A THEORETICAL APPROACH OF BIOMETRICS BASED STUDENT MANAGEMENT

S. Srikajan[1], U. Vithusha[2], S. Kamsavathana[3], R. Harthiyayini[4], J. Susana[5], A. Jerin[6] and K. Thiruthanigesan[7]

[1,2,3,4,5,6]Department of Technical Education & Training, College of Technology Jaffna, Sri Lanka

[7]Information and Communication Technology Center, University College of Jaffna, University of Vocational Technology, Sri Lanka

Abstract

A Theoretical Approach of Bio-Metrics Based Student Management System is an efficient and effective management system for the student's record maintenance. The proposed study was developed with the available technology of C#, .Net and MS SQL Database. In the current era, the biometric technologies were used in various fields such as Institutions, Universities, and Training centers, Organizations, and Bank. Biometrics touch application were especially for authentication purposes. The traditional system was difficult to maintain the data in the proper way. The administration faces several complex situations for record keeping of the teachers, students, examinations and attendance making. The system faces many difficulties when managing the students. All the departments provide various records regarding students. This information could be the general details like student name, address, performance, attendance and specific information related to departments like a collection of data relevant to the student. All the modules in administrations were interdependent. If they maintained the records manually for example, when a student needs his course completion certificate it needs to check many details about the student like his name, register number, year of study, exams, he attended and many other details, so it needs to contact all the modules that are once, department and examination and result of students. A theoretical approach of Bio-metrics based Student Management has overhauled the existing system and made necessary improve the processes.

Keywords:

Bio-Metrics based Student Management System, Theoretical Approach of Bio-Metrics based Student Management System, Bio-Metrics, Student Management System

1. INTRODUCTION

This 21st Century organization faced so many wicked problems. Because of that organization following manual system. They also immediately need to exchange an efficient and effective system by developing one type of the system. This research study was providing a solution to solve these problems in an effective manner. In the current era, the development of the Bio-Metrics Based Systems was very important. Organizations want to develop own management information systems. It was important to different requirements, perception, judgment, and human intelligence [1]. This Bio-Metrics Based Student Management System provides more use full information that helps decisions making opportunities, providing the answers and set of queries. Because the organization has so many burdens of monitoring and maintaining the achievement of individual students. Educational organizations to ease this burden are affected by the organization's access to student's information which has to be accurate and relevant. It has many benefits for the well-designed student's records fields.

In the era, reliable and secure user authentication is a more important need and most commonly used for user authentication biometric System [2]. Bio-Metrics Based Student Management System deals with all kind of information such as individual student details, student academic reports, institution details, course details and other resource-related details. Applying biometrics to user authentication was to provide security and physiological terms of users for an examples voice, fingerprint, iris, and face and keystroke [3]. It is the highly secure identification and personal solution for becoming the foundation and personal verification solutions. It has the potential to offer much more than a traditional system for an example passwords or passcodes pins tokens [4].

System owners and end users use this Bio-Metrics Based Student Management System, provide accurately required. This system has data's, databases and tables. The purpose of this system is to provide an efficient and effective system. Manually and used Papers based media to store and process their operations. Many of our sections were not near, therefore it faces difficulties handling, and some of the documents are maintained redundancy [5],[6].

Theoretical Approach of Bio-Metrics Based Student Management System effectively handles the above details through this system, the user (students) can submit their Inquiries and then the Administrator can also manage the effectively [7]. And also the Administrator can handle the admission processes, manage the registered students' details, handle the class locations, class times & teachers' schedules, and feedback the students easily.

1.1 IMPORTANCE OF FINGERPRINT BIOMETRICS

Fingerprints were considered to be the best and fastest method for biometric identification. It was most high security for the student's attendance. Students do not make fake attendance & must use to finger. They are secure to use and unique for every person. It has been proven over the years, through research that no two individuals have the same fingerprint [8]. Fingerprints have been used as a means to identify a person for a long time. Each fingerprint is made up of a pattern of ridges and valley on the surface of a fingertip. Finger ridge configurations do not change throughout the life of an individual except due to accidents such as bruises, cuts on the fingertips or deliberately damaging the fingers [9]. When compared with other biometrics.

1.2 OBJECTIVES OF THE RESEARCH

The purpose of this research to provide an efficient and effective Bio-Metrics Based Student Management System Handle Inquiries to each courses, and manage the details of the teachers and students, handling the course payments progress, manage the class and teachers' schedules, maintenance, releasing result of the students, generating reports and preparing summary details of the students [10].

The Managing Director and Administrators are faced Difficulties in preparing a summary, details for inquiries to each course, manage students and teachers' details, scheduling the class location, class time and lecture schedules and preparing payment summaries, pay sheets. Presently, all the administration works are handled manually and use papers based media to store and process their operations. Most of the department and Lecture Halls are not located close by. It faces difficulties handling, (duplicated) redundancy works was all areas Therefore Bio-Metrics Based Student Management System help to overcome the difficulties [11].

Through this system, the user (students) can submit On-Line inquiries and then the Administrator can also manage the On-Line inquiries effectively. And also the administrator can handle the admission processes, manage the registered students' details, handling the class locations, class time & teachers' schedules, and feedback of the student easily. We are using C#.net to design data gathering system. So that, all the necessary details of the Bio-Metrics Based Student Management System will be stored in the database. Literature, there were many characteristics discussed for an effective Bio-Metrics Based Student Management System [12].

Advantage of Bio-Metrics Based Student Management System

- High security - Using Bio-Metrics method was high-security power.
- On Time and Time Saving - Using Computers can save a lot time. This was possible, as computers were fast and more accurate as compared to human beings.
- Economical - Due to computerization, more accurate functioning can be obtained as compared to manual systems in long-term.
- Easy and faster Data Retrieval - By using computerized system data can be retrieved at much faster pace. Old records can be located immediately and easily
- Much more details Available - a lot of details can be obtained easily in a computerized system which otherwise cannot be available in a manual system.

1.3 EXISTING SYSTEM

In early-stage maintaining the student's management activities consists of student enrolments, Administration, maintenance, examination, student attendance and issuing Certificate procedures that are handled manually. In these system, people do all the processing manually. All the calculation also should be done manually and data and information written in papers should be stored in files in envelops that are kept in lockers [7]. It needs updating manually. The main disadvantage of this procedure takes additional time and effort. Further it is difficult to retrieve information quickly, prone error, Reduction in customer service, lack of security, duplicate of data entry time consuming, manpower, high workforce prone error damage, by mistake, by misspelling, missing, duplicate of data entry. In addition, need a lot of manpower for maintenance [8].

1.4 PROPOSED SYSTEM

The proposed Bio-Metrics Based Student Management System is accuracy, provide high security and increase safety.

This Bio-Metrics Based Student Management System has many advantages.

The system is capable of converting the collected data from the routine use and machine interactions into the effective information which was later on used by the decision makers to make appropriate decisions. In the Bio-Metrics Based Student Management System, the most important entity system itself which has a set of defined and interrelated components which are generally described as all of the direct or indirect complex components or elements that are related in a causal network. Within any particular time period, all of these complex components are interrelated in more or less stable way with at least some other components so a well-developed and interactive system was one which provides best and useful information to the managers at all levels [9].

These were perfective Maintenance where new functionality is added to system adaptive maintenance where the system was adapted to new environments and corrective maintenance which is systems repair. And we'll add fingerprint attendance system. The finger was a very high-level security. Every person has a variety of fingertips so we easily found the persons and don't make fake attendance. Because every person has different fingertips. So we would make to high-level security [10].

The system is to developed is support daily operations of student management system by improving various processes such as,

- Student Registration
- Search Courses, time tales
- Report generate result
- Search Modules

2. RELATED WORKS

Walia and Jain [1] said the term biometrics has been derived from two Greek roots 'bios' meaning life and 'metrics' meaning measurement. Biometric technology uniquely identifies an individual based on certain characteristics which can be behavior or physiological. There are mainly nine biometric techniques that are widely used including face, fingerprint, hand vein, hand geometry, iris, retinal pattern, voice print, signature and facial thermo grams. These techniques use data that is unique to the individual and remains so throughout once lifetime. Fingerprint are emerging as the most is unique to the individual and remains so throughout one's lifetime [1].

Mahalinga et al. [2] proposed a human body has the privilege of having features that are unique and exclusive to each individual. This exclusive and unique characteristic has led to the field of biometrics and its application in ensuring security in various kind fields. Biometrics has gained popularity and has provided itself to be a reliable mode of ensuring privacy, maintaining security and identifying individuals [2].

Adetiba et al. [3] said the need for an effective and reliable attendance system in any organizations such as schools, banks, factories, hospitals, and etc. has become of paramount importance as this can help determine the timeliness of any teachers or student. instance for all students to make 70% attendance before they are eligible to write the exams in a given course. Hence, there has to

be reliability and accuracy when taking this attendance. Apart from paper and pens used in taking attendance, a lot of researchers and designers have come up with various other methods in taking attendances. Some of these method includes Web Based, smart Board, mobile devices, RFID chips and Biometric based attendance system. Fingerprint biometrics is one of the most common biometric methods and it has been used for more than one hundred years as a proof of individual identification for forensic and law enforcement purposes. These days with advancement in technology, Fingerprint of individuals are acquired by electronic or optical sensors that turn patterns once only defined as whorls and arches into mathematical representations calls biometric templates. A lot of research works have adopted fingerprint biometric to develop electronic attendance system with remarkable benefits and some inherent shortcomings [3].

Thakkar et al. [4] discussed that biometric is being spotlighted as the authentication method because of the need for reliable security. 80% of the public has biometric recorded, Thus, it is very well accepted in the government and also in the private sectors for better security [4].

Walia and Jain [5] implement chapter have all of the concepts, theories, and methods that were related to the Bio-Metrics Based Student Management System. Such as Biometrics system, information system and MIS will be discussed. To implement this concept, we have studied different investigated works and found following data. Those different types of data have processed systematically then gain information. This data will then act as a guideline to analyse the empirical findings of primary data [5].

Shoewu and Idowu [6] proposed data have two types of data first one is primary data other one was secondary data. What is a data? Data are raw facts and figures that on their have no meaning example for the data's Text, Number, Images, Videos, Audios and Symbols an automatic attendance management system using biometrics would provide the needed solution. An attendance management system is a software developed for daily student attendance in schools and institutions [6].

Lokhande et al. [7] said this can be any alphanumeric characters. A single data haven't any meaning but Information have a meaning. We cannot make decisions observing raw data but we can make a decision with the information we gain when we process these data through a system with the information. [7].

Chen et al. [8] said an information system which consists of People, Interface, Data, Information Technology, Network, Process, and Equipment Technology. This Bio-Metrics Based Student Management System has so many databases. What is a database? A collection of interrelated data items that can be processed by one or more application systems. Create for a particular set of users the remainder of this paper is structured as follows. In Section 2, we discuss some past related works and references about Web Services adapted for constructing supply chain management systems. In Section 3, we illustrate the system design models and design patterns [8].

Fayetteville [9] said fingerprint biometrics is one of the most common biometric methods and it has been used for more than hundred years as a proof of individual identification for forensic and law enforcement purposes. A lot of research works have adopted fingerprint biometrics to develop electronic attendance system with remarkable benefits and some inherent short comings

developed an Automatic Attendance System using fingerprint verification technique. This work did not only focus on attendance management, but also on the specification of the accuracy of the minutiae during enrolment and verification process. A high degree of accuracy in the enrolment and verification process was reported by the author, however, the attendance management software is a desktop application [9].

Reddy et al. [10] suggested an automatic attendance management system using biometrics would provide the needed solution. An attendance management system is a software developed for daily student attendance in schools and institutions. It facilitates access to the attendance of a particular student in a particular class. This system will also help in generating reports and evaluating the attendance eligibility of a student [10].

Gujara et al. [11] said moreover, some students may call his/her friend as "presence" even though this student is currently absent. After thinking all these issues, author of the following research paper decided to create a system that makes easier to check students' attendance automatically. The system is based on RFID technology, and in this paper, details of this system are presented. The system can be easily accessed by the teachers via the web and most importantly, the reports can be generated in real-time processing, thus, providing valuable information about the students' [11].

Patel and Priya [12] said attendances of every student are being maintained by every organization. The faculty has to maintain a proper record for the attendance. The manual attendance record system is not efficient and requires more time to arrange record and to calculate the average attendance of each student. Hence there is a requirement of a system that will solve the problem of student record arrangement and student average attendance calculation. The proposed system should store the absent and present student's attendance details in electronic format so that management of attendance becomes easy. Old conventional methods for student attendance are still used by most of the universities. As this method is used, many students are helping their friends by signing in their attendance in case of their absence in the institute. So while this method is used, attendance records are analyzed and maintained manually by the faculty to know the present and absent student list [12].

3. MATERIAL AND METHODOLOGY

In the present competitive world, every work has become computerized. The manual system has become prone human error, duplicate data and time to consume as well as very difficult to maintain and retrieve information. To make the system of "Bio-Metrics Based Student Management System" Computerized, it made for used in organizations [1].

The manual system all the tasks are done manually weather add students' information, teachers' information, viewing student and teachers' details and any relevant information. Manually one or more teachers added the information, it makes a burden for saving information and needed more staffs and teachers facing several problems during the work period. In existing system very difficult to collect the payments and properly generate report manually [7].

The system can make easier to navigate and to use maximum effective of time and other resources. The student management

system creates user-friendly interface so user interacts with a system very easily and the user can access all the benefits through the system. This system increases efficiency and time-saving. It is very easy to save data to the system [9].

The main aim of this student management system for reduces the workload. The student management system has various users like administration, teacher, students; it also assigned access right [11]. Only administration can access the full system. Teachers and students show the course details, time tales, certificates, exam time tale, course timetable etc. The Bio-Metrics Based Student Management System is focusing on solving major problems.
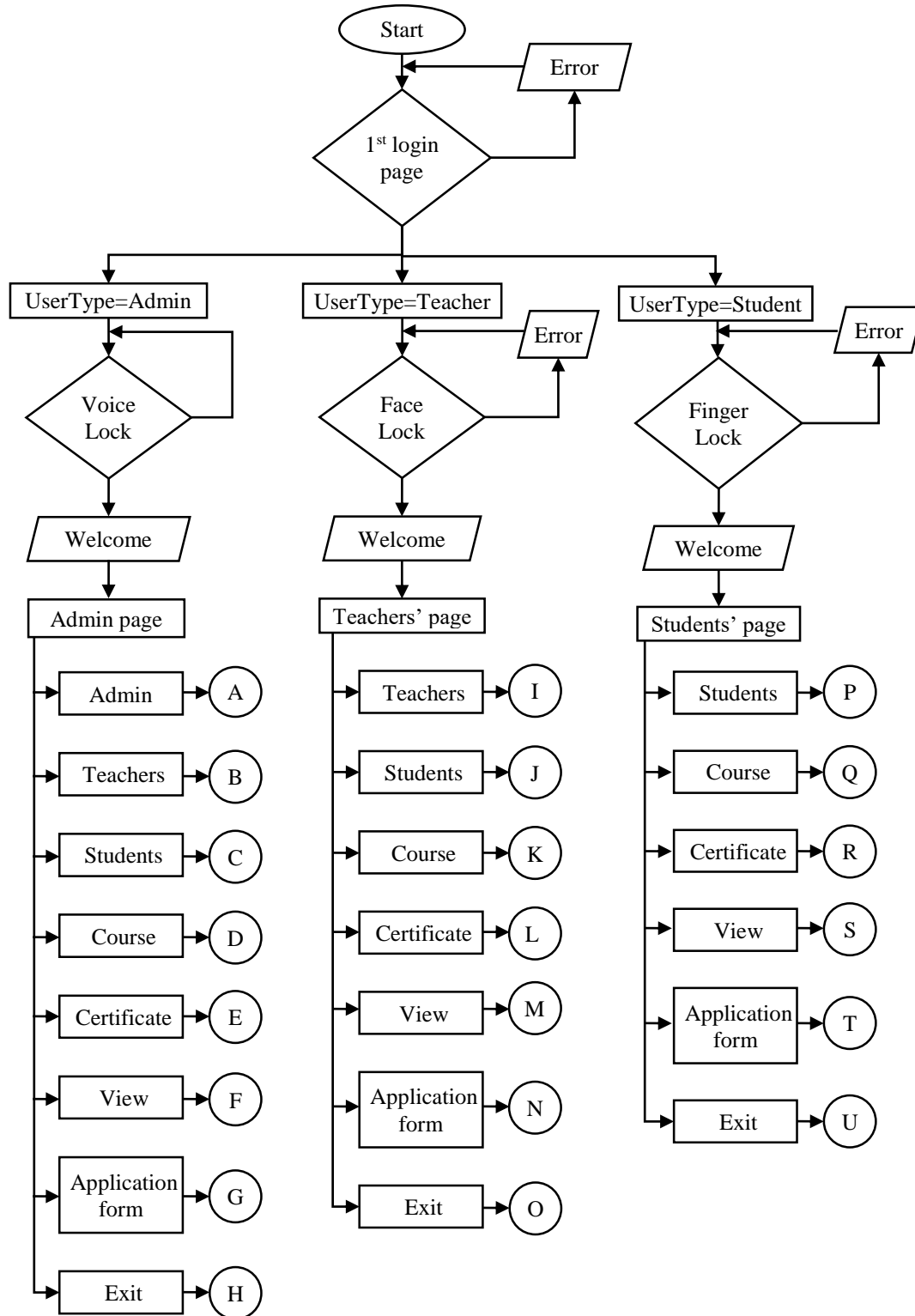
Fig.1. Flowchart of the system

This system basically has three main types of modules that module have so many items. The three type of modules are:

• Admin module

• Teachers modules and

• Student module

3.1 ADMIN

The administrator has all the rights to handle the forms and access the system. He is the one who has all rights to view the applicant details, modify those details. The administrator also keeps a track of the file status of the applicants. The applicant can fill in his own details and register himself for membership. The applicant has rights to view and modifies his own detail.

Admin is the one who controls whole management system, its staff, and every other person or thing that is associated with the students. In another term, the admin is the most powerful entity of the system.

There will be one admin in the system. He or she has the power to create, update or delete any record of the system. He or she will be able to view the profile of any other user in the system. The admin will be able to see all the details whether it is related to staff or examination. Whenever a student is registered into the institution, a class and the related section will be assigned by the admin to the student. Assigning timetable to teachers and the students will be the admin's responsibility. The admin will grant the designation to the staff of the institution such as who will be the professor, who will be the assistant professor etc. He or she will have the authority to promote any staff of the institution. The admin will approve the leave application of the teachers and students. Before going to discuss other users of this system, I will tell you some common features which will be included in all type of users [12].

3.2 REGISTRATION

To start with the institution, student, teachers, peons, librarians will have to register themselves. For registration, some personal details will be asked on the portal.

• *Name* – Each user will have to provide his/her full name.

• *Password* – The user will have to enter the password of his/her choice so that he/she easily remembers. The password will be used to authenticate the user to avoid irrelevant hooligans.

• *Email ID* – The email id is also necessary field. The email id can be used to recover the password and all the important information regarding the academics can be mail to the recipient.

• *Contact No*. – This is also an important field to have in the system. If necessary, the targeted user can be contacted any time or at the time of emergency.

There is one privacy and policy document which must be read by the user before agreeing to it. After providing all the above details and reading the agreement the user will have to check the checkbox next to it, and one email is sent to the user's given Id.

This contains the unique id which will be used by the user throughout his/her institution career. This unique id will be used as the login credential.

3.3 LOGIN

After successful completion of the registration process, the user can log in to his/her account by entering the unique id, which was sent to him/her via email, and the password he/she provides at the time of registration. If only and if the login id and password combination match with the data stored in the system, the user is granted access to the dashboard.

3.4 FORGOT PASSWORD

There may be a possibility that a user forgets his unique id or password or both of them. The reason can be anything. Now the user will have the difficult time to login into the system. But this is not why the designed system this way. The user can recover his login credentials. The user will have to enter his registered email id on the portal and some sequence of instructions will be sent to that mail id. The user simply has to follow those instructions in order to recover the credentials.

3.5 CHANGE PASSWORD

This is also the necessary feature for the system. The user may feel that it is time to change the password for security reasons.

The user can change his/her password whenever they want. First, they have to login into the system and provide the old password and new password. The password is changed.

3.6 EDIT PROFILE

The user will have to enter some additional information to use the system efficiently. Following are some fields each user has to enter after login into the system.

• Gender

• Age

• Date of Birth

• Home Address

• Work Address (for parents)

• Contact Number and etc.

3.7 TEACHERS

The teacher is one of the important entities for an institution. The teachers are there to teach the students. The following are the features which will be available to the teachers.

3.8 MARK THE ATTENDANCE

The teacher can take the attendance of the students. He/she just has to enter the class and section name into the portal and the whole list of the registered students of the section will be displayed to him/her. The teacher can mark the present and absent accordingly and at last, can save the record. This data will be reflected immediately.
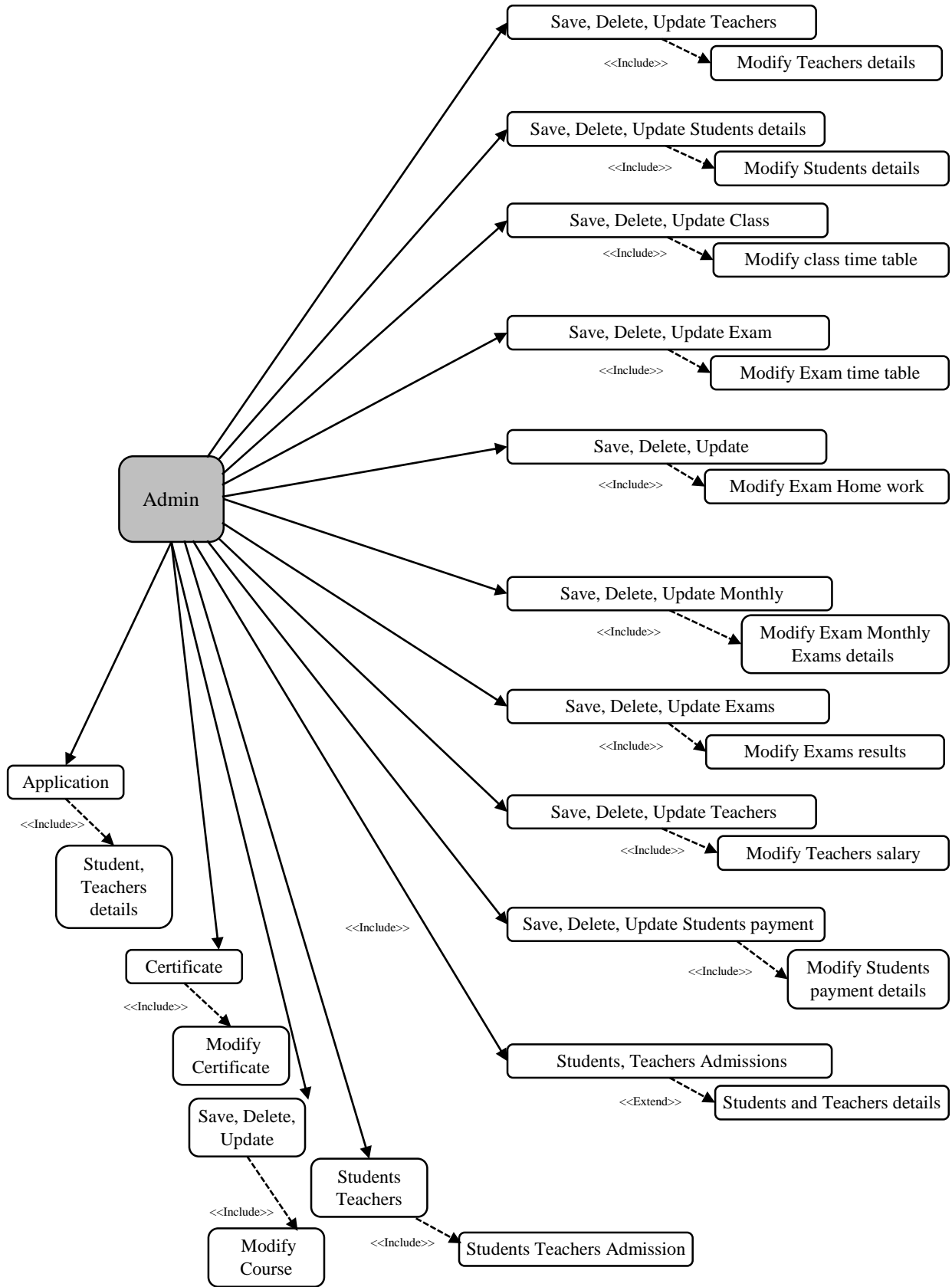
Fig.2. Admin Module Use Case Diagram

3.9 ASSIGN AND CHECK THE HOMEWORK

A teacher will be able to assign homework to the whole class or to some particular students accordingly. And this homework will be reflected the student portal.

Thus a student cannot make the excuse that he/she could not hear the teachers or something else. The next day the teacher can check whether the student has done their homework or not as the submission mode will be online.

3.10 VIEW STUDENT PROFILE

The teacher can be able to access any student's profile and acquire the information related to it. View Student's Marks – It is also another add-on in a teacher's account. He/she can view the performance of the student in class components, mid-term or end term examination. Thus he/she can give the guidance to the weak students accordingly.

3.11 STUDENTS

The student is also one of the main parts of the system. The students can login into the student account anytime they want.

3.12 VIEW AND UPLOAD THE HOMEWORK

The student will be able to view look into the details of the assignments he/she has been given such as the topic of the time assignment, questions, last submission dates, how much marks it is off etc. After finishing the homework, the student can upload that work onto the portal which will be reflected in teacher's account too.

3.13 PAYMENT

This is one of the important features of the system. The student will be able to know whether any due is pending against him/her or not. It can be a library fine, semester fee, sports fee or any other fee. If it is so, he/she can pay the amount via net banking or other methods.

3.14 TIMETABLE

Without a timetable, nothing falls into its right place. The student can access the schedule of the class he or she has to attend and some information such as class number, time of the class, which teacher will take that class etc.

3.15 EXAMINATION SEATING PLAN AND EXAMINATION RESULT

At the time exams, the students need to identify their seating plan of the exams. It can be viewed easily and their examination result or class assessments can also access them.

4. RESULTS AND DISCUSSIONS

Bio-Metrics Based Student Management System has following modules in different criteria with different access level control.

4.1 WELCOME MODULE

The Fig.3 is the welcome page of Bio-Metrics Based Student Management System. If the admin, teacher, and students able to enter the system through this module. Admin has authorized to access the entire module in the system. Teachers have some restriction in this system and it cannot access the admin level privileges and never see the admin form but they can see the student form. Students never see the admin and teacher forms in this system. The student's module consists some features word, excel, access, PowerPoint, paint, notepad, on-screen keyboard, change the password and apply button. Through this apply button, any user can click and get the student application form. The back button to use goes to back on where you stay first.
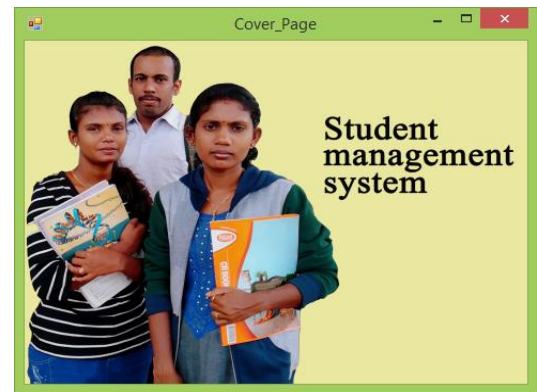

Fig.3. Welcome Module

4.2 LOGIN MODULE

The login module (Fig.4) facilitating the security to entire system with the proper username password

Fig.4. First Login Page

If you change your password, you can click the change password option in the login module. You must want your username and the old password. Then change your new password and save it. After completion of the changes, you will receive the message "successfully change your password" in the message box (Fig.5), (Fig.6).
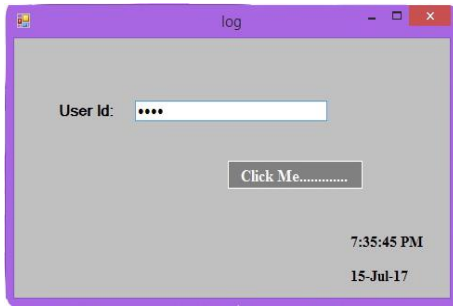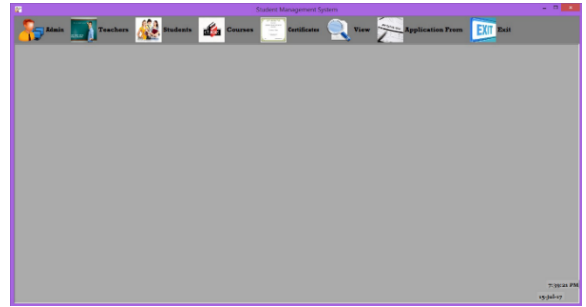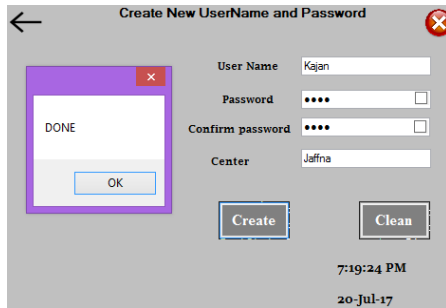
Fig.5. User ID Form

Fig.6. Create new login module

4.3 VOICE LOG

If the user of Bio-Metrics Based Student Management System as admin you will receive another option voice log. With the voice, you can log in the system based on the voice reorganization (Fig.7). Click the start button on the module then say "Hi", you will get the message from the system "You are welcome to Admin". After that with the single click of an ok button, you will enter the main form of the admin.

Fig.7. Voice Lock

4.4 MAIN MDI FORM

Fig.8 is the main module of the system. The main MDI form consist admin, teacher, student, courses, certificates, view and application form. Admin can access all the form and all the options in the system. But student and teacher can't access the admin. If you select the user type as admin has a voice reorganization log, teacher has face appearance log and the student has a fingerprint log to access the Bio-Metrics Based Student Management System.

Fig.8. Main Admin Form

4.5 ADMIN SUBMODULE

If your login as an admin in to the system you can access this admin sub module (Fig.9). This form consist teacher, student, timetable, exams, admissions, payment, and worksheet.
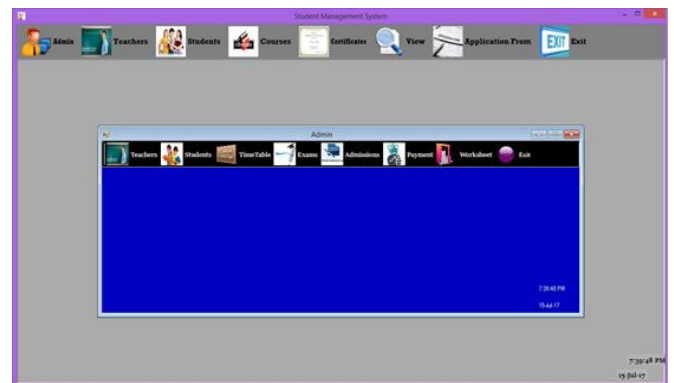
Fig.9. Admin submodule

4.6 TEACHER'S DETAILS/STUDENT'S DETAILS

The teacher's details form consists following options. Teacher id as a unique value, teacher name, NIC No., age, date of birth, contact no, address, gender, mail id, subject, civil status, salary and graduate post. In this module, image load button is used to load the image of the teacher. If you fill all the details correctly click the save button, you will receive the message "successfully save". If you need to search particular teacher details, just type the teacher id and press the search button. You can see the all the details of a particular teacher. If you need to delete the particular teacher details from the system with using delete you can remove. Then you will receive the message "if you delete this detail" if you need to delete press the ok otherwise cancel. If you fill some details incorrect you can edit by update button. The Clear button is to use to clear all details as shown Fig.10. The data grid view table views the all the teachers. If double-click any cell in data grid view, you could retrieve the all details in each suitable text boxes which row you select by cell click event.
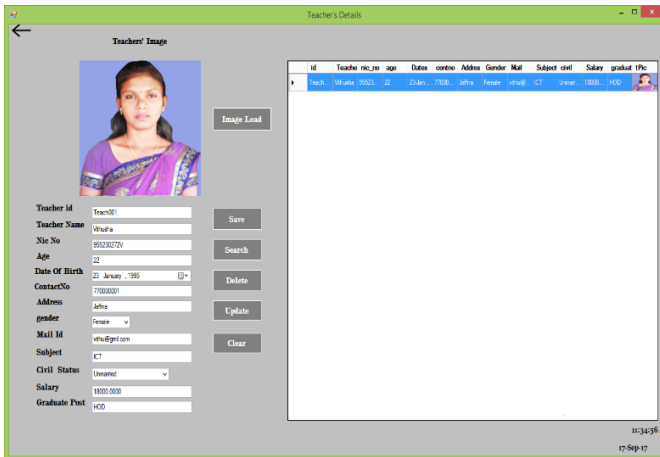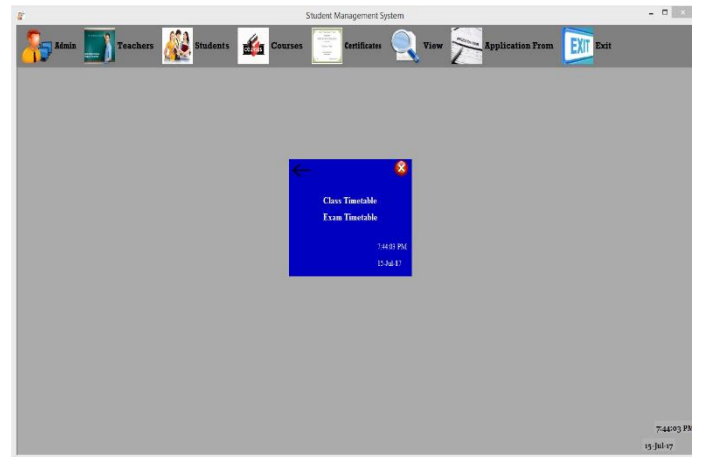
Fig.10. Teacher's Details Form
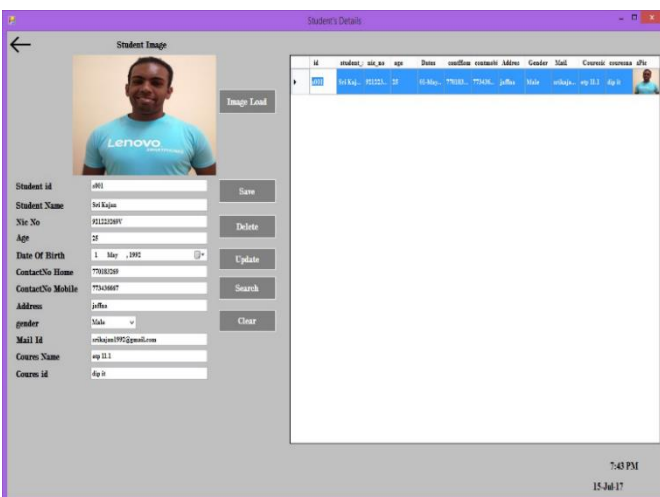

Fig.12. Timetable form

Fig.11. Student Details Form
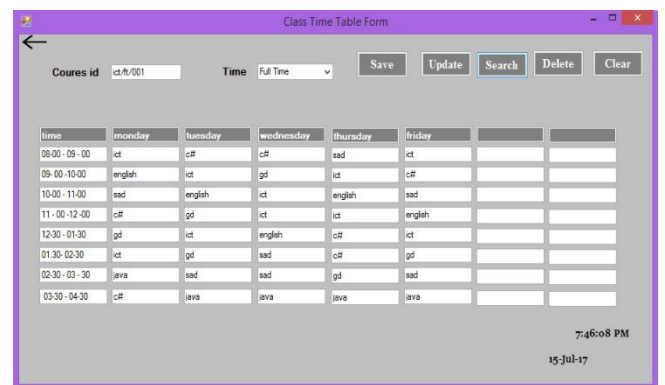
4.7 TIMETABLE FORM

The admin or teacher can generate the timetable (Fig.12, Fig.13). There are two types of timetables' available class timetable and exam timetable. Admin or teacher able to create, edit and delete the details of timetable. But a student can only see the timetable, can't make any changes on them. In class timetable, the student can search their class time by choosing their course id and course time. In the exam time, the student can search their exam time and date scheduled by choosing course ID.

Fig.13. Class table form

4.8 HOMEWORK FROM

The teacher can load the homework and monthly model exams papers of each subject as image format. The student can download the image through this module (Fig.14).
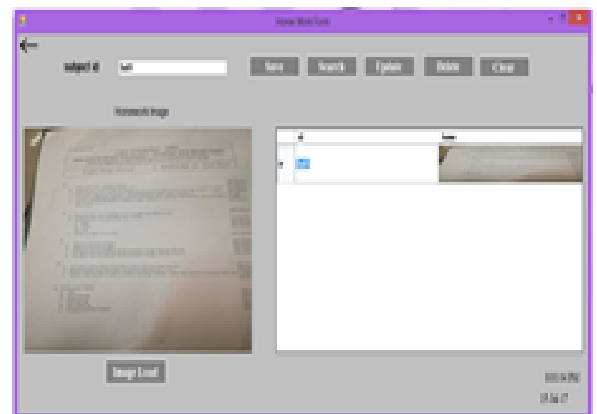

Fig.14. Homework module

4.9 RESULT FORM

Each student got their result of their course subject as shown in Fig.15. The admin or teachers can manipulate the result.
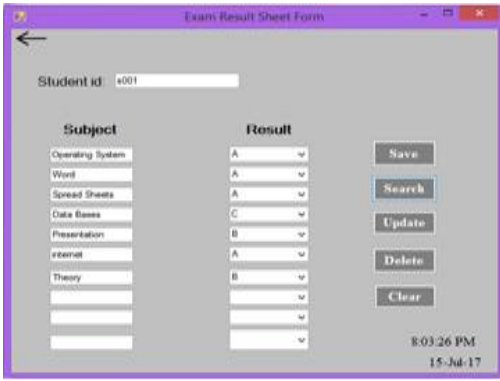
Fig.15. Exam result sheet module

4.10 TEACHER'S SALARY FORM

This module can access by admin. Its include teacher id, teacher name, and salary. Teacher id is a unique value this unique value generates a forging key. Admin can search the particular teacher details by using teacher id. The data grid view table view the teacher's salary details in this module (Fig.16, Fig.17).
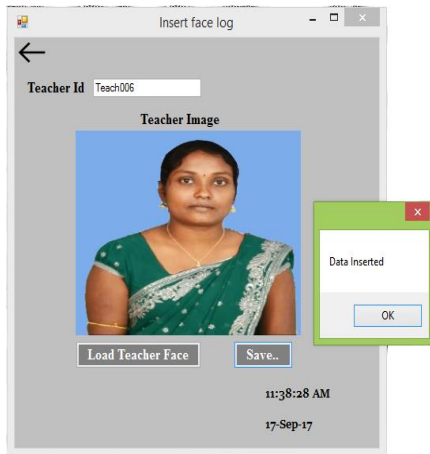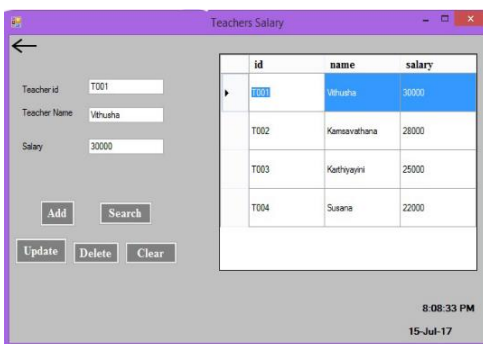

Fig.16. Teacher's details form

Fig.17. Teacher's salary form

4.11 APPLICATION FORM

The application module (Fig.18) can access all type of users such as admin, teacher, and student. The new student can apply to the courses through this application form. If you fill up any wrong format information, there can see the error message on the suitable

textboxes. If they filled successfully then click the add button the data is added to the database with a successfully saved message.
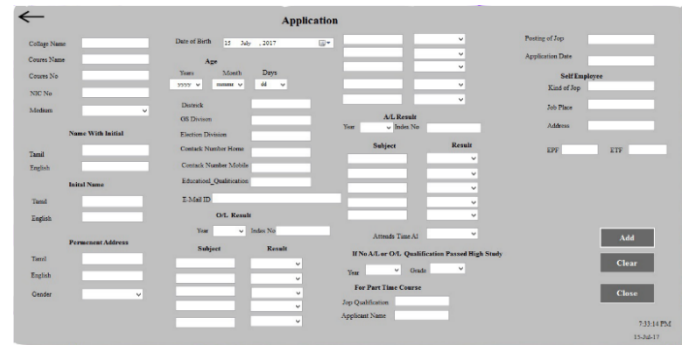

Fig.18. Application module

4.12 COURSES FORM

This is generating by admin. The course details are shown as image file format. The student can view the course details by using the course id.
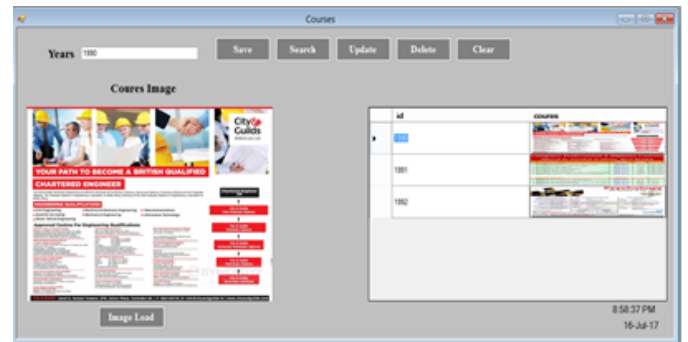

Fig.19. Course form

4.13 CERTIFICATE FORM

If the student finished their course successfully, the admin can upload their certificate on this system. The student can view their certificate and download it. A student could find their certificate using their student id (Fig.20).
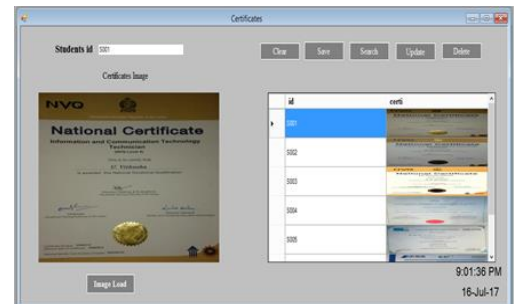

Fig.20. Certificate Form

5. TESTING AND VALIDATION

The purpose of the system testing was to determine all the defects in the developed system. The system was tested following criteria such as Unit testing, Integration testing, System Testing, Performance Testing, Statistical Testing, Accepting testing [13].

Defines a unit is a small package that can test software literature. System components should be tested individually. Generally, this is a package file or nontrivial object class. A hardware development analogy may be a pc board. Unit testing is just one of the levels or testing. It is used to divide it into units as well as to test. It will be tested individually. It complements integration and system tests. It should be also complemented code reviews and walk through. A module is created and tested in a unit testing. We need to provide a complete environment for testing a module. Various observations will be placed in a unit testing. This observation is created as a unit based on our test observation and whether or not our project. Is functioning correctly or whether there are any errors if errors are detected, it will be fixed again. Unit testing in Bio-Metrics Based Student Management System consists of the following modules. Such as login page, add students and teachers, update students and Teachers, delete students and Teachers [14].

The modules in the project are tested to unit testing. Including correct and incorrect data entry and verification of each data are checked. Example. Test for the Admin, Student and Teachers login.

5.1 ADMIN LOGIN MODULE TESTING

The Fig.21 module is used for the login of admin. The system was designed for admin login with use voice recognition security system. The system used the word "Hi" when the user said the right word is given in this log in the following message will be displayed "You Are Welcome To Admin" then a message box is shown "Hi sir". Then click the message box ok button system goes to admin module.

Fig.21. Admin Login Module

5.2 TEACHER'S LOGIN MODULE TESTING

This form is used for the login of teachers. The designed form for teacher's login with used face log (using face image) security system. This compares with two images one image is also input the SQL other image is random input. If the correct teacher's image is given in this login page then it will be open the relevant teachers' page. Otherwise, the error image is entered or given in this login page will not open and a message box is shown

"incorrect login or image" and goes back to the login page (Fig.22).

Fig.22. Teachers Login Module

5.3 STUDENT LOGIN MODULE TESTING

This form used for the login of the students. The designed module for student login with usage fingerprint student can access the system related to the students modules as shown in Fig.23.
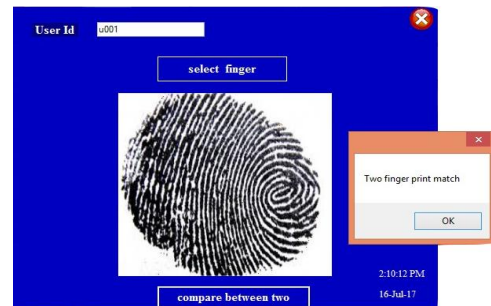

Fig.23. Student's Login Module

6. CONCLUSIONS

The developed the biometrics-based student management system using the visual C#.Net fully meets the objective of the system. It will be a medium for the proper management of administration, students and teachers' information in an organized way. The system in consists windows and web applications. The windows application activities are offline registering and attendance recording. The web application activities are applying application, producing the timetable, downloading assignments and uploading assignments, exercise the model exams and get the result and applying leave forms, and viewing student status by students, teachers, and parents. The aim of the project is to get the correct information about the particular student and maintenance the students and teachers reports correctly. The system will not only improve the efficiency but also reduce the human stress and improve the management of human recourses with the suitable technology.

REFERENCES

[1] Hitesh Walia and Neelu Jain, "Fingerprint Based Attendance System using LabVIEW and GSM", *International Journal of Innovative Research in Science, Engineering and Technology*, Vol. 5, No. 7, pp. 2319-8753, 2016.

[2] Mahalinga V. Mandi et al., "Biometric Based Attendance Management System Using Wi-Fi", *International Journal of*

Emerging Technology and Research, Vol. 1, No. 5, pp. 2347-6079, 2014.

[3] E. Adetiba et al., "An Online Biometrics-based Class Attendance Management System", *African Journal of Computing and ICT*, Vol. 6, No. 3, pp. 25-38, 2013.

[4] Avanti Thakkar, Bhalerao Prateek, Deshmane Rahul, Gadikar Akshay and Rajurkar Atharva, "Development of Fingerprint Biometric Attendance Management System using Wireless Connectivity", International *Journal on Recent and Innovation Trends in Computing and Communication*, Vol. 3, No. 3, pp. 1617-1620, 2015.

[5] Hitesh Walia and Neelu Jain, "Fingerprint Based Attendance Systems-A Review", *International Research Journal of Engineering and Technology*, Vol. 3, No. 5, pp. 2395-0056, 2016.

[6] O. Shoewu and O.A. Idowu, "Development of Attendance Management System using Biometrics", *The Pacific Journal of Science and Technology*, Vol. 13, No. 1, pp. 300-307, 2012.

[7] P. Lokhande, D. Kotkar and P. Nikam, "Combined RFID-Biometric based MIS for Student Information", *International Journal of Engineering Trends and Technology*, Vol. 4, No. 3, pp. 307-310, 2013.

[8] S.L. Chen et al., "Development of Logistic Management Information System based on Web Service Architecture and RFID Technology", *Applied Mathematics and Information Sciences*, Vol. 7, No. 3, pp. 939-946, 2013.

[9] B. Yew, "A Perspective on a Management Information Systems (MIS) Program Review", *Journal of Information Technology Education. Research*, Vol. 7, No. 1, pp. 299-314, 2008.

[10] E. Srinivasu, "The Contributions of TQM and Six SIGMA in the Organizations to Achieve the Success in Terms of Quality", *International Journal of Reviews in Computing*, Vol. 2, No. 4, pp. 8-10, 2009.

[11] U.A. Patel, "Student Management System Based on RFID Technology", *International Journal of Emerging Trends and Technology in Computer Science*, Vol. 2, No. 6, pp. 173-178, 2013.

[12] U.A. Patel, "Development of a Student Attendance Management System using RFID and Face Recognition. A Review", *International Journal of Advance Research in Computer Science and Management Studies*, Vol. 2, No. 8, pp. 109-119, 2014.

[13] V. Thusyanthy et al., "Automated Certificate Issuing and Students' Management System for College of Technology, Jaffna. Sri Lanka", *Middle-East Journal of Scientific Research*, Vol. 24, No. 7, pp. 2204-2208, 2016.

[14] K. Thiruthanigesan and N. Thiruchchelvan, "Data Verification and Validation Process in the Management System Development", *Middle-East Journal of Scientific Research*, Vol. 25, No. 5, pp. 902-911, 2016.