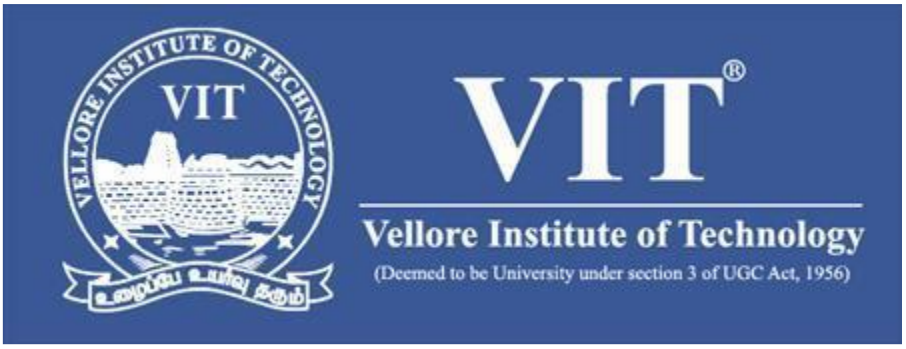


Project Title:

“Smart University Web-Application – Quiz System”

Internet and Web Programming

(CSE 3002)

Slot: E1 , L37+L38

Charan Lalchand Soneji **17BCE2196**

Shubhankar Pradhan **17BCI0143**

In partial fulfilment for the award of the degree of

Bachelors in Technology

In

Computer Science and Engineering

Under the Guidance of

Prof. Archana T

Certificate

This is to certify that the project work entitled “Smart University Web Application – Quiz System” that is being submitted by Shubhankar Pradhan and Charan Lalchand Soneji for Internet and Web Programming(CSE 3002) is cord of bonafide work done under my supervision. The content of this project work, in full or in parts, have neither been taken from any other source nor have been submitted for any other CAL course.

Place: Vellore

Date: 2nd November 2019

Acknowledgement

Firstly, we would like to thank Prof. Archana T for her able guidance and support for the project. Also, we are grateful to our honourable Dean of School of Computer Science (SCOPE) who gave us the opportunity to take up such a project. We learnt a lot from this project work. It proved to be really fruitful.

Last but not the least; we would like to thank our group members and fellow classmates who helped us to know about the depth of the project.

Contents Index:

1.Introduction:

It is good source of interactivities among students and between the teacher and students. It is done in order to improve student‘s comprehension levels and learning motivation. As one of their tools, online test tools are quite effective. However, in order to use the online test tool, a teacher is generally required a great deal of labour. For example, a teacher needs to create quizzes and input them in the online test tool. In order to solve these problems, we have developed a Web-based online test system which can create quizzes competitively and collaboratively by students for the purpose of reducing the load required for a teacher and promoting interactions among students and between the teacher and students.

Whenever we think of a university, our main focus comes to the academics. With advancement in technologies as well as education system, the offline mode of conducting examinations, especially quizzes, is going to end really soon; and people will shift to the online mode of conducting them only, because not only it is fairly conducted, but checking is easy too. There has been a lot of quizzing applications available online these days, namely, Schoology or Edmodo; but having a platform separately dedicated for conducting quizzes only for a particular institution will be easier to maintain, manage and trace in future – as, the more number of institutions, the more will be the data to be stored into the database, making it very difficult to store for thousands of hundreds of students over the years because huge database will be needed, thus more investment. Although VIT has a dedicated website Moodle for the same, but the user interface is not that attractive, we would like to create another web application for **online quiz management** to conduct quizzes as well as store course materials, with a better user interface. The first impression about a website comes from how attractive it looks, and not how complicated the code behind making that website is. The section that would be dedicated for uploading study materials irrespective of whether the faculty teaches the course or not, and for downloading too the materials will be available irrespective of whether the student has opted for the course or not.

The ONLINE QUIZ is a web application to take online test in an efficient manner and to avoid time wasting for checking the paper. The main objective of ONLINE QUIZ is to efficiently evaluate the candidate thoroughly through a fully automated system that not only saves lot of time but also gives fast results. For students they give papers according to their convenience and time and there is no need of using extra thing like paper, pen etc. Within the given project, we have enabled written answers which can be verified by the instructor as well as MCQ’s which give immediate result to the user giving the test.

1.1. Existing/Proposed system

The main problem faced is that there are loads of hard copied documents being generated. This brings us to the age-old discussion of keeping information in the form databases versus keeping the same on sheets of paper. Keeping the information in the form of hard-copied documents leads to the following problems.

I. Lack of space – It becomes a problem in itself to find space to keep the sheets of paper being generated as a result of the ongoing discussion. The documents being generated are too important to be ill-treated.

ii. Filing poses a problem – Filing the documents categorically is a time consuming and tedious exercise.

iii. Filtering is not easy – It becomes hard to filter relevant documents for the irrelevant ones if the count of the same crosses a certain manageable number.

iv. Reviewing becomes time-consuming – All the process done manually at the centres and all the records are maintained on the papers. So the maintenance of the record is very difficult in the departments and as well as it's very difficult for the workers to check the record. The Existing system is paper based, time consuming, monotonous, less flexible and provides a very hectic working schedule. The chance of loss of records is high and also record searching is difficult. Maintenance of the system is also very difficult and takes lot of time.

v. Result Processing: is slow due to paper work and requirement of staff.

This Web Application provides facility to conduct online examination irrespective of their location. It saves time as it allows number of students to give the exam at a time and displays the results as the test gets over, so no need to wait for the result for all the MCQ questions. It is automatically generated by the server. Administrator has a privilege to create, modify and delete the test papers and its particular questions. User can register, login and give the test with his specific id, and can see the results as well. The administrator also has the privilege to add written questions for which the user would have to type in the answer within the space provided and the marks are evaluated by the Administrator at a later point in time.

1.2. Scope

Scope of this project is very broad in terms of other manually checking yourself.
Few of them are:-
-This can be used in educational institutions as well as in corporate world.
-Can be used anywhere any time as it is a web based application
-No restriction that examiner has to be present when the candidate takes the test.

2.Work Breakdown Structure:

2.1. Features to implement

- **FUNCTIONAL CAPABILITIES:** The ultimate aim of this project is to help the quiz analysis and facilitate the faculties the faculties for easy evaluation of the students and generation of the automatic score cards. The system shall display the set of questions which may be randomly generated for each user. It also displays the category for which the students wish to answer. Once the student has completed choosing the category starts answering the questions. The mark is given based on the correct answers. It also provides an easy interface for the administrator to evaluate
- **PERFORMANCE LEVEL:** The scope of this project gives immense opportunity for the students to know their levels in quiz. It provides effective software so as to help the students as well as the evaluators who are involved in evaluating the student's performance.
- **DATA STRUCTURES:** The data in this project are maintained in the tabular form using MYSQL in the form of database. It provides easy access to the user. Easy category questions are maintained in the database which provides easy for the user to access and choose the category.
- **SAFETY:** No data loss occurs in the quiz system.

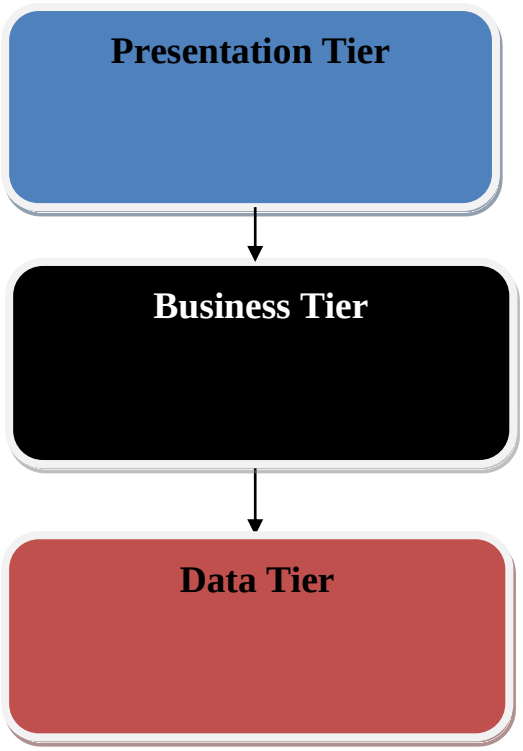
  1. It is very much protected in such a way that it gives permission to the students to access only when the username and password is correct.
  2. The results are produced electronically so that nobody is prone to mistakes.
- **RELIABILITY:** We assure that the project is completely authenticated in order to enhance security and corruptions of database as well as the software. The person is given access only if he/she has a valid username and password.
- **QUALITY:** The project is developed with the help of visual basic 6.0 software which meets the requirement of the user, the project is checked whether the phases individually have a served its purpose.

2.2. Split up of work

Here we are using a strong methodology which makes project easy to read for another person as well as for the programmers who made it in future. That is called Component based programming.

Three Tier Design: The idea of three-tier design is that the functionality of most complete applications can be divided into three main levels. The first level is the user interface (or presentation tier), which displays controls and receives and validates user input. All the event handlers in your web page are in this first

level. The second level is the business tier, where the application-specific logic takes place..



In our project, **HTML, CSS, JAVASCRIPT** is used as the development tool, At **Presentation Tier** Bootstrap has also been used to enhance the look and feel of the website.
At **Business Tier**, JavaScript + Adv. PHP at Back END.
At **Data Tier,** logic is implemented to connect with Database, WAMP server is used.
Within this project, we are designing our front end on HTML, CSS and JS and we have added bootstrap in order to enhance the look of the website. Each of these have been done and edited on Visual Studio Code because of its ease of use and compatibility with NodeJS.
We have then worked on the Backend using JavaScript to verify the constraints and used MongoDB using mlabs for our database which is connected to the front end using PHP and the server side is hosted using NodeJS.

3.Tools used:

We have used various Tools in the software to make the Online Quiz Portal. Some of the following are mentioned below:

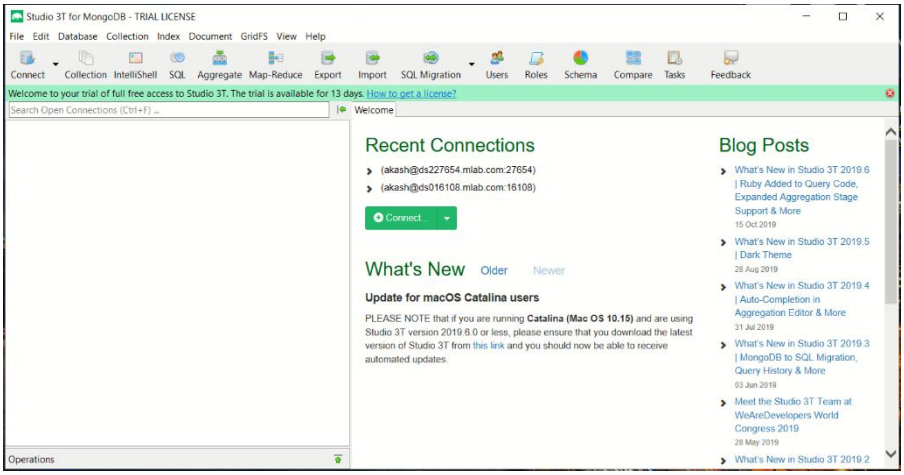
- HTML5 – Standard Markup language mainly for Web Page structure and its Usability.
- CSS – For Web Page Design and its User Interface and User Experience.
- JavaScript – For the Backend Programs, like shuffling the questions and options in random manner, checking the answers submitted, storing the answers etc.
- PHP – For the server side and client side handling of the Quiz portal, like storing information about Cookies, Session and Cookie and Session management and is also used for NodeJS.
- MongoDB and MySQL – For storing data on the database, like student info, question bank, answers etc.
- NodeJS – For hosting the server on any given PC using its inbuilt modules.

.

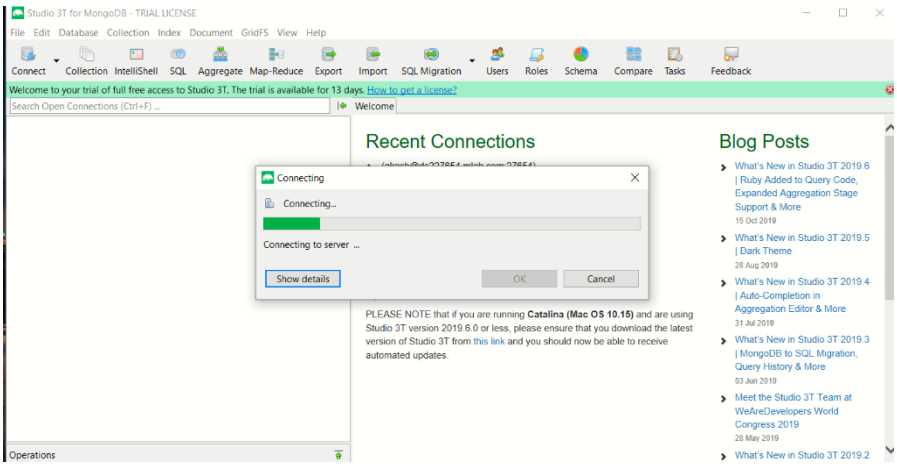
These are some basic steps which we have to follow at starting or at the time of initialization of this project.

4.Database and Schema:

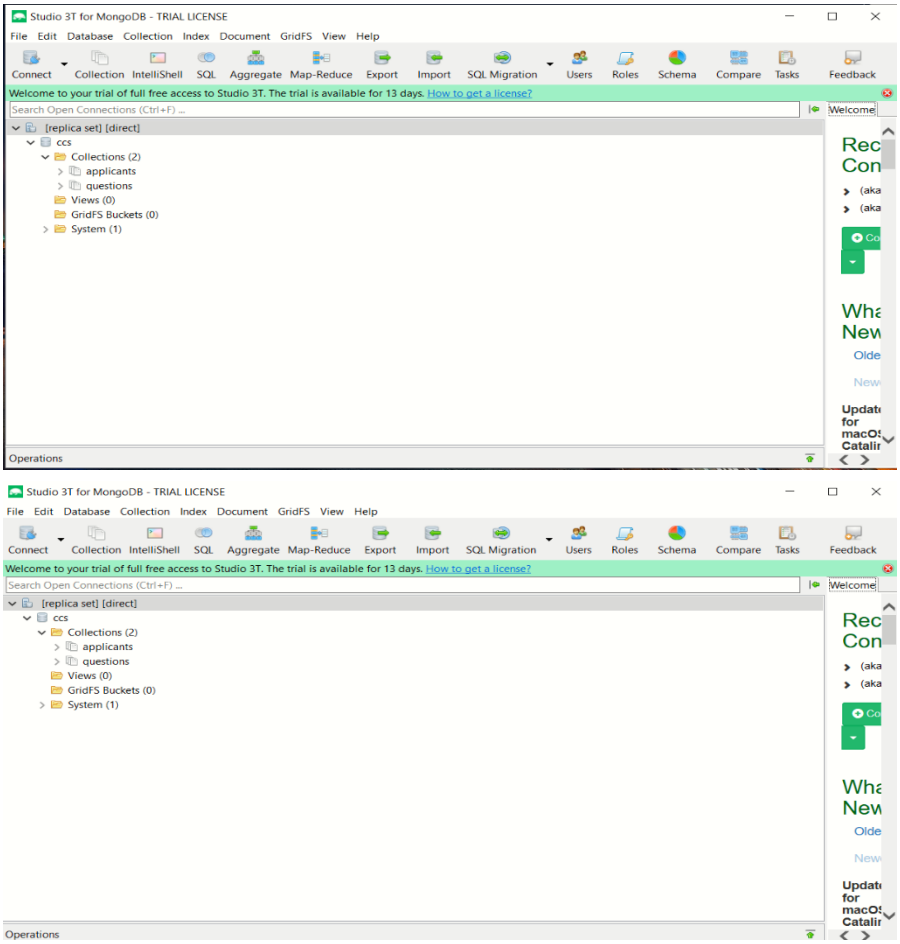
The database used in this project is MongoDB which is used along with NodeJS. The cloud version of MongoDB is used to store all the applicants and questions used in the quiz application. Since the database is only accessible online through mlabs, there is an alternative method of adding or viewing the database while being offline; through an application termed as Studio3T or r3oto as used in Ubuntu. The screenshots of the database and application are mentioned below:



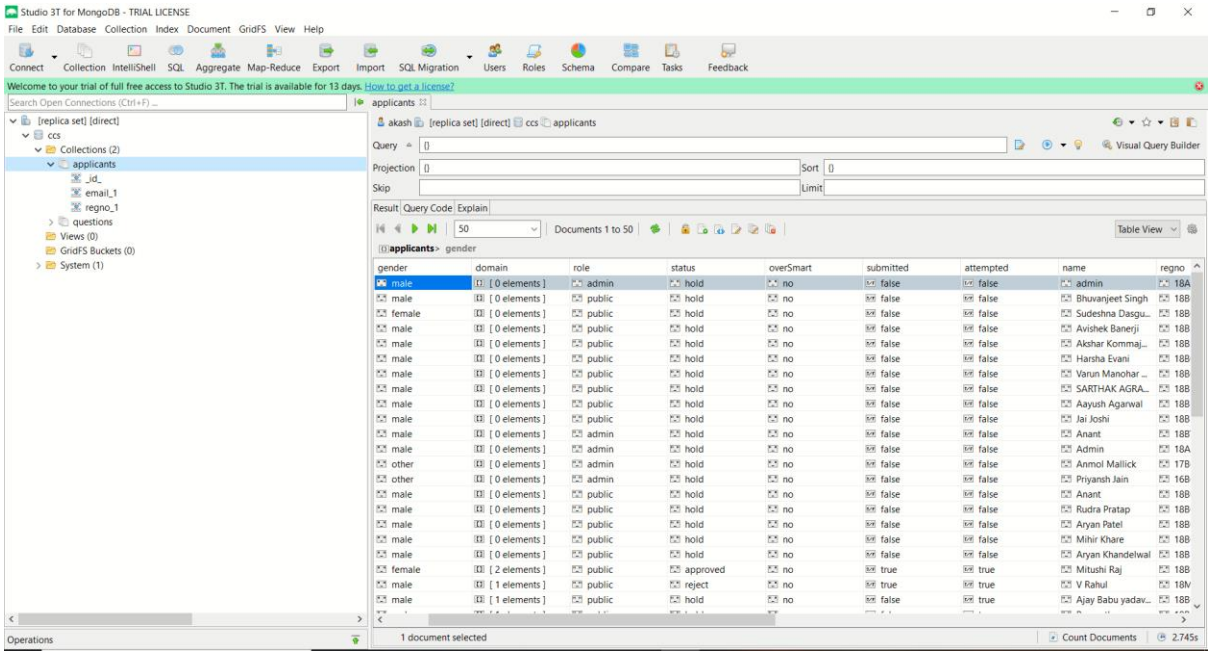
The above screenshot is of the application Studio3T.



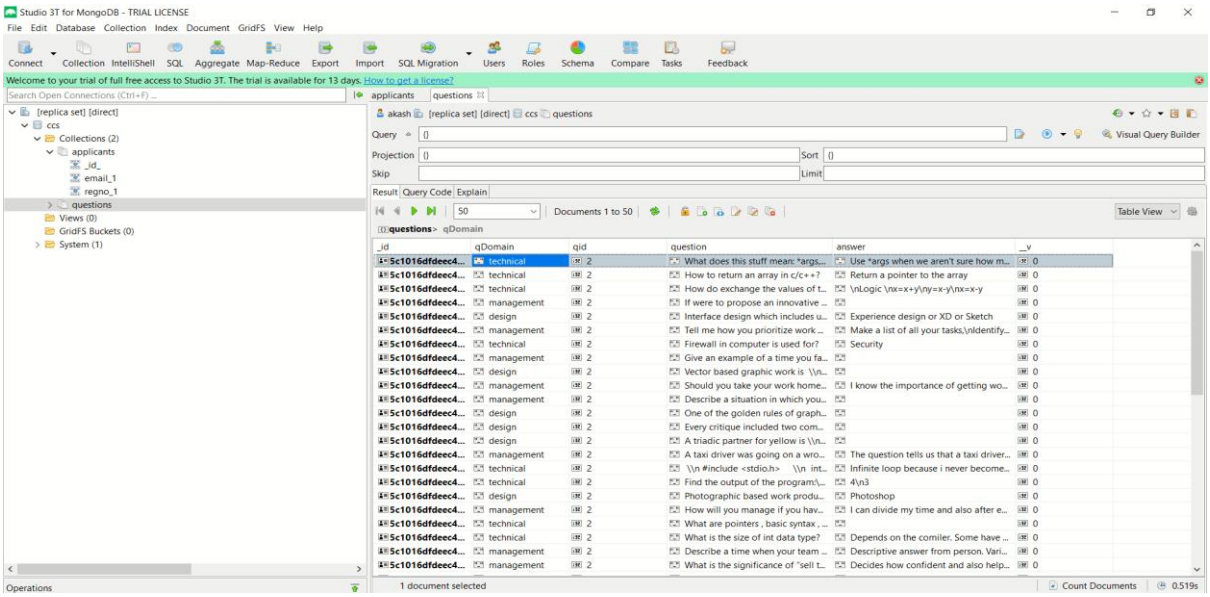
The above screenshot is when the application connects to the mlab database on cloud using the credentials provided.



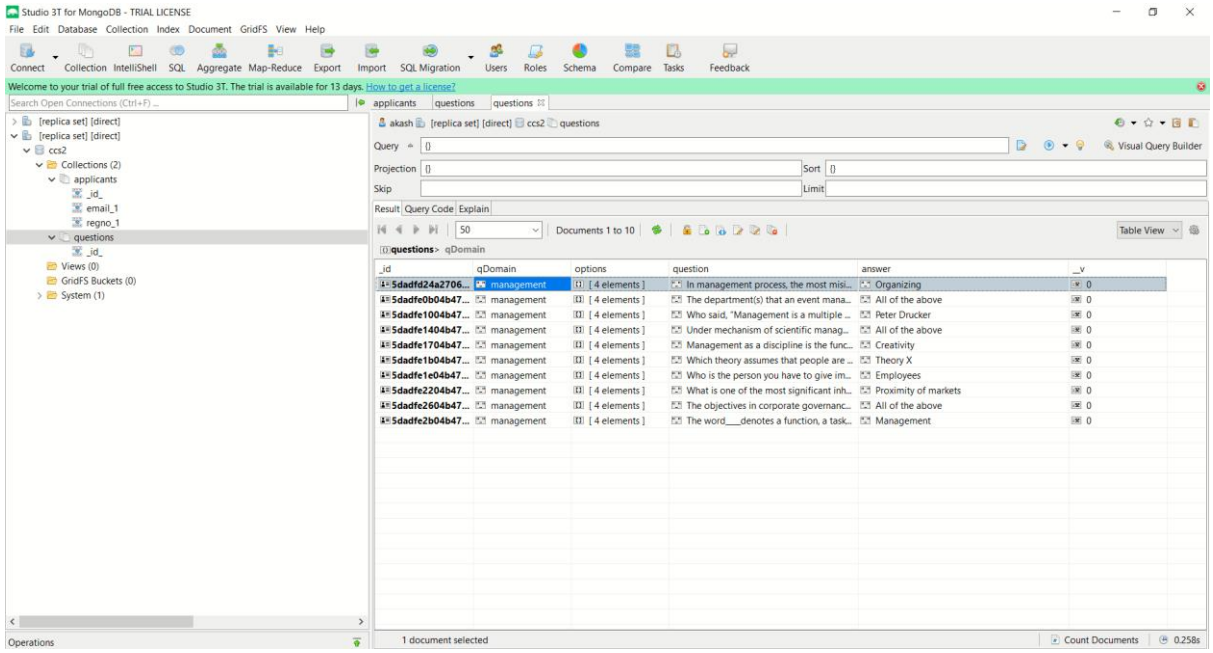
The above screenshot shows the hierarchy of the database in the collections section which includes the applicants and the questions used in the quiz as well.



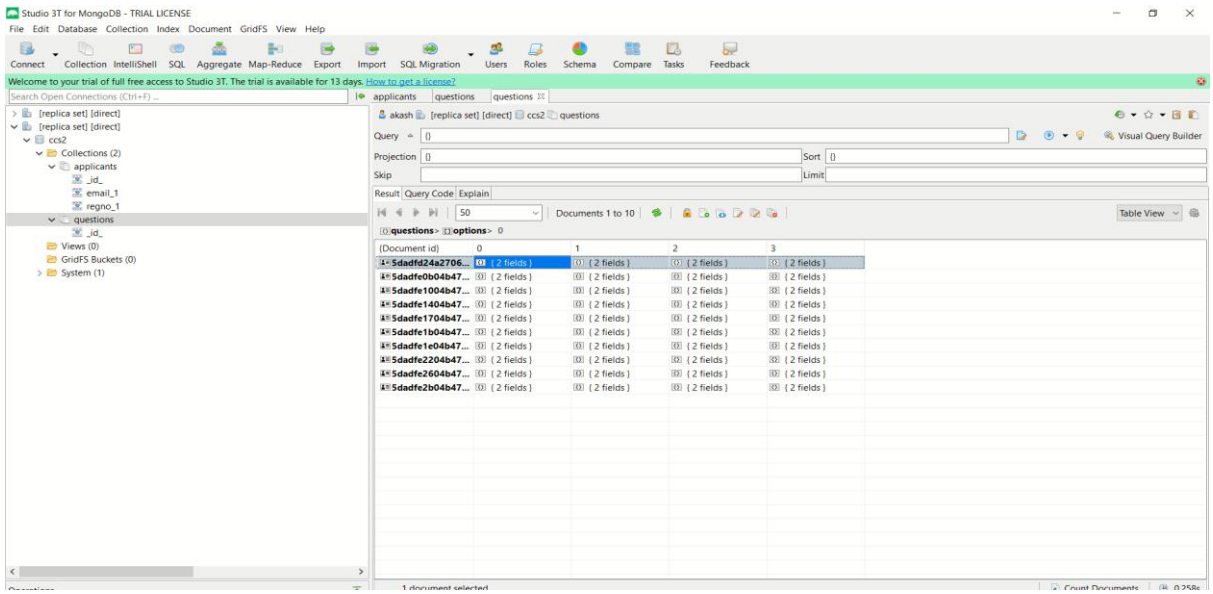
The applicants section which shows all the details of th regsitered applicants as well as the admin users.



The questions used in the quiz application along with the configuratin of the answers and their options.



The configuration of the database so as to make the options or multiple choice available.



5.Sitemap and modules:

5.1. Modules

In this phase, we understand the software requirement specifications for the system. We arrange all the required components to develop the project in this phase itself so that we will have a clear idea regarding the requirements before designing the project. Hence, we shall mention all the modules that shall be part of this online quiz portal.

1. **Admin Side**

1.1. Login page: This shall be a separate page for the Admin/teachers to login.

1.2. Adding Course Material: The teacher using the portal at the given time can add course material for the student to use at any specific time.

1.3. Designing Quizzes: To be able to design every aspect of the quiz for the student so as to decide the questions, along with the key pattern and decide the total amount of time to be given to the students and each student shall receive a random set of questions.

1.4. Correction/Evaluation: The teacher can view the list of students who have given the test and check the total questions answered along with the actual answers and compare them with the original answers in the same. Teacher can check the answers and can evaluate the marks at the same time ad pass comments if required for the student to read.

2. **Student side**

2.1. Login page: All students shall have a separate login page along with a forget password option, just in case any of the students forget the password and want to reset it.

2.2. Viewing Course Material: The Students can view all the material that has been uploaded by the teacher for that given subject.

2.3. Attending Quizzes: The whole purpose of the website is to be able to provide the students with a comfortable user interface so that they don't face any difficulty while attending or answering the quiz. The Timer shall be visible on the screen and the screen shall automatically close as the timer runs out.

2.4. Checking Evaluation: All students can check the marks obtained in the test in a separate section and compare themselves with the rest of the class based on a percentile figure that is generated by the website.

2.5. Adding resources: Each of the students on the portal can add private files or resources in order to use them in the future. This shall enable the students to access educational material at any given time.

3. Examination side

3.1. Login to the examination page: The student must be able to redirect his way using the interface to the portal or screen where the quiz shall be conducted.

3.2. Attend test: The student should be able to enter the quiz portal and start answering the questions.

3.3. Submit: After the student has completed entering the answers, he/she must be able to submit the answers.

TEST PAGE

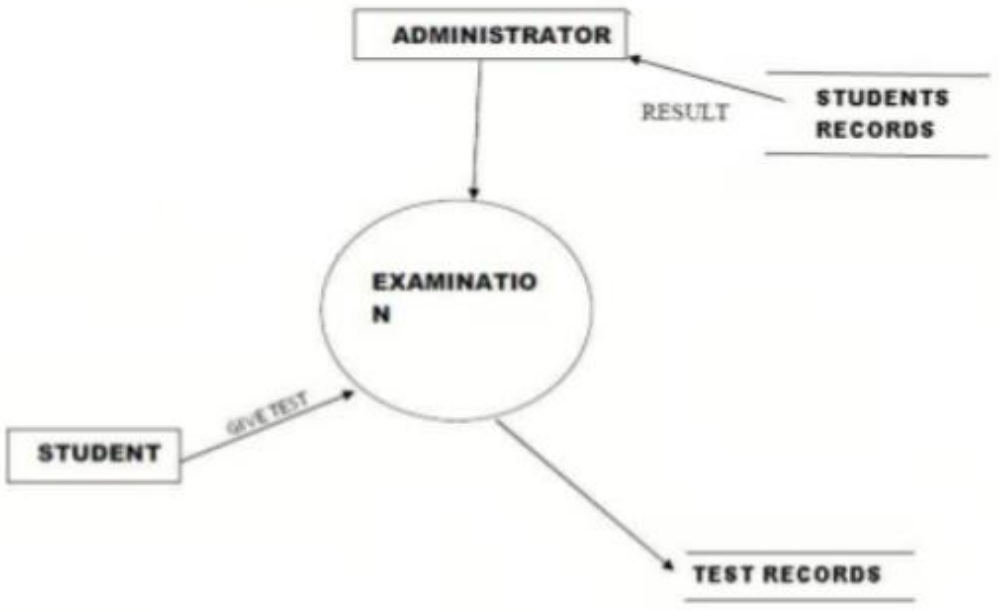
This is the most creative and important page of the project.

The test page includes:

a) Timer
b) Skip
c) Next
d) Previous
e) Finish

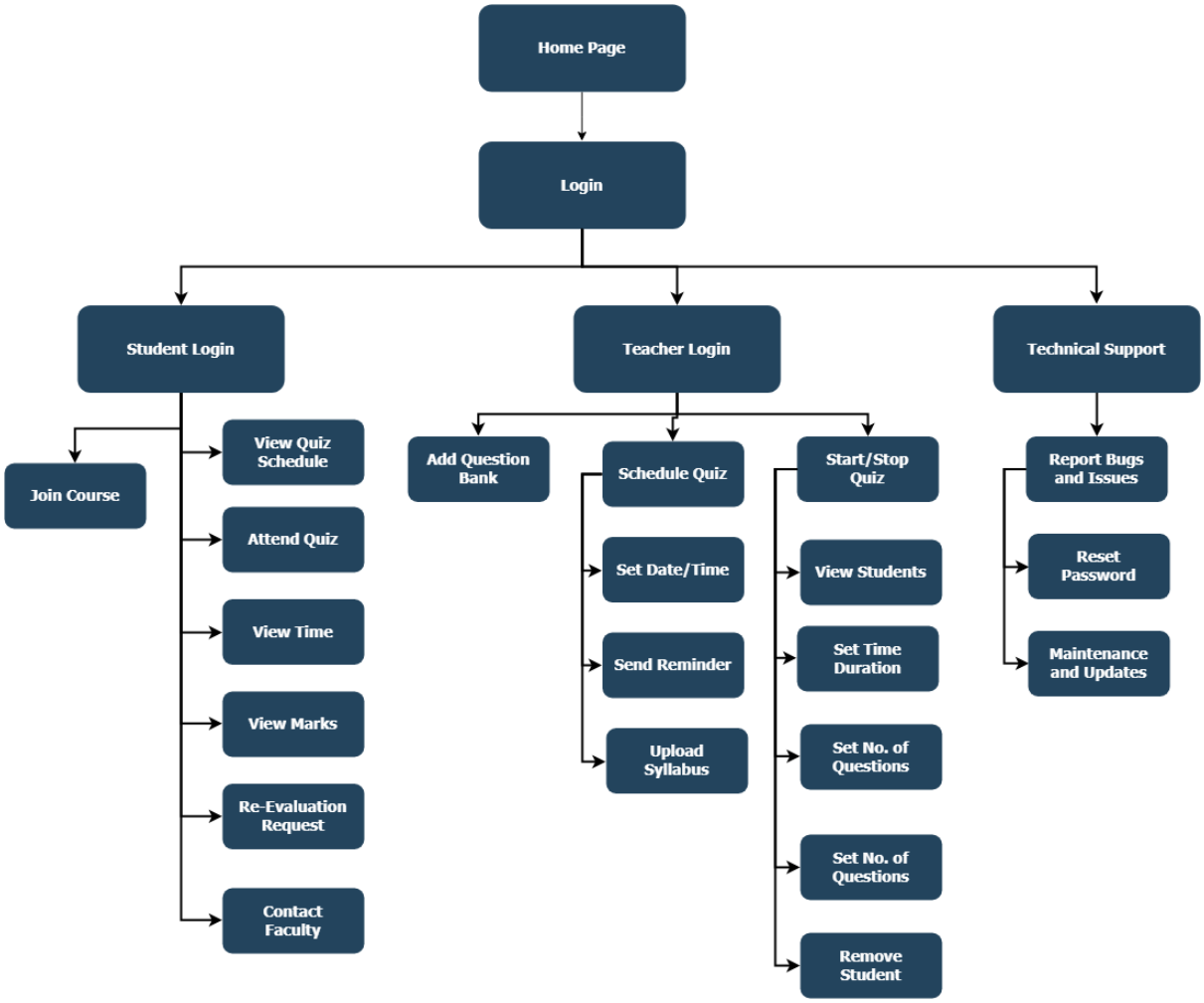
The form of questions in the test page:

a) Multiple Choice Questions
b) Questions are selected at random

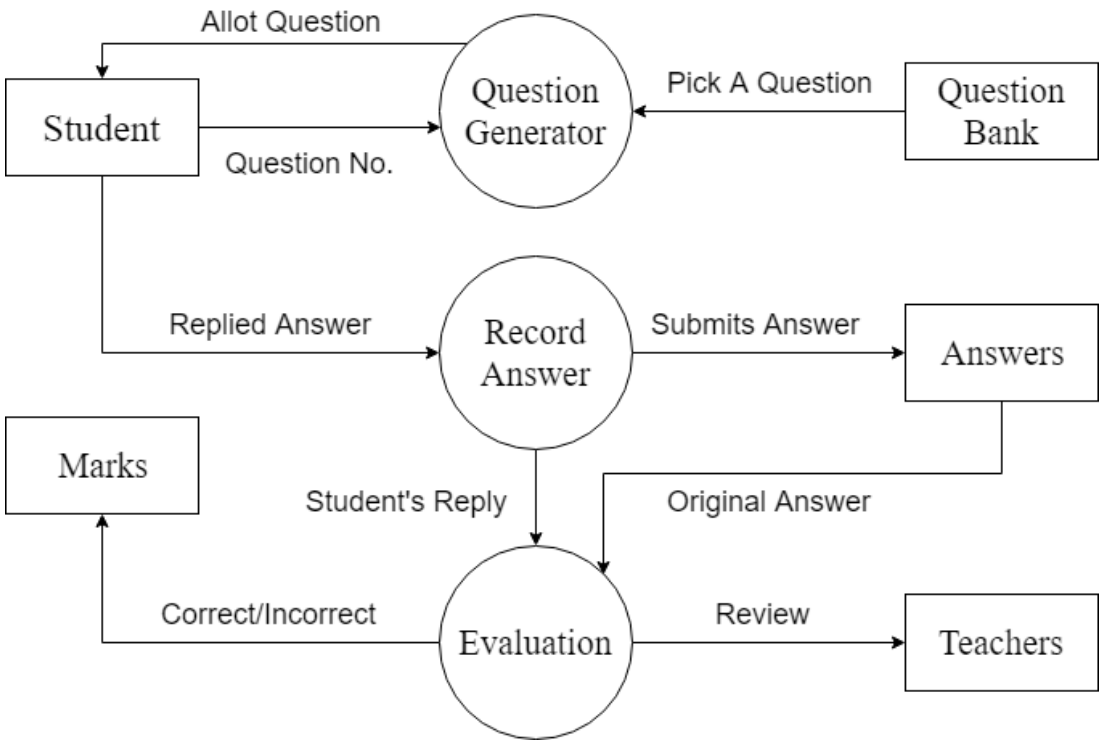


Level 0 Diagram of the Module Dependency Diagram (Overview)

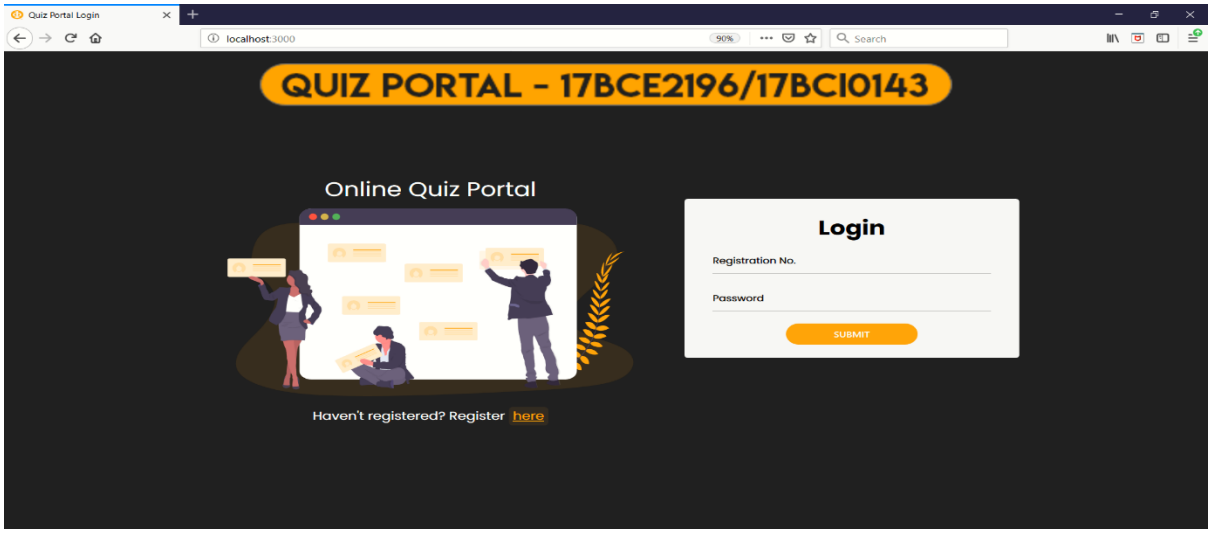
5.2. Sitemap



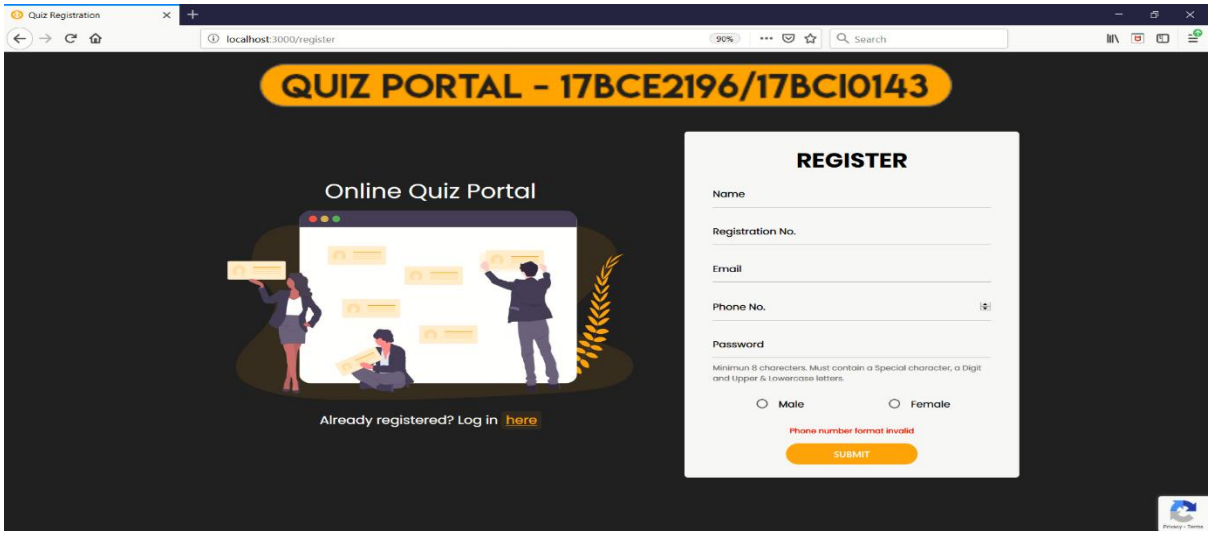
5.3. Data Flow Diagram



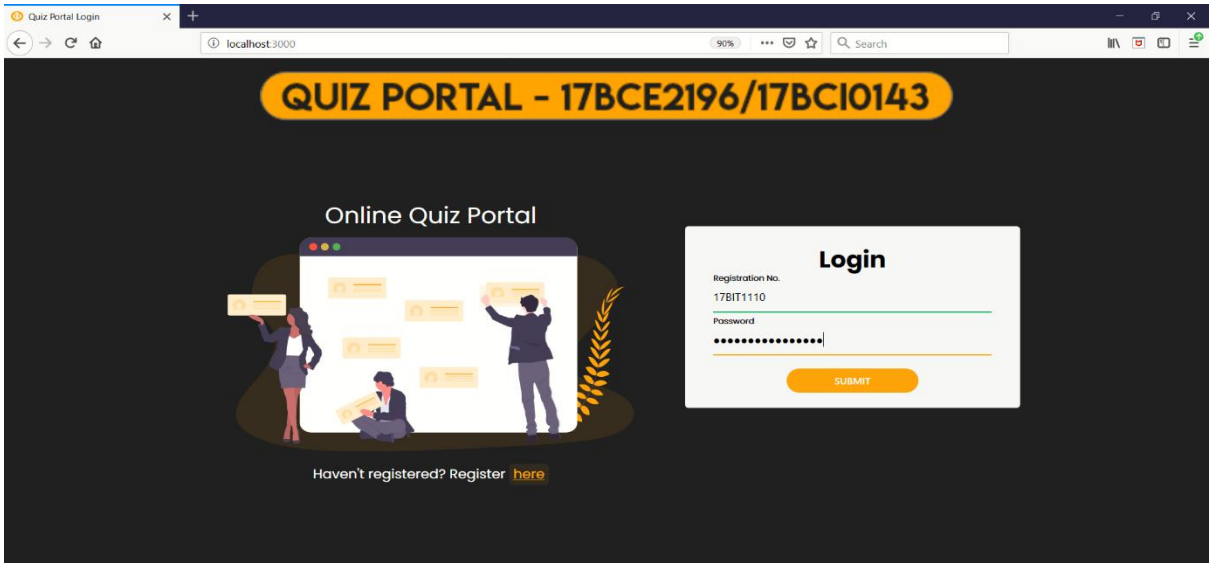
6.Screenshots of working model:



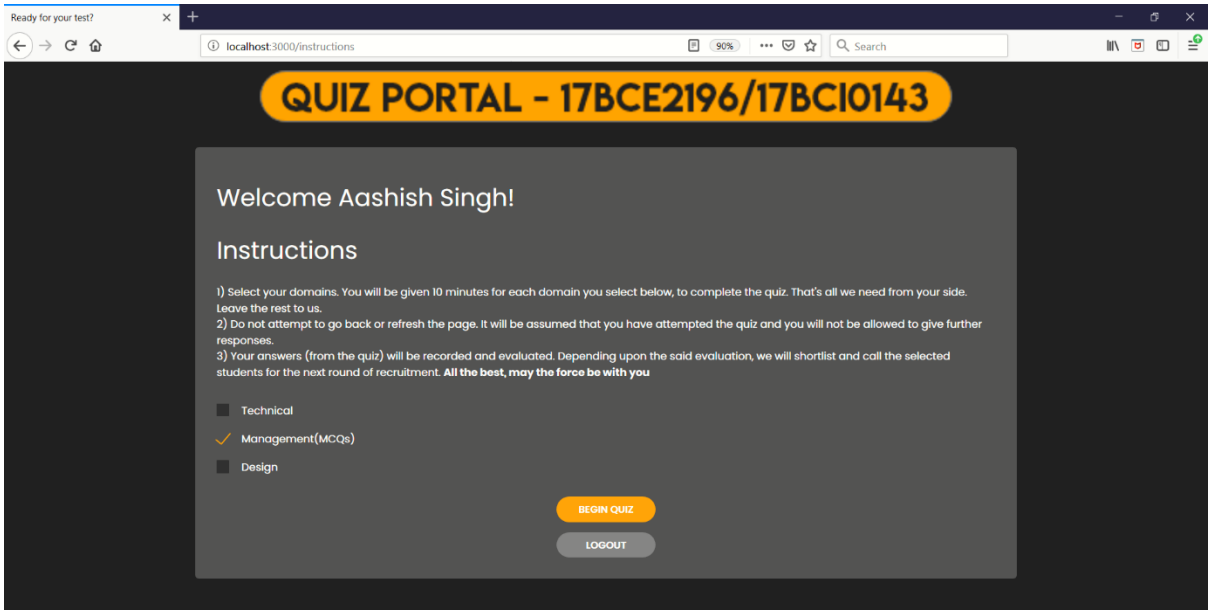
Login page



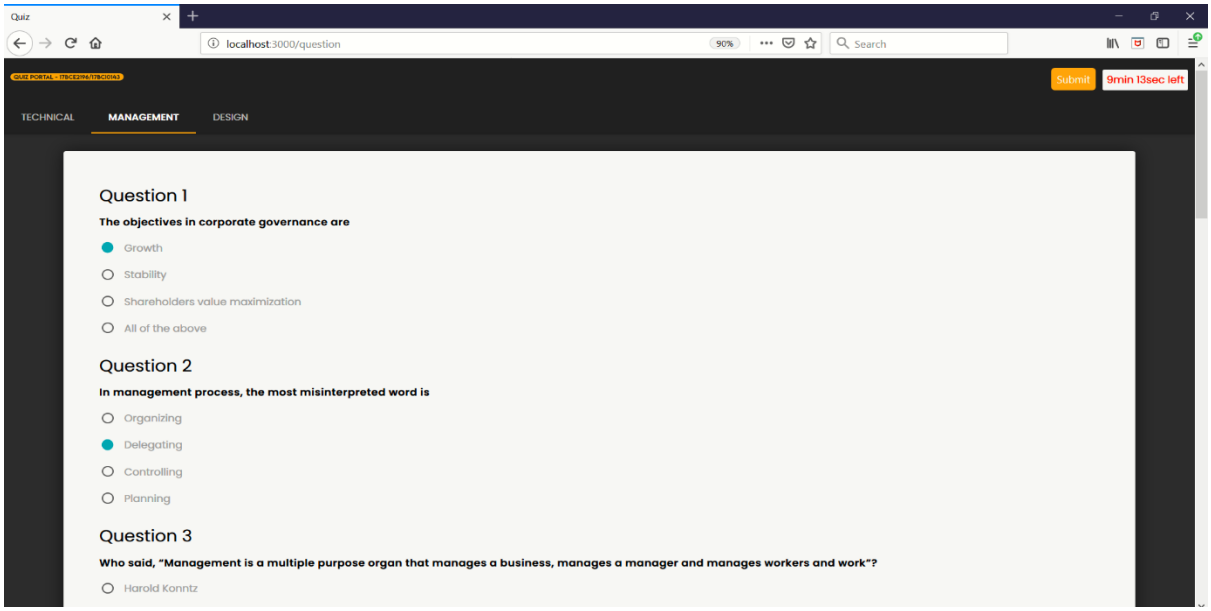
Sign up page/Register page



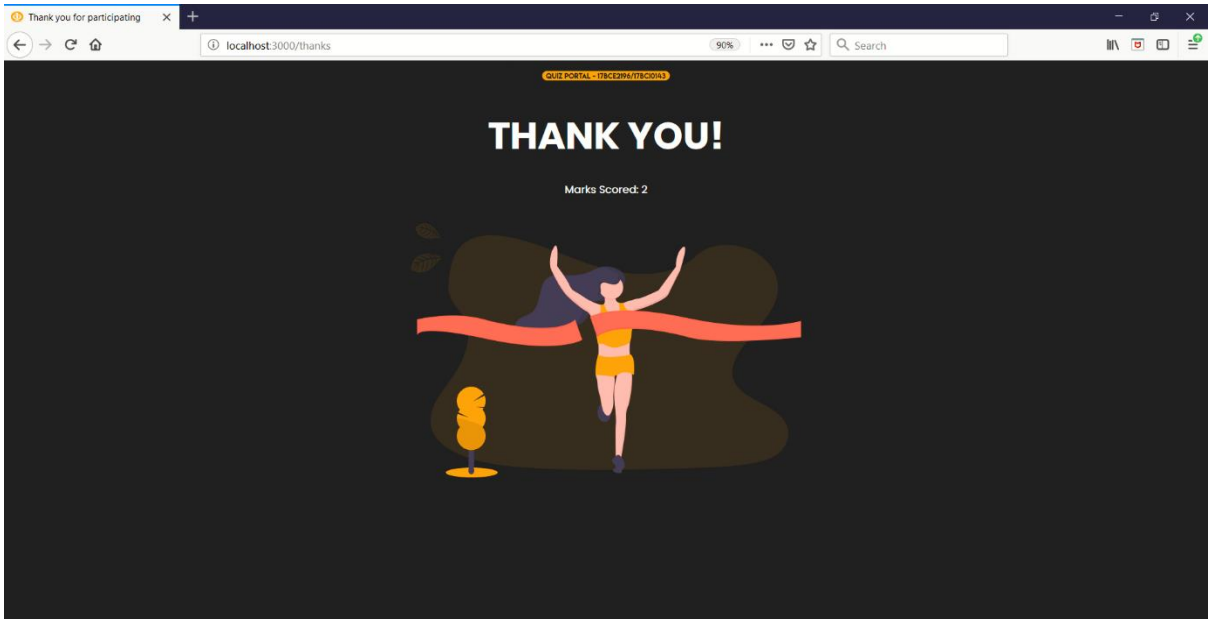
Login with the same details



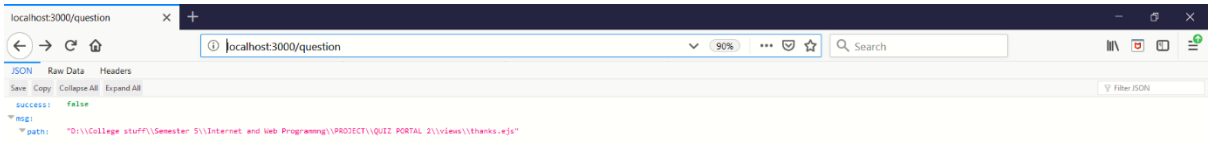
First page after Login to choose sections of quiz



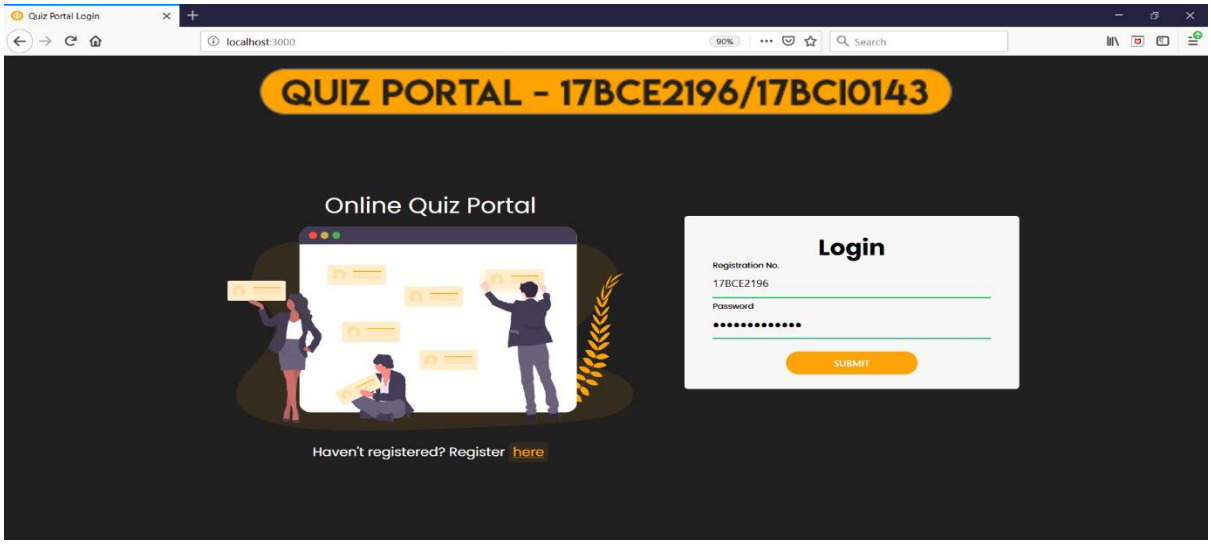
Questions of the selected section of multiple choice type



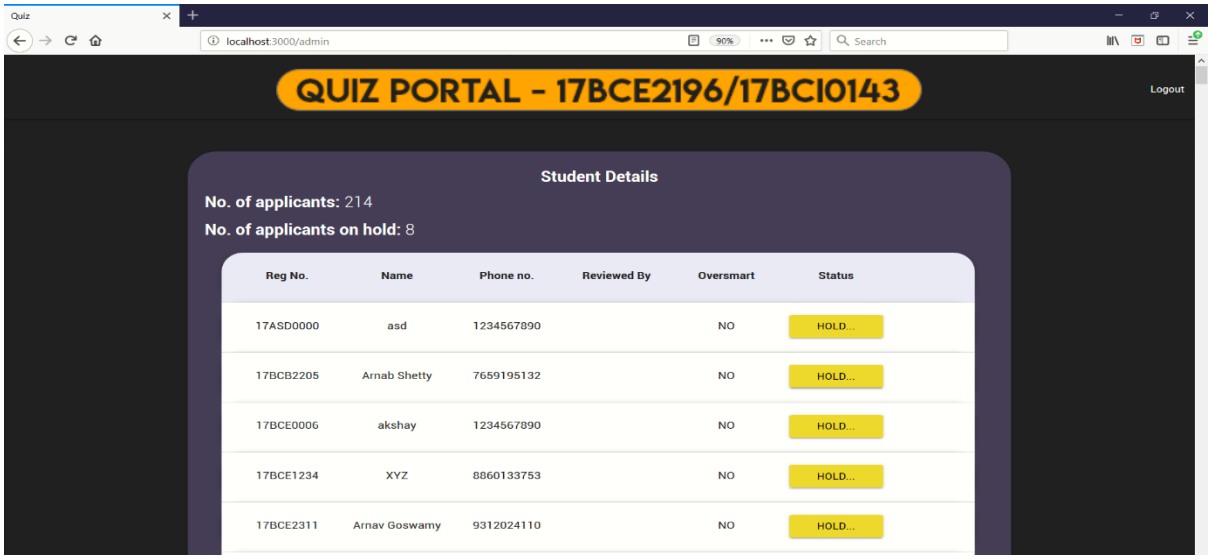
Final thank you page with the score or marks displayed



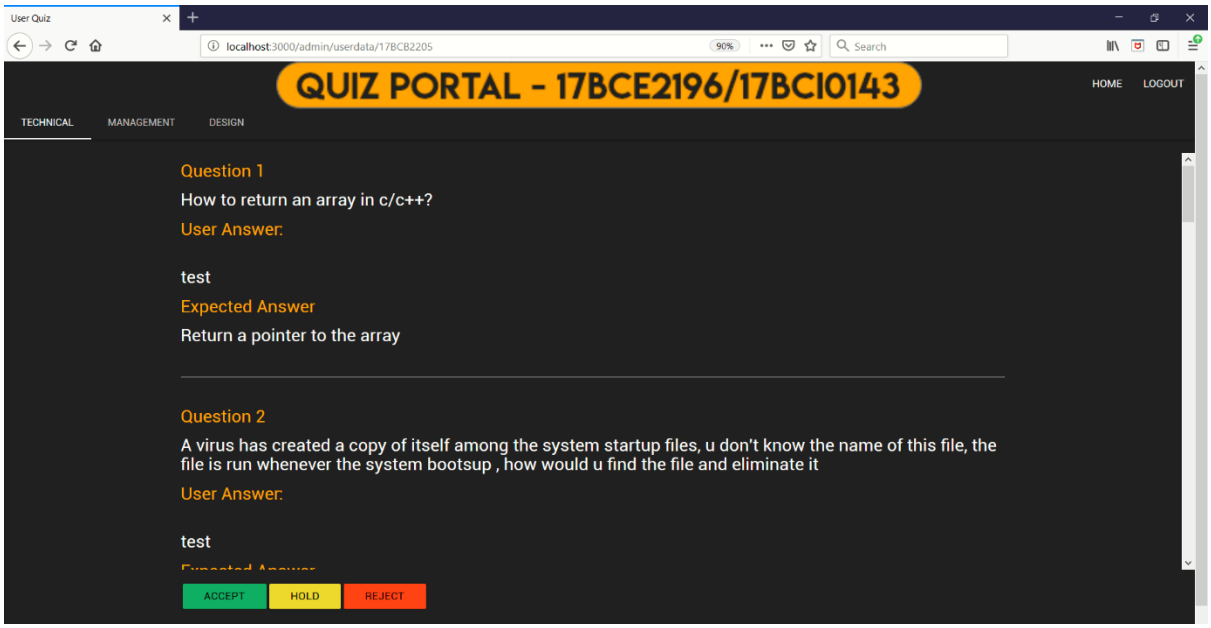
User cannot go back one section because of 1-way protocol that is set known as **middleware.**



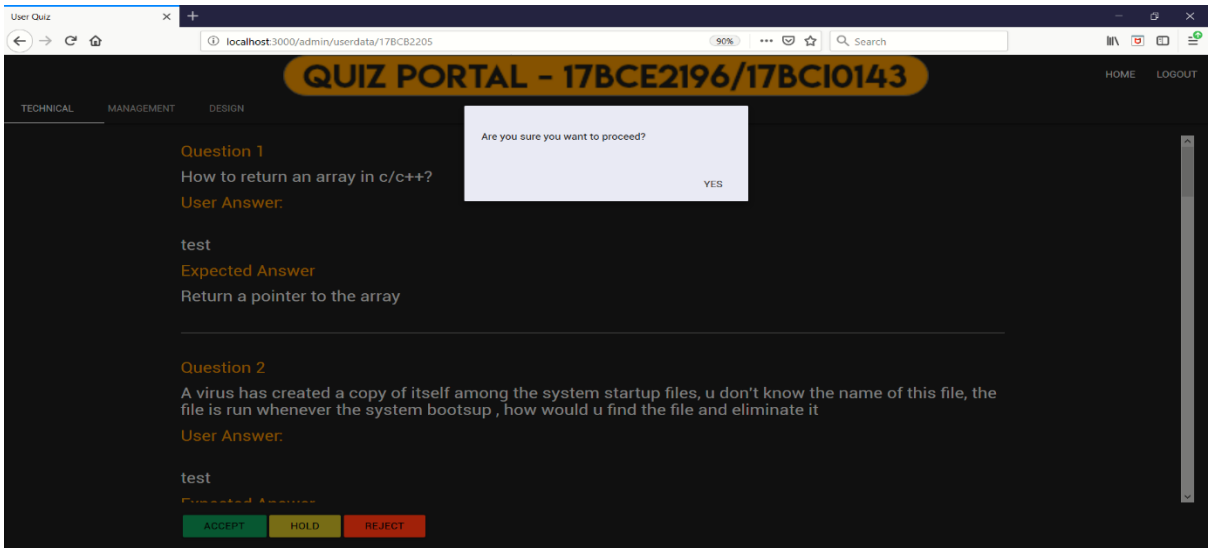
Login of the administrator ‘17BCE2196’ with the fixed password set in the Database



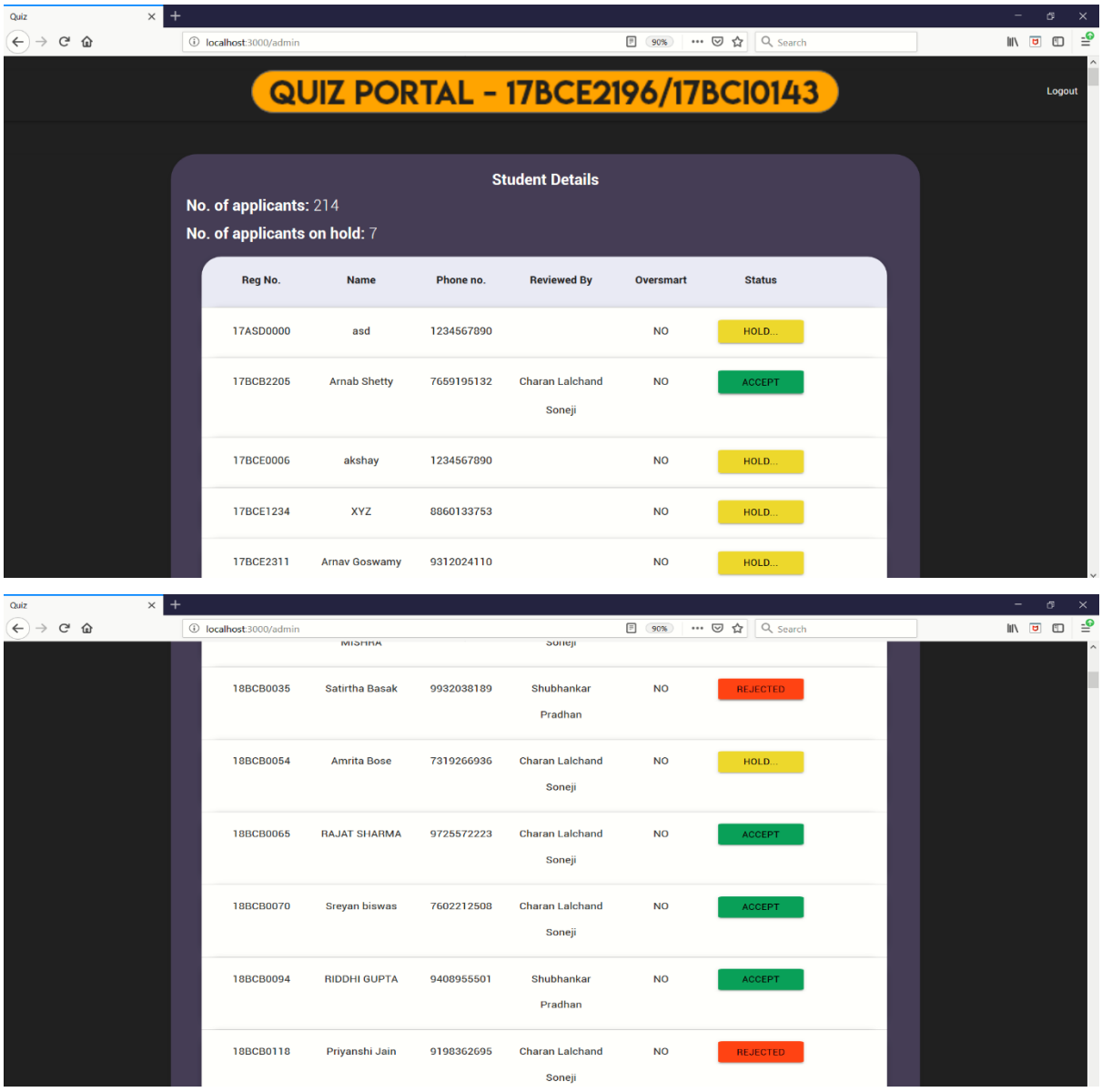
Set of users who have given the test along with a view to administrator to see the number of applicants and the status of acceptance, hold and rejection.



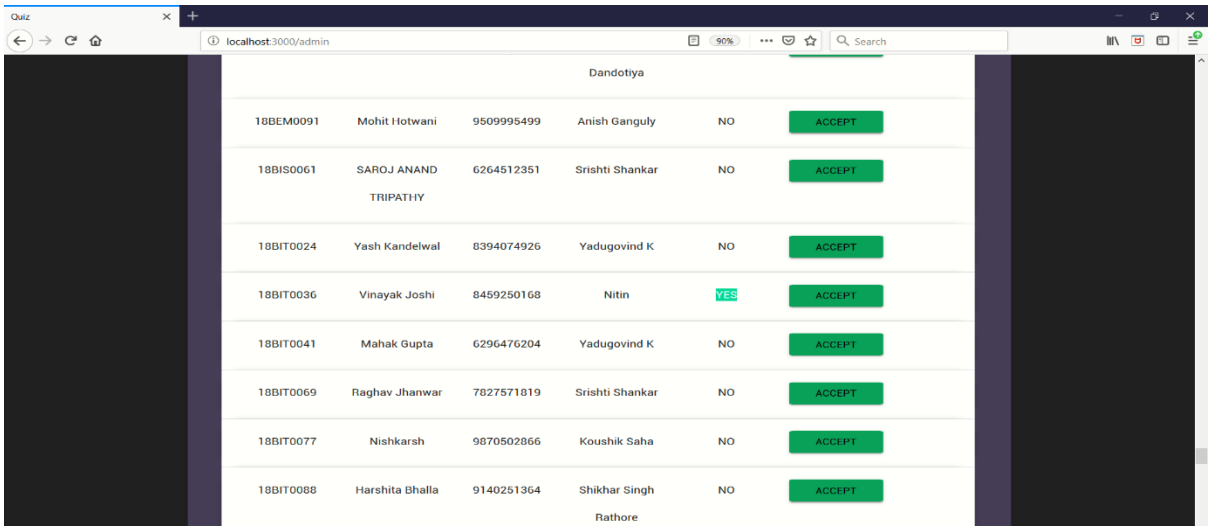
Answers submitted by the participant can be viewed



Submission before decision is made

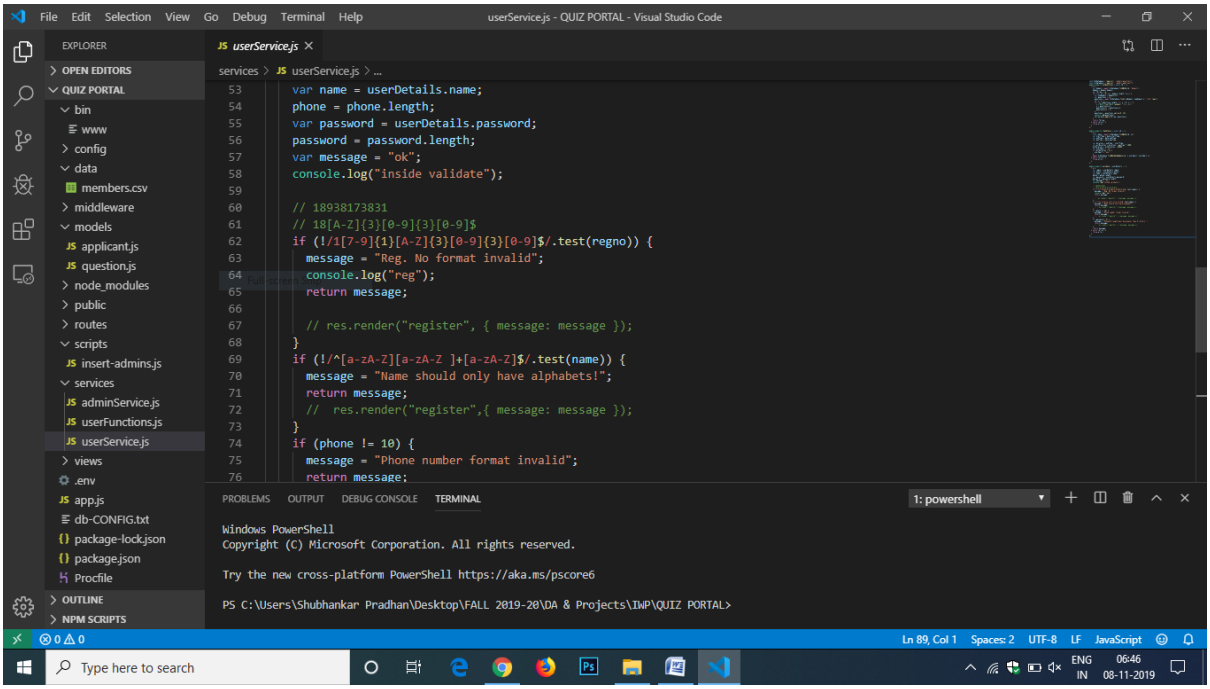


Acceptance status is seen along with the person who reviews it

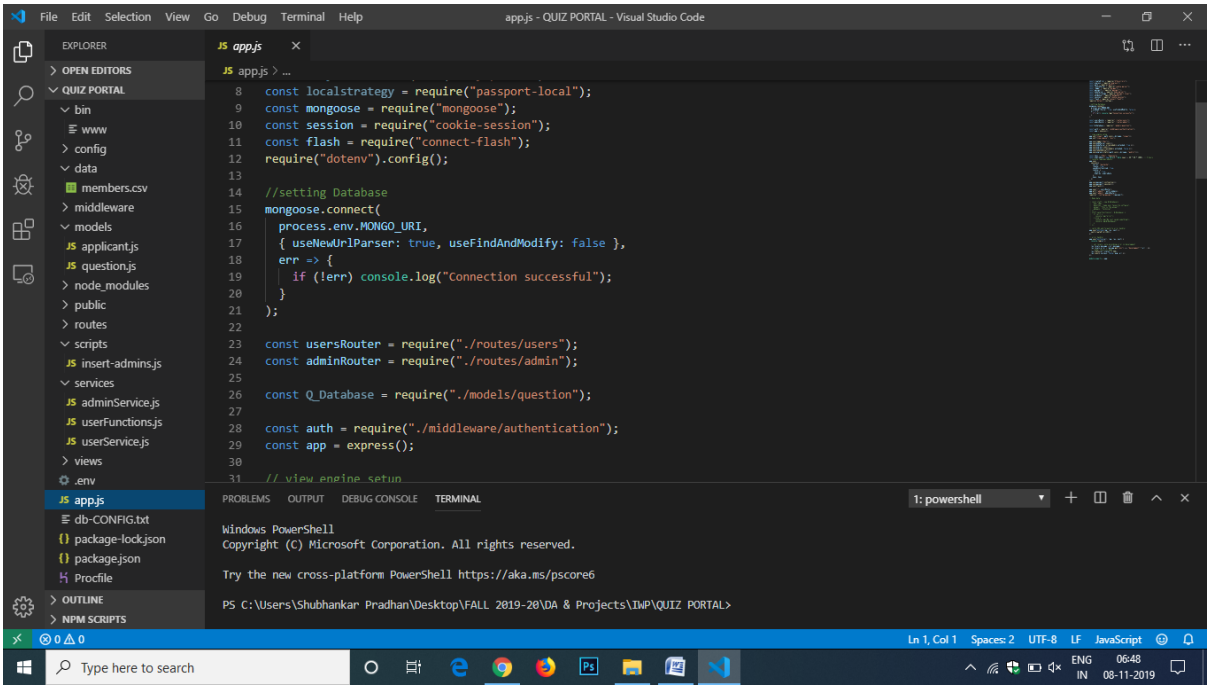


Over smart students are seen who try to manipulate the time using front end

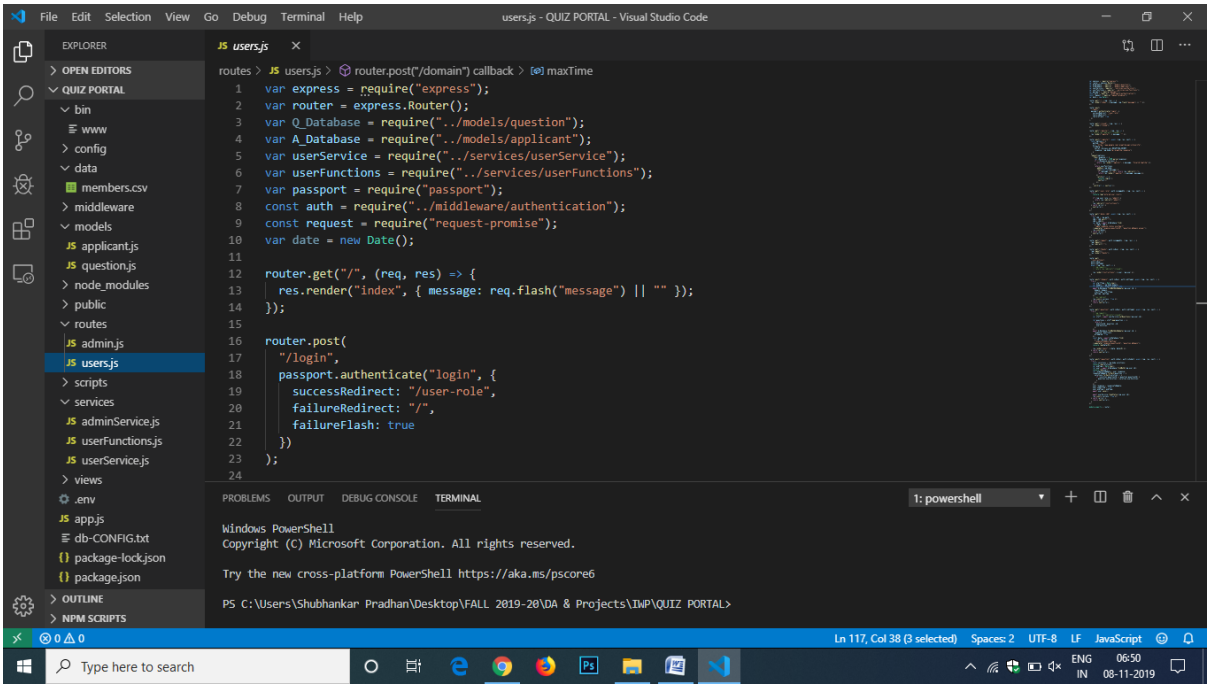
7.Code Snippets :



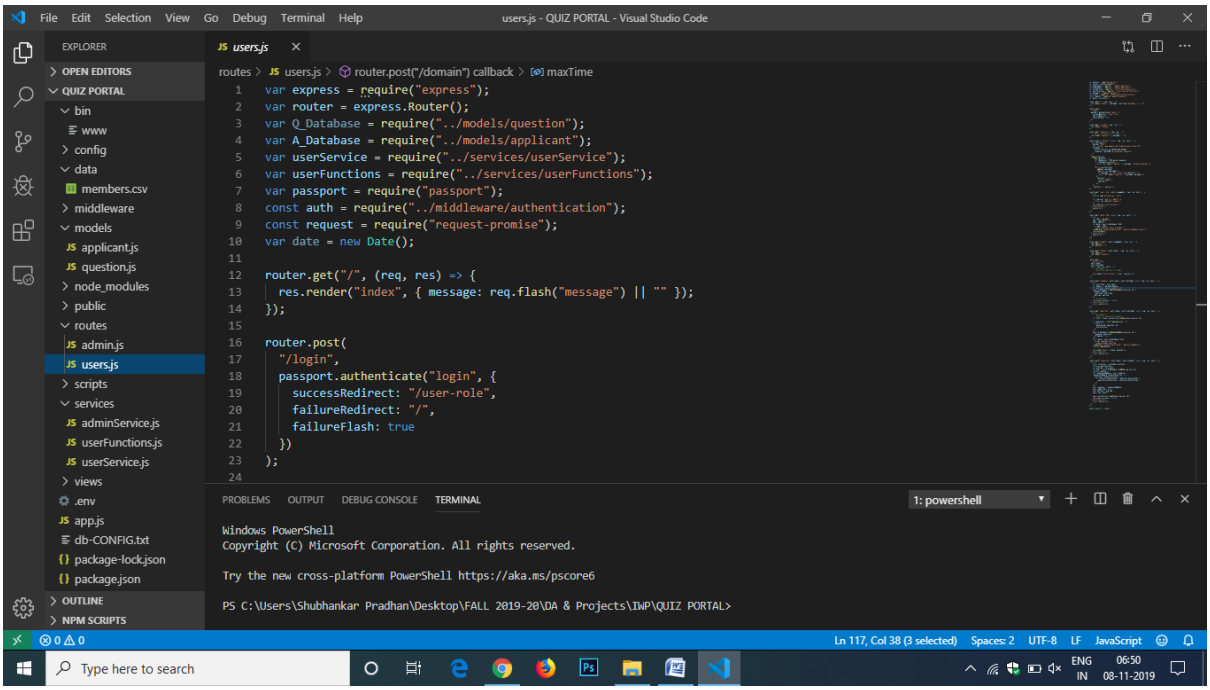
Using Regular Expressions for validation of user details on Signup page



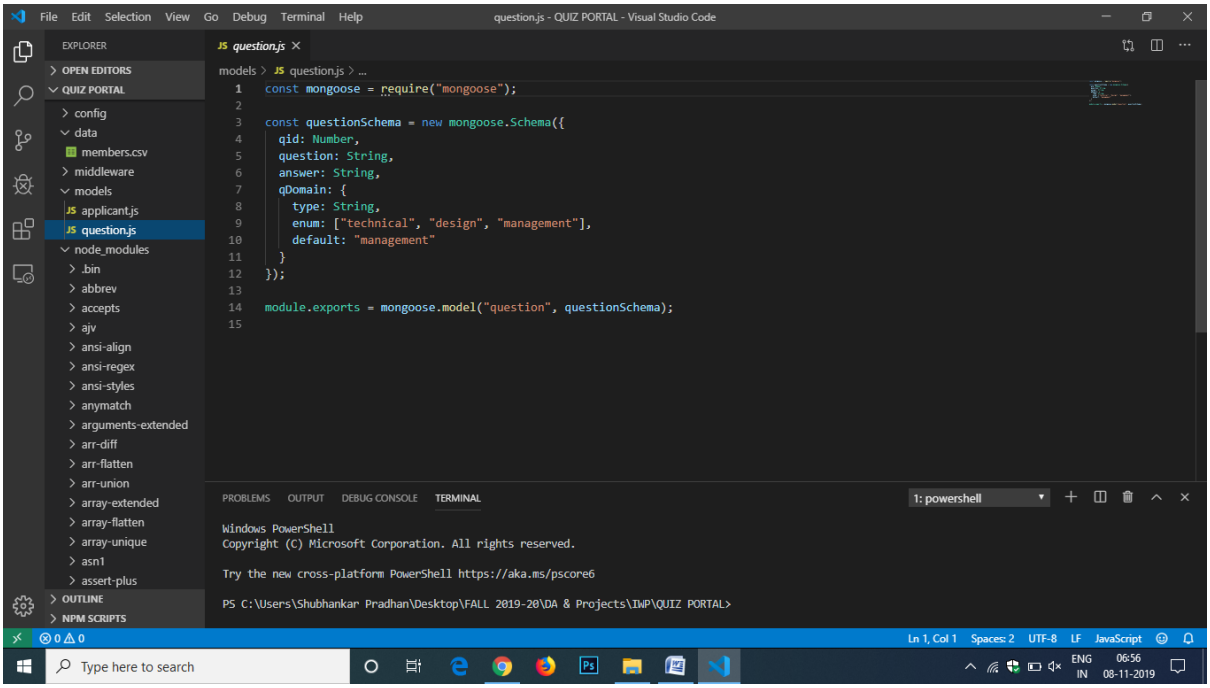
Setting up the Cookies and session



JavaScript for restricting users from accessing the Admin page (middle-ware)



Setting up the Database with Mongo DB



Fetching Questions from the Database for the sections chosen

8.Future Enhancements :

Online quiz portals are a popular form of Examination method for the modern society, where students these days have easy Internet access Most of the time and they can attempt the quiz remotely also. Online Quizzes are generally one of the easiest ways of conducting a quiz/short examination, both for the teacher as well as the students.

Online quiz is an efficient way of testing a potential examinee's knowledge without that candidate needing to travel to the exam hall, and only with the presence of a proper internet connection.

The quiz portal we made as of now has the ability to keep any type of questions, (maybe textual, or MCQs). With automatic checking for MCQs. Also it has 2 timers, one in the Backend and one on the Frontend, if someone tries to cheat by changing the timer duration on the frontend, it would show that the user who cheated is over smart on the admin side of the login.

For future Implementation of the portal, we may be able to add some more features, like correction of text based questions using data mining on the backend. Also we would be able to implement a script to avoid tab switching during the quiz so that the user would be unable to cheat by any means during the quiz/examination time.

9.Conclusion :

This project helped us in getting a clear understanding of development of a real world web application development is provided us with the deeper insight to the actual implementation of the web application scripts along with the detailed implementation of server side Java Script and the whole Backend whose server is run using the modules of NodeJS.

This Quiz system is perfectly made after assessing the real world problems; hence it can be used in real life scenario at schools and colleges, if they want to implement an online Quiz system for students and reduce the teacher's workload by using its automated correction system, as it has automated correction mechanism on the backend for MCQs given that the teacher has uploaded the list of question and answers on the Database.