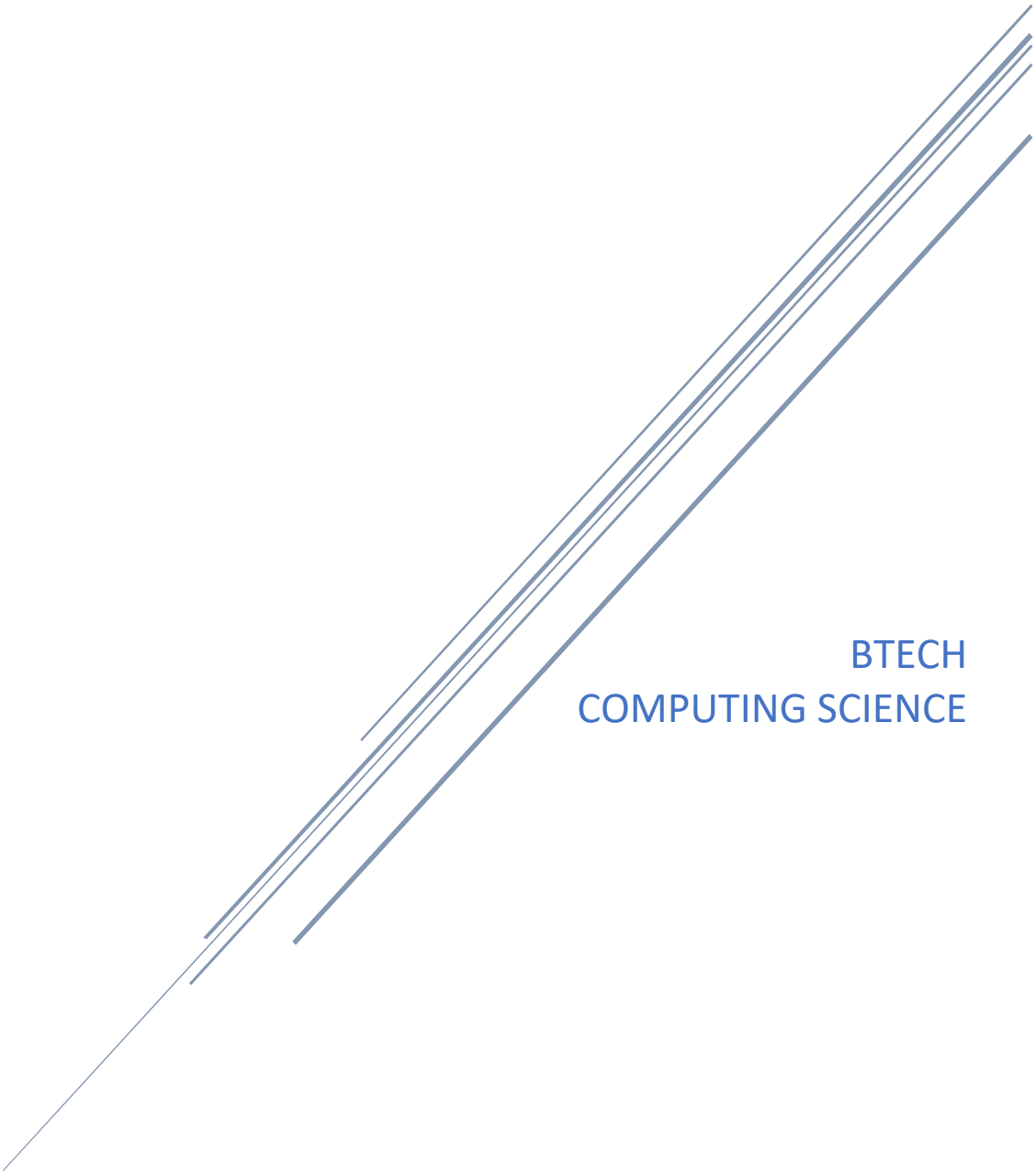
SOFTWARE ENGINEERING

PROJECT REPORT



BTECH
COMPUTING SCIENCE

STUDENT RESULT MANAGEMENT SYSTEM

submitted by

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in partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE AND ENGINEERING

NOVEMBER 2020

VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

School of Computer Science and Engineering

DECLARATION BY THE CANDIDATE

I hereby declare that the Software Engineering Report entitled "**STUDENT RESULT MANAGEMENT SYSTEM"** submitted by me to VIT University, Chennai in partial fulfillment of the requirement for the award of the degree of **Bachelor of Technology** in **Computer Science and Engineering** is a record of bonafide project training undertaken by me under the supervision of **Prof. Dr Hepsiba Mabel.** I further declare that the work reported in this report has not been submitted and will not be submitted, either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university.

Chennai: Signature of Student

Date:11/20/2020

CERTIFICATE

This is to certify that Software Engineering project report entitled "**Examination and Result Management System**" is the work carried out by Shiva Rajan , Prasoon Mathur , Arsh Parnami, students of B.Tech Computer Science 3rd Semester, Vellore Institute Of Technology, Chennai under the supervision of **Dr. Hepsiba Mabel.**

This report has not been submitted to any other organization/institution for the award of any other degree/diploma.

(Project Supervisor)

(Dean Of Academics) **(H.O.D.)**

ACKNOWLEDGEMENT

Apart from the efforts of team, the success of any project depends largely on the encouragement and guidelines of many others. We take this opportunity to express our gratitude to the people who have been instrumental in the successful completion of this project.The completion of any inter-disciplinary project depends upon cooperation, co- ordination and combined efforts of several sources of knowledge.We are eternally grateful to our **Professor Hepsiba Mabel** for her even willingness to give us valuable advice and direction; under whom we executed this project. Her constant guidance and willingness to share her vast knowledge made us understand this project and its manifestations in great depths and helped us to complete the assigned tasks.

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TABLE OF CONTENTS

Chapter	Title	Page
	Declaration	2
	Certificate	3
	Acknowledgement	4
	Table of contents	5
	Abstract	6
	List of Tables	7
	List of Figures	8
	List of Abbreviation	9
1	Introduction	10
	About the Project	10
2	Related Work	11
	2.1 Literature Study	11
	2.2 Proposed System	12
3	Design and Implementation	13
	3.1 Architecture/Framework	13
	3.2 Design/modules	14
4	Implementation	20
	4.1 Interfaces	20
	4.2 Modules	21
	4.3 Screenshots	25
5	Results and Conclusion	36
	5.1 Future Work	37
	References	37
	Appendix ……38	

ABSTRACT

In today's tech era, IOT (Internet of things) has become much popular around the world. Almost all the devices, which are known as smart device, can connect to the internet and access data from any corner of the world. There was a time when people used to waste their valuable times just to get a piece of information. Now the technology is more advance then compare to any previous times. One of the blessings of technology is web application. It allows users to interact with the system from anywhere as long as they are connected to the internet.

This report presents the work done on the project "**Examination and Result Management System**" which is a web application. As we already discussed above that internet has made the user's interaction through the system easier, so this web application can connect to respective servers for accessing data which will surely help students to get information about their syllabus, result and much more other information . Moreover, in recent decays it has become much difficult to manage all the student's records in physical files. So, it is very much needed to build a system which can store and display all these information in a database. In this modern tech era we want a system that will enhance the portability, accessibility as well as user friendly. So here, we are going to implement a web system, which we already stated above, having all the features that will make it more user friendly and accessible.The aim of this project was to develop a System that would help an institution to manage all its data.

It is having mainly three modules. One is at Administration Level, second is at Teacher Level and the other one is of student level. The Application maintains authentication in order to access the application. Administrator task includes managing all the students and teachers records. To achieve this aim, a database was designed in order to allow the Institution's operators to enter, and store all the information about students like their result, datesheet, syllabus etc.

LIST OF TABLES

Table 1: RISK TABLE 38

LIST OF FIGURES

Figure 1: system architecture 14
Figure 2:state transition 15
Figure 3: sequence - system 16
Figure 4:sequence-admin 17
Figure 5: sequence - student 18
Figure 6:use case 19
Figure 7:Display page 25
Figure 8:dashboard 26
Figure 9:class manage 27
Figure 10:create subject 28
Figure 11:manage subject 29
Figure 12:manage student 30
Figure 13:change password 31
Figure 14:manage student 32
Figure 15:student login 32
Figure 16:final result 33
Figure 17:full database 34
Figure 18:result database 35
Figure 19:subject database 35

LIST OF ABBREVIATIONS

ABBREVIATION	DEFINATION
1. HTML	Hypertext Markup Language
2. CSS	Cascading style sheet
3. PHP	Hypertext Preprocessor
4. JS	Javascript
5. SRMS	Student Result Management System
6. SQL	Structured Query Language
7. URL	Uniform Resource Locator
8. HTTP	Hyper Text Transfer Protocol
9. API	Application Programming Interface

CHAPTERS

1. Introduction

This document lays out a project plan for the development of "Student Result Management System".The plan will include, but is not restricted to, a summary of the system functionality, the scope of the project from the perspective of the "Examination and Result Management System" project risks and how those risks will be mitigated, the process approach to develop the project, and metrics and measurements that will be recorded throughout the project. This document will cover each of the system's intended features, as well as offer a preliminary glimpse of the software application's User Interface (UI). The document will also cover hardware, software, and various other technical dependencies.

The "Examination and Result Management System" is a mobile application, which helps students and teachers to find all the up-to-date information related to examination and result.The Examination and Result Management System is composed of two main components: a client-side application which will run on Android handsets, and a server-side application which will support and interact with client-side queries. The server-side verifies logins as Student , Teacher or Administrator and manages user information. The data will be held in an Access database on the server. The administrator logins to upload information about creating/updating a record of a student or a teacher, or handle the complaints and queries put forward by students/teachers.The application should be free to download from either a mobile phone application store or similar services.

PROBLEM STATEMENT

In our current examination conduction and result processing system, there is too much manual and paperwork used for conduction of exam and computation of result.It becomes very difficult to manage record of all students manually which results in heap of files.

1.1 About the Project

Our software is designed to efficiently manage all the records of the students, automatically calculate the percentage and grade point of the students.With the use of our software, the span required for declaration of result and use of man power will be reduced to a great extent. In our software, we are following **prototyping Model (Evolutionary)** as initially the requirements are not clear. The requirements are added in the prototype as and when they are understood.

The goal of this project is to provide a mobile application for all the students and teachers and Institute's administrators, to build an online system to manage all the records related to examination and result of students and teachers to ease the service of examination and result management.

2. Related Work

2.1 Literature Review

Information system

Data is the lifeline of every educational institution. Right from the student turnover rate to the financial records, every piece of data that is/was ever associated with the college paves way for its development. The bigger the institution, the greater the volume of data, which makes it challenging to manage on paper or even with excel files.Today, most of the higher education institutions are looking for an optimum distribution of resources and services to yield maximum benefits to students, teachers, and the management alike. In this world of ballooning educational demands, ***Management Information System*** is just what these institutions need to propel their progress in the right direction.

Information System in Education

The Education Information System is specially designed to monitor the performance of education programs offered by the institute and to manage the distribution and allocation of educational resources. Of course, in the field of education, EMIS has specific roles to help an educational institution grow.

According to Freund, et al. (2019), nowadays people interact directly with technology in fields such as education, government, finance, retail, entertainment, health care, science, travel, publishing, and manufacturing.

And they also state that, educators and teaching institutions use technology to assist with education. Most equip labs and classrooms with laptops or desktops. Some even provide computers or mobile devices to students. Many require students to have a mobile computer or mobile device to access the school's network or Internet wirelessly, or to access digital-only content provided by a textbook publisher.

Educators may use a **Course Management System (CMS), sometimes called a Learning Management System (LMS),** which is a software that contains tools for class preparation, distribution, and management. For example, through the course management system, students access course materials, grades, assessments, and a variety of collaboration tools.

Many schools offer distance learning classes, where the delivery of education occurs at one place while the learning occurs at other locations. Distance learning courses provide time, distance, and place advantages for students who live far from a campus or work full time.In the U.S. higher education market as of fall 2018, the top three LMSs by number of institutions were Blackboard (31%), Canvas (30%), and Moodle (18%). The same three systems led in terms of number of students enrolled, but Canvas slightly surpassed Blackboard. Worldwide, the picture is different, with Moodle having over 50% of market share in Europe, Latin America, and Oceania.

Many users of LMSs use an authoring tool to create content, which is then hosted on an LMS. In some cases, LMSs that do utilise a standard include a primitive authoring tool for basic content manipulation. More modern systems, in particular SAAS solutions have decided not to adopt a standard and have rich course authoring tools.

Features Of LMS

Dias, et al. (2015) state that, LMS Moodle (Modular Object-Oriented Dynamic Learning Environment), a free and open source platform based on socio constructivist perspectives developed by Dougiamas in 1999, allows

users to incorporate various resources and functionalities in a modular structure. Additionally, seen as a Course Management System (CMS), Moodle can be used to manage the students' path, to monitor their performance, to create and distribute content, to organize e-activities, to evaluate, as well as to provide tools for communication, collaboration and interaction between the peers involved in the educational process.

However, it is important to underline that incorporation of a wide range of activities in the LMS per se does not seem sufficient to enhance the teaching learning process. These kind of learning platforms (e.g.,Blackboard, Formare, Moodle, Teleformar, WebCT) should be seen as an opportunity for institutions to develop learning materials, online courses, tests and evaluations, databases and to online monitor students' progress.

Furthermore, Wundenberg (2018) states that, an LMS also has to represent a number of characteristics to satisfy the stakeholders' needs:

• User friendly, intuitive design and self-explanatory functionalities;
• Adequacy for the users' levels of experience and knowledge;
• High system robustness against data-loss or system failure;
• High data security standards;
• Easy accessibility;
• System flexibility for institutions' individual configurations and concept adaptations

2.2 Proposed System

PROBLEM SPECIFICATION

Student Result Management System that were suggested till now, are not up to the desired level. There is no single system which automates all the process.In order to build the system, all the processes in the management should be studied, System study helps us under the problem and needs of the application. System study aims at establishing requests for the system to be acquired, development and installed. It involves studying and analysing the ways of an organization currently processing the data to produce information. Analysing the problem thoroughly forms the vital part of the system study. In system analysis, prevailing situation of problem is carefully examined by breaking them into sub problems. Problematic areas are identified and information is collected. Data gathering is essential to any analysis of requests. It is necessary that this analysis familiarizes the designer with objectives, activities and the function of the organization in which the system is to be implemented.

Existing System

- The Existing System of getting the student information is done manually
- Updating the records becomes a difficult task for the administrator
- Students wishing to know their results have to wait for a longer period of time as work is done manually.
- The information about courses, assignments, results, quizzes are not available at one place.
- Needs a lot of working staff and extra attention on all the records..
- Major problem was lack of security.

Proposed System

The system is very simple in design and to implement. The system requires very low system resources and the system will work in almost all configurations. It has got following features:

- Our Proposed system i.e. "Student Result Management System" makes use of technology and reduces manual labour.
- Making use of our System the course materials i.e. the results, printed the result can be accessed easily by the student.
- Records are efficiently maintained by DBMS.
- DBMS also provides security for the information.
- Any authorized person across the world, having internet can access this service.
- The application is simple to understand and can easily be used by the students.
- The application makes use of latest coding frameworks and thus is flexible to use i.e less number of glitches.
- Thus, time taken for getting information will be reduced.
- The administrator can now easily modify the existing student records without disturbing the records of other students and will require less time in doing so with absolute perfection.

3.0 Design and Implementation

3.1Architecture

System design and specification is very important in every software development. At this stage, we have put every factor into consideration while making this design. In the course of the design, the system has to be designed in a way that there will be a close relationship between the inputs and outputs. Also, the design format is made in a way that it will be acceptable to the end users.The input to the new system is derived from student's registration form, course registration form, and examination score sheet. These forms contain relevant information concerning student personal and academic records. The inputs are the processed to obtain the desired outputs.The output design was based on the inputs. The report generated gives a meaningful report to the management. The system designed generated the following reports.

1. Students semester result
2. Students session result
3. Score Sheet
4. General Register
5. Students personal record

These outputs can be generated as softcopy or printed in hard copy.The primary design constraint is the mobile platform. Since the application is designated for mobile handsets, limited screen size and resolution will be a major design consideration. Creating a user interface which is both effective and easily navigable will pose a difficult challenge. Other constraints such as limited memory and processing power are also worth considering. Examination

and Result management system is meant to be quick and responsive, so each feature must be designed and implemented with efficiency in mind. The following list offers a brief outline and description of the main features and functionalities of the Examination and Result Management System. The features are split into two major categories: core features and additional features. Core features are essential to the application's operation, whereas additional features simply add new functionalities

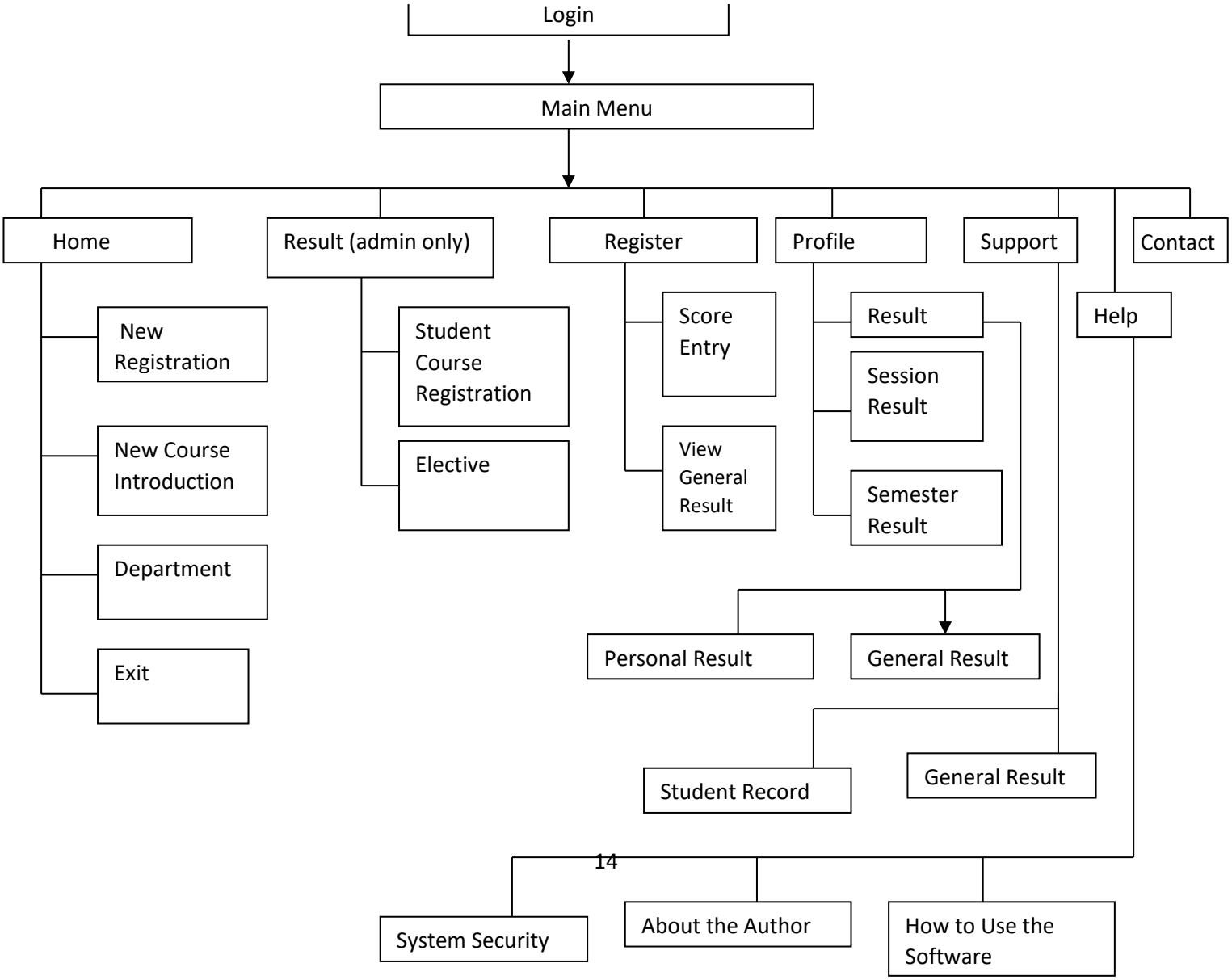
3.1.1 Operating Environment

The main component of the Examination and Result Management System is the software application, which will be limited to the Android operating system (specifically Android 4.0 and above). The application is not resource- or graphics- intensive, so there are no practical hardware constraints. The app will rely on several functionalities built into Android's Application Programming Interface (API), so ensuring appropriate usage of the API will be a major concern. Beyond that, the application is a self-contained unit and will not rely on any other Android-related software components.

3.2Design/Modules

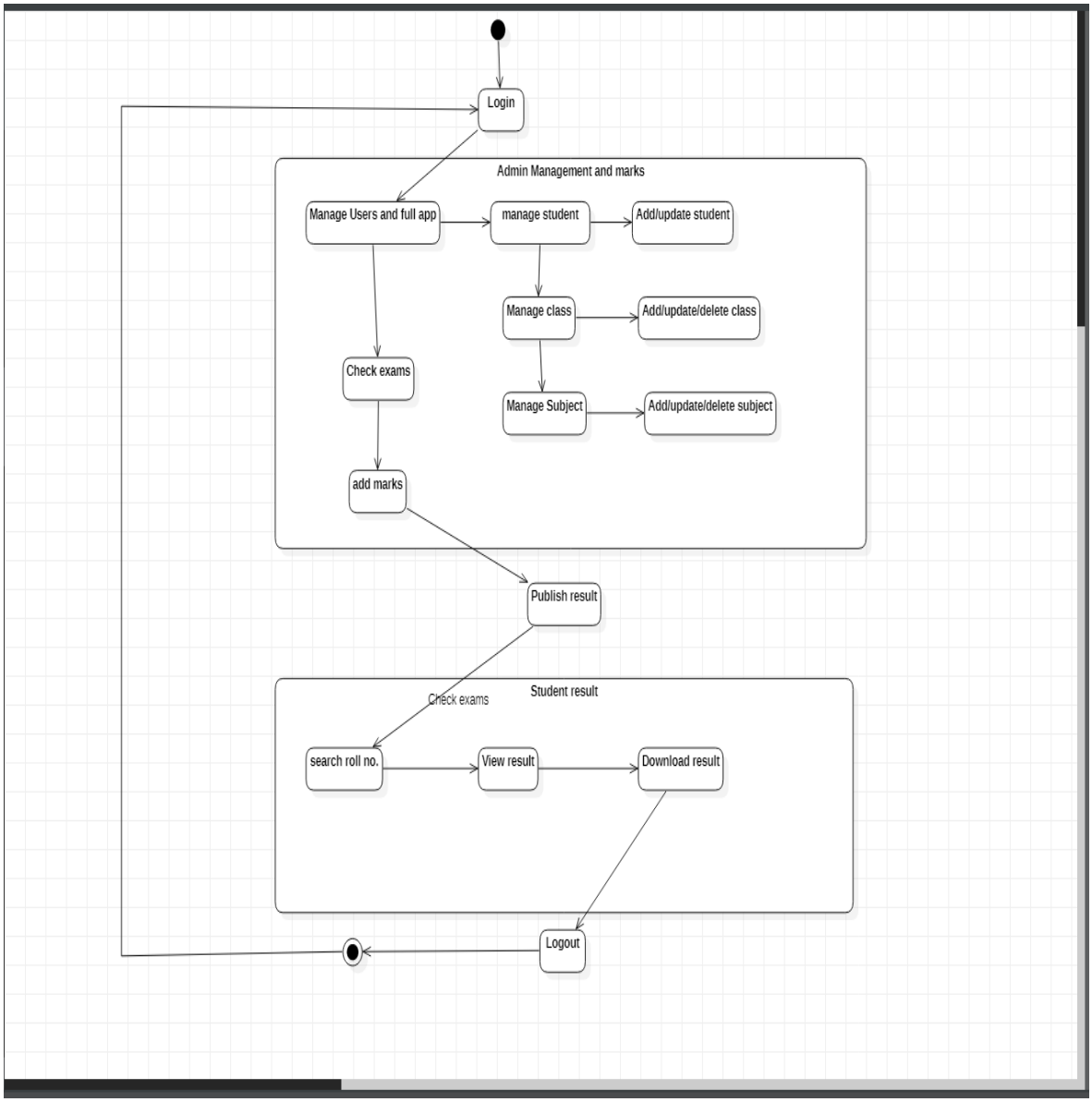
System Architecture:

Figure 1: system architecture



State Transition Diagram:

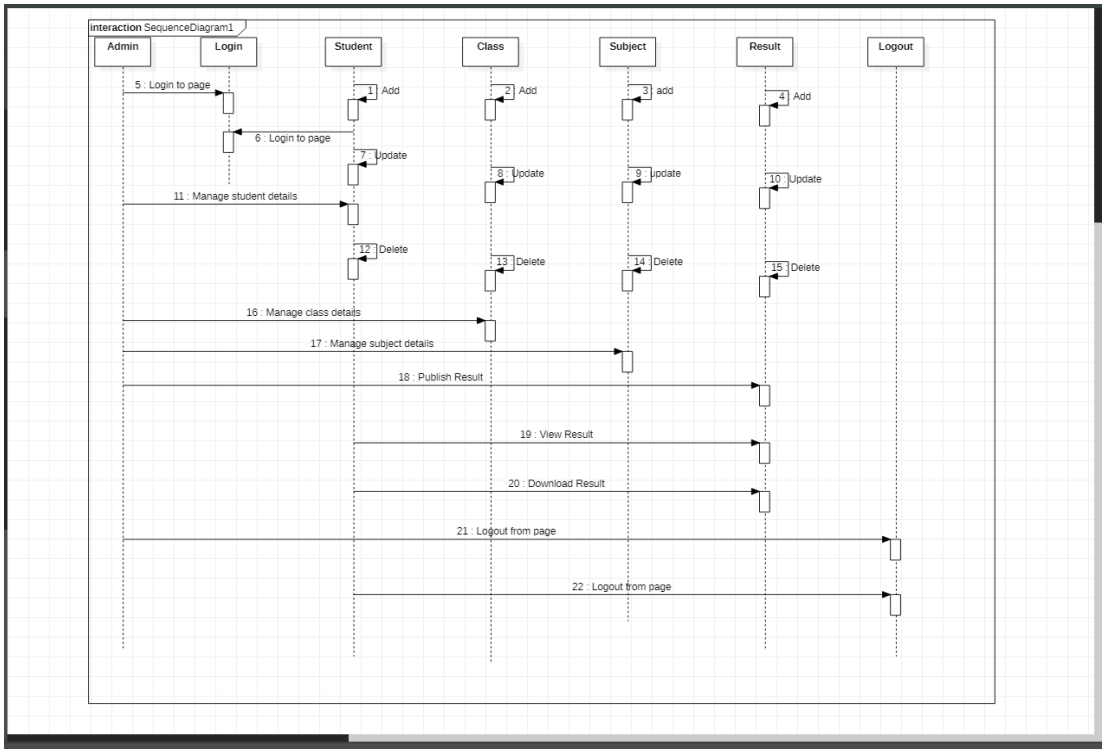
Figure 2:state transition



Sequence Diagram:

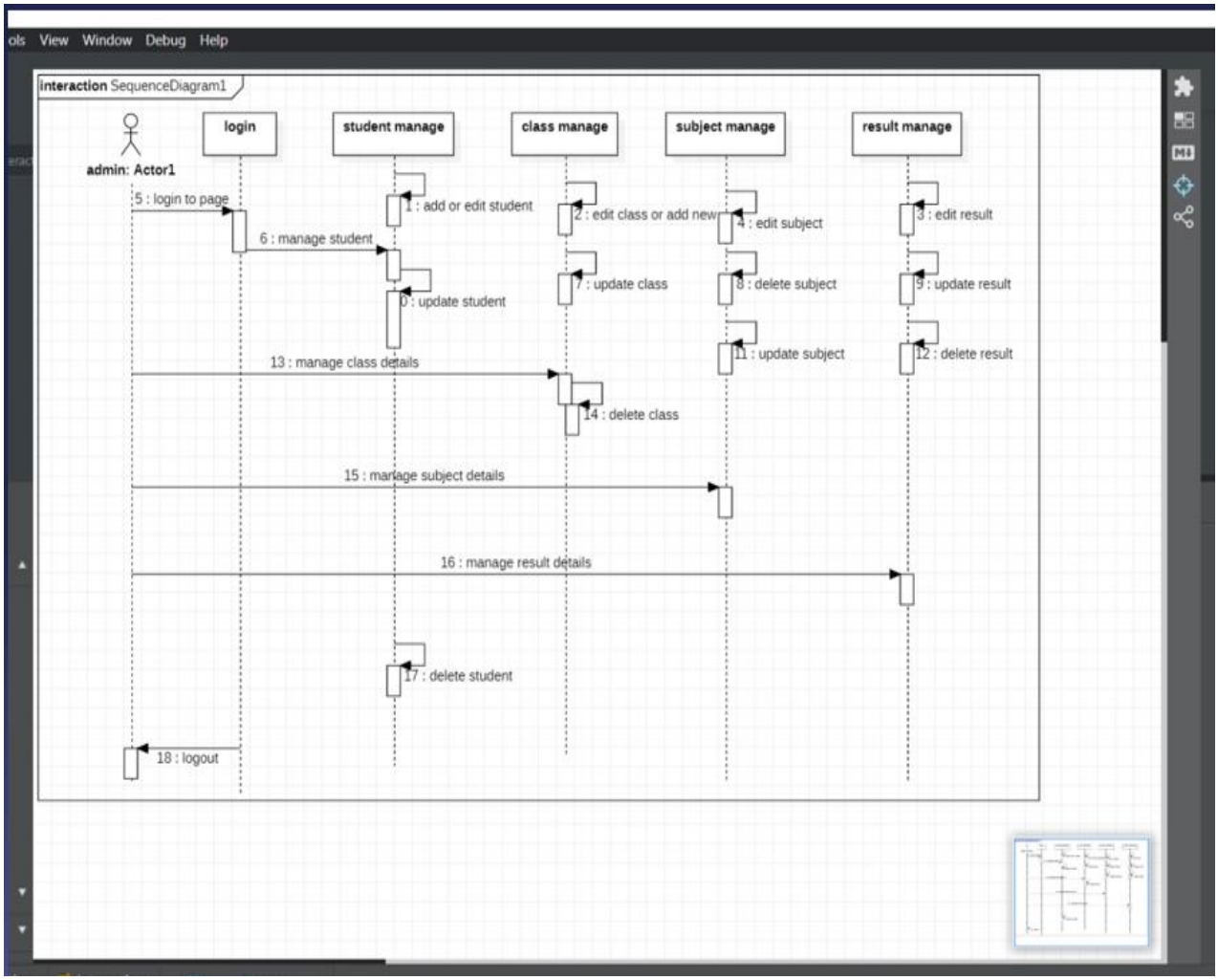
System:

Figure 3: sequence - system



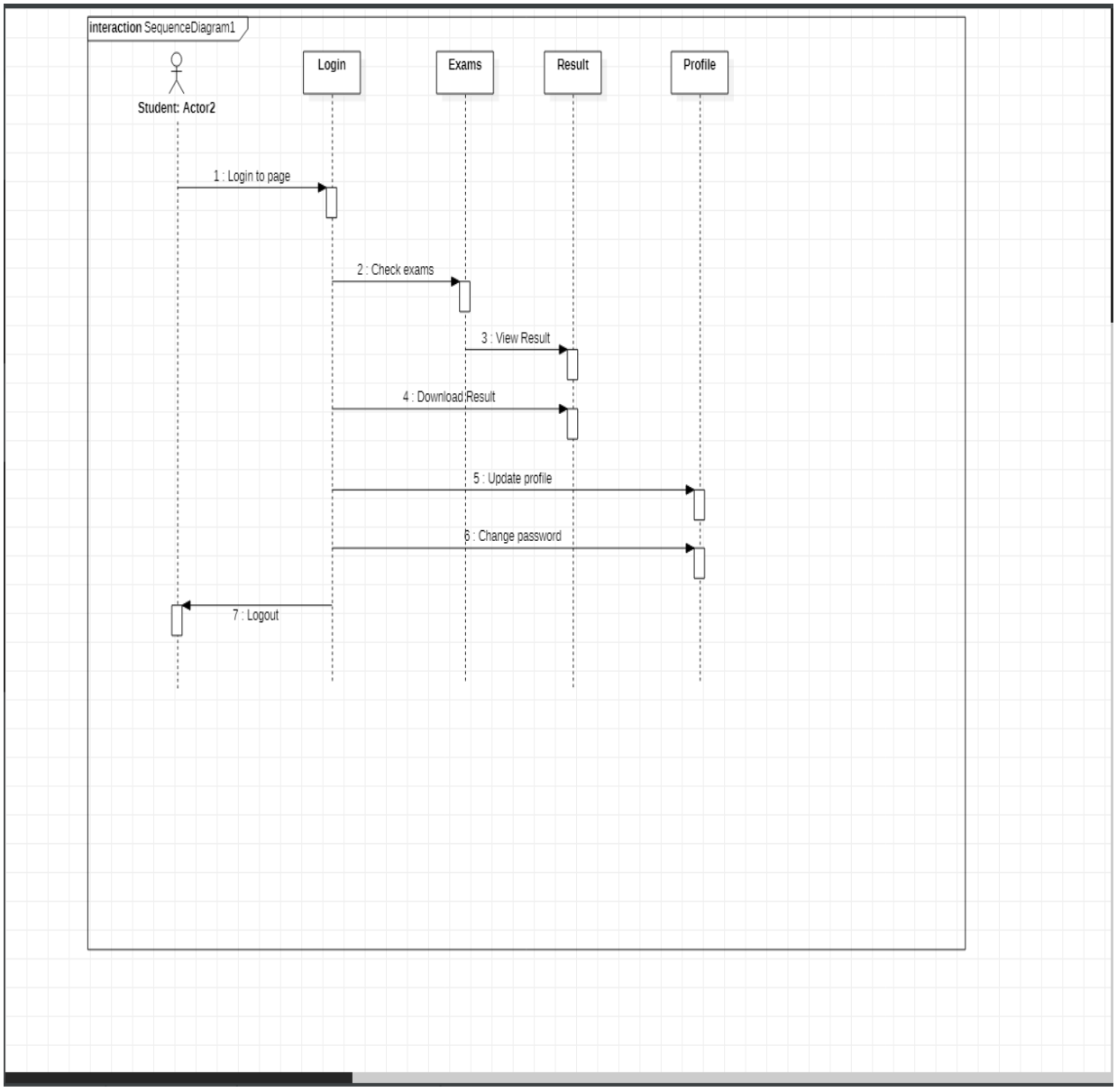
Admin:

Figure 4:sequence-admin



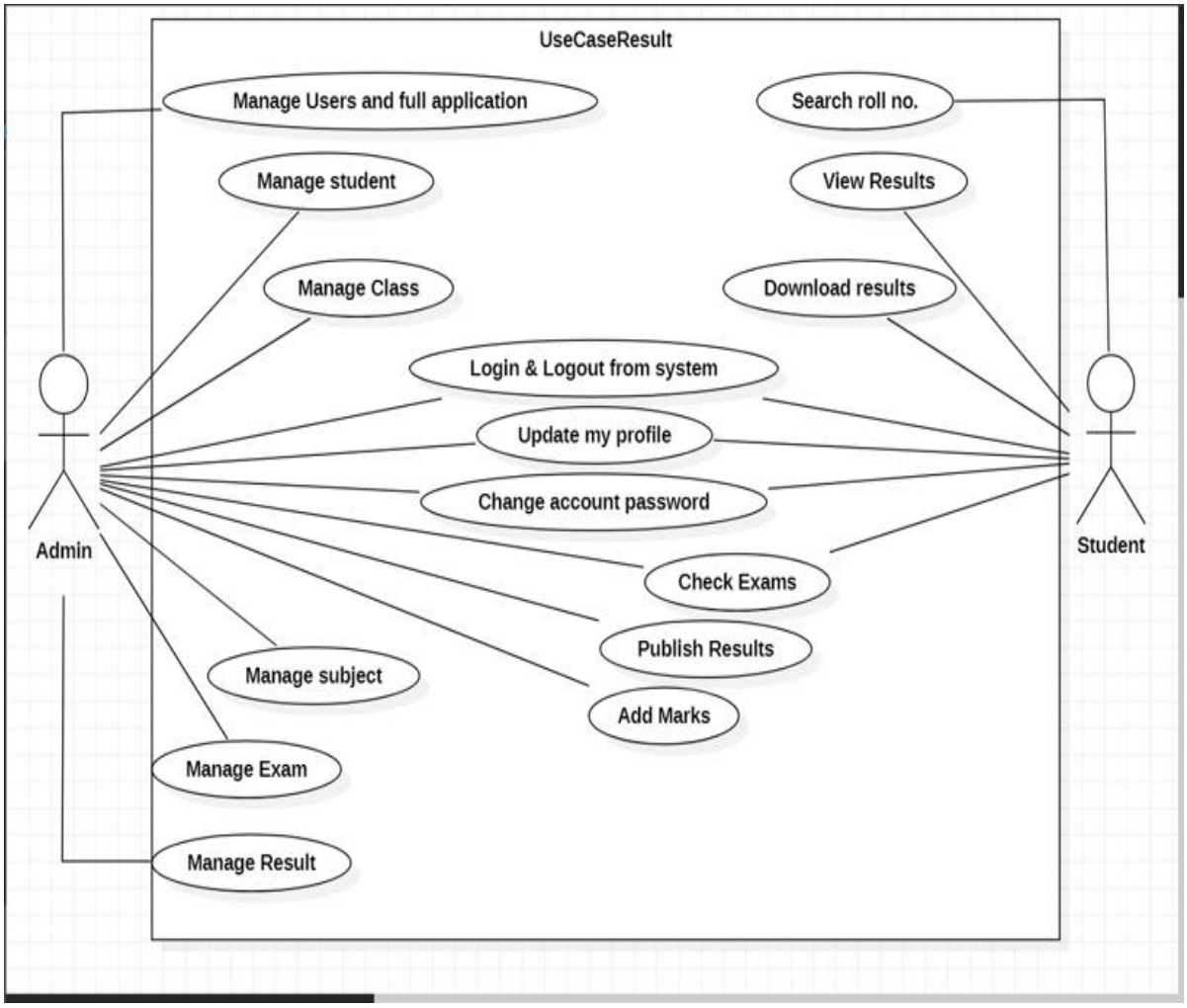
Student:

Figure 5: sequence - student



Use Case Diagram:

Figure 6:use case



4.0 Implementation

The new system was implemented using HTML, CSS and Javascript. This is because the programming language has the advantage of easy development, flexibility and it has the ability of providing the developer/programmer with possible hints.

4.1Interfaces

4.1.1 External Interface

This section provides a detailed description of all inputs into and outputs from the system. It also gives a description of the hardware, software and communication interfaces and provides basic prototypes of the user interface.

The protocol used shall be HTTP. The Port number used will be 80.

There shall be logical address of the system in IPv4 format

4.1.2 User Interfaces

A first-time user of the mobile application should see the log-in page when he/she opens the application.If the user is not a first-time user, he/she should be able to see profile directly when the application is opened.An administrator should be able to log in to the Application where he/she can administer the system by for instance editing user and other information.

4.1.3 Hardware Interfaces

Examination and Result Management app is intended as a mobile application for the Android platform and hence is solely supported on Android-powered devices. The Android platform supports push messages that will be used to synchronize data between the local application and the main application server. Information will be sent using TCP/IP and the HTTP protocol.The Android platform provides abstractions for all network communication interfaces and thus the hardware as well.

4.2 Modules

4.2.1 PHP file

```
<?php
session_start();
error_reporting(0);
include('includes/config.php');
if($_SESSION['alogin']!=''){
$_SESSION['alogin']='';
}
if(isset($_POST['login']))
{
$uname=$_POST['username'];
$password=md5($_POST['password']);
$sql ="SELECT UserName,Password FROM admin WHERE UserName=:uname and Password=:password";
$query= $dbh -> prepare($sql);
$query-> bindParam(':uname', $uname, PDO::PARAM_STR);
$query-> bindParam(':password', $password, PDO::PARAM_STR);
$query-> execute();
$results=$query->fetchAll(PDO::FETCH_OBJ);
if($query->rowCount() > 0)
{
$_SESSION['alogin']=$_POST['username'];
echo "<script type='text/javascript'> document.location = 'dashboard.php'; </script>";
} else{

    echo "<script>alert('Invalid Details');</script>";

}

}

?>
```

4.2.2 Script file

```
<script src="js/jquery/jquery-2.2.4.min.js"></script>
  <script src="js/bootstrap/bootstrap.min.js"></script>
  <script src="js/pace/pace.min.js"></script>
  <script src="js/lobipanel/lobipanel.min.js"></script>
  <script src="js/iscroll/iscroll.js"></script>
  <script src="js/prism/prism.js"></script>
  <script src="js/select2/select2.min.js"></script>
  <script src="js/main.js"></script>
  <script>
    $(function($) {
      $(".js-states").select2();
      $(".js-states-limit").select2({
        maximumSelectionLength: 2
      });
      $(".js-states-hide").select2({
        minimumResultsForSearch: Infinity
      });
    });
  </script>
```

4.2.3 CSS file

```
    html, body {
      font-family: "Poppins", sans-serif;
      font-weight: 400;
      color: #494949;
      font-size: 12px;
      line-height: 1.75em;
    }

    @media (min-width: 600px) {
      html, body {
```

```
    font-size: calc( 12px + (14 - 12) * ((100vw - 600px) / (1140 - 600)));
  }
}

@media (min-width: 1140px) {
  html, body {
    font-size: 14px;
  }
}

h1, h2, h3, h4, h5, h6, p, blockquote, pre,
a, abbr, acronym, address, big, cite, code,
del, dfn, em, img, ins, kbd, q, s, samp,
small, strike, strong, sub, sup, tt, var,
b, u, i, center,
dl, dt, dd, ol, ul, li,
fieldset, form, label, legend,
table, caption, tbody, tfoot, thead, tr, th, td {
  margin: 0;
  padding: 0;
}

p, blockquote, pre,
address,
dl, ol, ul,
table {
  margin-bottom: 1.75em;
}

h1, h2, h3, h4, h5, h6, .h1, .h2, .h3, .h4, .h5, .h6 {
  font-family: "Poppins", sans-serif;
  font-weight: 400;
  color: #292929;
```

```
  clear: both;
}

h1, .h1 {
  font-size: 27.8543898685px;
  margin-top: 0.9424008253em;
  line-height: 1.1308809903em;
  margin-bottom: 0.1884801651em;
}

@media (min-width: 600px) {
  h1, .h1 {
    font-size: calc( 27.8543898685px + (32.4967881799 - 27.8543898685) * ((100vw -
600px) / (1140 - 600)));
  }
}

@media (min-width: 1140px) {
  h1, .h1 {
    font-size: 32.4967881799px;
    margin-top: 0.9424008253em;
    line-height: 1.1308809903em;
    margin-bottom: 0.1884801651em;
  }
}

h2, .h2 {
  font-size: 23.5370033519px;
  margin-top: 1.1152651681em;
  line-height: 1.3383182017em;
  margin-bottom: 0.2514831227em;
}
```

4.3**Screenshots**

Figure 7:Display page

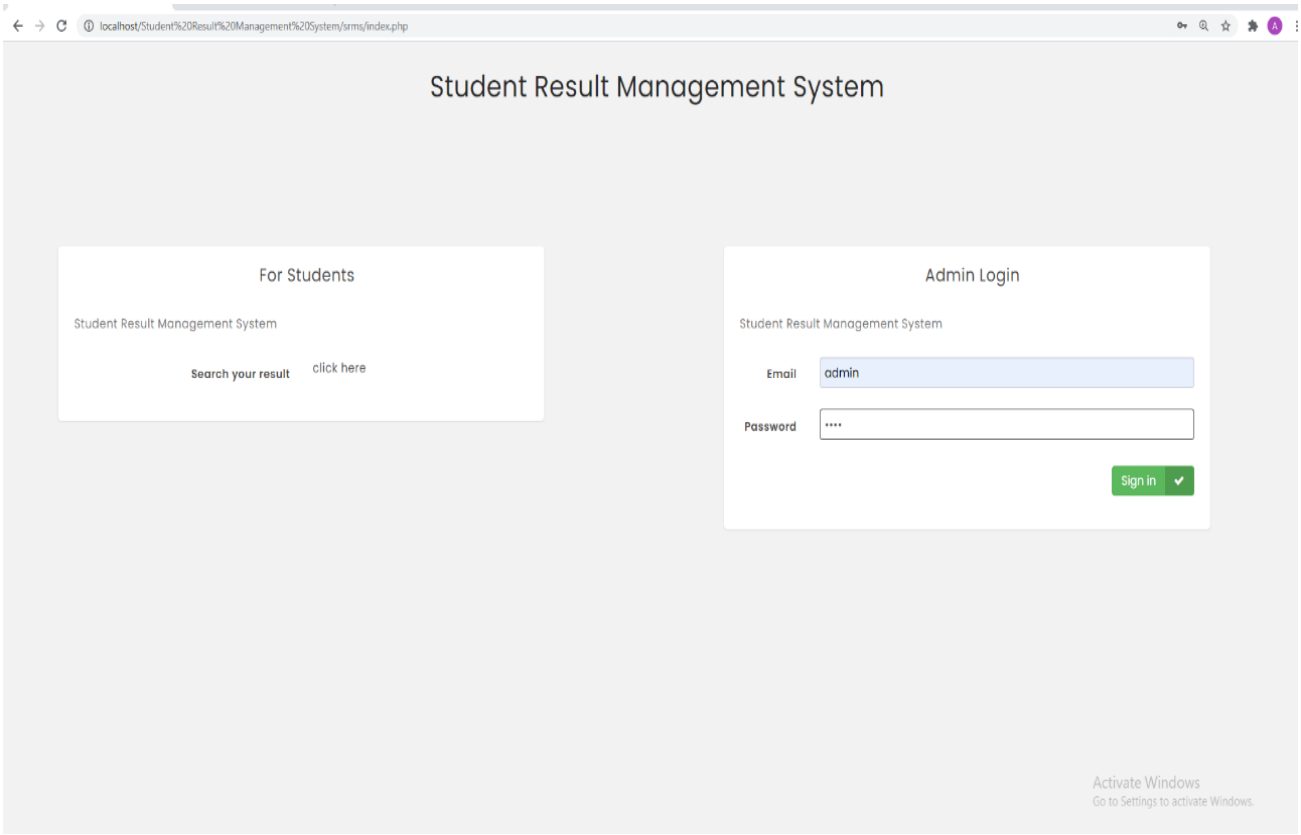


Figure 8:dashboard

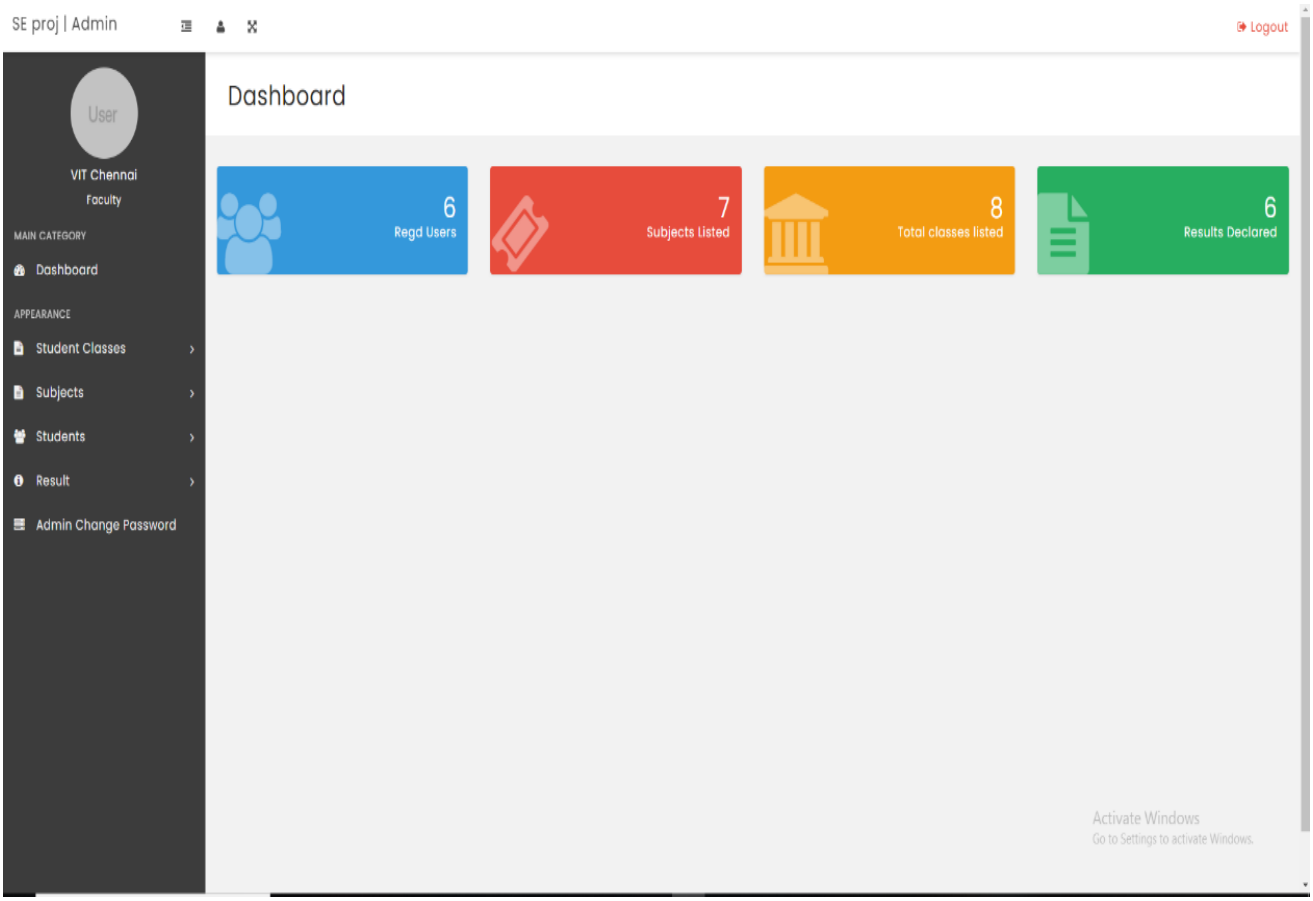


Figure 9:class manage

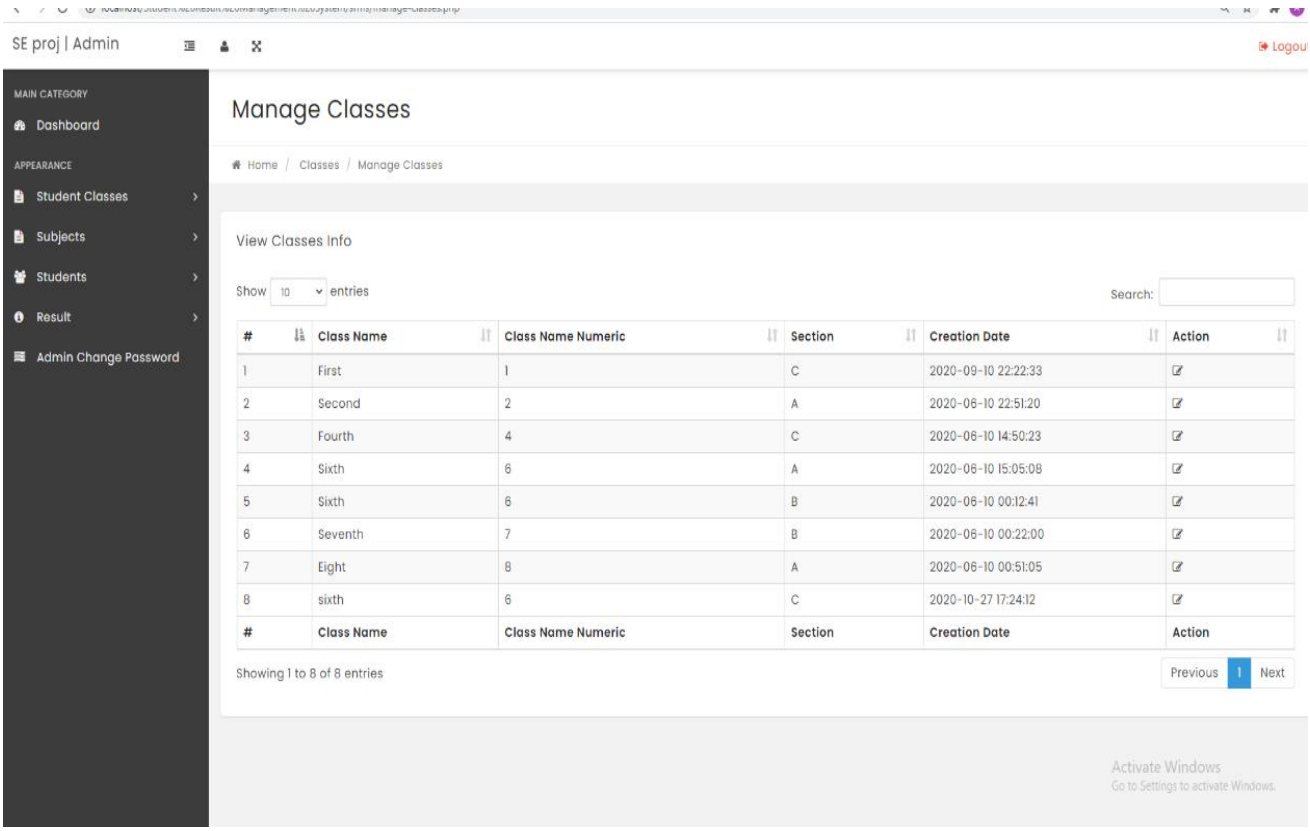


Figure 10:create subject

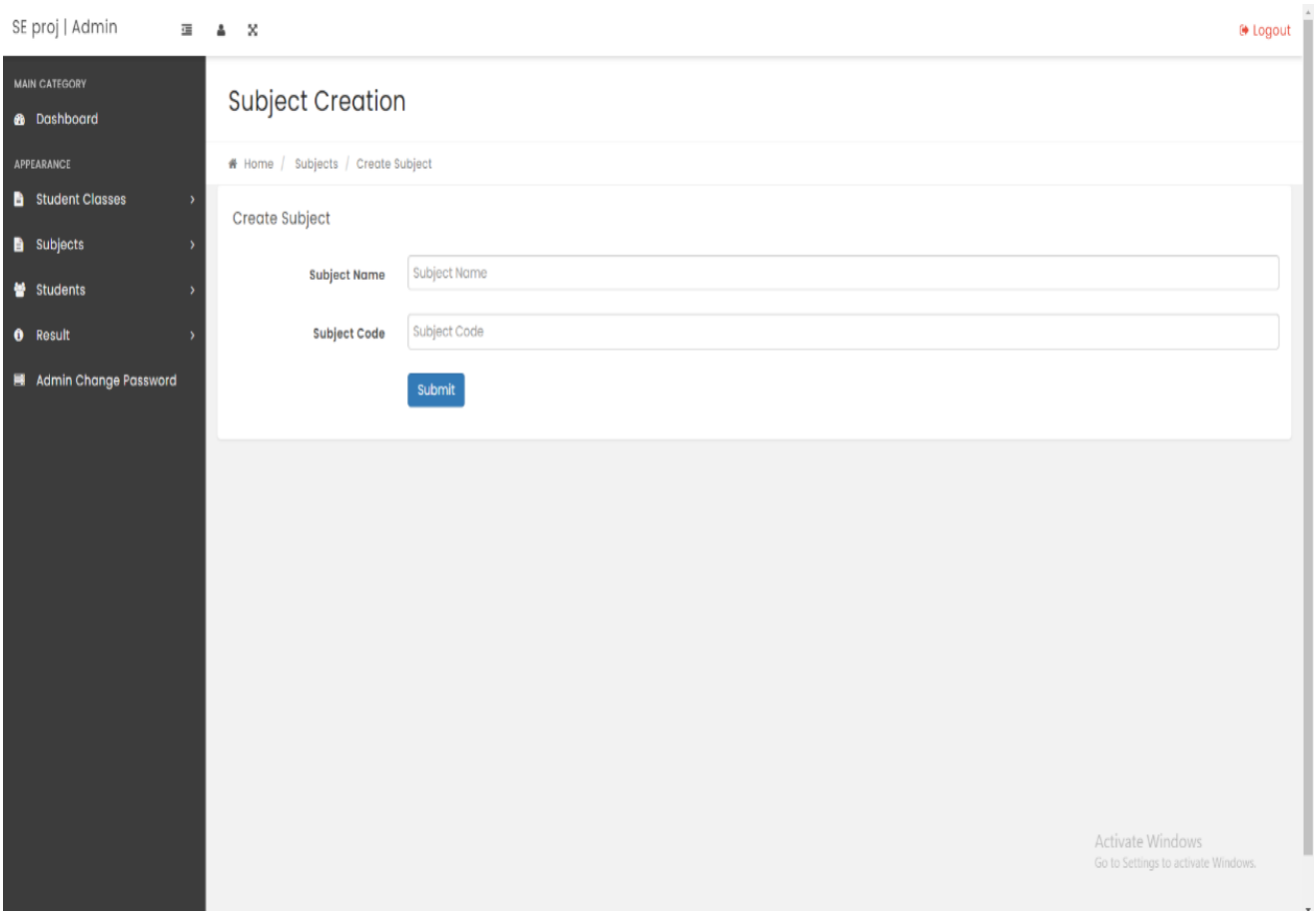


Figure 11:manage subject

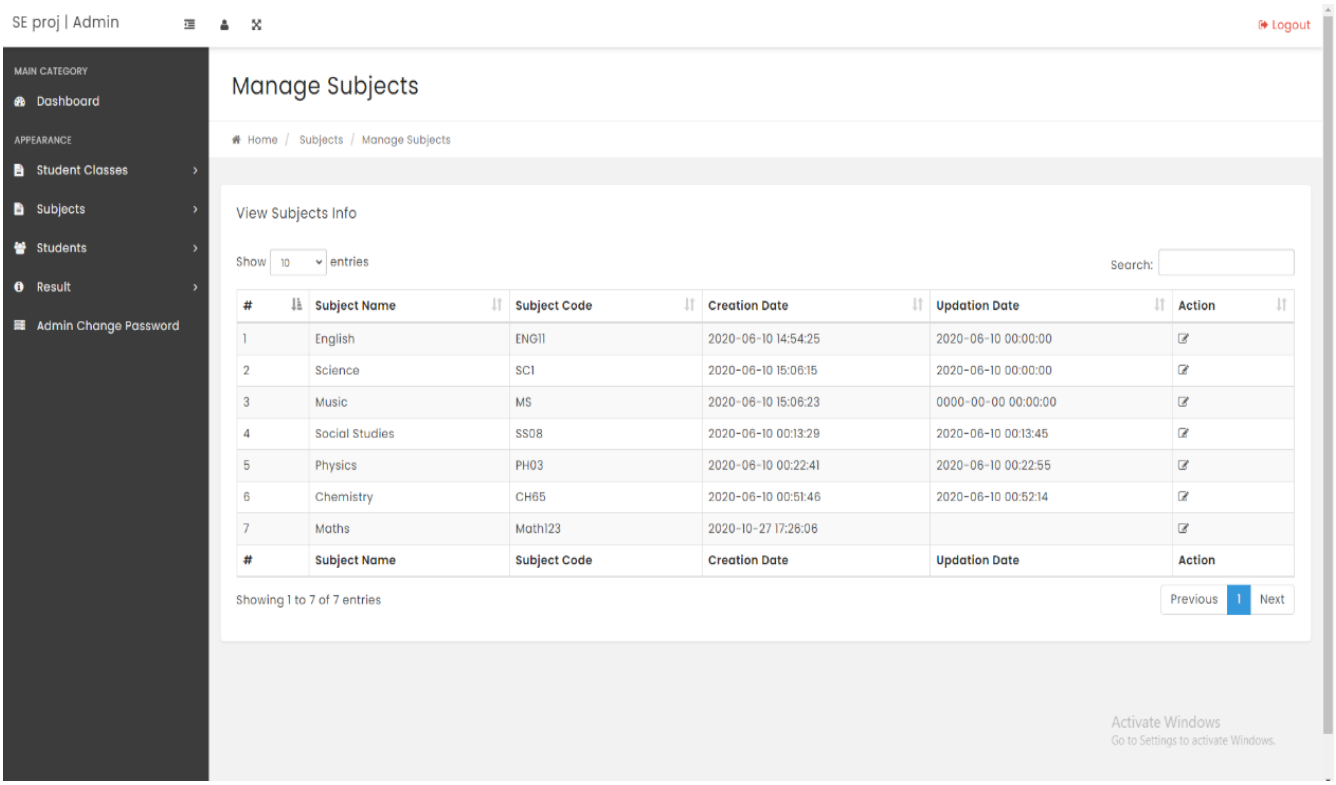


Figure 12:manage student

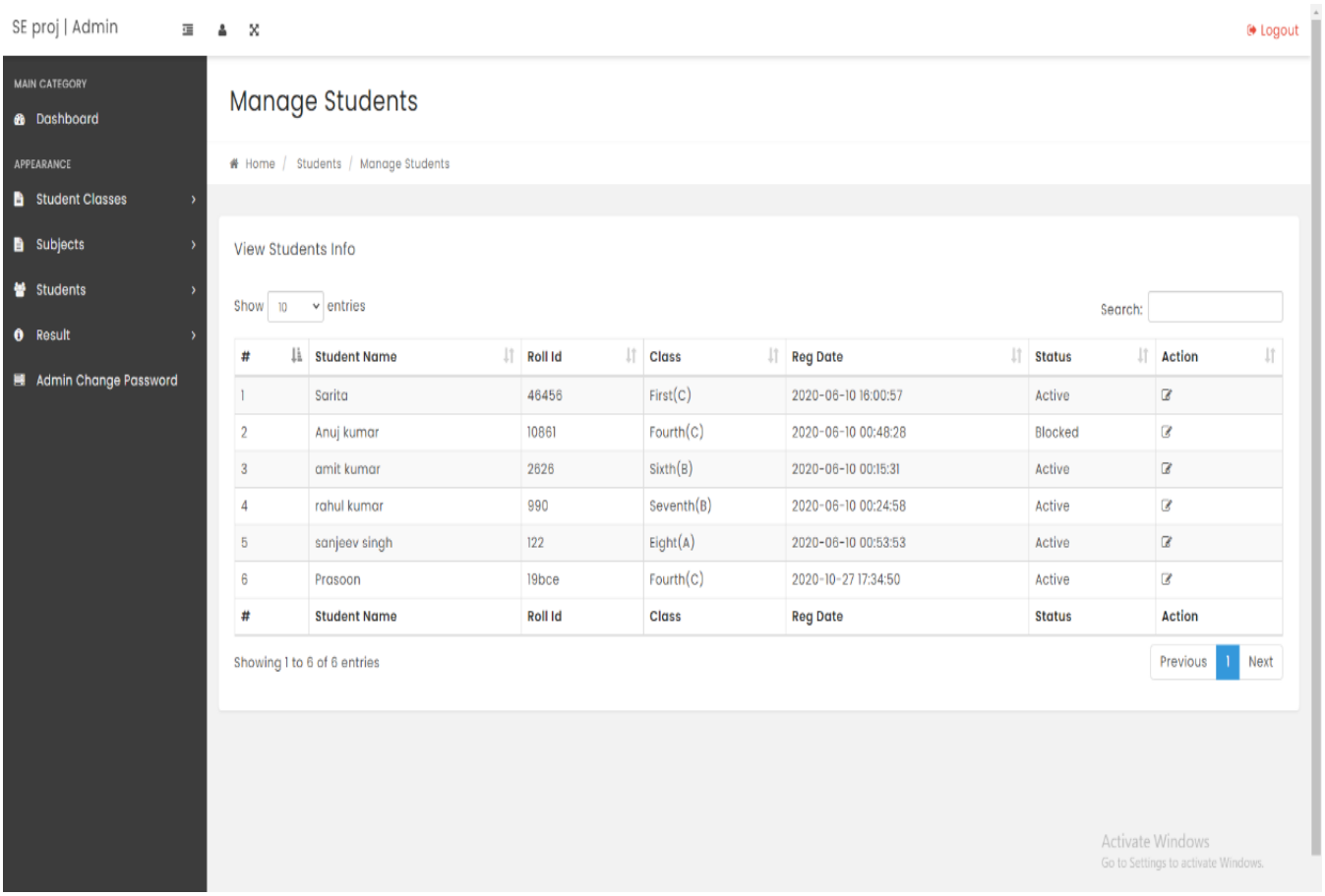


Figure 13:change password

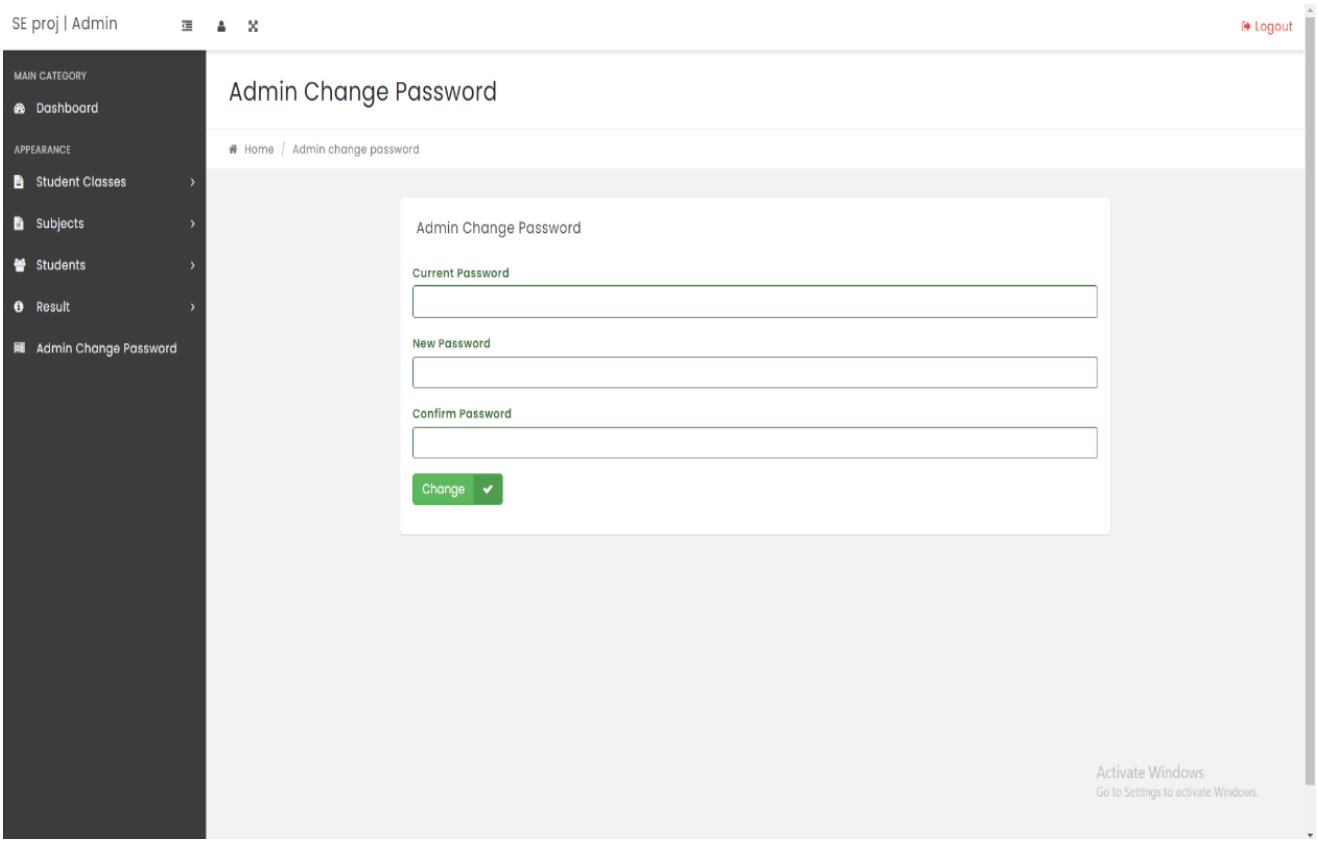


Figure 14:manage student

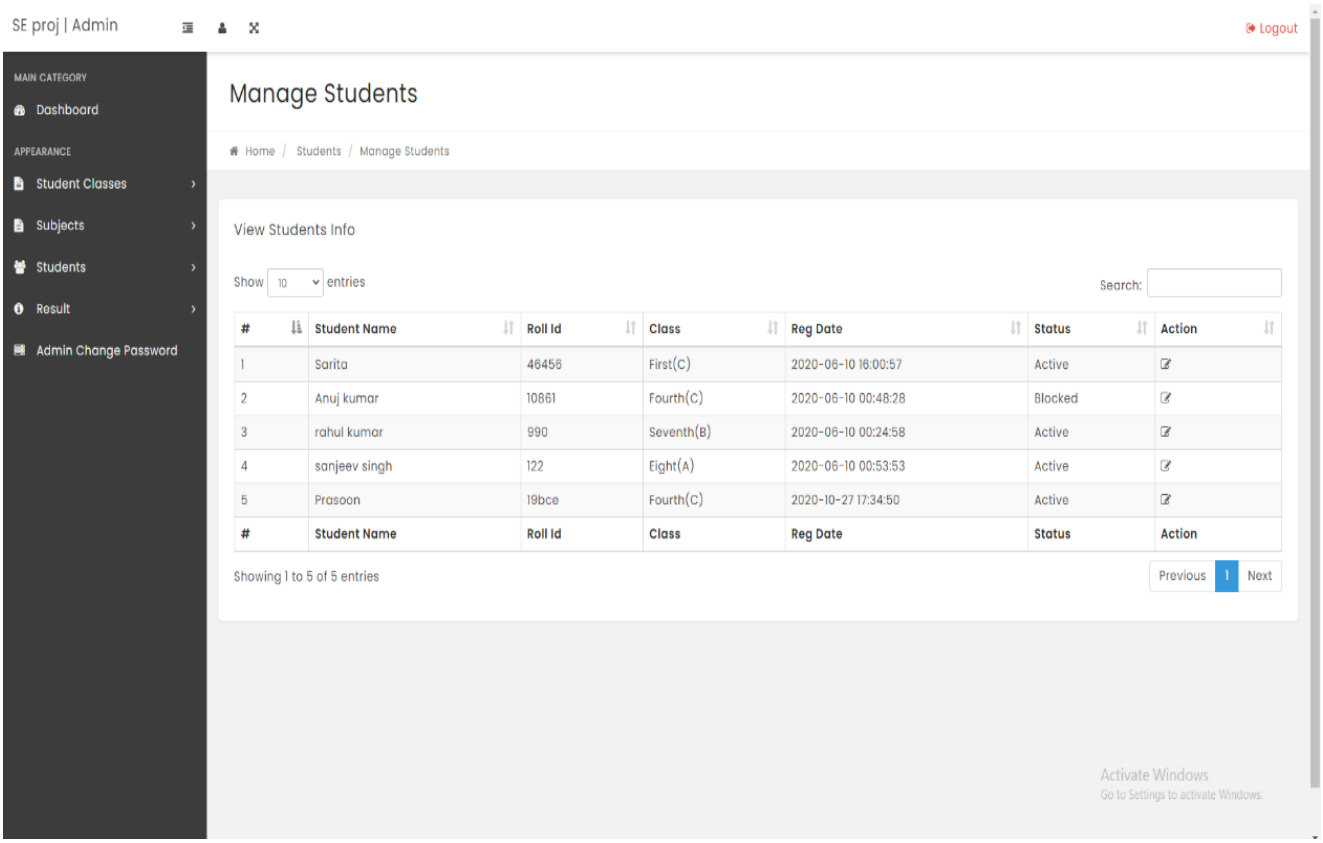


Figure 15:student login

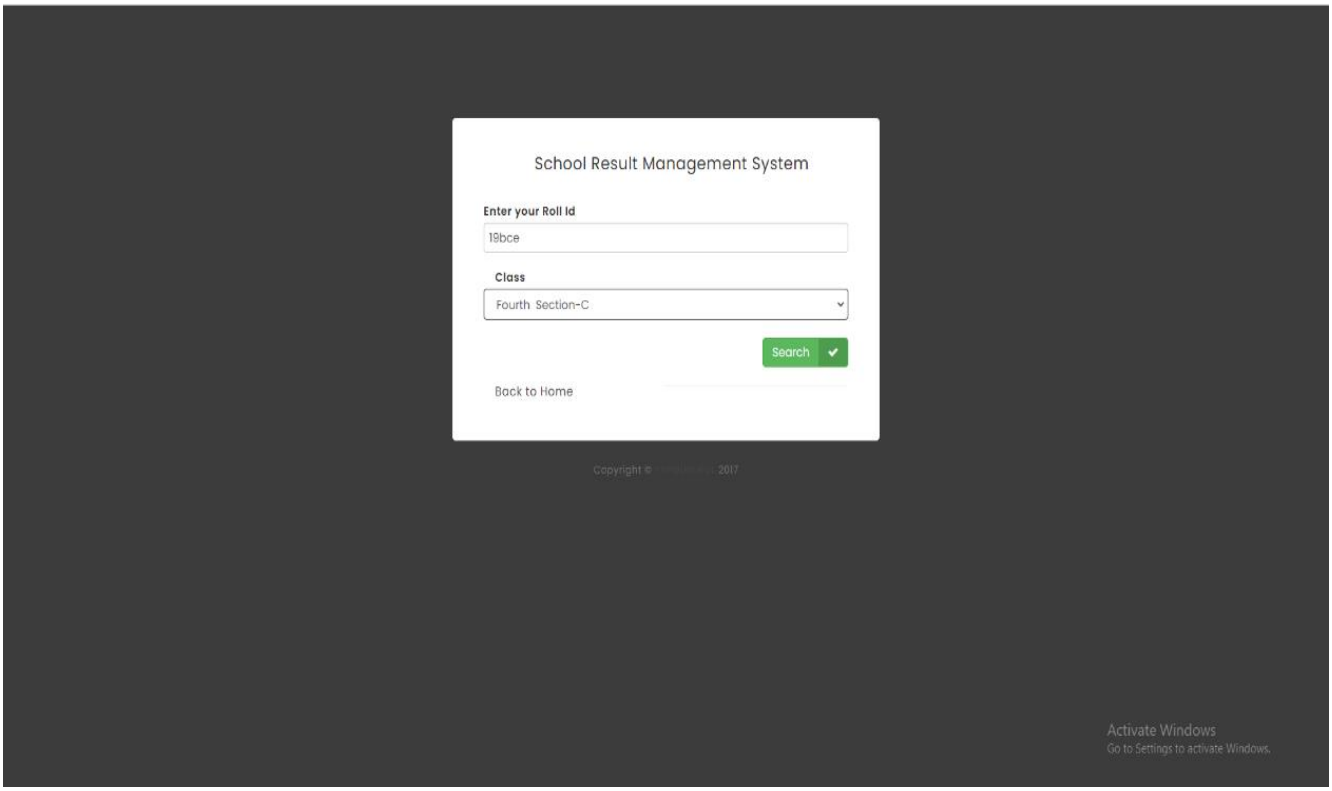
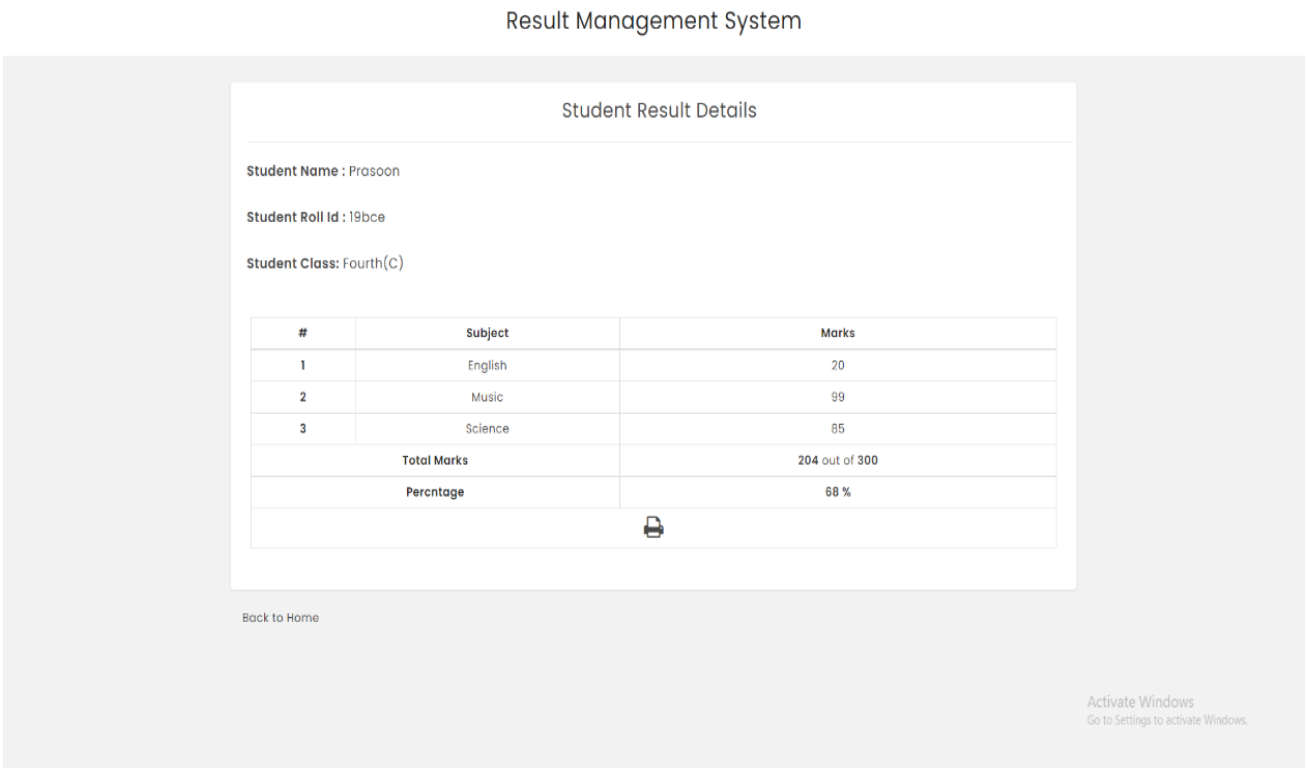


Figure 16:final result



DATABASES

Figure 17:full database

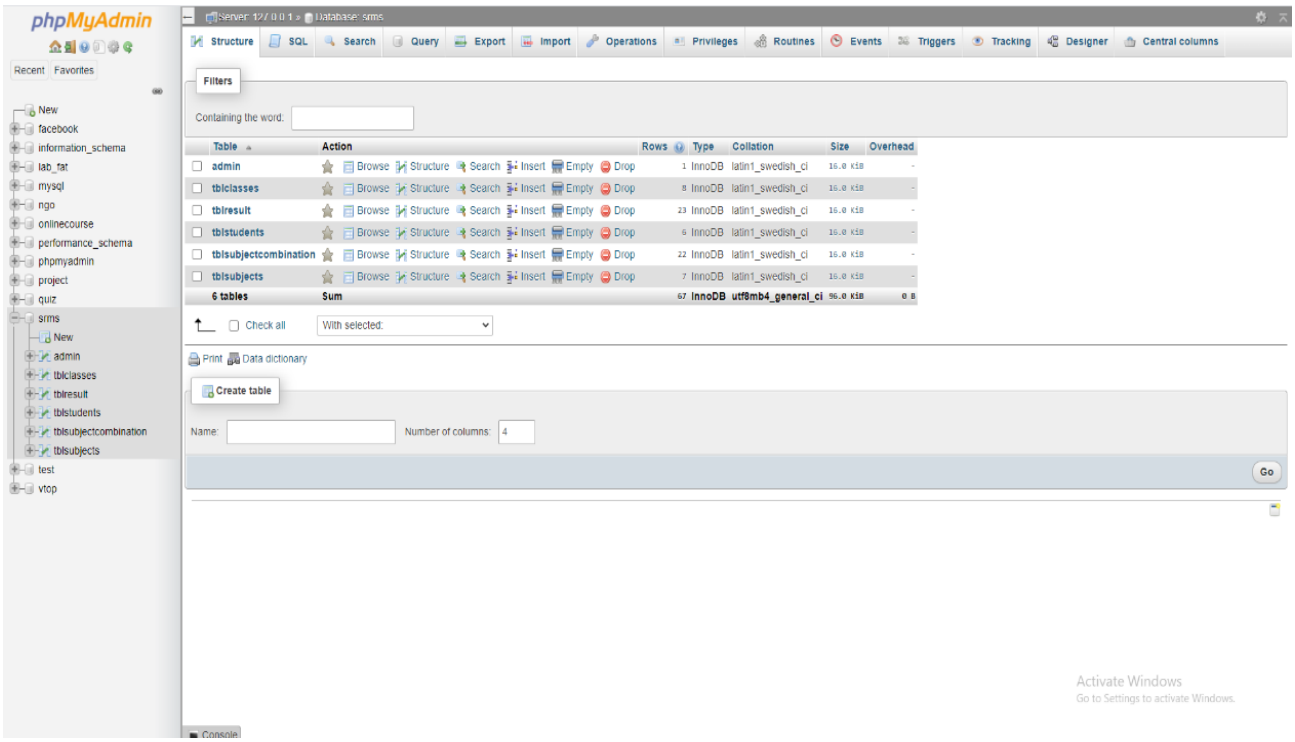


Figure 18:result database

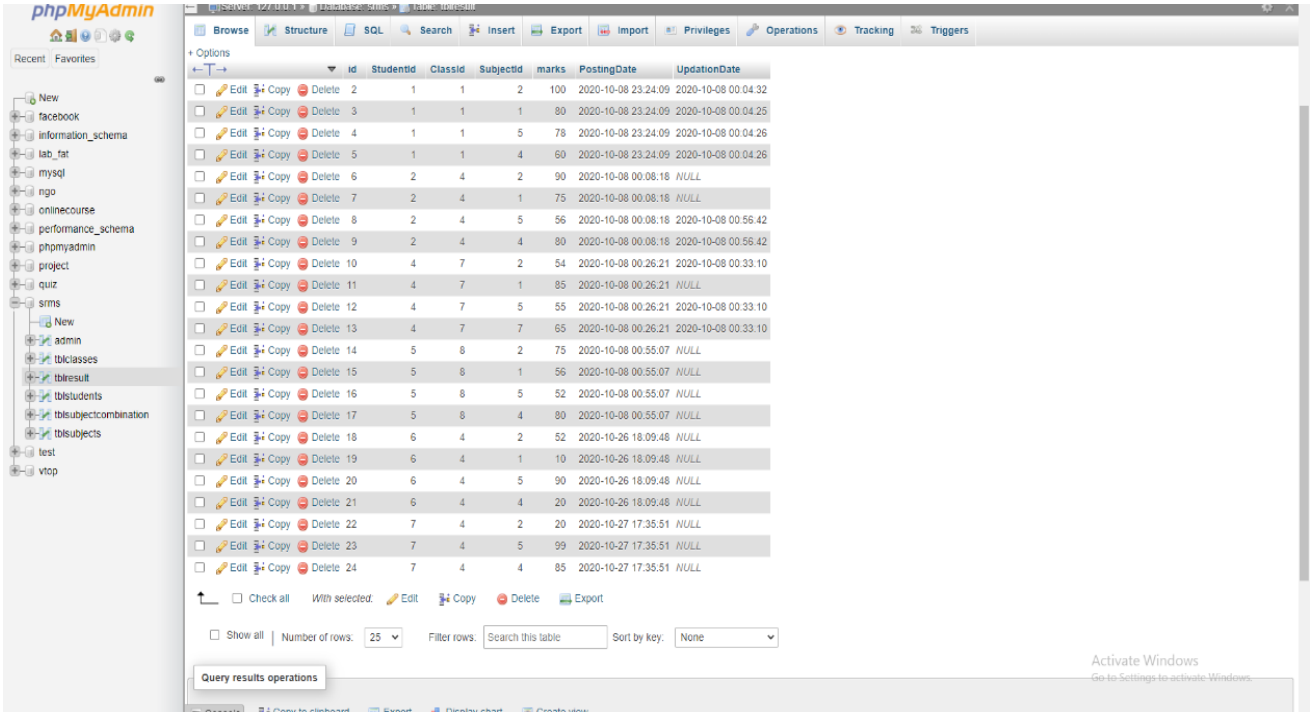
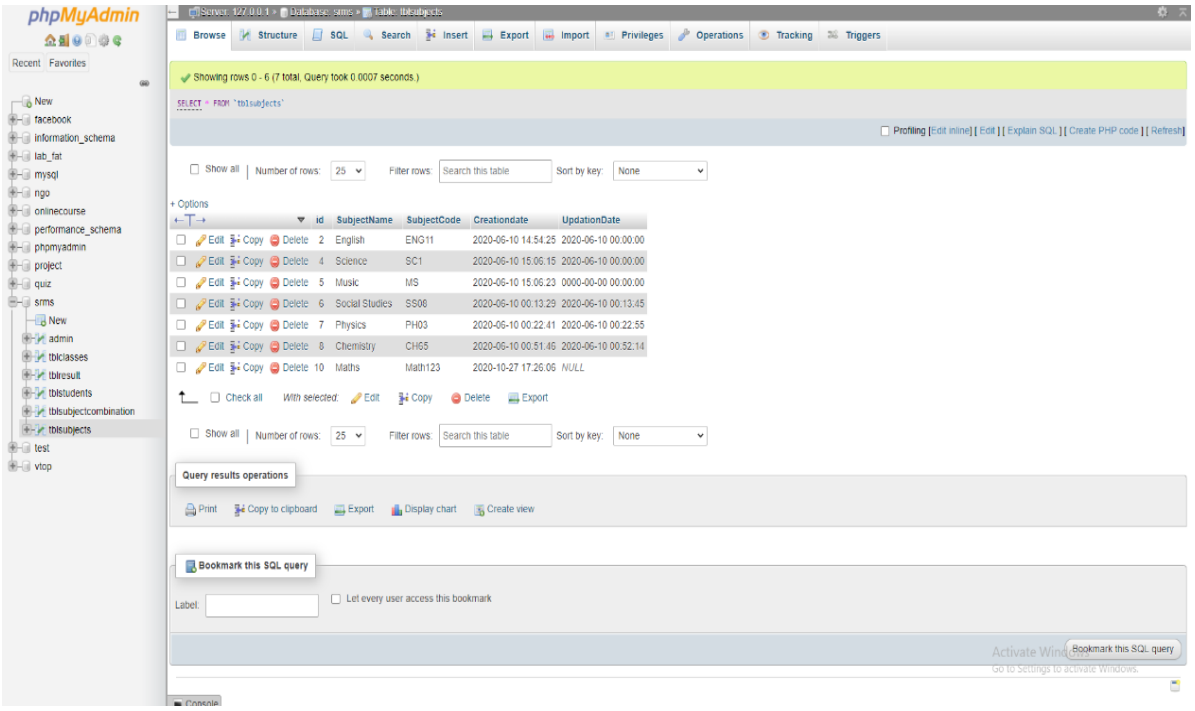


Figure 19:subject database



5. Results and Conclusion

The entire project has been developed and deployed as per the requirements. It is found to be bug free as per the testing standards that are implemented. The software is meant to address the challenges facing students' records management. The RMS is developed using PHP, MYSQL, HTML, CSS, JAVASCRIPT and was hosted locally with Apache web server. Functional decomposition of the system and its key modules are provided to explain the major functionalities proffered by the system. For implementing the system PHPmyAdmin (localhost) is used.

The system comprise of following features :

- View result (All Users)
- Create/Update Result
- Create/Update Class
- Create/Update Subjects
- Create/Update Students
- Change password of User profile

The present project was based on the computerization and the implementation of a sophisticated Web-Based Student Result Management System for Vellore Institute Of Technology. The main objective was to enhance and automate the management and declaration of students' results using a computerized system. A well-defined, efficient, controlled and managed information system or software based on web technology storing, processing and providing information through the internet. And the objectives were achieved by following a process model such as system analysis, design, system implementation and testing. The system analysis was composed of two activities, requirement determination and structuring. The first activity focused on the collection of data or requirements through structured interview, work environment observation and by collecting procedures and other written documents. And the latter, performed the modeling of the collected data and processes, transforming it into UML diagrams with the aid of a UML modeling tool, Star UML into a graphically understandable manner.

The design started with the definition of the system physical architecture where client-server model was employed, a relational database was designed which defines system's data organization, storage and management. And went through the process called normalization that resulted in a data model that has the properties of simplicity, non-redundancy, and minimal maintenance. Which was represented through the ERD with the help of MySQL Workbench. And the system design was finalized with the creation of a friendly user interface of the system.. An essential tool for developing the system was Virtual Studio IDE. And some technologies like Apache programming language, MySQL DBMS, HTML, CSS, Bootstrap and JavaScript. And finally, the system testing was performed to verify if it meets what was specified in the analysis phase and to discover program defects before it is put into use. The system went through three stages of testing: unit, integration and system testing. Therefore, with the conclusion of the project, it was possible to perceive the importance of an information system

5.1 Future Work

In the forthcoming years we will try to compile this project with Google Firebase. With C++ our project will be efficient, and connecting it to google Firebase we can make it real – time too. The Firebase Realtime Database can Store and Synchronize data using a NOSQL cloud database. Data is synchronized across all clients in real-time , and remains available when your app goes offline. By this we can get this project to a new Generation.

REFERENCES

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APPENDIX-1 – RISK ANALYSIS – DESIGN AND IMPLEMENTATION

Risk involves 2 characteristics

a. Uncertainty - The risk may or may not happen. There are no 100% probable risks.
b. Loss - If a risk becomes a reality, unwanted consequences or losses will occur.

The goal of the risk mitigation, monitoring and management plan is to identify as many potential risks as possible. The project will then be analysed to determine any project-specific risks.

- When all risks have been identified, they will then be evaluated to determine their probability of occurrence. Plans will then be made to avoid each risk, to track each risk to determine if it is more or less likely to occur, and to plan for those risks should they occur.
- It is the organization's responsibility to perform risk mitigation, monitoring, and management in order to produce a quality product.
- The quicker the risks can be identified and avoided, the smaller the chances of having to face that particular risk's consequence. The fewer consequences suffered as a result of good RMMM plan, the better the product, and the smoother the develop-ment process.

Table 1: RISK TABLE

Risks	Category	Probability	Impact
Computer Crash	Technical Risk	70%	1
Late Delivery	Project Risk	30%	1
End Users Resist System	Project Risk	20%	1
Changes in Requirements	Project Risk	20%	2

Risk 1 : Computer Crash

- **Mitigation**

  The cost associated with a computer crash resulting in a loss of data is crucial. A computer crash itself is not crucial, but rather the loss of data. A loss of data will result in not being able to deliver the product to the customer. This will result in a not receiving a letter of acceptance from the customer. Without the letter of acceptance, the group will receive a failing grade for the course. As a result the organization is taking steps to make multiple backup copies of the software in development and all documentation associated with it, in multiple locations.

- **Monitoring**

  When working on the product or documentation, the staff member should always be aware of the stability of the computing environment they're working in. Any changes in the stability of the environment should be recognized and taken seriously.

- **Management**

  The lack of a stable-computing environment is extremely hazardous to a software development team. In the event that the computing environment is found unstable, the development team should cease work on that system until the environment is made stable again, or should move to a system that is stable and continue working there.

Risk 2 : Late Delivery

- **Mitigation**

  The cost associated with a late delivery is critical. A late delivery will result in a late delivery of a letter of acceptance from the customer. Without the letter of acceptance, the group will receive a failing grade for the course. Steps have been taken to ensure a timely delivery by gauging the scope of project based on the delivery deadline.

- **Monitoring**

  A schedule has been established to monitor project status. Falling behind schedule would indicate a potential for late delivery. The schedule will be followed closely during all development stages..

- **Management**

  Late delivery would be a catastrophic failure in the project development. If the project cannot be delivered on time the development team will not pass the course. If it becomes apparent that the project will not be completed on time, the only course of action available would be to request an extension to the deadline form the customer.

Risk 3: End Users Resist System

- **Mitigation**

  In order to prevent this from happening, the software will be developed with the end user in mind. The user-interface will be designed in a way to make use of the program convenient and pleasurable.

- **Monitoring**

The software will be developed with the end user in mind. The development team will ask the opinion of various outside sources throughout the development phases. Specifically the user-interface developer will be sure to get a thorough opinion from others.

- **Management**

  Should the program be resisted by the end user, the program will be thoroughly examined to find the reasons that this is so. Specifically the user interface will be investigated and if necessary, revamped into a solution.

Risk 4: Changes in Requirements

- **Mitigation**

  In order to prevent this from happening, meetings (formal and informal) will be held with the customer on a routine business. This insures that the product we are producing, and the requirements of the customer are equivalent.

- **Monitoring**

  The meetings with the customer should ensure that the customer and our organization understand each other and the requirements for the product.

- **Management**

  Should the development team come to the realization that their idea of the product requirements differs from those of the customer, the customer should be immediately notified and whatever steps necessary to rectify this problem should be taken. Preferably a meeting should be held between the development team and the customer to discuss at length this issue.