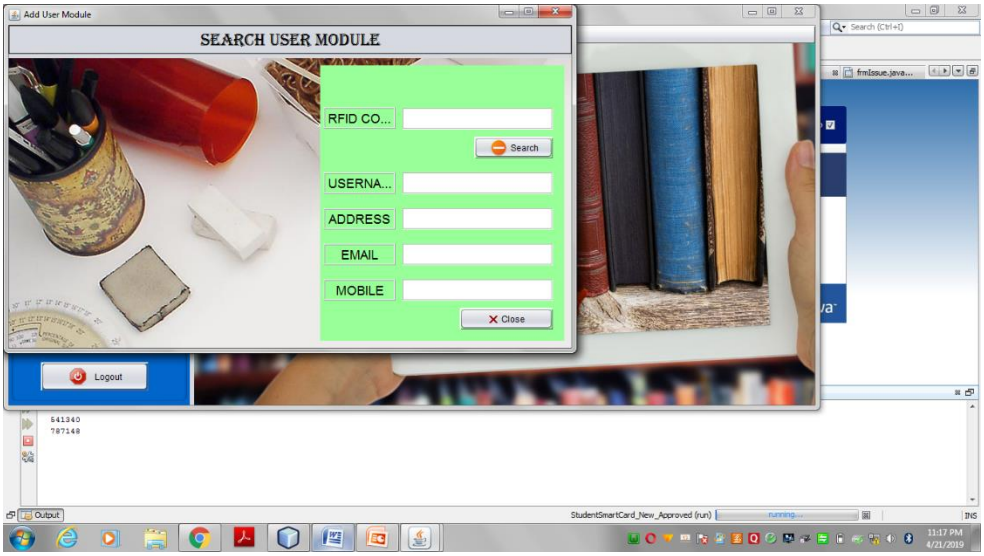

Fig 8.12 Verify User Module

Fig 8.13 Cafeteria Module

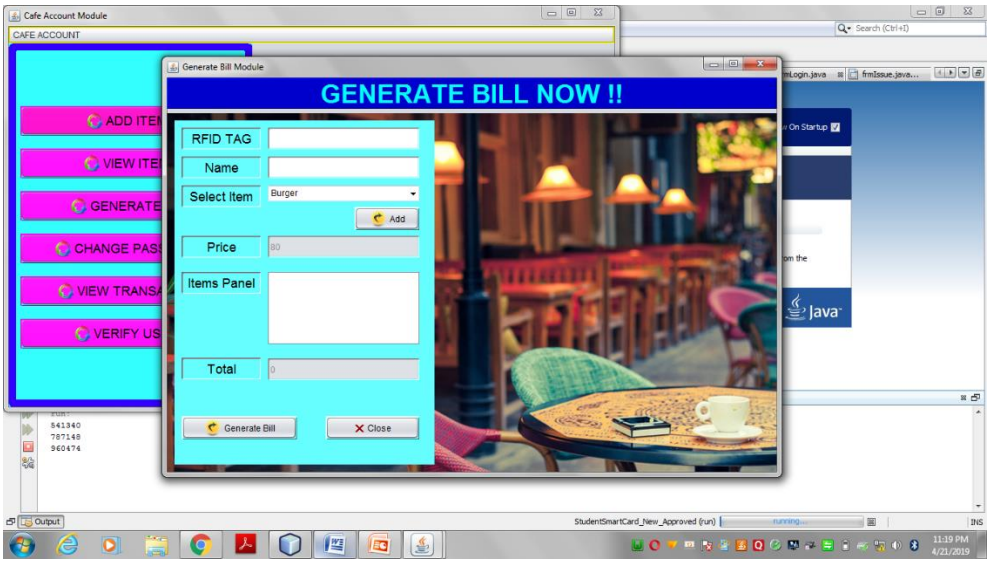

Fig 8.14 Generate Bill

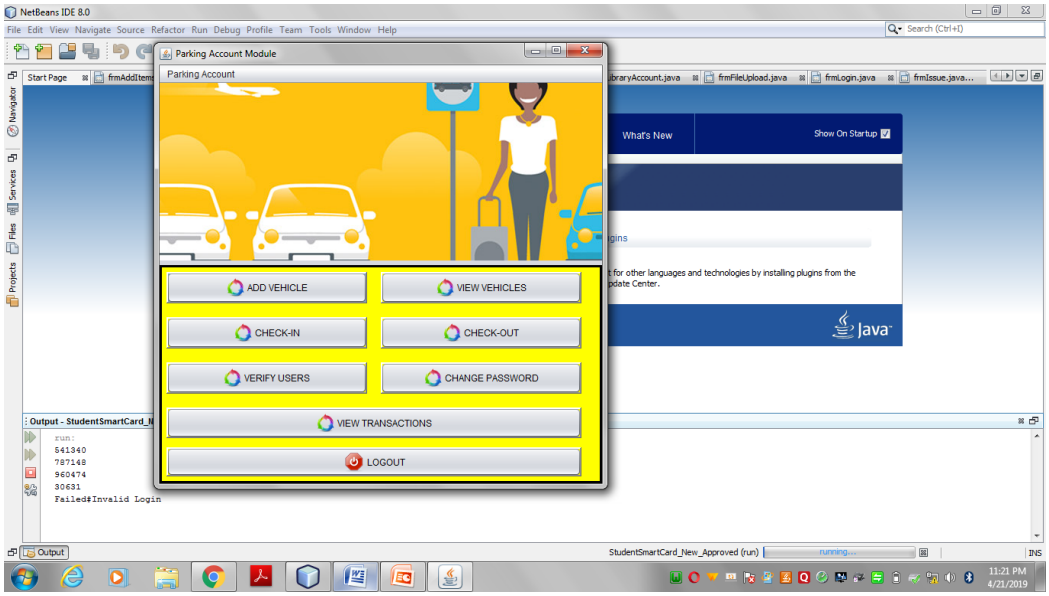

Fig 8.15 Parking Module

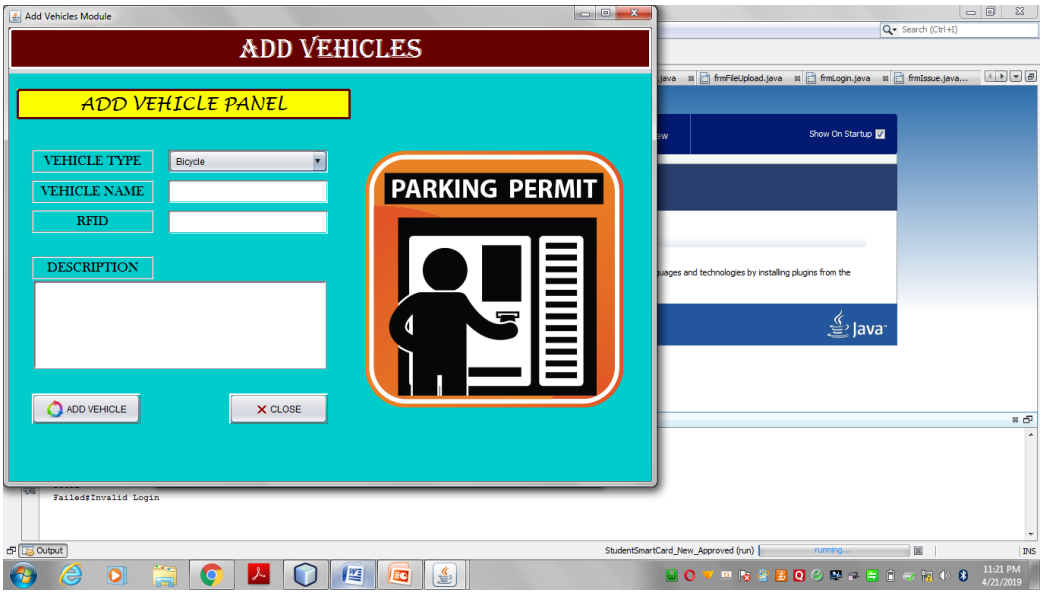

Fig 8.16 Add Vehicles

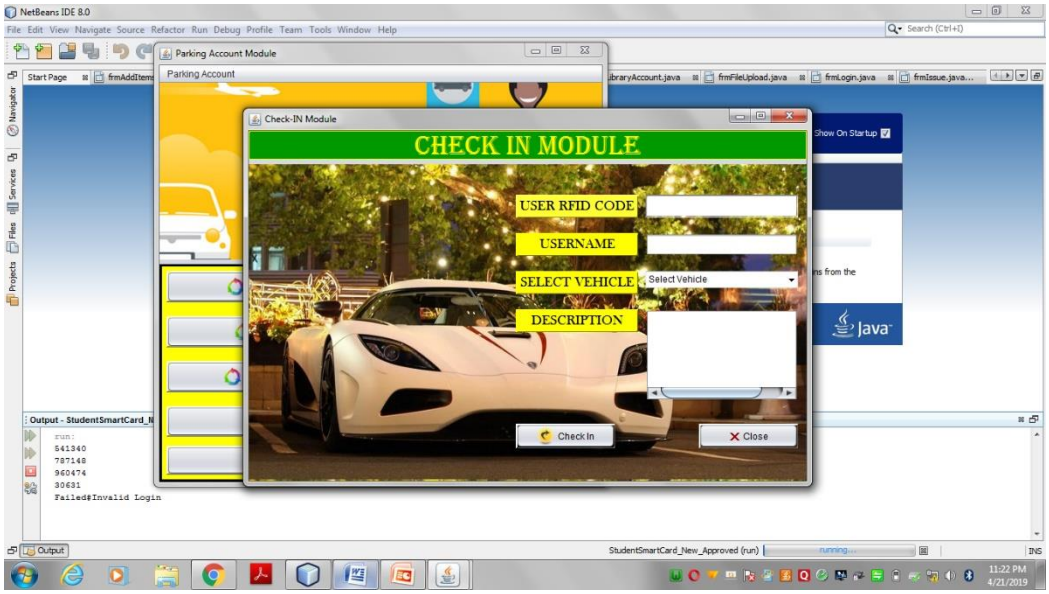

Fig 8.17 Check-In Module

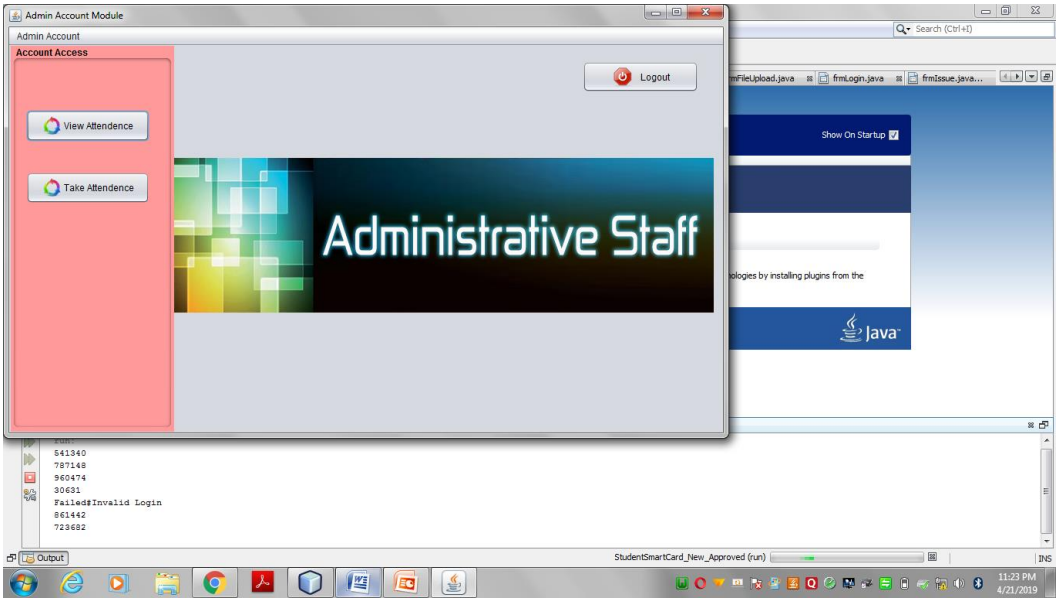

Fig 8.18 Teacher Module

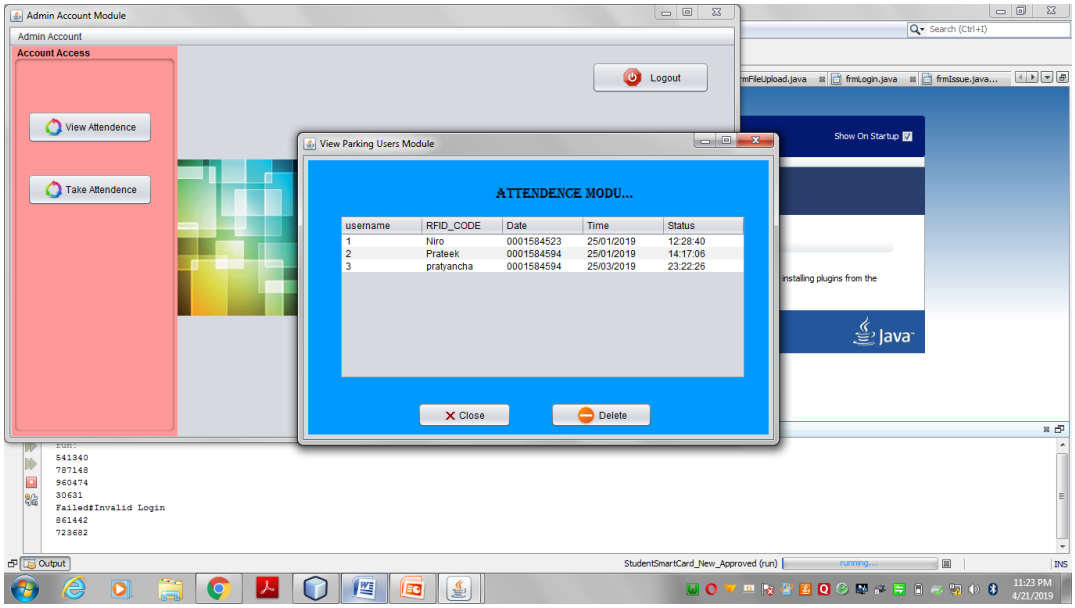

Fig 8.19 View Module

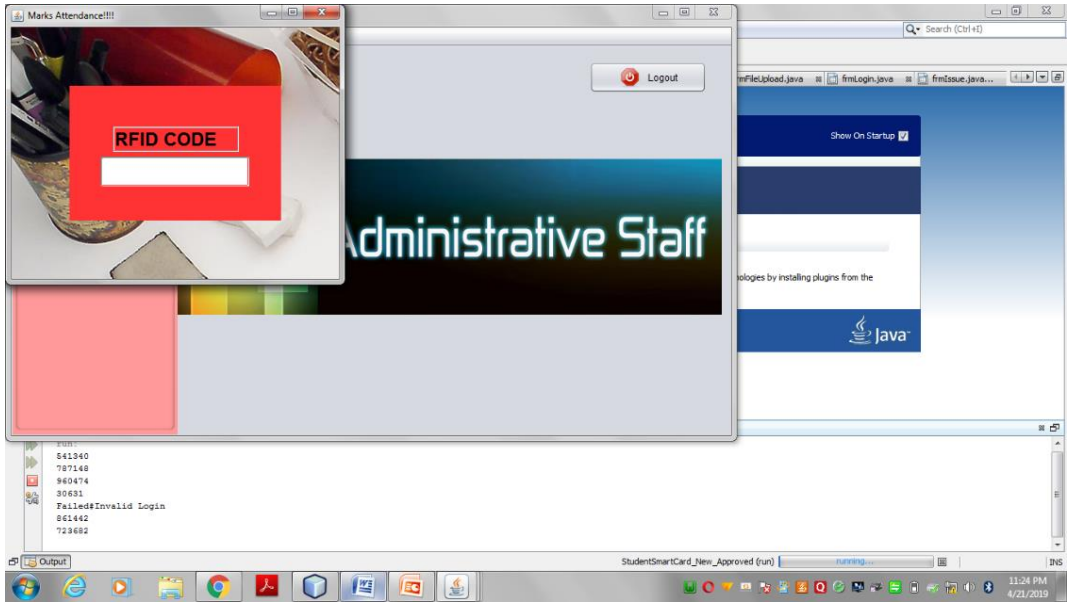

Fig 8.20 Mark Attendance

CHAPTER 9

CONCLUSION AND FUTURE WORK

Various implementations and establishments of RFID system it taken on account to full fill our basic goals and bring a smart change.

9.1 CONCLUSION

Earlier the manual methods were adopted by the institutions to pay for the library fines, billing for café and taking attendance and maintaining them. It's also noticed that earlier students in time and out time from the campus is enable to track which make their parents worried. Our proposed project will make the students safe and can reduce the risk in involving in bad influence. The enhanced student tracking using RFID tag is implemented with all application working properly. The use of RFID technology is established by full filling all the goals set initially. It is been noticed that all the application make full use of RFID technology. The RFID tag generates is generated and the reader is able to sense the IC chip inside the student ID card.

9.2 FUTURE WORK

RFID System have been used earlier and can also be implemented or enhanced better in future. Tracking locations of students inside campuses, access the company building, tracking students in bus, their check-in and check-out time and locations. For future works it can be possible to enhance the RFID technology like:

- Increasing frequencies for RFID

- Multiple band Operations to access multiple scans at a single time.
- Lower power Oscillators
- High rated RFID reader with more accuracy.

The proposed system will help everyone to access and track the near and dear ones and save them from a bad influence. May be in the future it will reduce the cash flow traditional system and make it a cashless environment which is secure and adoptable. The project initiative may help parents to get rid of fear about their kids and reduce the crime and manipulation among the college students. This may also bring a smart change and make world digitalized.

CHAPTER 10

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CHAPTER 11
PLAGIARISM REPORT

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