

**The  
Project Report  
On  
SECURED ONLINE EXAMINATION SYSTEM  
BTech-sem VI**

**Prepared By  
Mahyavanshi Harsh (IT067)  
Makwana Pranay (IT069)**



**DEPARTMENT OF INFORMATION  
TECHNOLOGY  
FACULTY OF TECHNOLOGY,  
DHARMSINH DESAI UNIVERSITY, COLLEGE ROAD,  
NADIAD- 387001**

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**A**  
**Project Report**  
**On**

**SECURED ONLINE EXAMINATION SYSTEM**  
**BTech-sem VI**

**In partial fulfillment of requirements**  
**for**  
**Bachelor of Technology**  
**In**  
**Information Technology**  
**Submitted By:**  
**1.Mahyavansi Harsh**  
**2.Makwana Pranay**

**Under the Guidance of**  
**Prof. (Dr.)Mukesh . M. Goswami**

**DEPARTMENT OF INFORMATION  
TECHNOLOGY  
FACULTY OF TECHNOLOGY,  
DHARMSINH DESAI UNIVERSITY, COLLEGE ROAD,  
NADIAD- 387001**

## **CANDIDATE'S DECLARATION**

We declare that the pre-final semester report entitled “Secured Online Examination System” is our own work conducted under the supervision of the guide Prof. Mukesh Goswami.

We further declare that to the best of our knowledge the report for B.Tech. VII semester does not contain part of the work which has been submitted either in this or any other university without proper citation.

Candidate's Signature

Candidate's Name: Mahyavanshi Harshkumar Shaileshbhai

Student ID: 18ITUSS096

Candidate's Signature

Candidate's Name: Makwana Pranay Dilipkumar

Student ID: 18ITUBS027

Submitted To: (Dr.)Prof. Mukesh Goswami

Department of Information Technology,

Faculty of Technology,

Dharmsinh Desai University, Nadiad

Gujarat.

**DHARMSINH DESAI UNIVERSITY**  
**NADIAD-387001, GUJARAT**



**CERTIFICATE**

This is to certify that the project carried out in the subject of Software Design Project ,entitled "SECURED ONLINE EXAMINATION SYSTEM"and recorded in this report is a bonafide report of work of

<b>1) Mahyavansi Harshkumar</b>	<b>Roll No. IT067</b>	<b>ID No: 18ITUSS096</b>
<b>2) Makwana Pranay</b>	<b>Roll No. IT069</b>	<b>ID No: 18ITUBS027</b>

of the Department of Information Technology, semester VI, . He/She/They was/were involved in Project work during the academic year 2020 -2021.

**Prof. (Dr.)Mukesh M. Goswami**  
(Project Guide),  
Department of Information Technology,  
Faculty of Technology,  
Dharmsinh Desai University, Nadiad  
Date:

**Prof. (Dr.) V . K. Dabhi,**  
Head , Department of Information Technology,  
Faculty of Technology,  
Dharmsinh Desai University, Nadiad.  
Date:

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With Sincere Regards,

**1.Mahyavanshi Harshkumar  
2.Pranay Makwana**

## **TABLE OF CONTENT**

<b>1.0 Introduction.....</b>	<b>1</b>
1.1 Project Details .....	1
1.2 Purpose .....	1
1.3 Scope .....	1
1.4 Objective .....	2
1.5 Technology and Literature Review.....	2
<b>2.0 Project Management .....</b>	<b>3</b>
2.1 Feasibility study .....	3
2.1.1 Technical feasibility .....	3
2.1.2 Time Schedule feasibility.....	3
2.1.3 Operational feasibility.....	3
2.1.4 Implementation feasibility.....	4
2.2 Project planning .....	4
2.2.1 Project Development Approach & Justification.....	4
2.2.2Project Plan.....	5
2.2.3 Milestones and Deliverables.....	5
2.2.4 Roles and Responsibilities.....	6
2.3 Project Scheduling Chart .....	6
<b>3.0 System Requirements Study.....</b>	<b>7</b>
3.1 Study of current system.....	7
3.2 Problems and weaknesses of current system .....	7
3.3 User characteristics .....	7
3.4 Hardware & Software requirement .....	8
3.5 Constraints .....	8

3.5.1 Higher Language Order constraints .....	8
3.5.2 Reliability requirements .....	8
3.5.3 Safety & Security consideration .....	8
3.5.4 Editing Constraint .....	8
3.6 Assumption and Dependencies .....	8
<b>4.0 System Analysis .....</b>	<b>9</b>
4.1 Requirements of new system .....	9
4.1.1 User Requirements(Use Case Diagram) .....	9
4.1.2 System Requirements.....	10
4.1.3 Non-Functional Requirements .....	12
4.2 Features of new system .....	12
4.3 Database .....	13
4.3.1 Database Model.....	13
4.3.2 Collections .....	14
<b>5.0 System Design .....</b>	<b>18</b>
5.1 Class Diagram .....	18
5.3 Sequence Diagrams.....	19
<b>6.0 Implementation Planning .....</b>	<b>29</b>
6.1 Implementation Environment.....	29
6.2 Modules Specification .....	29
6.3 Coding Standards .....	30
6.4 Coding Snippet .....	30
<b>7.0 Testing .....</b>	<b>31</b>
7.1 Testing Plan .....	31
7.2 Testing Strategy .....	31

7.3 Testing Methods .....	32
7.4 Test Cases .....	34
<b>8.0 User Manual .....</b>	<b>35</b>
<b>9.0 Limitations and Future Enhancements .....</b>	<b>57</b>
9.1 Limitations .....	57
9.2 Future Enhancements .....	57
<b>10.0 Conclusion and Discussion .....</b>	<b>58</b>
References .....	59

## **Abstract**

The project this team is working on highlights the problem the current education system is facing and how they can be solved as well as how the systems can be enhanced for further development of esteemed education the country is providing.

The project we have brought is the solution for this new normal we are living right now. As we haven't faced a situation like this before, the pandemic situation, it directly affected our education system. But the online learning was the solution for it but then what about the examination. It is difficult to manage everything to conduct an examination online.

Observing everything about the present system that students and faculties have to use multiple platforms. We have gathered everything to one platform which is safe and secured. The threat of cheating in examinations has been abandoned so faculty can assure that students are honest with their answers.

## **LIST OF FIGURES**

<b>Name</b>	<b>Page</b>
Iterative Waterfall Method	4
Project Scheduling Graph	6
Use Case Diagram	9
Database Models	13
Class Diagram	18
Sequence Diagram	19
Output of Online Examination System	35

## **LIST OF TABLES**

<b>Name</b>	<b>Page</b>
Roles and Responsibilities	6
Test cases	34

# **1. INTRODUCTION**

## **1.1 PROJECT DETAILS**

By this system we will provide an **Secured Online Exam System** through which universities can conduct online exams on web-enabled devices like laptops and desktop computers. In the System there are 3 different roles. Organization admin who register organization with this system and add faculties and students. Faculty who create exams and specific students and last students who will give the examination.

## **1.2 PURPOSE**

The purpose of the online examination system is to test the subject knowledge of the students. Once a candidate starts with the online exam, he/she would not be allowed to access any extra tab or browsing window other than the one through which he/she is appearing for the exam. Once a candidate starts examination, the candidate will be automatically added to the Exam Room, Where faculty can track student activities.

## **1.3 SCOPE**

We need an online examination system to ensure examination continuity amid any present and unforeseen disruptions, such as the one caused by COVID-19. Traditional education has suffered immensely because of the ongoing pandemic. The only way universities can sail through such times is to do away with the pen-and-paper mode of examination and adopt an online examination system. This ensures seamless continuity of academic sessions, widening the scope of an online examination system. Current social distancing norms have resulted in adopting new technology for the secure online exams process. Security during online exams is one of the critical success factors for management of academic exams. Exam security means taking measures which ensure that the test is conducted in a fair manner. There should be no scope of cheating by the students while they give the online exam. It also helps to improve the brand image and reputation of the college.

## **1.4 OBJECTIVE**

- User Friendly System
- Scalable Platform
- More Secure
- Saves Cost and Time
- Anti cheating environment
- Reduce administrative burden

## **1.5 TECHNOLOGY AND LITERATURE REVIEW**

- **React** : ReactJS is just simpler to grasp right away. The component-based approach, well-defined lifecycle, and use of just plain JavaScript make React very simple to learn, build a professional web (and mobile applications), and support it. React uses a special syntax called JSX which allows you to mix HTML with JavaScript.
- **Node.js** : Node.js is a server-side JavaScript run-time environment, and back-end frameworks run within it. Popular ones include Express.js (or simply Express) for HTTP servers and Socket.IO for WebSocket servers.
- **Electron** : Electron helps us develop cross-platform applications by using existing web-technologies. Electron is a JavaScript-based framework.
- **Express** : The express framework is the most common framework and helps in fast-tracking development of server-based applications.
- **MongoDB** : The document data model is a powerful way to store and retrieve data that allows developers to move fast.

## **2. PROJECT MANAGEMENT**

### **2.1 FEASIBILITY STUDY**

The feasibility of software can be tested in four dimensions:

1. Technology- Is a project technically feasible? Are the tools available to develop it?
2. Finance- Is it financially feasible? Does it have too much cost of development?
3. Time- Will it take too much time to complete? We have planned each phase and it seems to be in control and within time so no extra time cost will be added.
4. Resources- Do we have sufficient resources to succeed?

#### **2.1.1 Technical Feasibility**

In technical feasibility, we study all technical issues regarding the proposed system. It is mainly concerned with the specifications of the equipment and the software, which successfully satisfies the end-user's requirement. The technical needs of the system may vary accordingly but include:

- The feasibility to produce outputs in a given time.
- One must have good internet connectivity.
- Response time under certain conditions.
- Ability to process a certain volume of the transaction at a particular speed.
- Facility to communicate data.

#### **2.1.2 Time Schedule Feasibility**

The complexity of the software used to develop this project needs technical prowess but that can be managed in the allocated time. Tight schedule always helps us to learn in a short period of time. So, respecting the tight schedule in considering the fixed objectives of the project, it is expected to be a feasible product regarding the schedule concern.

#### **2.1.3 Operational Feasibility**

Operation feasibility deals with the acceptance of the users and their willingness to use the system. The application of education in virtual reality is helpful in current situations. The use of technology in delivery of education is increasing and such an application will be of great use for the users. The users of this environment are all the students who have a difficulty in understanding the concepts.

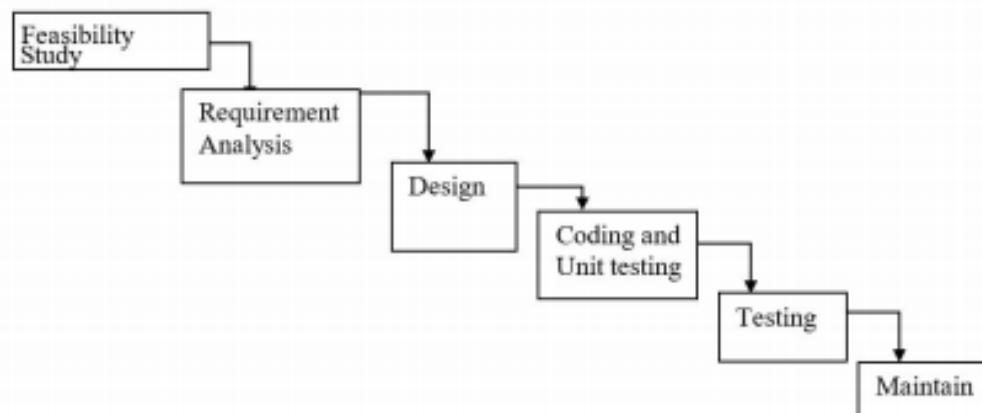
### **2.1.4 Implementation Feasibility**

Implementation feasibility is concerned with specifying external resources and software that will successfully satisfy the requirements. This system is built in virtual technology as an Oculus Application. As more and more virtual reality applications are available for different use. so the system is feasible for implementing.

## **2.2 PROJECT PLANNING**

### **2.2.1 Project Development approach and justification.**

#### **Iterative Waterfall Model**



**Fig. Iterative Waterfall model**

1. Feasibility Study: Doing research about the technology and other factors that affect the project development.
2. Requirement Analysis: Gathering the resources required for the developing the project and the estimate of the process of moving forward with the application development.
3. Design: Make the database architecture and design the GUI of the application.
4. Coding and Unit Testing: Write the code for different functionalities and test them individually and solve the bugs if present.
5. Testing: Integrating the whole application and doing various tests on it to catch any errors and bugs.
6. Maintain: After releasing the application for use to other users give required maintenance.

### **2.2.2 Project Plan**

In managing any project the whole plan of the project is made before its actual implementation. The plan of the project helps the team to work as per the schedule and helps to successfully complete the project.

To plan a project the main requirements that are calculated are cost, duration, effort, scheduling, manpower, resource allocation, risk management etc. The plan of our project is as follows:

1. Gather the definition.
2. Check whether the definition is feasible or not in the given deadline.
3. Requirement gathering.
4. Analysis on gathered requirements.
5. Designing.
6. Coding and Unit Testing.
7. Integration and System Testing.
8. Deployment

### **2.2.3 Milestones and Deliverables**

Management needs information. As software is intangible, this information can only be provided as documents that describe the state of the software being developed. Without this information, it is impossible to judge progress and cost estimates and schedules cannot be updated. When planning a project series of milestones are established

#### **Milestones:**

- Milestone is an end-point of the software process activity.
- At each milestone there should be formal output, such as a report, that can be represented to the management. The weekly report is submitted to the project guide, which includes a day to day work report.
- Milestone represents the end of the distinct, logical stage in the project.

#### **Deliverables:**

Deliverables is a project report that is delivered to the administrator of the project.

### **2.2.4 Roles & Responsibilities**

## PROJECT MANAGEMENT

Name	Analysis	Designing	Frontend	Backend	Testing	Documentation
Harsh Mahyavanshi (IT067)	✓	✓		✓	✓	✓
Pranay Makwana (IT069)	✓	✓	✓		✓	✓

### 2.3 PROJECT SCHEDULING

	1 Week	2 Week	3 Week	4 Week	5 Week	6 Week	7 Week	8 Week	9 Week	10 Week	11 Week
Feasibility study											
Requirements Gathering											
SRS, Use Case, Wireframe/GUI design											
Sequence Diagram, Class Diagram, MVC DB design											
Component Diagram, Deployment Diagram											
Coding, Unit Testing, Implementation											
Integration Testing, System Testing											
Demonstration											
Documentation: Report											

### **3. SYSTEM REQUIREMENTS STUDY**

#### **3.1 STUDY OF CURRENT SYSTEM**

The current applications contain some of these features. They are exploratory in nature. They are provided to the users as per the demand. Students have used such applications and benefited from it.

#### **3.2 PROBLEMS AND WEAKNESSES OF CURRENT SYSTEM**

There are some websites who conduct online examinations but not sufficient to conduct university examinations. Alternatively the system we acquire is that we have to join a meeting app and then attendance is taken. After everyone is present, students have to open the classroom and open a link for the MCQ section. Then after submitting everyone will raise their hands in the meet and faculty will check if everyone has submitted the quiz successfully. Then the students have to wait until the PDF of the Question paper is uploaded to the classroom. Then the student can start the writing section. After that they need to scan the answer sheet and upload it to the classroom again. And also it's not feasible to say that the answers written by the students are honest.

#### **3.3 USER CHARACTERISTICS**

**Admin :** We will provide a website through which University can register themselves and while registration they need to provide university details and documents for verification. After verifying documents we can approve their request and provide user id and password through Email. After registration they have to download an application and users can login as Organization Admins using provided user id and password. After login they can add other user admin as well.

**Faculty :** After adding teachers now teachers can add more than one student for examination using Excel files. In excel file you need to add name, student id, student email id etc. Teachers can create an exam using the create an exam option. In that they need to provide a google form link for MCQ type questions and need to upload a pdf file for the Writing Section.

**Student :** When students are added to the system, students get email of user id and password using that student can login into the system. Now when the teacher creates an exam student can see an exam and be able to attend an examination

### **3.4 HARDWARE AND SOFTWARE REQUIREMENTS**

The minimum configuration requires Windows 3.1 and about 2MB of hard disk space. Both performance and versatility are enhanced with more modern hardware. The recommended minimum hardware configuration for the Student Program is a 33 MHz 486 processor with a 1024x768 1MB video display. The recommended minimum hardware for the Teacher Program includes a 100 MHz 486 or 75 MHz Pentium, a 1024x768 2MB video display.

### **3.5 CONSTRAINTS**

#### **3.5.1 Higher Language Order Constraints**

The application requires the front end to be interactive.

#### **3.5.2 Reliability Requirements**

The application must adhere to the reliability requirements as needed and should run smoothly on device.

#### **3.5.3 Safety and Security Consideration**

The application does not access any feature of the system which may cause it to compromise on the user's security or personal information.

#### **3.5.4 Editing Constraint**

Users cannot copy or paste other codes, thus cheating can be prevented.

### **3.6 ASSUMPTION AND DEPENDENCIES**

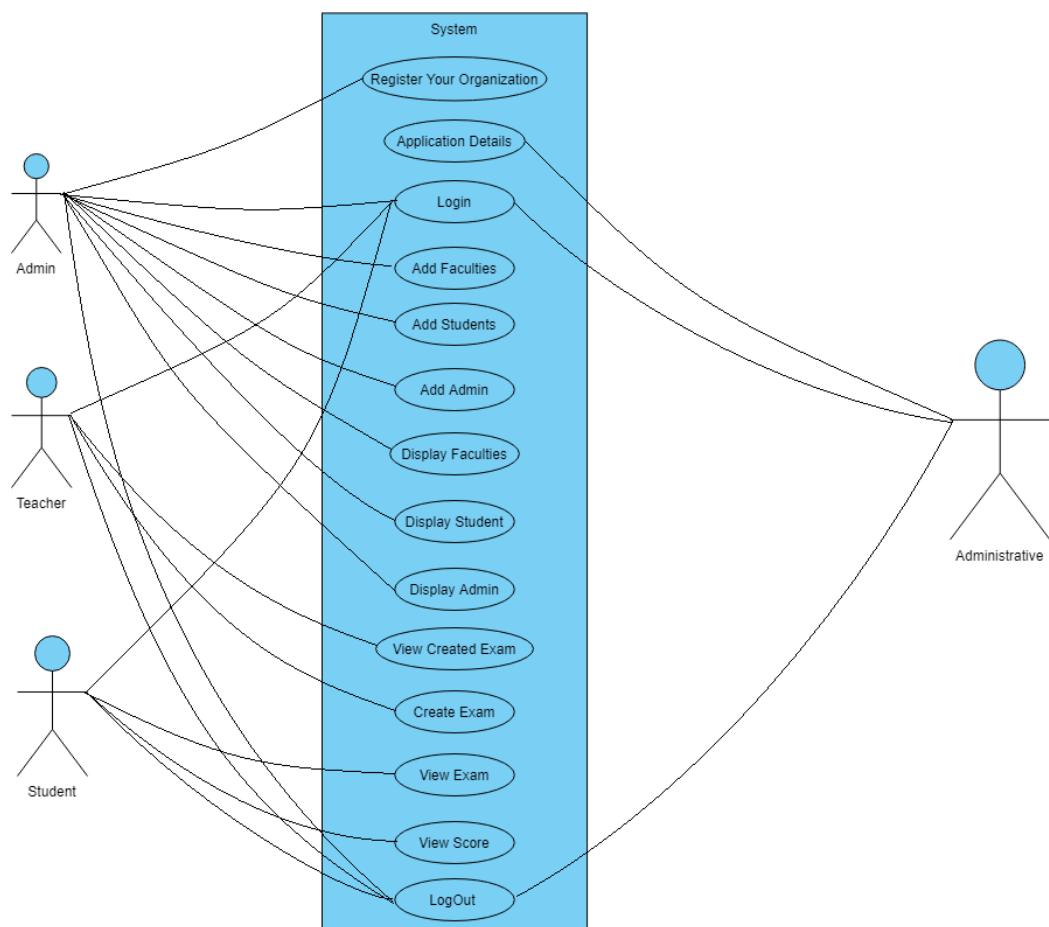
We assume that the clients will have better internet connection. In general it has been assumed that the user has complete knowledge of the system that means the user is not a naïve user. Any data entered by him/her will be valid. To make the software as user friendly as possible but at the same time keeping in mind user requirements.

- Server OS should be Windows 7.
- Client PC should be Windows 7. with the latest service pack.

## 4. SYSTEM ANALYSIS

### 4.1 REQUIREMENTS OF NEW SYSTEM

#### 4.1.1 User Requirements



### **4.1.2 System Requirements**

#### **4.1.2.1) Student:**

**R1:** Login

**Input:** Provide Username and Password

**Output:** Validate and Login

**R2:** View Exam

**Input:** View Exam

**Output:** Assignment task to be performed and test-cases to be run

**R3:** MCQ Section

**Input:** Student gives MCQ exam.

**Output:** Google form will take the response.

**R4:** Upload PDF

**Input:** Student uploads a pdf

**Output:** Google form will take the response.

**R5:** Submit the exam

**Input:** Submit the exam

**Output:** Exam is submitted.

**R6:** View Result

**Input:** Check result for examination.

**Output:** Marks of exam.

**R7:** Logout

**Input:** Logout button.

**Output:** Logging out and returning to login screen.

#### **4.1.2.2) Faculty:**

**R1:** Login

**Input:** Provide Username and Password

**Output:** Validate and Login

**R2:** Create Exam

**Input:** Faculty provides google link for MCQ and question paper details.

**Output:** Students can view the exam in there login

**R3:** Create Student List

**Input:** Provide student csv file as input

**Output:** Create a list of students for a particular semester.

**R4:** Upload Result:

**Input:** Marks of subject.

**Output:** Students can see their marks.

**R5:** View Students

**Input:** Display Students.

**Output:** Status of submission of exam of Student.

**R6:** Logout

**Input:** Logout button.

**Output:** Logging out and returning to login screen.

### 4.1.2.3) Admin:

**R1:** Register

**Input:** Register their organisation.

**Output:** A confirmation mail is sent on the respective email.

**R2:** Login

**Input:** Provide Username and Password

**Output:** Validate and Login

**R3:** Add faculty

**Input:** Adds faculty list.

**Output:** Faculty can login.

**R4:** View faculty

**Input:** Display faculty.

**Output:** See the list of faculty.

**R5:** View Students

**Input:** Display Students.

**Output:** Status of submission of exam of Student.

**R6:** Logout

**Input:** Logout button.

**Output:** Logging out and returning to login screen.

### **4.1.3 Non-Functional Requirements :**

#### **Performance**

The system must be interactive and the delays involved must be less .So in every action-response of the system, there are no immediate delays. In case of opening windows forms, of popping error messages and saving the settings or sessions there is delay much below 2 seconds, In case of opening databases, sorting questions and evaluation there are no delays and the operation is performed in less than 2 seconds for opening ,sorting, computing. Also when connecting to the server the delay is based on editing on the distance of the 2 systems and the configuration between them so there is high probability that there will be or not a successful connection in less than 20 seconds for sake of good communication.

#### **Safety**

Information transmission should be securely transmitted to the server without any changes in information.

#### **Reliability**

Proper exception handling is implemented to prevent unexpected behaviour.Such exceptions are reverted back with error codes mentioned in the previous section.

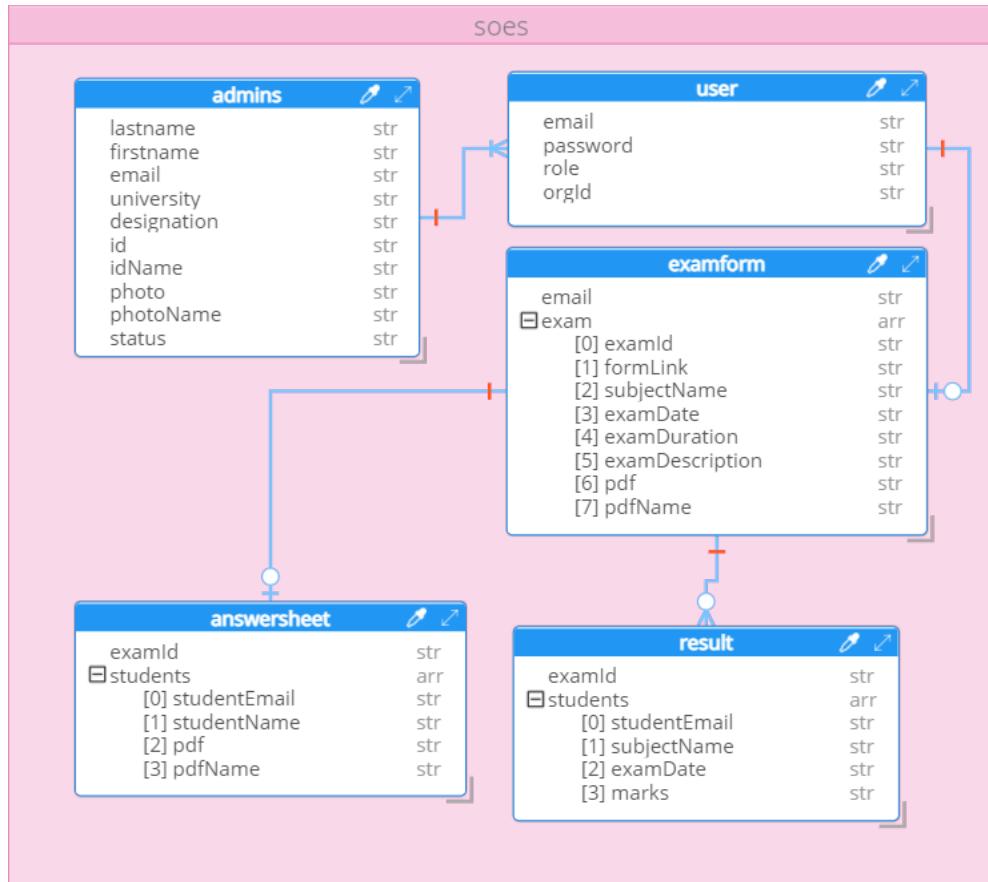
## **4.2 FEATURES OF NEW SYSTEM**

In the new system, the admin can add faculties, students and other admins of their organisations. Then the faculties can create exams ie MCQs as well as Written examinations and view that exam also check the link of google form and the pdf of the question paper they have uploaded. Also they can check the pending responses of students who have given the examination and upload the result for specific examination. The student can start the exam by login as student and as soon as they start examination they will be joined in virtual examination room and faculty can see their faces live. The exam will open in fullscreen mode and no switching tabs are allowed by any shortcut key or from taskbar. It cannot be closed until the exam has been finished. And they can also view their result and if there is any changes in marks faculty will reupload the marks and students can see the updated marks in view result.

## 4.3 DATABASE

### 4.3.1 MongoDB Database model

**Model name:** soes



**Fig 4.3.1 SOES model**

### 4.3.2 Collections

#### 1. Admins

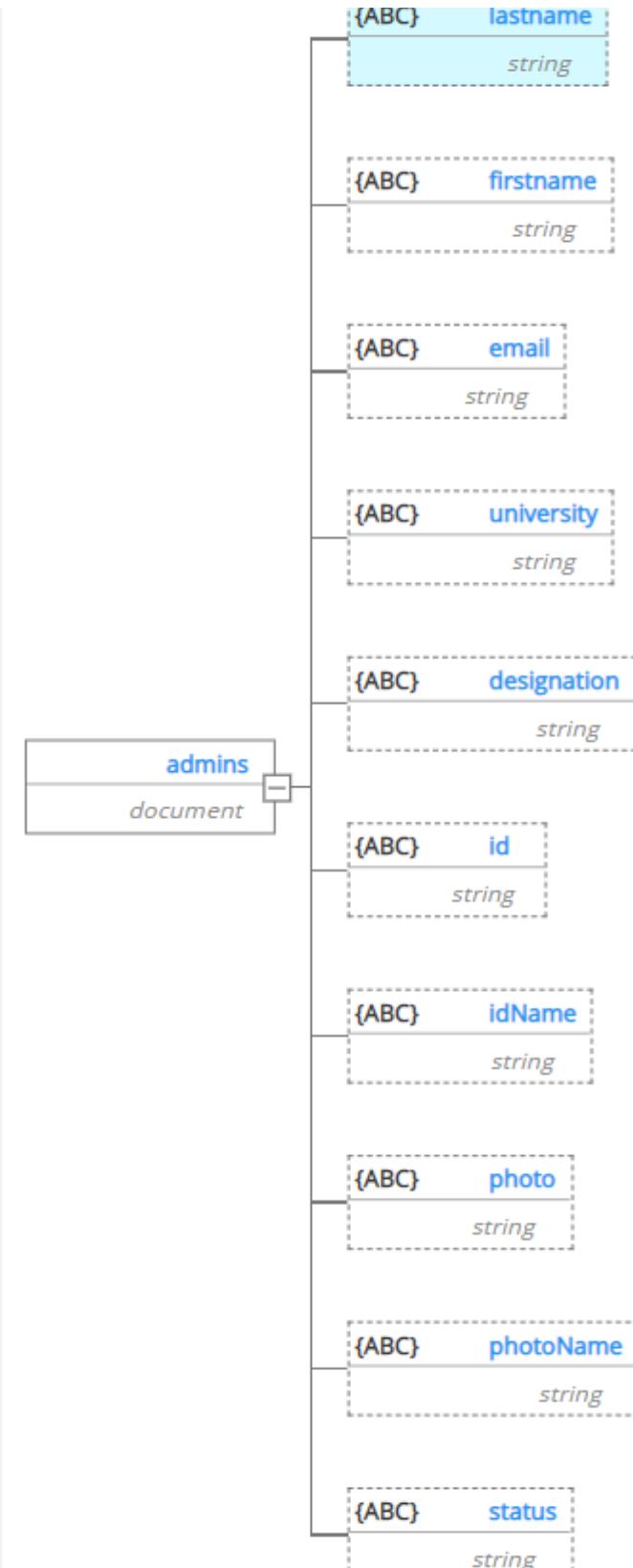
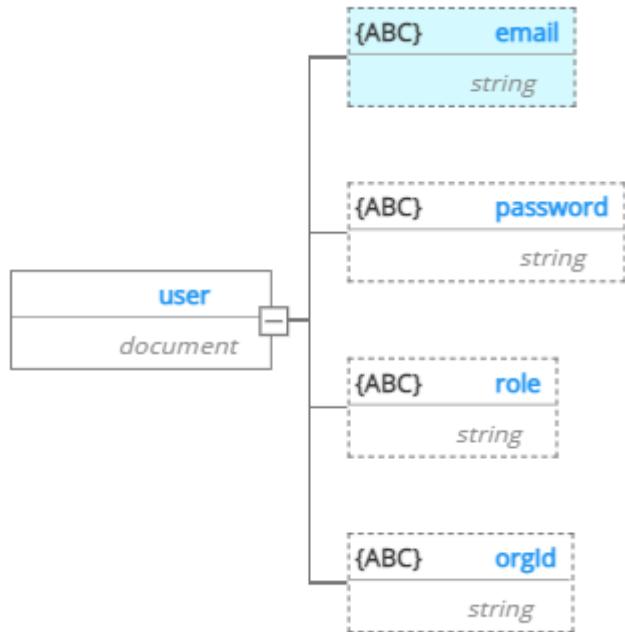
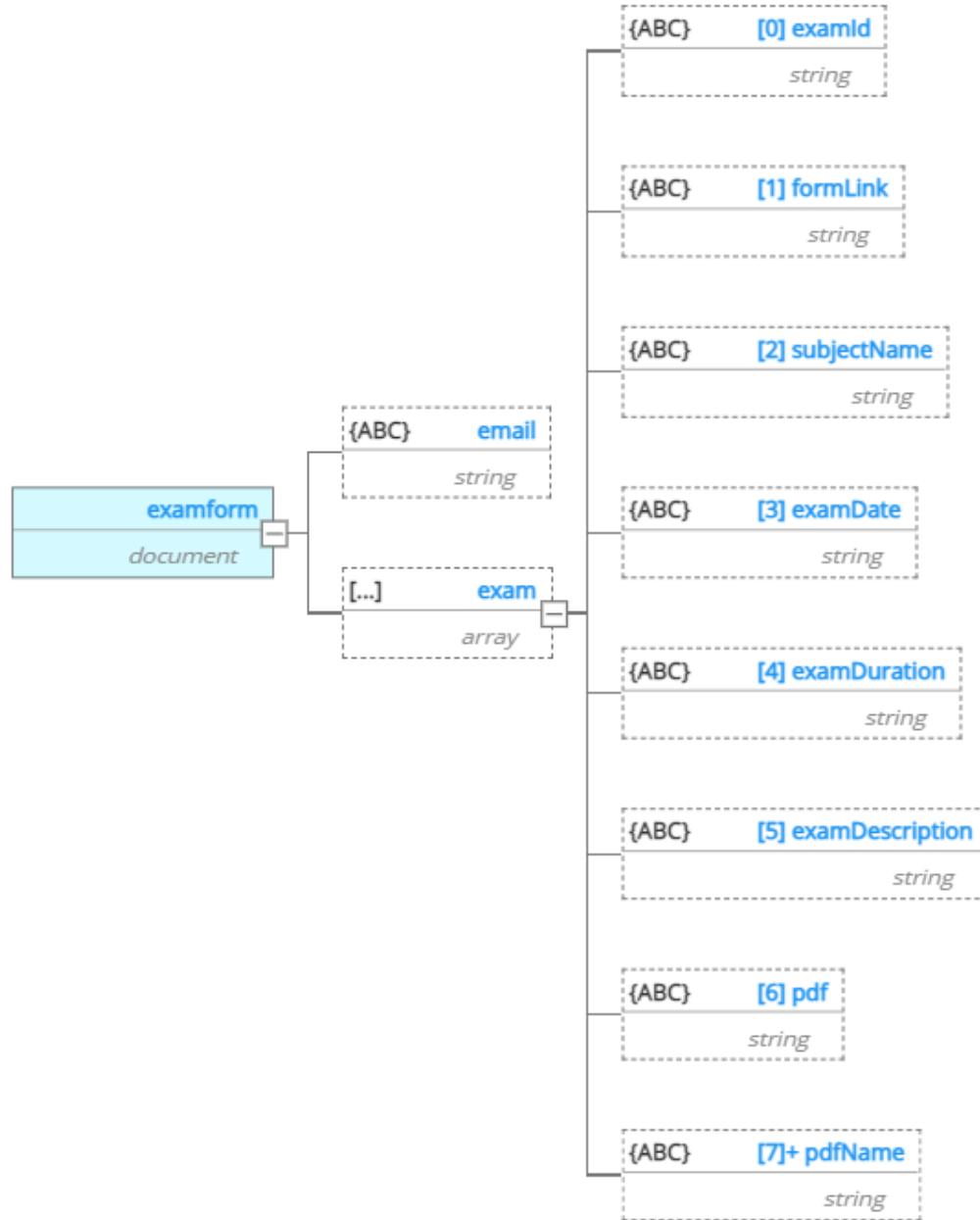


Fig 4.3.2.1 Admins collection

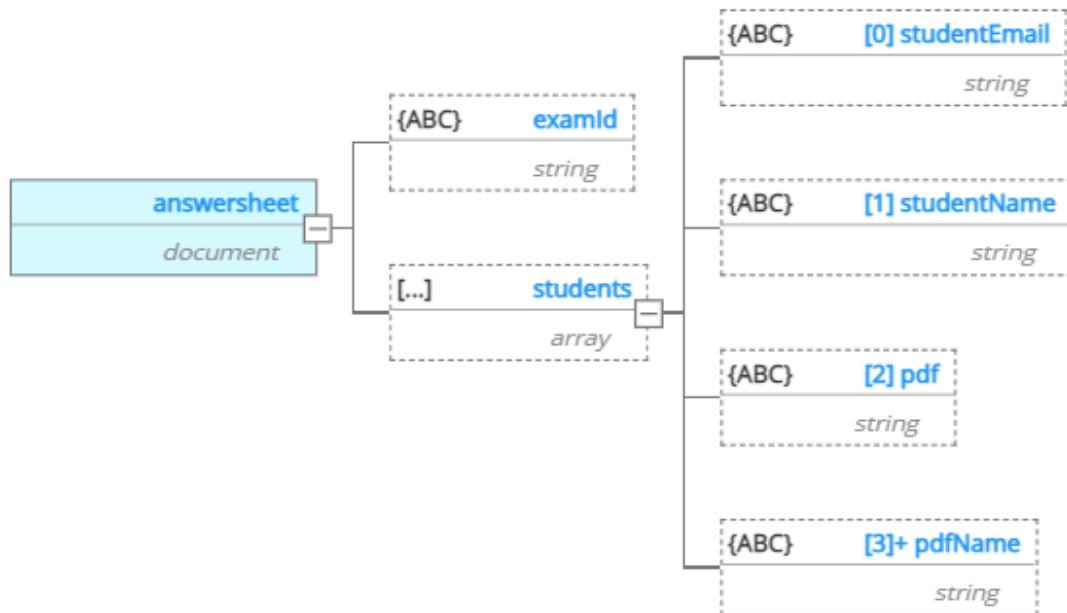
**2. User :****Fig 4.3.2.2 Users collection**

### 3. Examform :



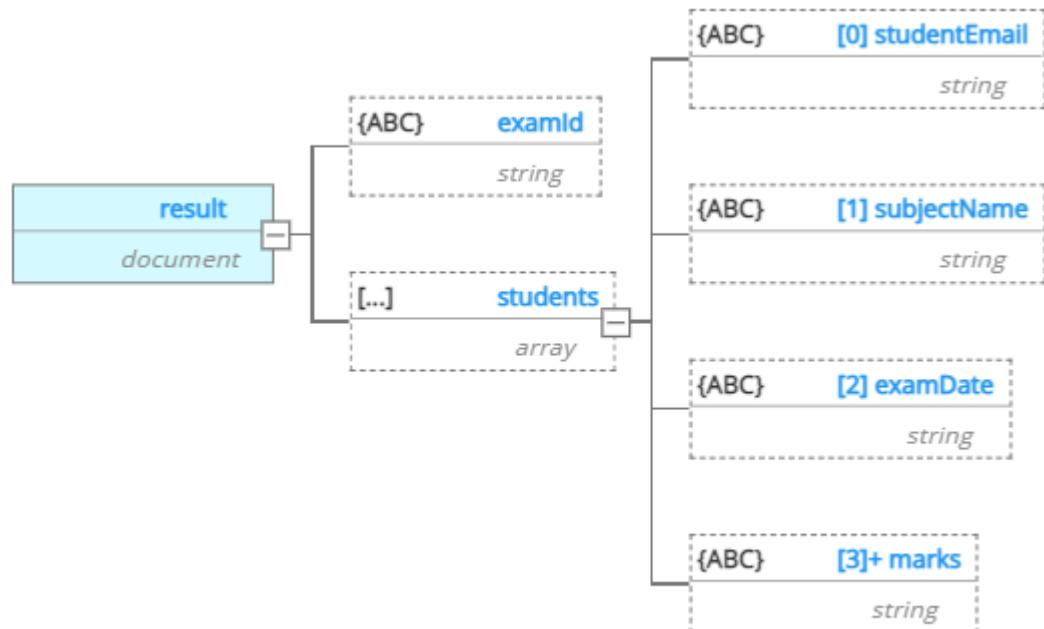
**Fig 4.3.2.3 Examforms collection**

#### 4. Answersheet



**Fig 4.3.2.4 Answersheets collection**

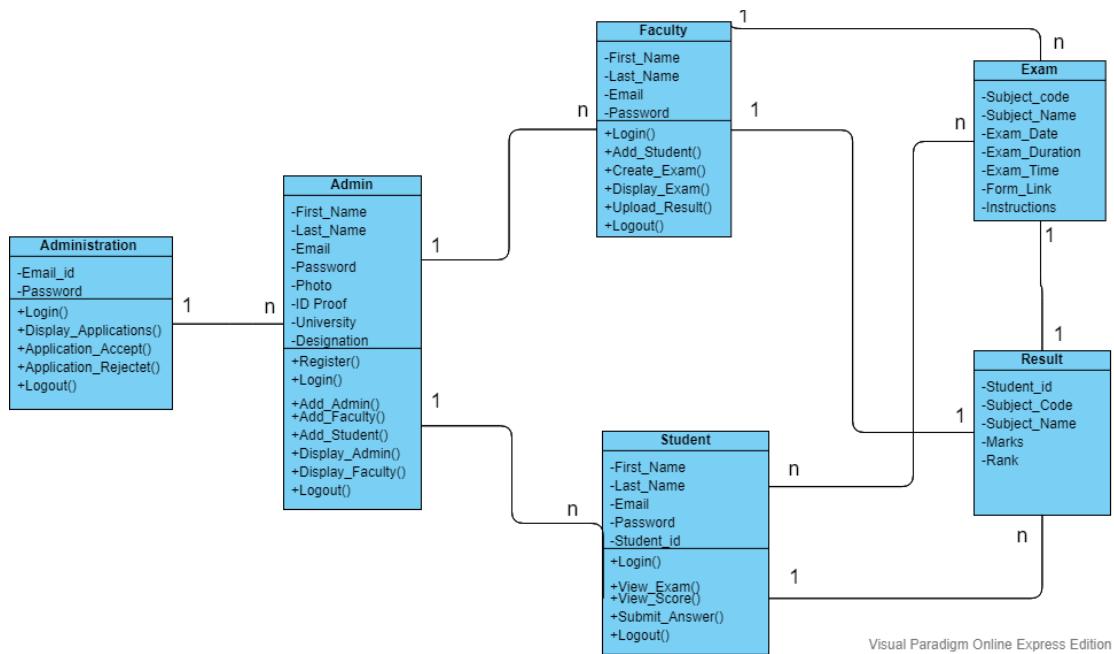
#### 5. Result



**Fig 4.3.2.5 Results collection**

## 5. SYSTEM DESIGN

### 5.1 CLASS DIAGRAM

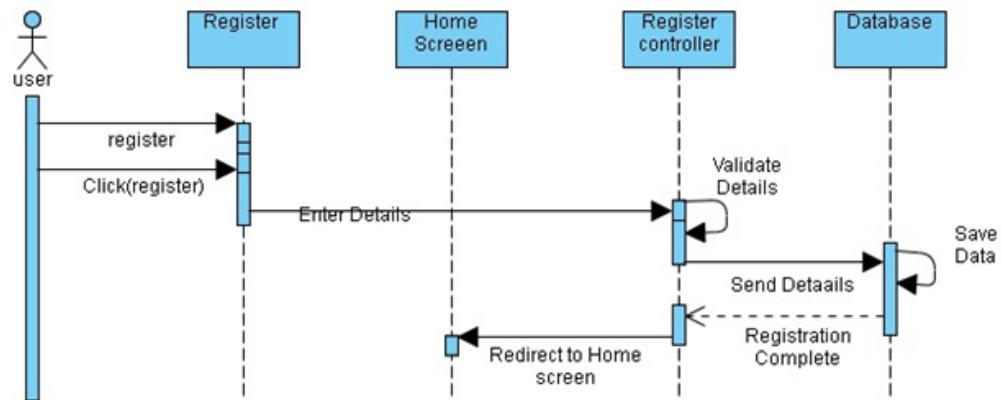


Visual Paradigm Online Express Edition

## 5.3 SEQUENCE DIAGRAM

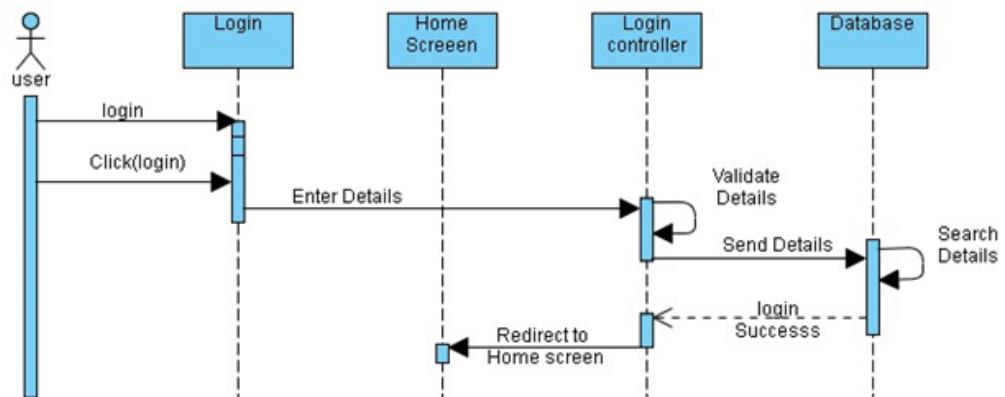
### 5.3.1 ADMIN SEQUENCE DIAGRAM

#### 1. Registration and Verification



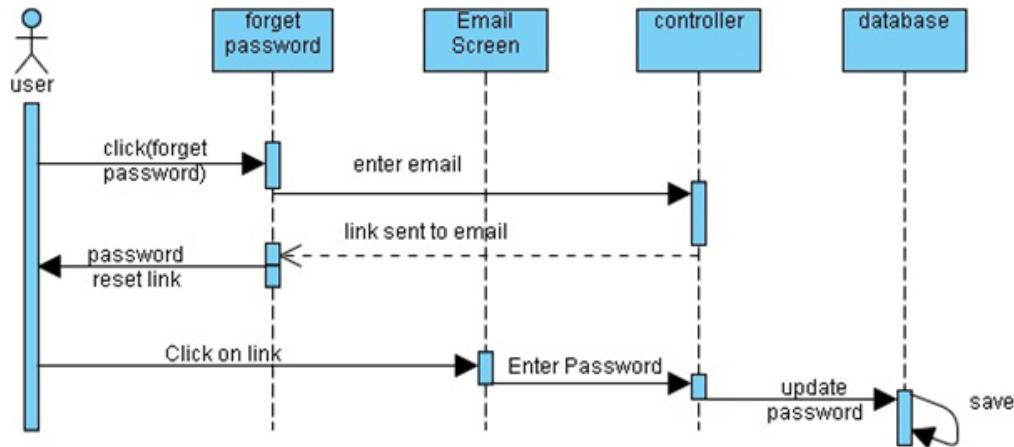
**Fig 5.3.1.1 Sequence Diagram for Registration and Verification**

#### 2. LogIn



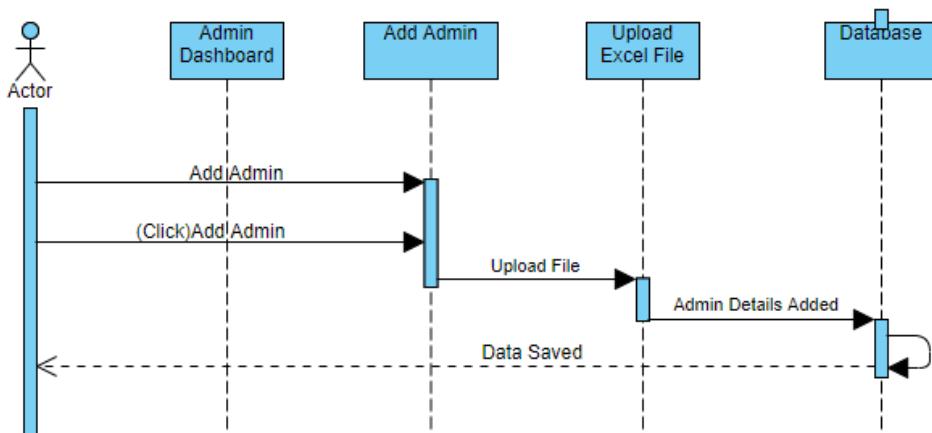
**Fig 5.3.1.2 Sequence Diagram for LogIn**

### 3. Forgot Password



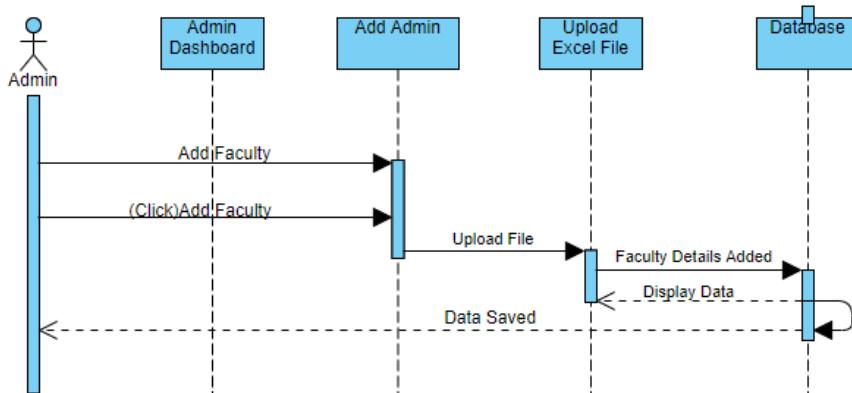
**Fig 5.3.1.3 Sequence Diagram for Forgot Password**

### 4. Add Admin



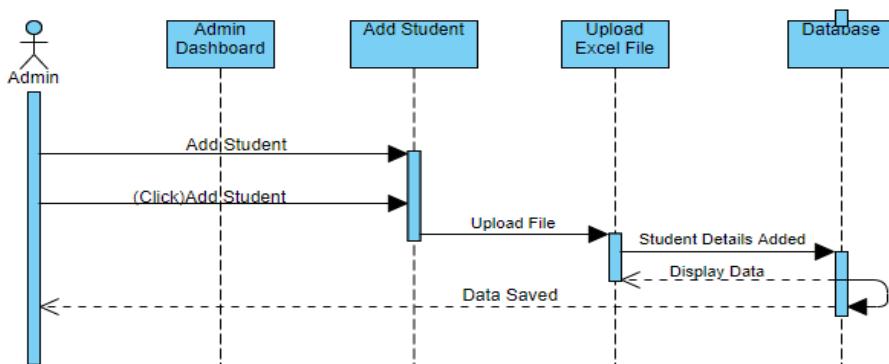
**Fig 5.3.1.4 Sequence Diagram for Add Admin**

## 5. Add Faculty



**Fig 5.3.1.5 Sequence Diagram for Add Faculty**

## 6. Add Student



**Fig 5.3.1.6 Sequence Diagram for Add Student**

## 7. Display Admin

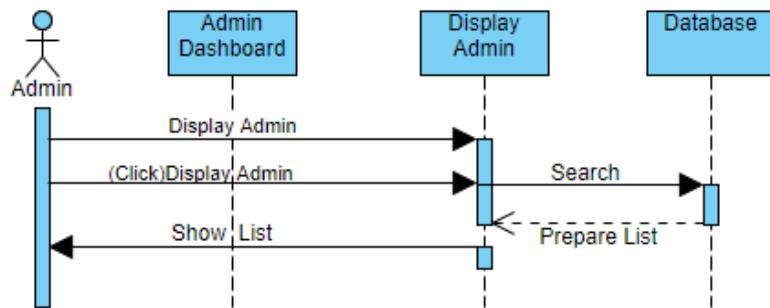


Fig 5.3.1.7 Sequence Diagram for Display Admin

## 8. Display Faculty

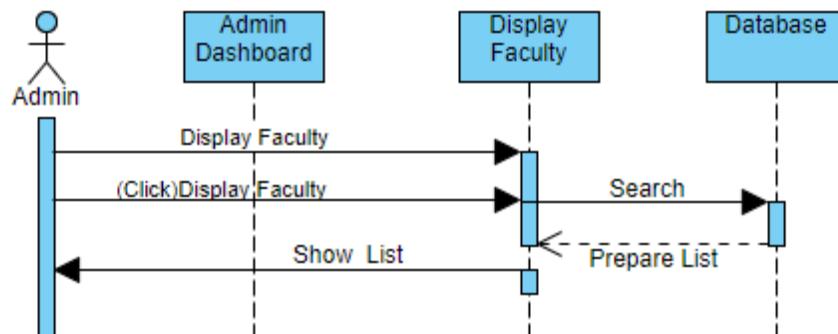
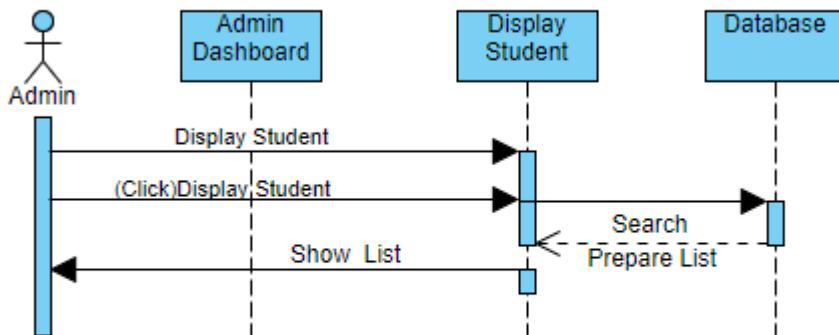


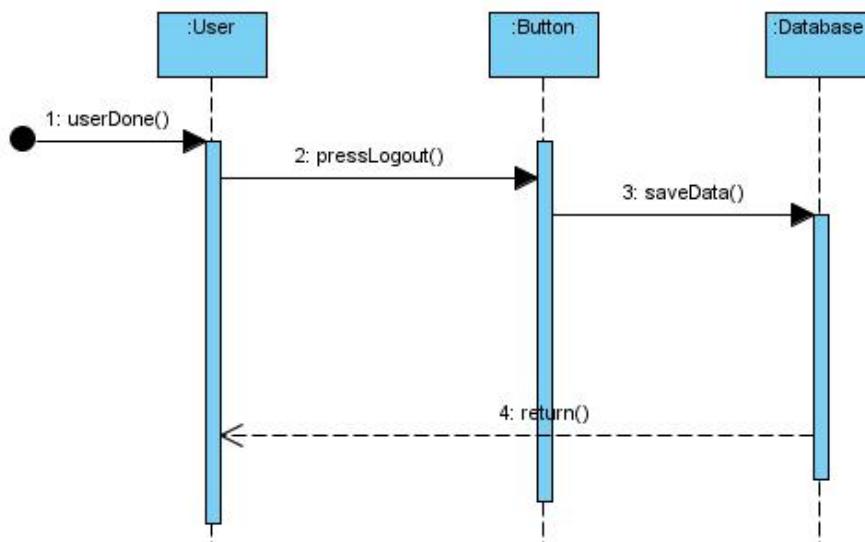
Fig 5.3.1.8 Sequence Diagram for Display Faculty

## 9. Display Student



**Fig 5.3.1.9 Sequence Diagram for Display Student**

## 10. Log Out



**Fig 5.3.1.10 Sequence Diagram for LogOut**

### 5.3.2 FACULTY SEQUENCE DIAGRAM

#### 1. Log In

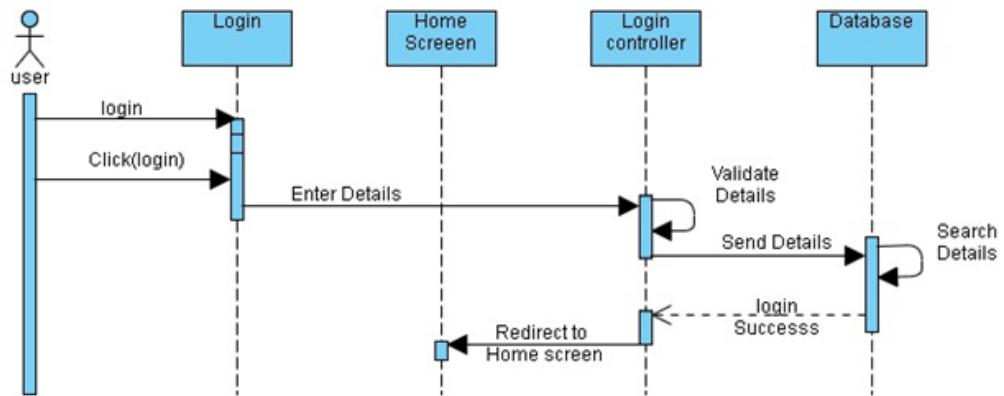


Fig 5.3.2.1 Sequence Diagram for LogIn

#### 2. Create Exam

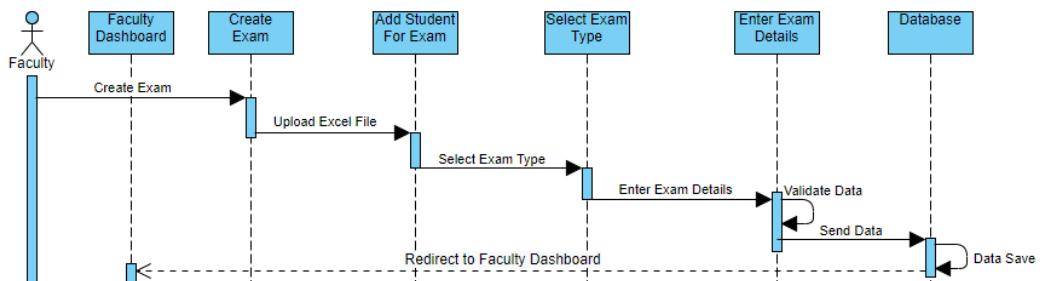


Fig 5.3.2.2 Sequence Diagram for Create Exam

### 3. View Created Exam

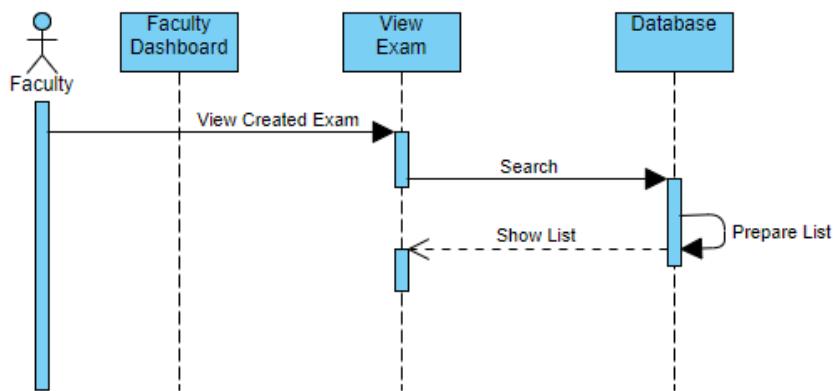


Fig 5.3.2.3 Sequence Diagram for View Created Exam

### 4. Upload Result

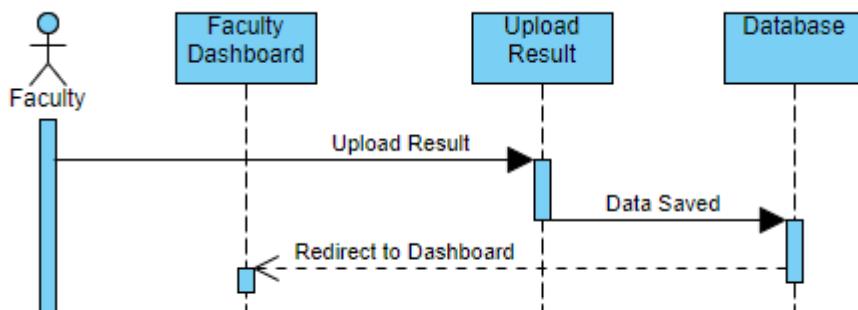
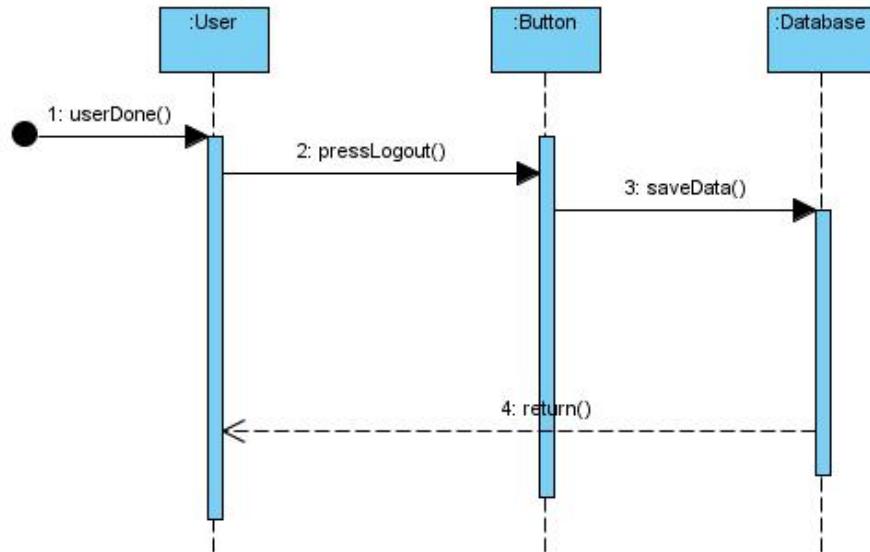


Fig 5.3.2.4 Sequence Diagram for Upload Result

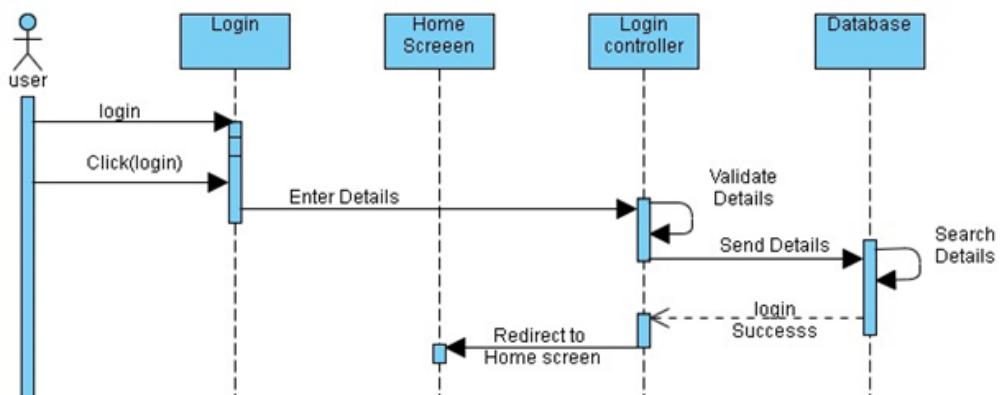
## 5. Log Out



**Fig 5.3.2.5 Sequence Diagram for Log Out**

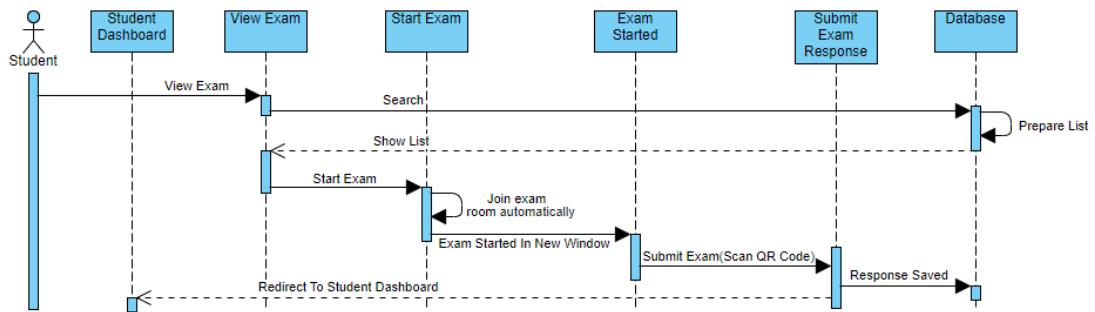
## 5.3.3 STUDENT SEQUENCE DIAGRAM

### 1. Log In



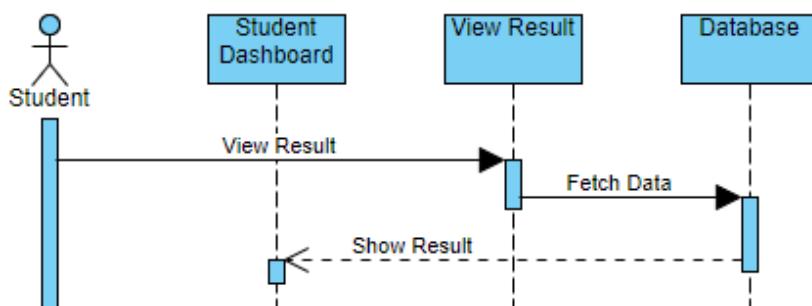
**Fig 5.3.3.1 Sequence Diagram for LogIn**

## 2. View Exam



**Fig 5.3.3.2 Sequence Diagram for View Exam**

## 3. View Result



**Fig 5.3.3.3 Sequence Diagram for View Result**

#### 4. Log Out

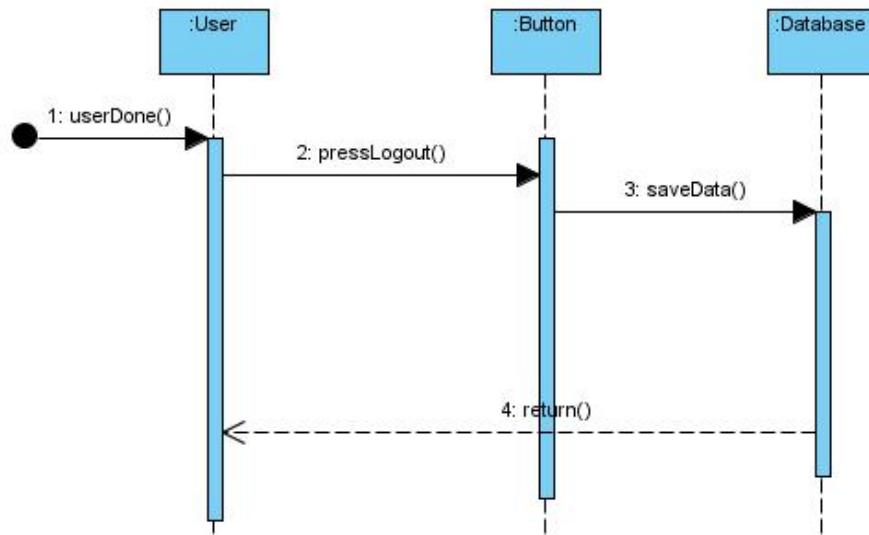


Fig 5.3.3.4 Sequence Diagram for Logout

## 6. IMPLEMENTATION PLANNING

### 6.1 IMPLEMENTATION ENVIRONMENT

#### 6.1.1 Firstly Install Visual Studio Code in your System If not installed.

- Download VS code:  
<https://visualstudio.microsoft.com/downloads/>
- Installation Documentation:  
<https://docs.microsoft.com/en-us/visualstudio/install/install-visual-studio?view=vs-2019>

#### 6.1.2 Install NodeJS and npm in your System If not installed

- Download Nodejs:  
<https://nodejs.org/en/download/>
- Installation Documentation:  
<https://www.guru99.com/download-install-node-js.html>  
[https://www.youtube.com/watch?v=JINE4D0Syqw&ab\\_channel=Telusko](https://www.youtube.com/watch?v=JINE4D0Syqw&ab_channel=Telusko)

#### 6.1.3 Install MongoDB in your System.

- Download MongoDB:  
[https://www.mongodb.com/try/download/community?tck=docs\\_server](https://www.mongodb.com/try/download/community?tck=docs_server)
- Installation Documentation:  
<https://docs.mongodb.com/manual/tutorial/install-mongodb-on-windows/>

### 6.2 MODULES SPECIFICATION

The following modules will be implemented:

- Super Admin Dashboard  
**Description:** Super admin can view pending, accepted and rejected application from University. And takes the action.
- Admin Dashboard  
**Description:** Admin can add faculty, students and other admin to the system.
- Faculty Dashboard  
**Description:** Faculty can create exams and view all created exams. Faculty also view responses of the exam and upload results.
- Student Dashboard  
**Description:** Students can view all exams which are created by faculty and

start giving exams.

### 6.3 Coding Standards

We've followed standard in Visual Studio Code indentation and coding standards for react applications.

### 6.4 Coding Snippet

```
import admin from './admin';
import error from './error';
import dashboard from './dashboard';
import web from './scanner';

class Start extends React.Component {
  render() {
    return (
      <BrowserRouter>
        <Switch>
          <Route exact path="/" component={App} />
          <Route exact path="/admin" component={admin} />
          <Route exact path="/signup" component={signup} />
          <Route exact path="/dashboard" component={dashboard} />
          <Route exact path="/scanner/:email/:id" component={web} />
          <Route exact path="/" component={error} />
        </Switch>
      </BrowserRouter>
    )
  }
}
```

```
import react from 'react';
import { BackTop } from 'antd';
function AppFooter(){

  return(
    <div id="footer" className="container-fluid">
      <div className="footer">
        <div className="logo">
          <i class="fas fa-bolt"></i>
          <a href="/"> Secured Examination System </a>
        </div>
        <div className="copyright"> Copyright © 2021 SOE </div>
        <BackTop>
          <div className="gotop"><i class="fas fa-arrow-circle-up"></i></div>
        </BackTop>
      </div>
    </div>
  );
}

export default AppFooter;
```

## **7. TESTING**

### **7.1 TESTING PLAN**

#### **What is ‘Software Testing’?**

Testing involves operation of a system or application under controlled conditions and evaluating the results. The controlled conditions should include both normal and abnormal conditions. Testing should intentionally attempt to make things go wrong to determine if things happen when they don’t happen when they should. It is oriented to ‘detection’.

#### **The need for Testing:**

No matter how good a programmer is, no application will ever be one hundred percent correct. Testing was important to us in order to ensure that the application works as efficient as possible and conforms to the needs of the system. Testing was carried out throughout the development of the application, not just the application has been developed, as at this stage it took a great deal of effort to fix any bugs or design problems that occurred.

### **7.2 TESTING STRATEGY**

When our application was configured and customized in the system, the test was observed that this configuration or customization does not cause any improper processing or violation. The following care was taken when the application was developed at the local machine. The interface may have something not proper, which can be tested by this checklist:

- Number of input parameters equal to number of arguments?
  - Parameter and argument attributes match?
  - Number of arguments transmitted to called forms equal to number of parameters?
  - Attributes of arguments transmitted to called forms to attributes of parameters?
  - Number of attributes and order of arguments to built-in functions correct?
  - The local data structures for a form are a common source of errors. The following types of errors should be searched for,
  - Improper or inconsistent typing
  - Erroneous initialization or default values
  - Incorrect (misspelled or truncated) variables names
  - Inconsistent data types
  - Underflow, overflow and addressing exception
- 
- As far as unit testing is concerned we did it at the time of coding in an informal but extensive way, so as to reduce the number of problems arising out of incorrect syntax, incorrect variable, function names etc.
  - Close the database connection when not required.

- Care was taken to check for any infinite loop that exists in code before executing the code.

### **7.3 TESTING METHODS**

#### **While Box Testing**

Also known as glass box, structural, clear box and open box testing. A software testing technique whereby explicit knowledge of the internal workings of the item being tested are used to select the test data. Unlike black box testing, white box testing uses specific knowledge of programming code to examine outputs. The test is accurate only if the tester knows what the program is supposed to do, it means that he must be completely aware that for particular input a particular output must be obtained. The main benefit of this type of testing is Tester can see if the program diverges from its intended goal. This test concentrates on the examination of the code rather than the specification. We have included three different forms of white box testing.

#### **Statement Coverage Criterion:**

This is the simplest coverage criterion. We are checking in it that each statement of the program was executed “at least once”.

#### **Branch Coverage Criterion:**

An improvement over statement is **Branch Coverage**. In that we are running a series Of test to ensure that all branches are tested at least once.

#### **Path Coverage Criterion:**

There are many errors which were not detected by statement or branch testing. The reason is that some errors are related to some combination of branches and it may not check in other tests. We are checking in this test if all paths of programs are executed or not.

#### **Black Box Testing**

Black-box and white-box are test design methods. Black-box test design treats the system as a "black-box", so it doesn't explicitly use knowledge of the internal structure. Black-box test design is usually described as focusing on testing functional requirements. Also known as behavioral, functional, opaque-box and closed-box.

Black Box Testing was helpful us to find error such as:

- Interface error
- Incorrect or missing functions.
- Errors in data structures or external database access.
- Performance Errors.

## **Unit Testing**

Unit testing is a method of testing the correctness of a particular module of source code. The idea is to write test cases for every non-trivial function or method in the module so that each test case is separate from the others if possible. The developers mostly do this type of testing. In this method of testing we test all individual components to ensure that they operate correctly. Each component is tested independently without other system components.

## **Integration Testing**

It is the phase of software testing in which individual software modules are combined and tested as a group. It follows unit testing and precedes system testing. The purpose of Integration testing is to verify functional, performance and reliability requirements placed on major design items.

It takes as its input modules that have been checked out by unit testing, groups them in larger aggregates, applies tests defined in an Integration test plan to those aggregates and delivers as its output the integrated system ready for system testing.

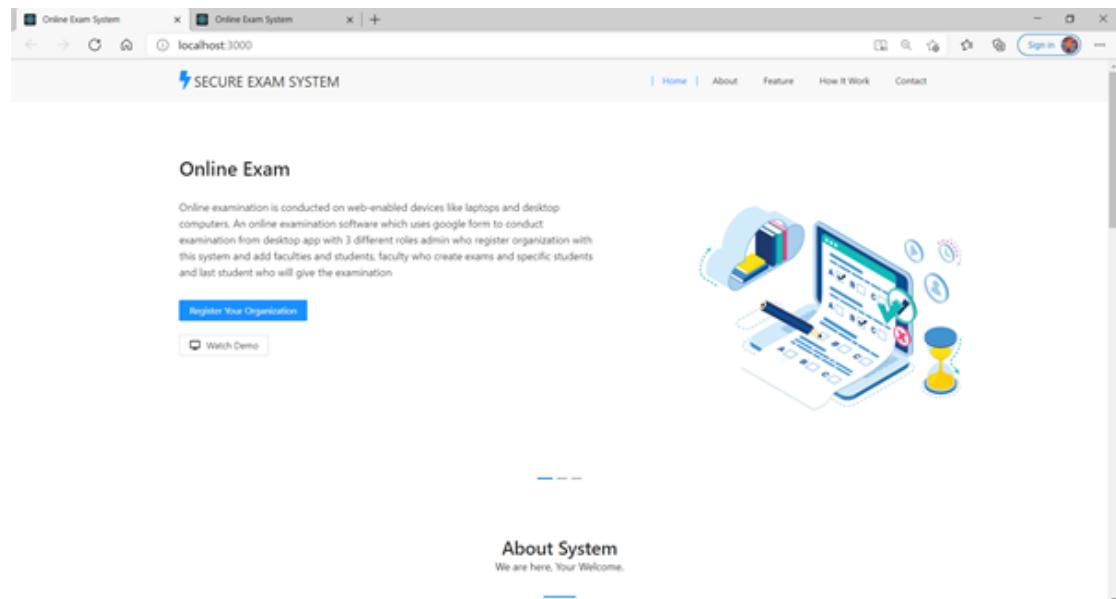
**7.4 TEST CASES**

<b>Test Object Description</b>	<b>Test Condition Input</b>	<b>Expected Output</b>	<b>Result Output</b>	<b>Pass/Fail</b>
Loading of Web Server	Web Server is built and deployed properly	No Errors	Web Server Loads properly	Pass
Rendering of views	The views are optimized	No bugs are noticed to the user in the views	No bugs are noticed to the user in the views	Pass
Selection of GUI	The scripts on GUI are working properly	No Errors	The user can select the buttons and appropriate actions are triggered	Pass
Switching in the view	The movement script is working properly	The user can switch easily on the different section of the view	The user can switch easily on the different section of the view	Pass

## 8. User Manual

### 8.1 Website:

#### 1. Home page:



**Fig 1 Home page**

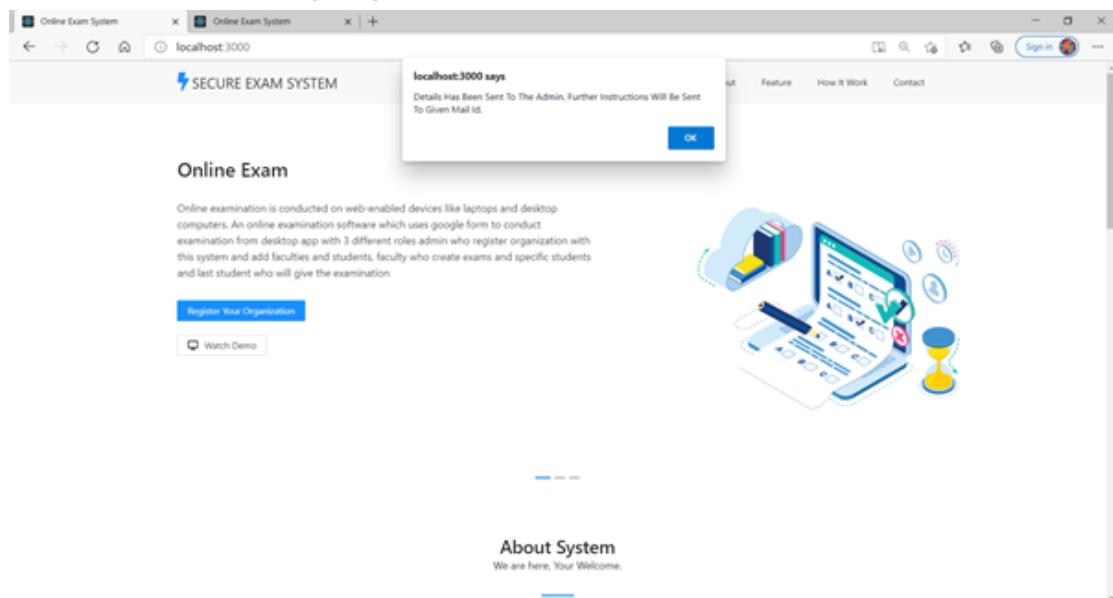
#### 2 Registration page:

##### 2.1 submitting registration page:

The screenshot shows a web browser window titled 'Online Exam System' with the URL 'localhost:3000/signup'. The page is titled 'Register Your Organization' and contains several input fields: 'First Name\*' (Pranay), 'Last Name\*' (Makwana), 'Email Address\*' (pranaymakwana00@gmail.com), 'University\*' (DDU), 'Employee Designation\*' (HOD), 'UPLOAD ID PROOF' (Choose File contact ...alert.PNG), and 'UPLOAD PHOTO' (Choose File got the m...age.PNG). At the bottom is a large blue 'REGISTER' button.

**Fig 2.1 submitting registration page**

## 2.2 After submitting registration form:



**Fig 2.2 after submitting registration page**

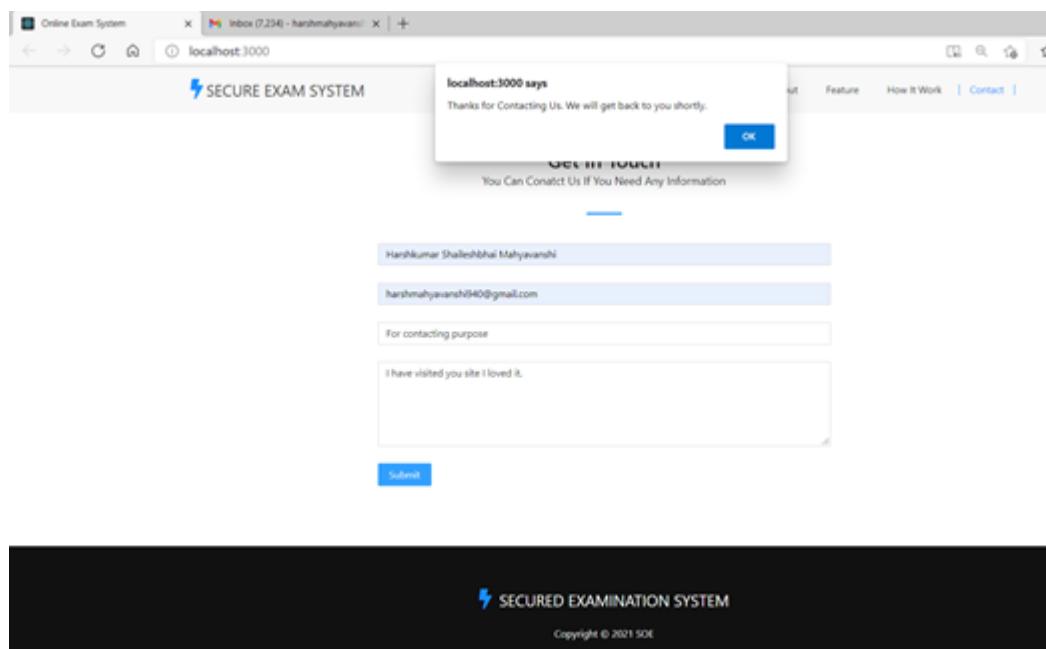
## 3 Contact Us

### 3.1 Get In Touch

A screenshot of a contact form titled "Get In Touch" from the "SECURE EXAM SYSTEM" website. The form asks "You Can Contact Us If You Need Any Information". It has several input fields: a name field containing "Harshkumar Shaileshbhai Mahyavanshi", an email field containing "harshmahyavanshi940@gmail.com", a purpose field containing "For contacting purpose", and a message field containing "I have visited your site I loved it.". A "Submit" button is at the bottom.

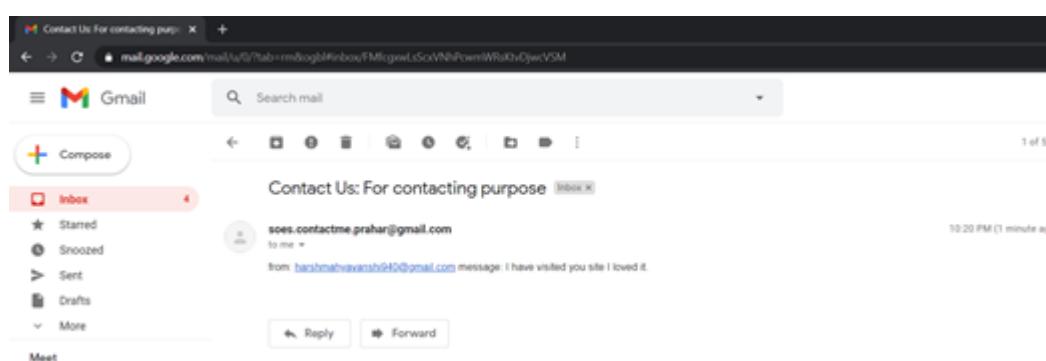
**Fig 3.1 get in touch**

### 3.2 After submitting contact us form



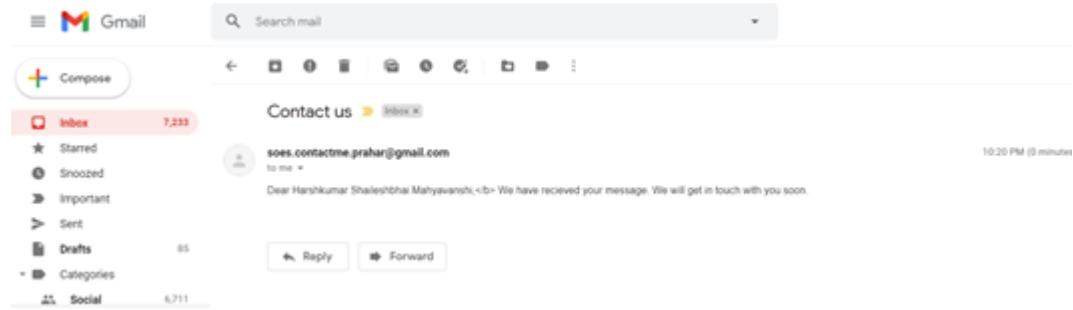
**Fig 3.2 after submitting contact us form**

### 3.3 Message received to website



**Fig 3.3 message received to website**

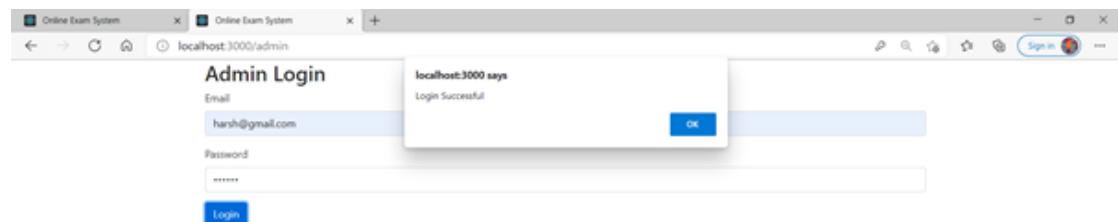
### 3.4 Mail set to client in reply



**Fig 3.4 Mail sent to client in reply**

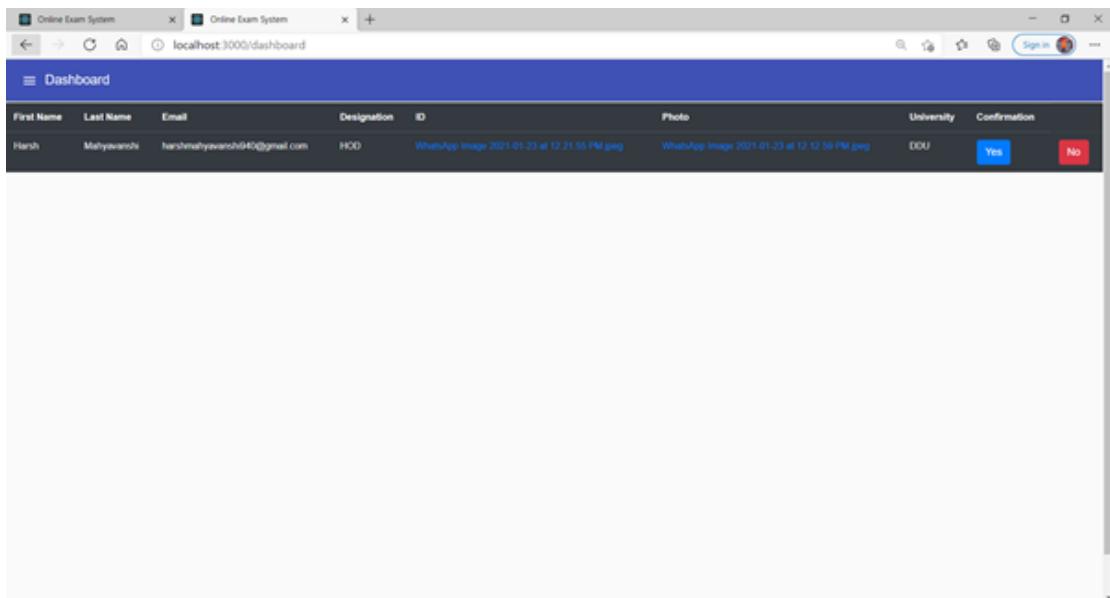
## 4 Super Admin Dashboard

### 4.1 Login



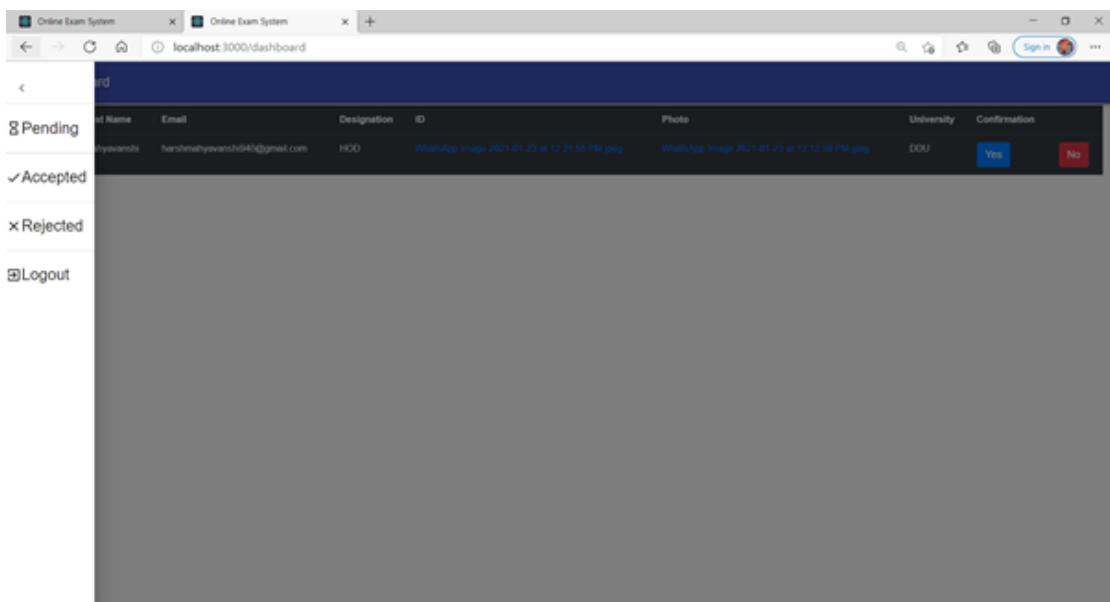
**Fig 4.1 Login**

## 4.2 Dashboard (By default pending requests are shown)



**Fig 4.2 Dashboard**

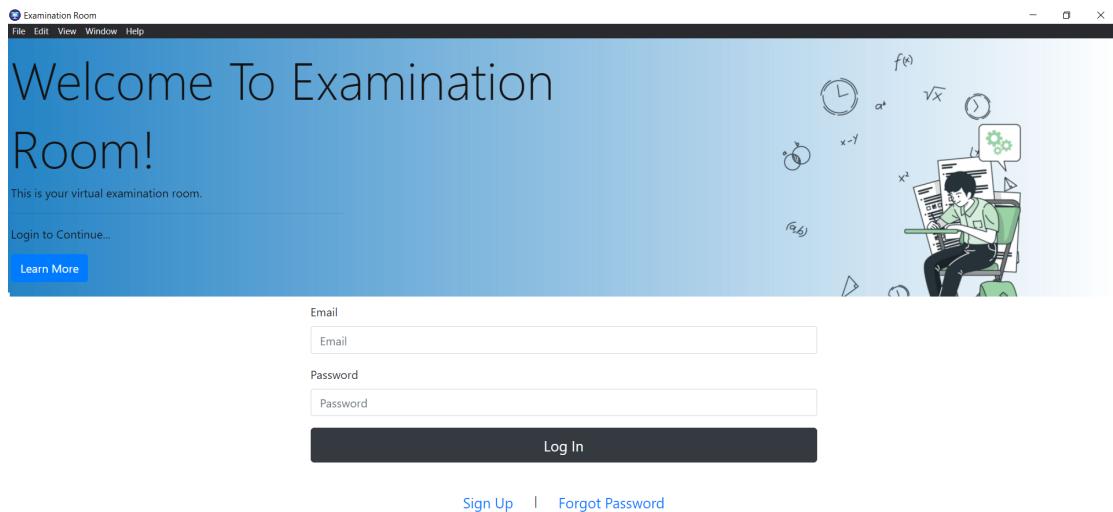
## 4.3 Menu



**Fig 4.3 Menu**

## 8.2 Desktop App:

### 1. common login panel:

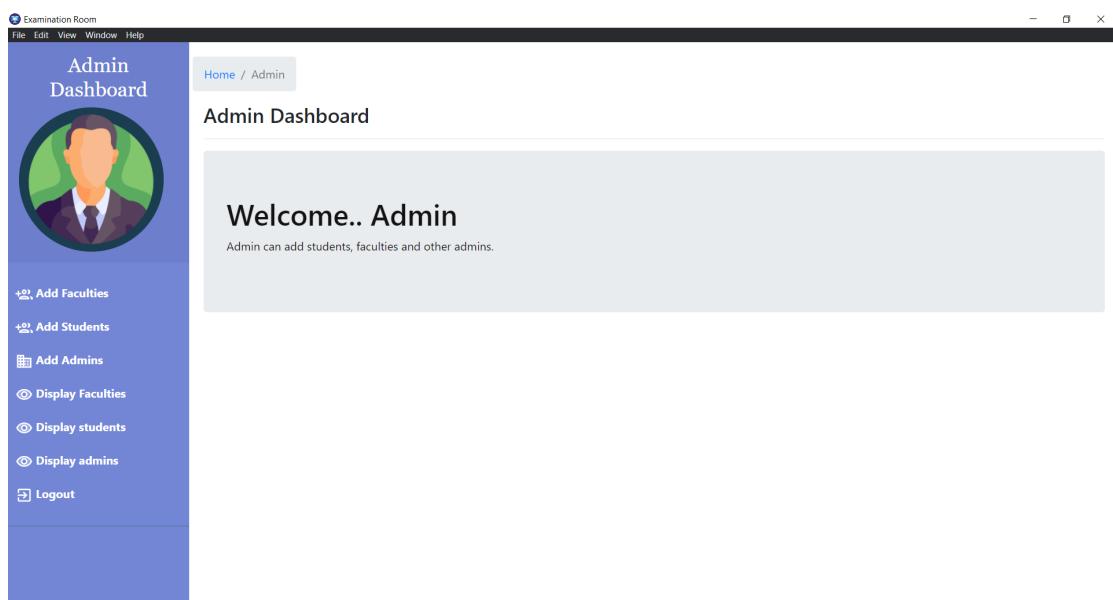


---

**Fig 1 common login panel**

## 2 Admin

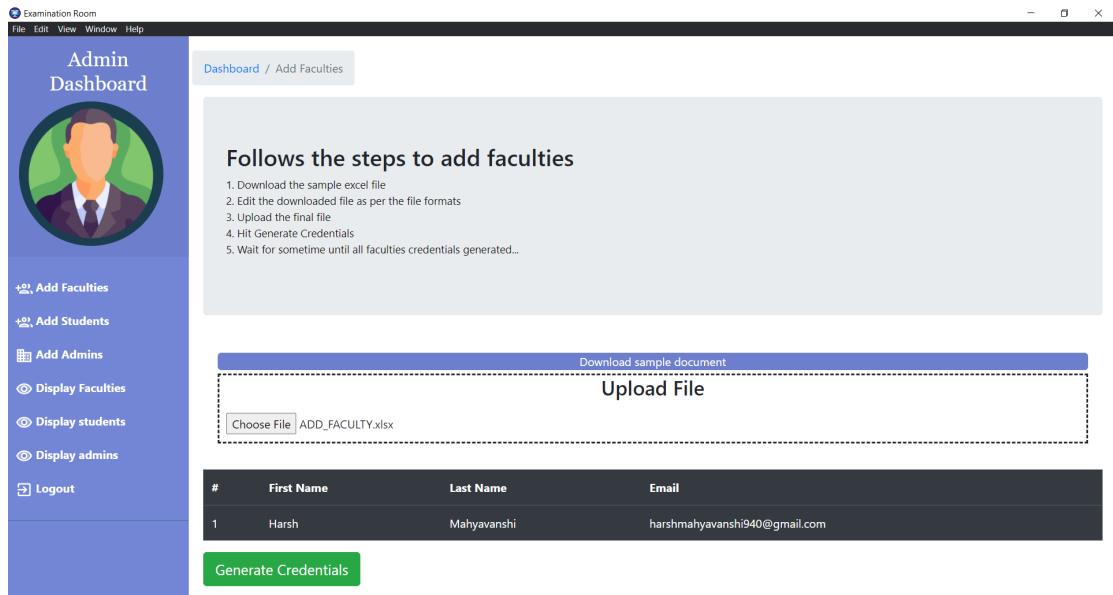
### 2.1 Admin Dashboard



---

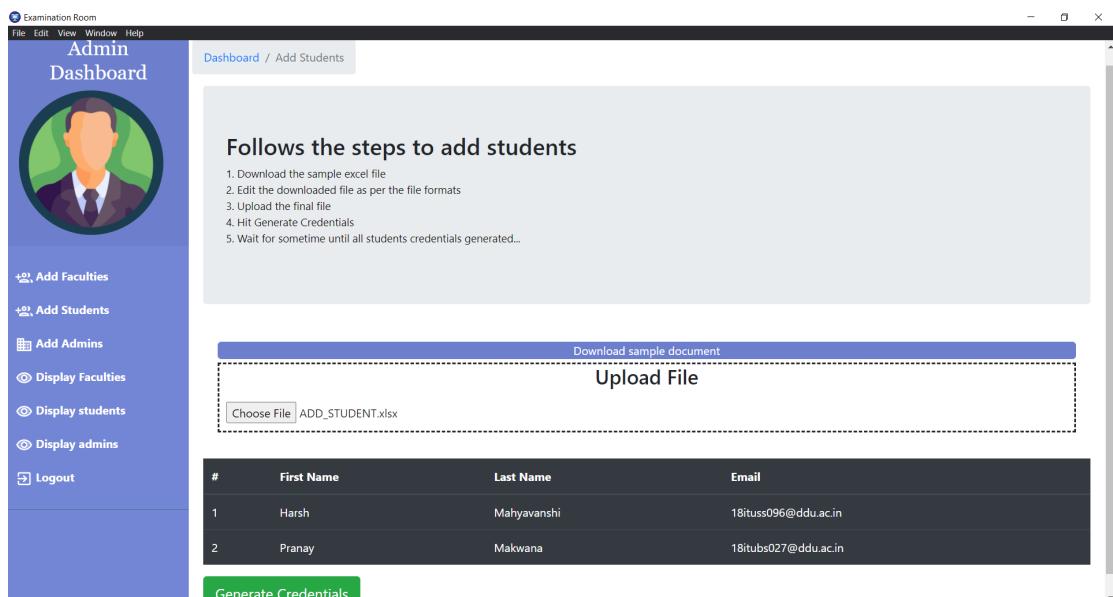
**Fig 2.1 Admin Dashboard**

## **2.2 Add Faculties**



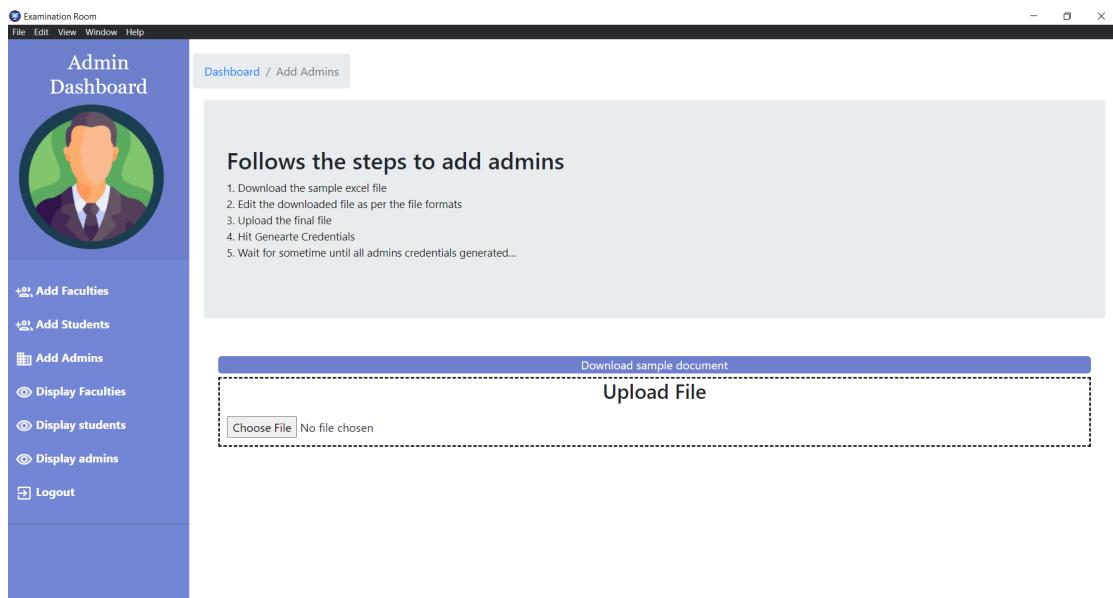
**Fig 2.2 Add Faculties**

## **2.3 Add Students**



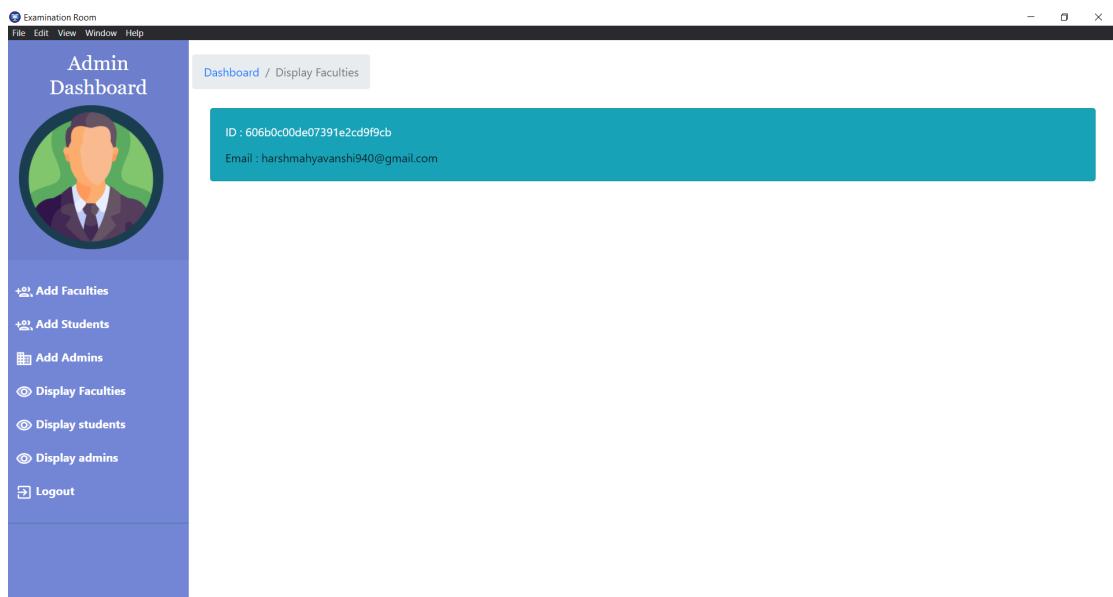
**Fig 2.3 Add Students**

## 2.4 Add Admins



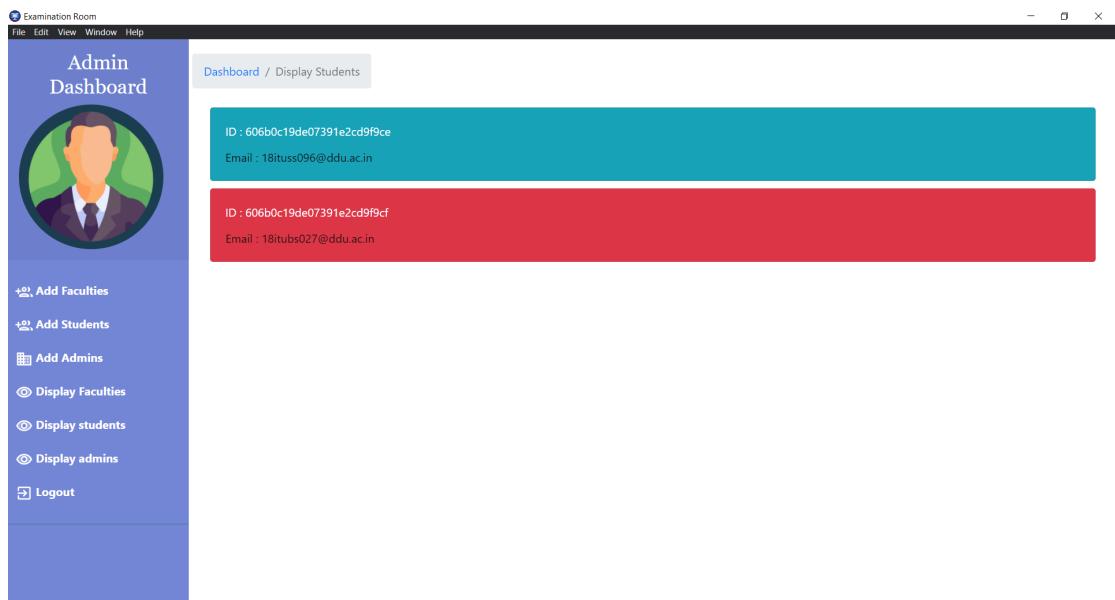
**Fig 2.4 Add Admins**

## 2.5 Display Faculties



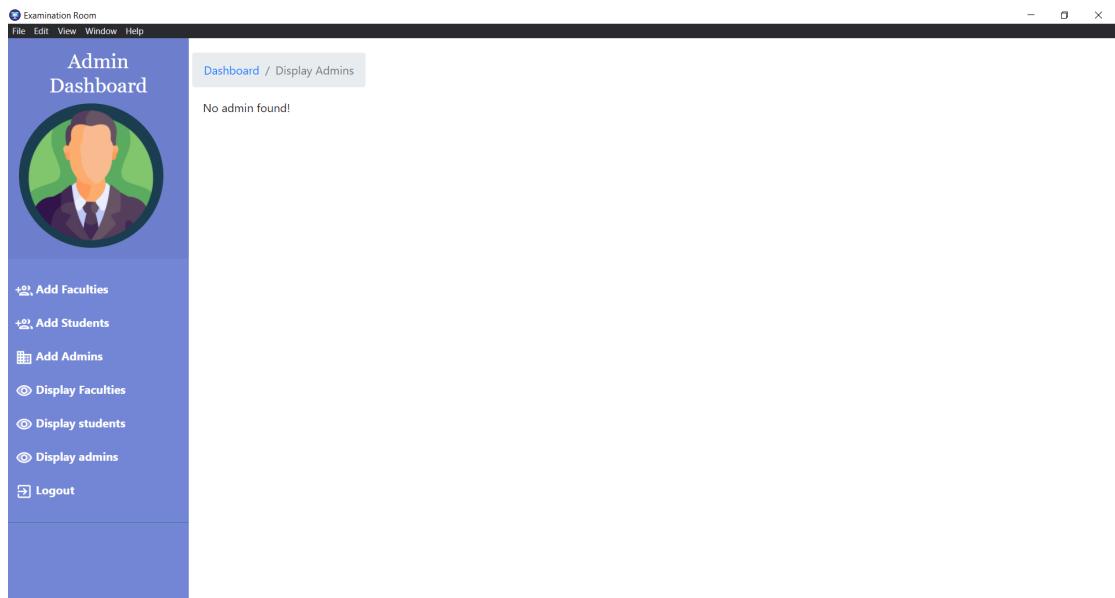
**Fig 2.5 Display Faculties**

## 2.6 Display Students



**Fig 2.6 Display Students**

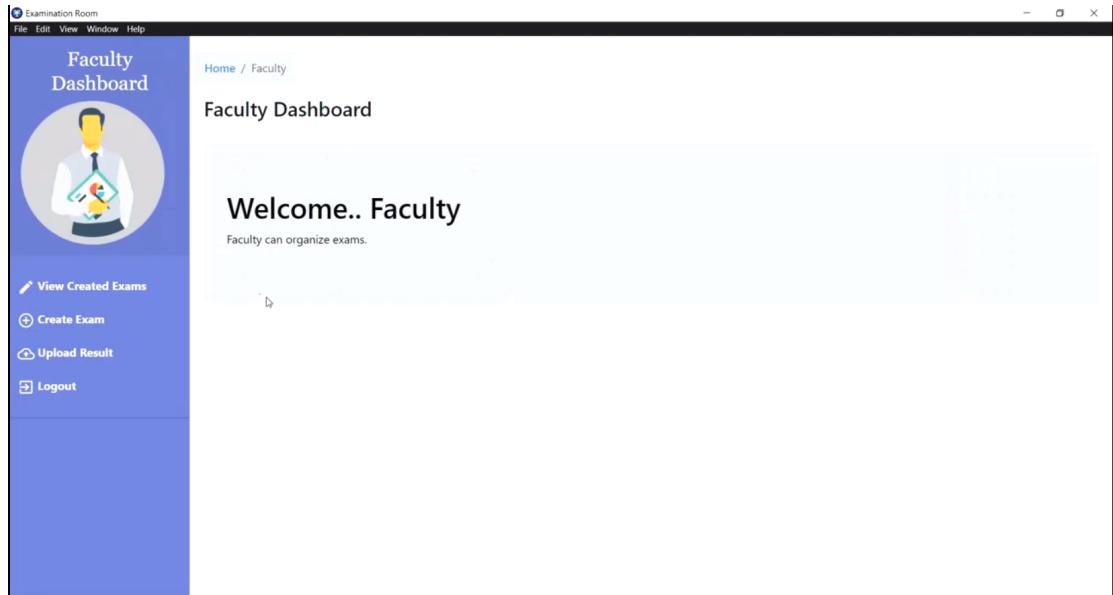
## 2.7 Display Admins



**Fig 2.7 Display Admins**

## 3 Faculty

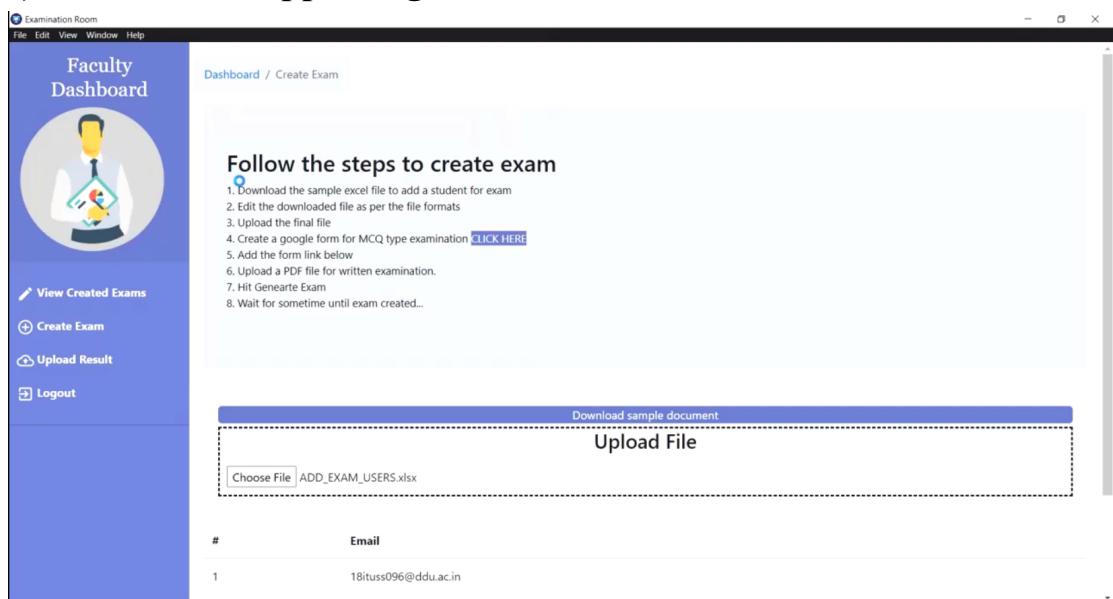
### 3.1 Faculty dashboard



**Fig 3.1 Faculty Dashboard**

### 3.2 Create Exam

#### a) Add students appearing in exam



**Fig (a) Add students appearing in exam**

**b) Select Type MCQ**

The screenshot shows a software window titled "Examination Room". At the top, there is a menu bar with "File", "Edit", "View", "Window", and "Help". Below the menu, there is a table with two rows:

#	Email
1	18ituss096@ddu.ac.in
2	18itubs027@ddu.ac.in

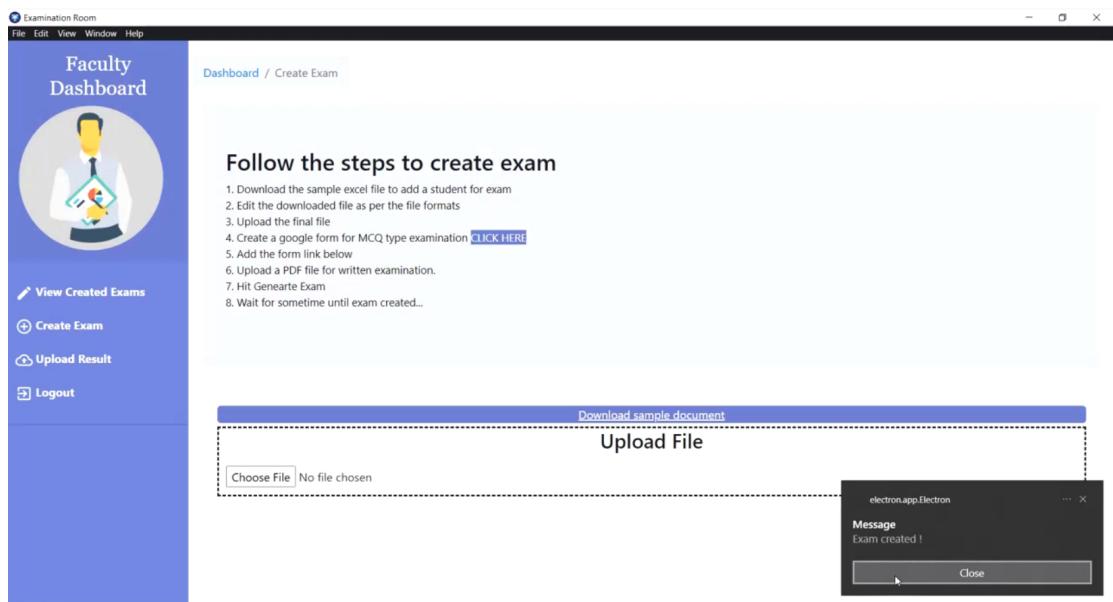
In the center of the screen, a blue rectangular box contains the text "Select a Exam Type" and three radio buttons: "MCQ Exam" (selected), "Written Exam", and "Both". Below this box, there are input fields for "Form Link" (with "form link" typed in), "Subject Name" (with "subject name" typed in), "Exam Date" (with "dd-mm-yyyy" typed in), "Duration" (with "duration" typed in), and "Description(Optional)" (with "description" typed in). A blue "Create Exam" button is located at the bottom right.

**Fig (b) Select type MCQ****c) Select Type Written**

The screenshot shows the same software interface as Fig (b). The "Select a Exam Type" dialog now has the "Written Exam" radio button selected. The input fields have been updated: "Subject Name" is now "DBMS", "Exam Date" is "12-04-2021", and "Duration" is "75". The "Description(Optional)" field contains the word "Written". The "Create Exam" button remains at the bottom right.

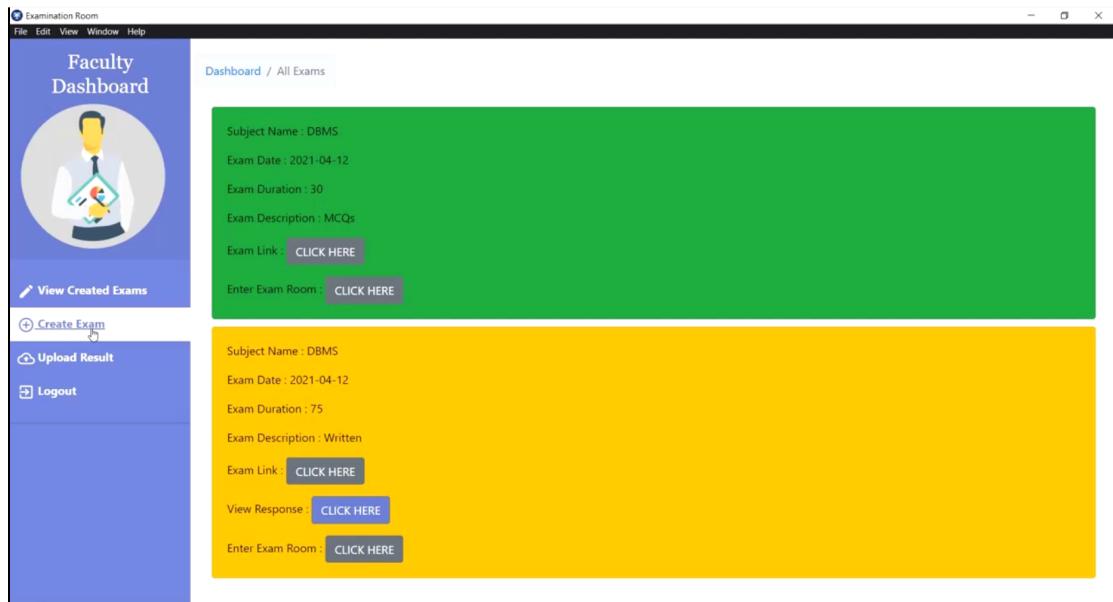
**Fig (c) Select type Written**

### **d) Exam Created Notification**



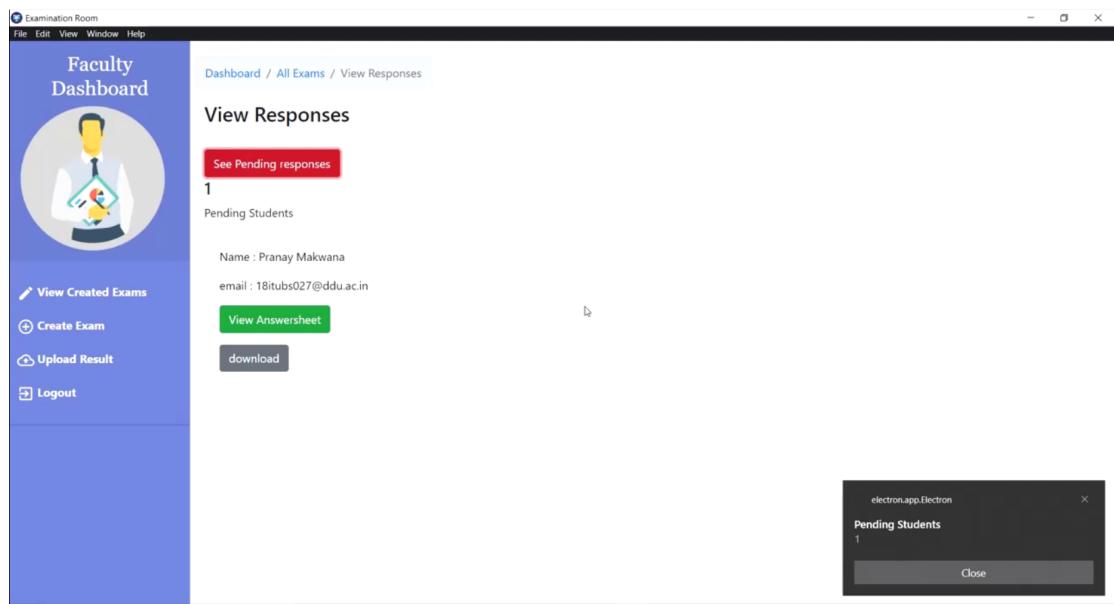
**Fig (d) Exam created notification**

### **3.3 View exam**



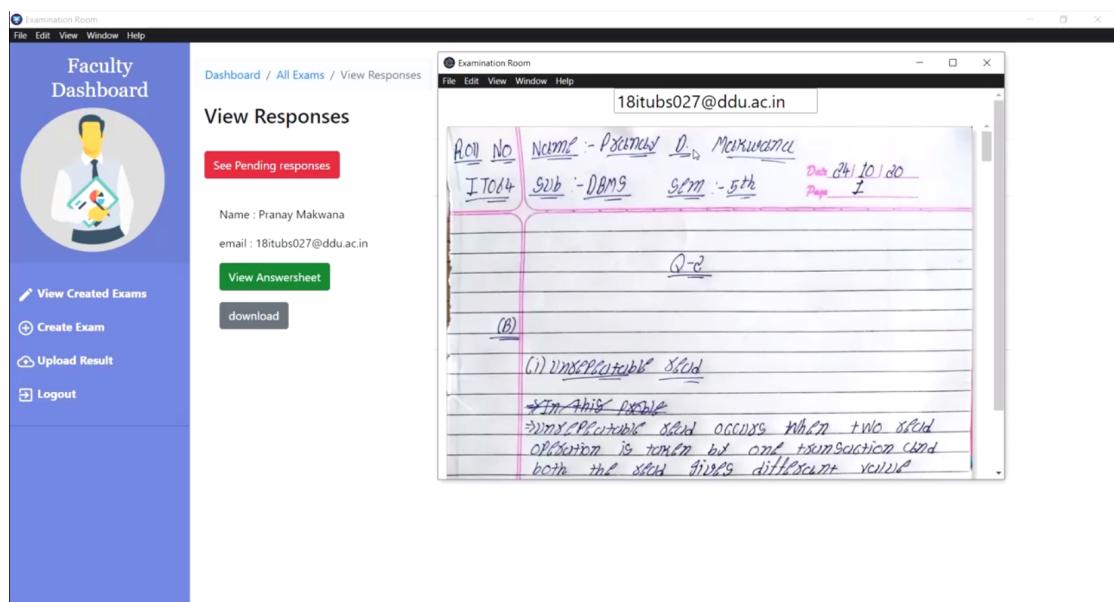
### 3.4 View Responses

#### a) Pending students



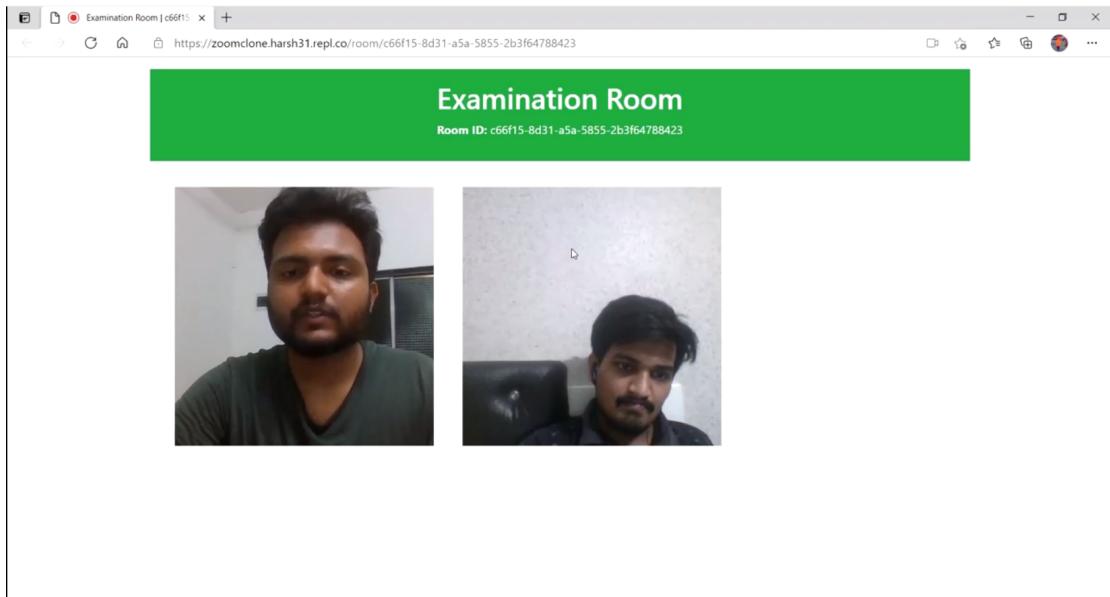
**Fig (a) Pending students**

#### b) View/download Answersheet



**Fig (b) View/download answersheet**

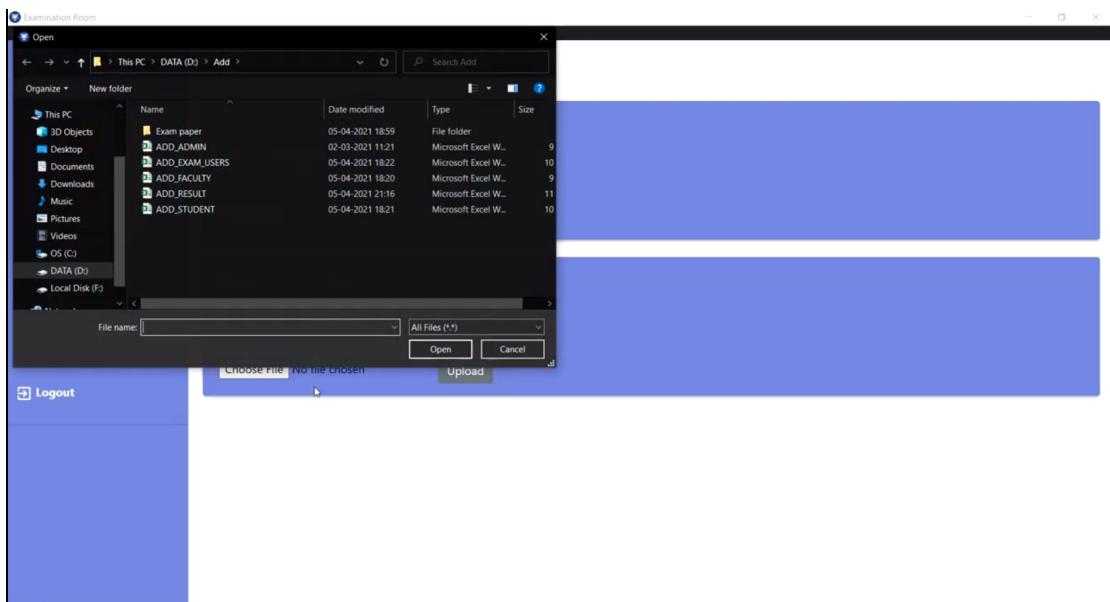
### 3.5 Examination Room



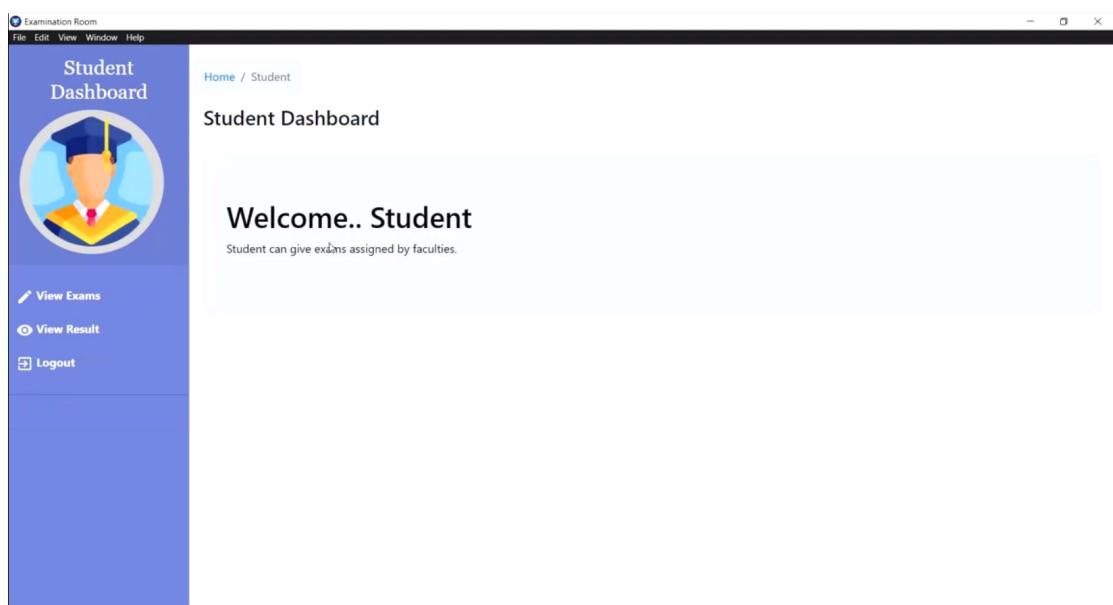
**Fig 3.5 Examination Room**

### 3.6 Upload Result

#### a) Uploading excel sheet



**Fig (a) Uploading excel sheet**

**b) Uploaded result notification****Fig (b) Uploaded result notification****4 Student****4.1 Student Dashboard****Fig 4.1 Student Dashboard**

## 4.2 View Exam

### a) All exams

The screenshot shows the 'Student Dashboard' interface. At the top, there's a navigation bar with 'Examination Room' and other options like File, Edit, View, Window, Help. Below the dashboard title, there's a profile icon of a student in a graduation cap. On the left sidebar, there are three buttons: 'View Exams' (highlighted), 'View Result', and 'Logout'. The main area displays two exam entries in a grid:

Subject Name	Exam Date	Exam Duration	Exam Description	Exam Link
DBMS	2021-04-12	30	MCQs	<a href="#">START EXAM</a>
DBMS	2021-04-12	75	Written	<a href="#">START EXAM</a>

**Fig (a) All exams**

### b) Start exam (MCQs in full screen mode)

The screenshot shows a Google Forms examination page titled 'Examination'. It has a '30 minutes' duration and a note that 'Name' is required. There are two questions, each with a text input field labeled 'Your answer'. A 'Submit' button is at the bottom. Below the form, there's a note about never submitting passwords and links to Google's terms of service and privacy policy. The page is identified as being from 'Google Forms'.

**Fig (b) Start exam (MCQs in full screen mode)**

### c) Start exam (Written in full screen mode)

Take Your Exam

**DHARMSINH DESAI UNIVERSITY, NADIAD**  
 FACULTY OF TECHNOLOGY  
 B.TECH. SEMESTER V [IT]

**SUBJECT: (IT-502) DATABASE MANAGEMENT SYSTEM**

Examination : Regular External Exam(online)	Seat No. :	_____
Date : 01/12/2020	Day :	Tuesday
Time : 2 hours	Max Marks :	30

---

**INSTRUCTIONS:**

1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.
5. Follow the following file name convention for uploading the document:  
**BTech\_Semester IDNo\_SubjectCode\_SubjectName.pdf**

---

**SECTION - II**

**Q.1 Answer any three from the following: [15]**

(A) Explain Two-phase locking protocol with example. Differentiate between [05]  
strict two-phase and rigorous two-phase locking protocol.

(B) Differentiate between the following terms with example:- [05]

- i) Sparse indexing and dense indexing
- ii) Immediate database modification and deferred database modification.

(C) i) Let relation R(A,B,C,D,E,F,G,H) satisfy the following functional [05]  
dependencies F = {A → B, CH → A, B → E, BD → C, EG → H, DE → F}.  
Find all possible candidate keys of R.

ii) Find Canonical cover for the relation R(VWXYZ) with functional  
dependency as F = {V → W, VW → X, Y → VWX}

1 hours | 14 minutes | 56 seconds

**Fig ( I ) Question paper**

Take Your Exam

entries. Initially the structure is empty. The keys and their hash values are given below:-

A	00001
B	00011
C	00110
D	01110
E	01111
F	10001
G	10101
H	10111
I	11000
K	11001
L	11101
M	11111

i) Create the hash table assuming sequence of insertion order is same as given above.  
ii) Create the hash table assuming sequence of insertion order is F,E,D,C,B,A,M,L,K,I,H,G.

\*\*\*\*\*

Page 2 of 2

Submit

1 hours | 14 minutes | 42 seconds

**Fig ( II ) Submit exam**

## Take Your Exam

C 00110  
D 01110  
E 01111  
F 10001  
G 10101  
H 10111  
I 11000  
K 11001  
L 11101  
M 11111

- i) Create the hash table assuming sequence of insertion order is same as given above.  
ii) Create the hash table assuming sequence of insertion order is F,E,D,C,B,A,M,L,K,I,H,G.

\*\*\*\*\*

Page 2 of 2



1 hours | 14 minutes | 39 seconds

## Fig (III) Submit exam

#### 4.3 Upload pdf (From mobile)

##### a) Scan QR code

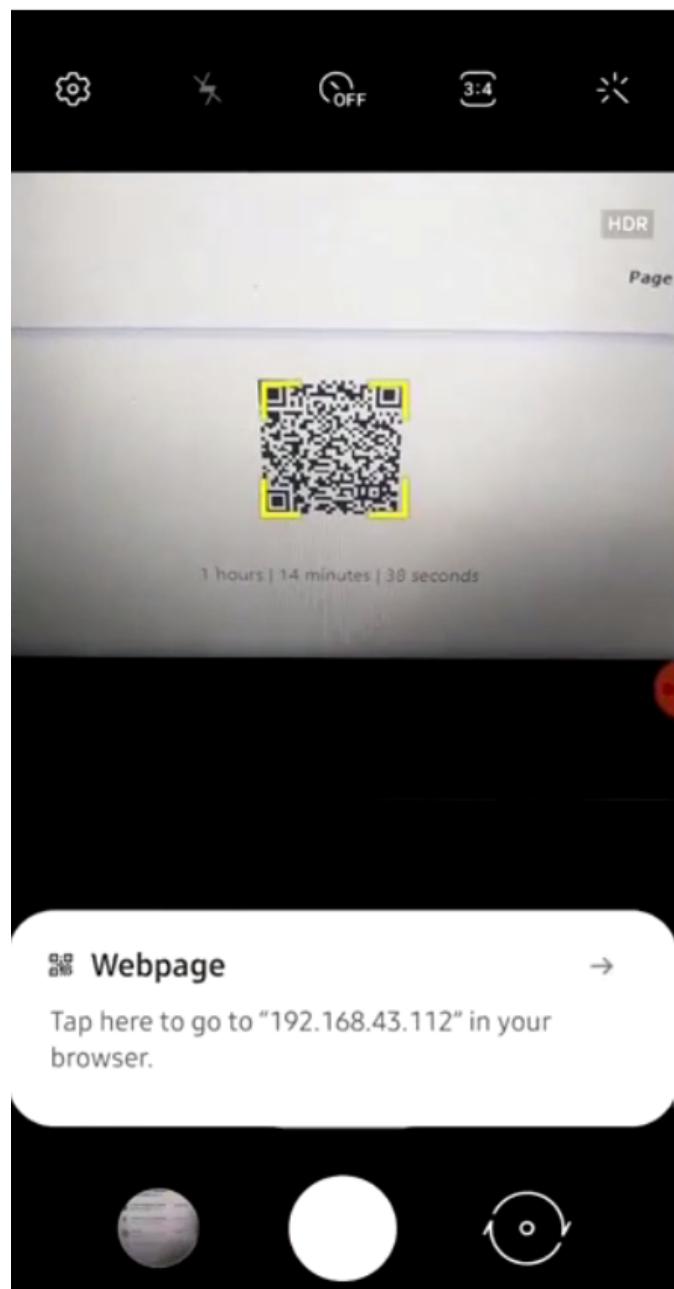


Fig (a) Scan QR code

**b) Fill the form and submit**

Welcome Students

1. Here You can upload a PDF file for your written examination.
2. File must be in pdf formate.
3. Check your email-id before uploading a file.

Name  
Pranay Makwana

Email  
18itubs027@ddu.ac.in

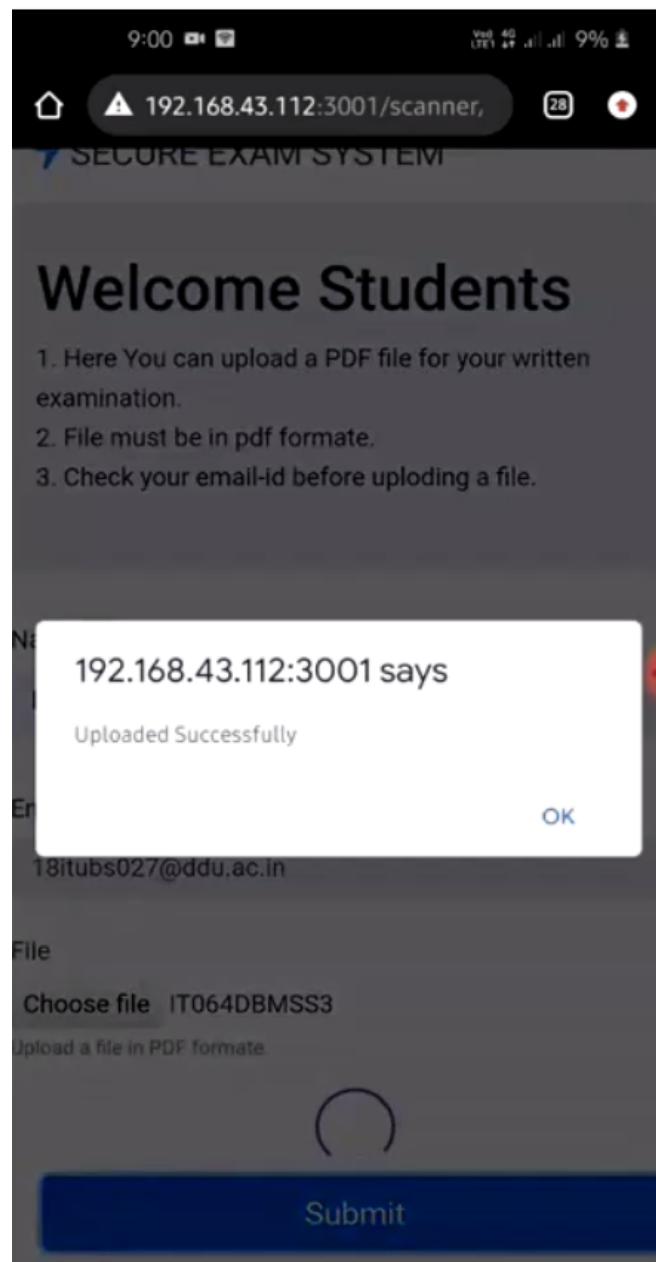
File  
Choose file IT064DBMSS3  
Upload a file in PDF formate.

Submit

SECURE EXAM SYSTEM

**Fig (b) Fill the form and submit**

c) Submitting pdf



**Fig (c) Submitting pdf**

## 4.4 View Result

The screenshot shows a Windows application window titled "Examination Room". The menu bar includes "File", "Edit", "View", "Window", and "Help". The main content area is titled "Dashboard / View Result". On the left, there is a sidebar with a blue background labeled "Student Dashboard" and featuring a circular profile picture of a student in academic regalia. Below the sidebar are three buttons: "View Exams", "View Result" (which is highlighted in blue), and "Logout". The main content area displays a table with the following data:

#	Subject Name	Exam Type	Marks	Date
1	DBMS	MCQs	0	2021-04-12
2	DBMS	Written	32	2021-04-12

**Fig 4.4 View result**

## **9. LIMITATIONS AND FUTURE ENHANCEMENTS**

### **9.1 LIMITATIONS**

1. Requirement of internet connectivity.
2. Required web-enabled devices like laptops and desktop computers.
3. Challenges in Technology Adoption.
4. Infrastructural Barriers.
5. This system requires a strong connection between client and server.
6. Difficulty with big data processing and storing a huge amount of student datasets.

### **9.2 FUTURE ENHANCEMENTS**

1. Better hardware without these limitations can be used.
2. GUI must be improved in future.
3. Our application's startup and loading must be as fast as possible.
4. User feedback is very important for us so we can do required modifications in application on the basis of user's requirements in future.
5. Content and environment to be made more interactive and intuitive.
6. Exam Notifications.
7. Add face recognition using machine learning to the examination room.
8. Auto Object detection(Phone, book etc..) using artificial intelligence.

## **10. CONCLUSION AND DISCUSSION**

From the project we worked on following points can be concluded:

1. This will also give a skip ahead boost for institutions to be connected more to technology rather than analog study methods. Continuous updates in the content can be provided as and when the discoveries are made.
2. There is a lot of scope for enhancements, as there is a vast sea of knowledge waiting to be understood, as well as better hardware evolution can provide a better experience to the end users.
3. Online examination system is a user-friendly system, which is very easy and convenient to use. The system is complete in the sense that it is operational and it is tested by entering data and getting the reports in proper order. But there is always a scope for improvement and enhancement. During the development of this ,coding standards are followed for easy maintainability and extensibility.

## REFERENCES

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