

Web Based University Admission Preparation System

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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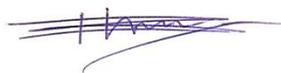
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APPROVAL

This Project titled “**Web based University Admission Preparation System**”, submitted by Prity Ali, ID: 172-15-9630 and Md. Raihan, ID: 171-15-9134 and Biva Mony, ID: 172-15-9874, to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on *11/09/21*.

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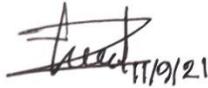
We hereby declare that, this project has been done by us under the supervision of **Shah Md. Tanvir Siddiquee, Assistant Professor Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

In our project, we are implementing a system where we can help the student who wants to get admission in undergrad in and University. We tried to connect and share different resources and merge them into one system. Usually a student after their HSC examination they try to get admitted to Engineering, Medical, and General Admissions in universities. We are trying to talk to all the students and help them to enrich their knowledge and prepare themselves for there is examination. Students can enroll in our courses which are organized for three types of students who wants to get admission in engineering, medical, and universities. We try to create a quiz exam which is almost similar to the admission test papers so that students can get an idea that how strong his or her preparation is for the admission test exam. So the main goal of our project is to help the students who want to get a good result and good preparation for their admission test exam. We have temporarily created a web app that can actually help the student to improve their confidence. We are working on it and try to get more examination papers, suggestions, and try to get an organized team from different sectors who can help the students by consulting and giving new suggestions.

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CHAPTER1

Introduction

1.1 Introduction

After finishing the HSC examination in Bangladesh, students try to get admission to any University for their higher education in under-graduation. Every year, over a million students, participate in the admission test examination. In 2019 they're almost 1.3 million students appeared on admission tests after their HSC examination. The number of public universities in Bangladesh is only 53. Each Public University have generally 500 to 700 seats for the students. So there is a huge competition for getting admitted to and Public University as the number of candidates is over a million. Bangladeshi Institutions are generally divided into three types: government-owned and sponsored, private-sector universities, and international universities (operated and funded by international organizations such as the Organization of Islamic Cooperation). Universities in Bangladesh are members of the Commission for University Grants. Most universities focus on a broad education, combining such study fields as business, technology, and engineering. There are 22 universities with the specialized curriculum. Two of them are devoted to Islamic studies, four to medical sciences, six to agriculture, six to engineering, one to textile engineering, one to veterinary medicine, another to aviation science, another to ocean science, and one to women's study.

In the majority of higher education students, Bangladesh has 53 public universities. These universities are supported as self-governing institutions by the government. The Dhaka Division has 13 public universities, eight of which are located in the city of Dhaka. In Chittagong, there are 7 public universities, in Rajshahi Division, there are 6 in Khulna, in Mymensingh Division. There are 7 public universities. Each division of Rangpur, Sylhet,

and Barisal has two of them. The Cluster method for student registration was introduced in Bangladesh by the University Grant Commission in 2020. Under this scheme, all public universities in Bangladesh are to be classified into five clusters one for agricultural institutions; one for academia, one for engineering universities, one for medical institutions, and the latter for universities of general studies.

1.2 Motivation

Based on the Modern situation in 2020 and 2021 we have seen that almost each and every education system is getting online because of this Corona situation. So students need to get prepared because the education system has changed a lot. Most of the students need to take the operation online because of the lockdown and pandemic situation. Students need to read online and practice from the examination. So we tried to build a system which really helped and inference that students to change the face of their study. Each modern problem needs to have a modern solution we are trying to build a solution for the students as part of the situation. This online system will help All sectors students because we are trying to cover all the admission sectors in Bangladesh. So don't want to get admission in medical, engineering, or in general education and universities, our system will help them to enrich their knowledge and help the students to get a good preparation and keep their confidence level up. There are a lot more options that will be available soon and we are working on them so that is our motivation for building this system.

1.3 Objective

The following facilities can be provided by the our System:

- Students can enroll in three sectors in our website.
- We are providing medical, engineering, general education, IT university course for that any students can take multiple preparation according to their will.
- We are trying to collect different sector admission questions so that students can learn form that.
- Students can participate in different quiz exams in our system and see their score.
- Students can enroll multiple courses and give examination and they can see their all score together.

We are trying to provide our best from different sectors to help the students. We are taking a very reasonable fees to give them access to our courses. These fees are for the manpower who do extreme hard work to maintain our system and also create different quiz exams as per every years admission exams. We have a goal to reach every student in our country to help them to take a good preparation for their exam.

1.4 Expected Outcome:

As we already know almost every year over a million a student is participating in the admission test. We try to enrich our system with more and more courses so that students can take the good preparation for all kinds of admission tests. And we are also trying to reach each and every corner of our country. So we are trying our best to create a simple, usable, and understandable for all students. Our system is performing quite well as it is in very primary stages, so we have a very good future plan to complete it and spread our system all over the country. So that in every sector and every level of students can exercise system with a very reasonable cost. We are also trying to motivate all the students with our system. So that each and every student can take preparation for multiple sectors, can keep their confidence level high. There are a lot of students who get depressed if they can get any chance. So we are trying our best to collect all the above questions which are necessary for their preparation and we also try to motivate the students by helping them and participating in our quiz system. Students can learn and take good preparation by participating in these exams which are available in your system.

1.5 Report Layout:

In this part we will cover the study representation and the entire report. The first chapter covers how our system is implemented, why we have chosen to select this issue as our project, the objective of the project and the results. In our second chapter, we also described the history and prerequisites, the labor involved and the comparative studies and challenges facing us as well as the intricacy of the matter. We presented a sort of marketing design in the third section and what the project has to accomplish afterwards to model the design standards. In the next part we displayed the schedule for the event, the chain, ER schedules and the state schedule. The front end architecture, backend design, user experience and implementation specifications were discussed in the following chapter. In the following section we looked at the execution of the database, the implementation of front-end designs and a number of photographs of the project, and how these images truly grasp the purpose of the project. We then examined a number of

test cases and tests. In the following section, we discussed the environmental and societal effects. In the last chapter we discussed the future developments and results.

CHAPTER 2

Background Studies

2.1 Introduction:

As we grow up, we have infinite dreams. Some people imagine that they float in space whereas others think that they may be professional sports. When you finish your school, we have a little grounded notion of what we would like to do for our HSC or A-level examinations. However, once the exam is complete, we find ourselves in a sea of bewilderment - "How can I get ready for acceptance tests? What do I start with?" And thereby the struggle for 3 months, like eons, begins. I hate to disappoint the question for oneself if you are still asking yourself this question, but you are about a month back. Given that key examinations at universities start in September and that several sessions take place at private universities, there is still sufficient time to catch up. The goal is to correctly manage your time and create a pattern that allows you to spend a few hours concentrating on all your courses. Remember, it isn't about how often hours you put your procedures behind when people beginning. The response is a loud "NO," like most other situations. Most admissions exams follow largely the national curriculum (HSC) except for certain commercial institutions that tend to follow the SAT questioning patterns flexible. Consequently, you just want to get firm grips with the linked themes of your guidebook in order to be prepared for pure subjects, engineering, and medical schools. So you may prepare yourself at home simply if you think you can hold your concentration long enough to study for full-focused hours. However, if your comprehension of the issues is deficient and you require support, you should receive this further assistance as quickly as feasible. You should accumulate materials in past years to obtain an idea of the arrangement of questions and rehearse the papers in a certain time period. Additionally, you may even gather your friend's and colleagues' mock/model questions for further practice if needed. This saves a significant amount of valued time that our unpredictable traffic circumstances would also have squandered anything else.

2.2 Related Work or Studies:

We decided to create our web by using React JS. But at first, we have to gain proper knowledge about HTML and CSS. [6] HTML CSS actually helps us to understand how we can design and how we can implement different elements in react JS. After having enough knowledge about HTML and CSS we started to learn about React JS. React is a free and open-source JavaScript toolkit for the construction of user interfaces or user components. React (also known as React.js and ReactJS). Facebook and a network of engineers and companies continue this process. In developing single-page or mobile applications, React might be utilized as a basis. However, React simply deals with State management and transfers the state to the DOM, which makes it typically necessary for the creation of React apps to utilize extra libraries and certain customer functionality. [1] Node.js is a JavaScript back-end runtime environment running on the V8 engine, cross-platform, and running JavaScript code from a web browser. Node.js allows developers to use JavaScript to create command-line tools and scripts to server-side scripts to build dynamic Web page content before the page is transmitted to the web browser of the user. Node.js, therefore, represent a paradigm of 'JavaScript Everywhere' which combines the creation of web applications around the same language as server-side and client-side scripts rather than distinct languages. [2] Express.js is a back-end application tool for Node.js, which is available under the MIT license as free and open-source software. It is for the development of web apps and APIs. The de facto standard Node.js server framework has been named. The creator defined it as a server influenced by Sinatra, thus many functionalities accessible as plugins are rather basic. Express, combined with a MongoDB database software and JavaScript front-end framework, is the back-end of popular development ports such as the MEAN, MERN, and MEVN stack. [3] JavaScript is, in addition to HTML and CSS, one of the basic World Wide Web technologies. It is used by the website's customers by more than 97 percent of websites, which typically incorporate libraries from third parties. The JavaScript engine for executing the code on the user's device is used in all major web browsers. JavaScript offers event-driven, functional, and imperative approaches as a multi-paradigm language.

It includes APIs to handle text, dates, frequent expressions, standard data structures, and a Model Document Object (DOM). Originally just web browsers were using JavaScript engines, but now they are fundamental components of numerous software programs. [5] MongoDB is a document-based database software offered on a cross-platform basis. MongoDB employs optional schemed JSON-like documents classified as NoSQL database software. MongoDB is created and licensed under the public side server license by MongoDB Inc. (SSPL). [4]

2.3 Comparative Studies:

Admission coaching centers are much more useful than the previous one for training business schools because not all the information is so well organized. But this may also be done at home. These examinations require less textual knowledge as they are aptitude tests. It would be more beneficial to have a firm mental grasp of the core subjects we all master in English and in mathematics in our school years. Websites such as majortests.com and 10minuteschool.com provide sufficient resources to practice from the heart of your homes for these tests. Each college has its own set of standards. Rest assured that, with the exception of top-end engineering colleges, you typically do not require a direct A or a flawless GPA score. In each website and the circular of the universities to which you wish to apply, you may discover the required criteria. We frequently feel that maintaining our choices open is the best approach to deal with situations since we have a cultural tendency to avoid ambiguity. If there is a circumstance in which this idea can trigger, the input tests are likely to take place. Although numerous preparations cannot be carried out at the same time, it is quite unlikely for an average individual to meet the enormous task. Certainly, you may prepare for several colleges which demand comparable topic knowledge, but trying to prepare for universities in entirely unrelated disciplines is quite ambitious. "Engineering training corresponds with major universities in scientific departments. You may thus simply prepare yourself together for saying 'A' Unit of Dhaka University and BUET, as most common papers such as physics, chemistry, and mathematical work need to be replied to. Medical preparations are very distinct from other preparations. It can out to be catastrophic to try

to prepare jointly for medical and business schools and engineering institutions." Since the time during this period is quite restricted, it is vital to count each second. Shuffling back and forth not only generates extra mental strain but also removes the much-needed spatial awareness and resolve.

2.4 Challenges

While doing this project we have faced a lot of issues. We have used React Js as our front end and use express Js as our back end. We have used MongoDB as a database. We have to collect different sector questions in different years. We have to create a big collection of medical, engineering, and other universities question so that people who use our system can see the previous and the latest versions of admission tests. So we have to face a lot of problems when connecting these questions. And we have to arrange the question four different sectors. And also I have to find the correct answers for the users. We try to give the user Almost 100% correct answers for the quiz and questions. I bet that was our biggest challenge for this project.

2.5 Scope of the Problem:

It is recommended to appear on each and every entrance test consisting of the same subjects as you have researched. There are two beneficial consequences. First, for the most concentrated test, you are warmed up. The more exams you take, the better in the examination hall you can deal with your worries. So you'd like to rehearse and sit as often as possible for tests. Second, it makes your mind easier if you've had a support system on the field in which you wish to learn. You may hold the much more important examination because you do not consider it to be the best thing in the world. The majority of entrance examinations follow the national curriculum as previously indicated. English mediums must thus be adapted to the subjects whereas Bangladesh mediums are automatically used to the curriculum.

"I had to feel strained in the 1.5 months from the enormous HSC syllable. As Such levels maintained a conceptual manner, I was not used to devouring huge volumes of material "Swapnil Saha said Dhaka University, an undergraduate in electrical & electronics engineering. However according to him, routinely exercise and solve prior documents as

often as possible to acclimatize to the sequence of questions is the best method for him to adjust to change. In essence, whereas the medium surely does not alter chances because topics in each of these mediums have already been taught, the student's perception of the contents is influenced. Initially, English medium pupils require a little time adjustment, therefore it's advisable to start early and get the chapters done. It's a bit challenging here. Given that quality and experience vary greatly from institution to university, it is impossible to answer the issue objectively. However, private institutions have some advantages that are not accepted by most public universities. A girl with a BA from North-South Institution explained what benefits can be gained from a private university. "Perhaps the nicest thing is the fact that you pick your own courses. You can explore additional areas of your choosing instead of being trapped with courses you don't desire. For example, I took a Mandarin course and it was quite intriguing. Whenever it comes to private institutions, you have so much more options than most public universities. The entrance price and associated expenditures for many, however, might be quite high. So, private colleges can sometimes be wonderful options if you are someone who wants to explore fields of studies and therefore can pay the cost. It is also a good idea for certain private colleges to check the numerous bursaries and scholarships.

CHAPTER 3

Requirement Specification

3.1 Business Process Modeling

Computer development is a term that describes a company to assess, develop and simplify its current process. BPM is generally conducted by industry scientists that have modeling knowledge; by subject experts that have system know-how or, more commonly, by a team including both. Alternatively, the procedure may be derived directly from multiple sources using tools for predictive analysis. Many sub operations that have their very own features yet continue to add to the general purpose might break apart a trading technique. The business to business processes comprises mapping and sub-processing to their layer. A business process model outlines how operations are done to accomplish the desired objectives of a company. This model remains an abstraction based on the model's anticipated purpose. The business process workflow or co-operation can be determined. It can be constructed on a number of levels. To use a treatment method for the technical definition of an IT device that processes sensitive information from the constructed secret office. The article discusses the usage of the BPMN modeling technique to manually identify processes and to automate them by means of modern technologies. In addition, the accuracy of the structural and dynamic analysis approaches was assessed using instances (process simulation). The extension of the procedure analysis method allows for the use of processes and process mining approaches.

3.2 Requirement Collection and Analysis

- **User:**Users can see what type of course and what type of service we are providing without logging. But when the user wants to see the details of our services and provided courses the user must have to log in.
- **User Booking process:** Before accessing the courses we provide the user has to enroll in our courses by completing their payment system. User can complete their payment by using Bkash. After completing the payment our admin when gender conviction ID which is given by the user in our website and which is stored in our Bkash account, if that transaction ID matches the admin will give the user access to their courses.
- **View Score:**In this feature user can see all the previous quizzes he/she have been participated and all the scores he or she have done by using our system. And the history of the scores and all the details like booking type, payment,and other things will be shown.
- **Admin:** Admin have the authority to access everything in this project. Admin can see how many users are using this system, how much they earn by the registration of new users by the host, and also the number of courses and students have been booked. User can create a new quizzes and courses. And also maintaining and access the previous area to change or add some new features.
- **Registration:**User have to be registered in our system. The user can book the existing courses and the admin can keep their track and other access. So user have to be registered to access all the facilities we are providing in our project.
- **Login failure:**If no user provides the details, an error message appears.

3.3 Use Case Modeling and Description:

The case schedule shows how machine users communicate with the Software. The user can search the application with the login option. You must log in or enter the device first as a new user. In the use case only the system's main feature is shown. The clients participate or participate. The case showing characteristics:

- User Registration.
- Login respectively.
- Admin give access to the user.
- Admin add new courses and quizzes.
- Admin observes all the activites.
- User book different course we provide in our system.

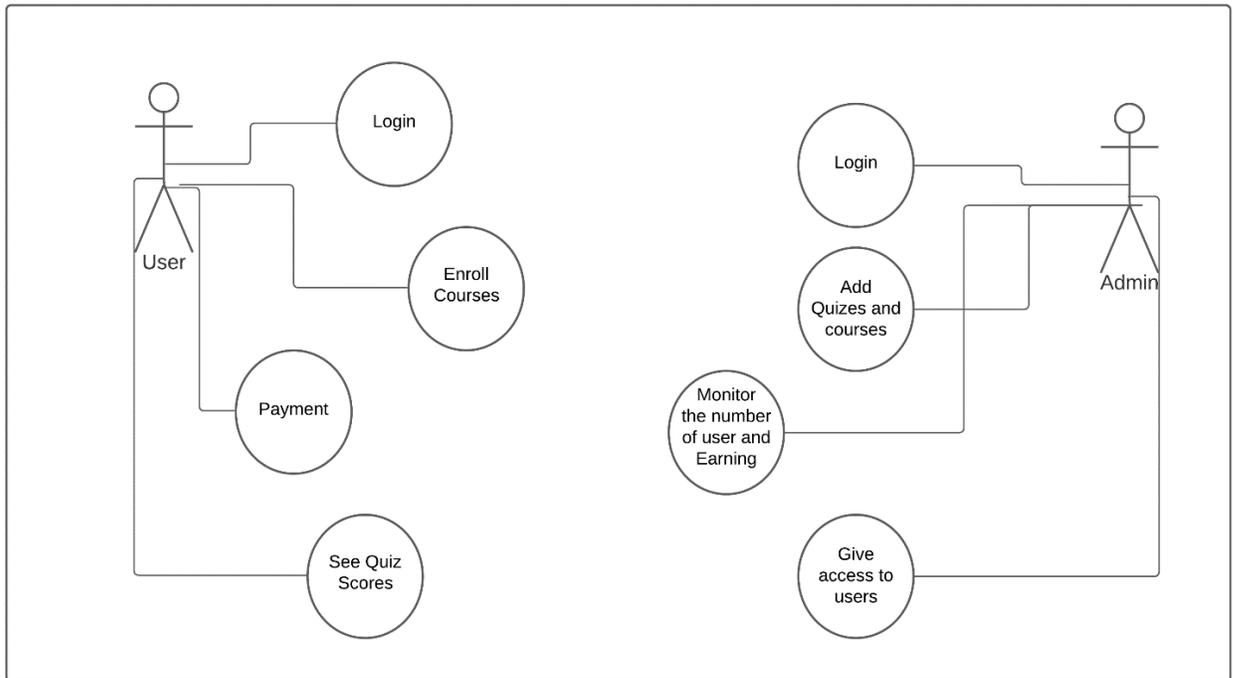


Figure 3.1: Use Case Diagram

3.4 Logical Data Model:

Here you will find the characteristics and links of database items using a database dictionary and crossover table. These data items are taken into account. The three primary elements of the communities comprise the Our system. The first involves saving user records, the second relates to the data module of course and the third concerns the data module of quizzes. The data contained in a logical data model database is logically represented by a computer.

3.5 Design Requirements:

Architecture seems to be the stage according to demand and construction needs. The architecture of software consists of three technical activities - design, coding, performance and testing that are necessary for the software design and verification once analysis and sound parameters are defined. Design activities are of crucial importance at this stage, because decisions influence the success and ease of program implementation. Those considerations eventually relate to performance and efficiency and management. Designing is indeed the greatest approach to correctly convert customer requirements into a final program or gadget. The location to promote impressive performance is architectural. Computational analysis is a technique by which the requirements may be converted into a software representation. Two stages of the program are established. That the very first step is to transform requirements into percentages.

- 1) Use case Diagram
- 2) Sequence Diagram
- 3) The ER Diagram
- 4) The State Diagram

3.5.1 The ER Diagram:

ER seems to be a diagram that displays a referencing in a database of entities that are also known as the ERD diagram. In other words, ER graphs tend to show the logic of the database. Diagrams depending on ER consist underpinned by three key concepts: entities, characteristics and relationships. ER charts provide several representations of the individuals, ovals and the shapes of diamonds representing interconnections utilizing rectangles. HE chart In order to construct a distributed database, ER Modeling enables you to continually analyze data criteria. So it is a preferable practice to finish ER modeling before adding the database.Allow you to

discover commercial connections simulation conditions of employment. Enter a view of the connection of each table to the fields. Helps to recognize people, features and relationships. You can transform ER diagrams into relationship tables, allowing you to construct databases rapidly. ER diagrams can be utilized by computer programmers as a template for data implementation in certain software systems. The Databases Designer may comprehend information in the database better with the use of ER diagram. ERD Diagram is allowed to communicate with the conceptual architecture of the database.

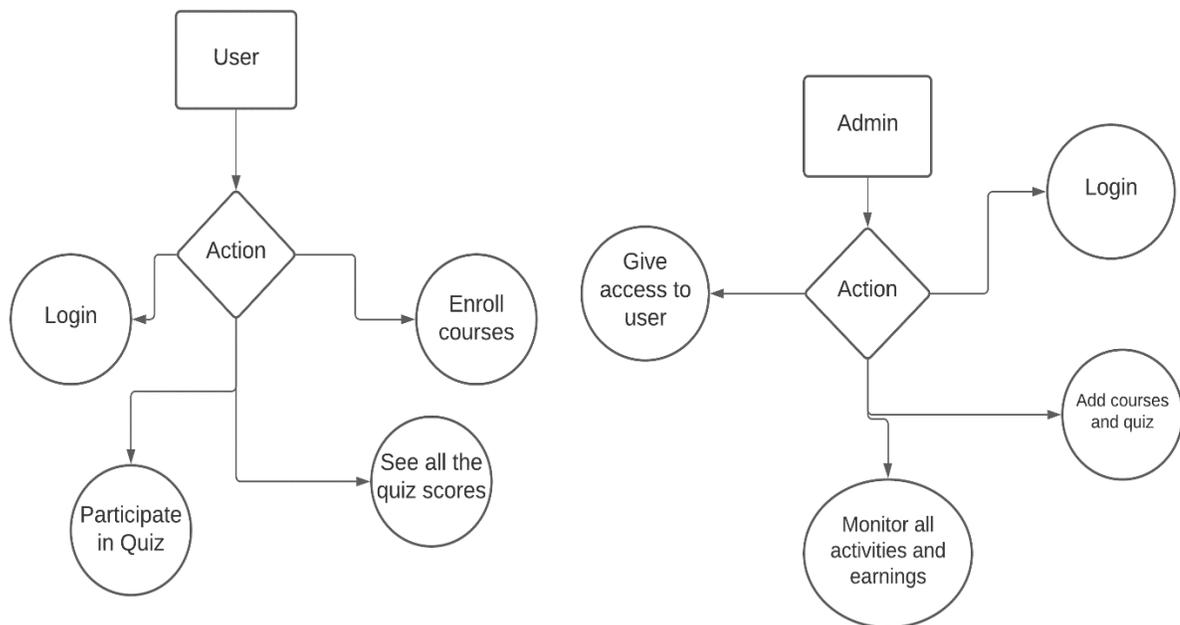


Figure 3.2: ER Diagram

3.5.2 Sequence Diagram:

A time-specific interactions between items is shown in a sequence diagram. It displays the objects and the chain of communications between objects needed to execute the scenario operation. Sequence diagrams are frequently linked in a logical view of the approach being developed with case studies. Sequence diagrams are often called incident diagrams or event scenarios.

Different mechanisms or entities exist in a sequence diagram as comparable vertical stripes simultaneously and in the manner in which these are communicated as horizontal arrows between them. This permits the graphical definition of fundamental runtime circumstances.

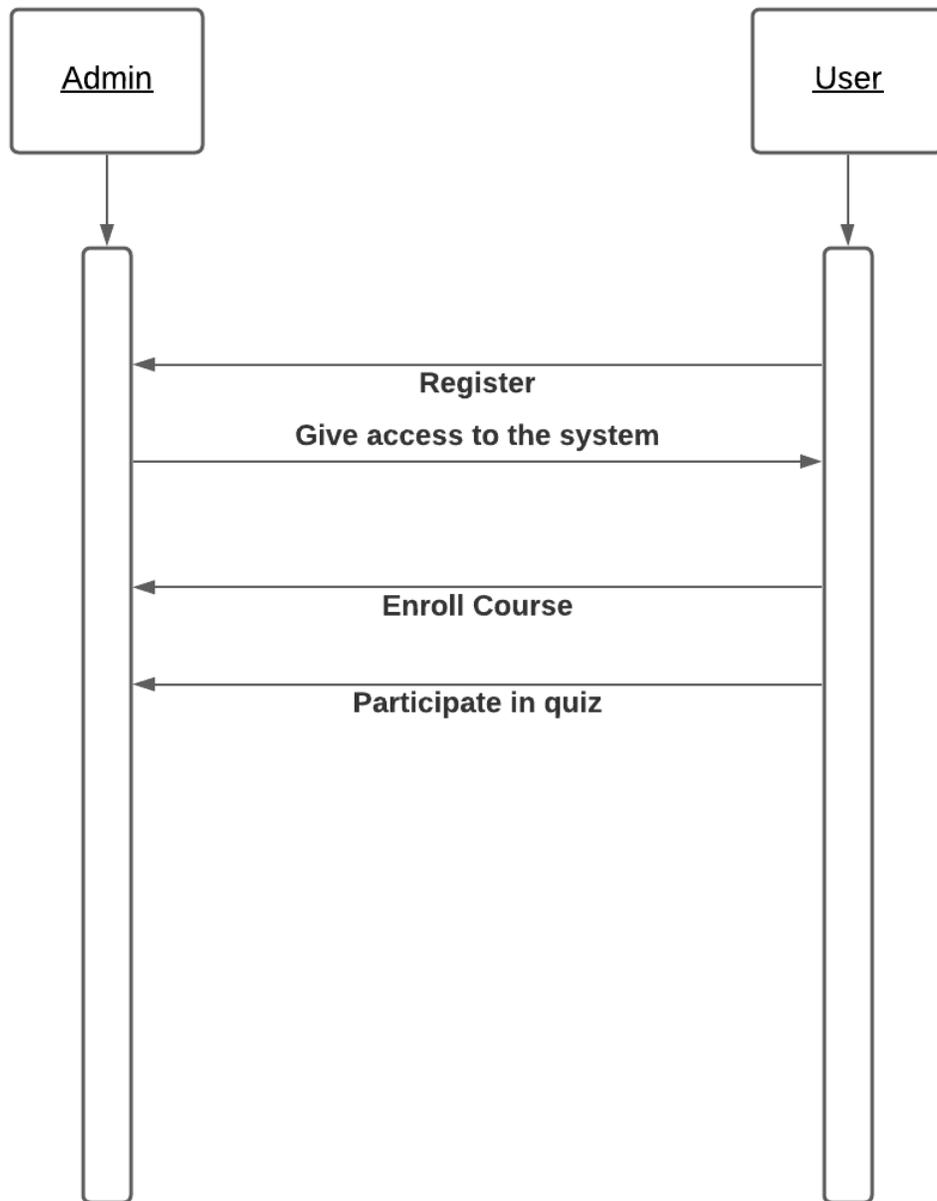


Figure 3.3: Sequence Diagram

3.5.3 State Diagram: A state diagram is a type of diagram used in computer engineering and related disciplines for describing system activities. State schemes need a restricted majority of cases to form the stated structure. Which is often true, while this is a logical abstraction at other times. Many forms of mathematical functions with slight variations and separate semantises are available.

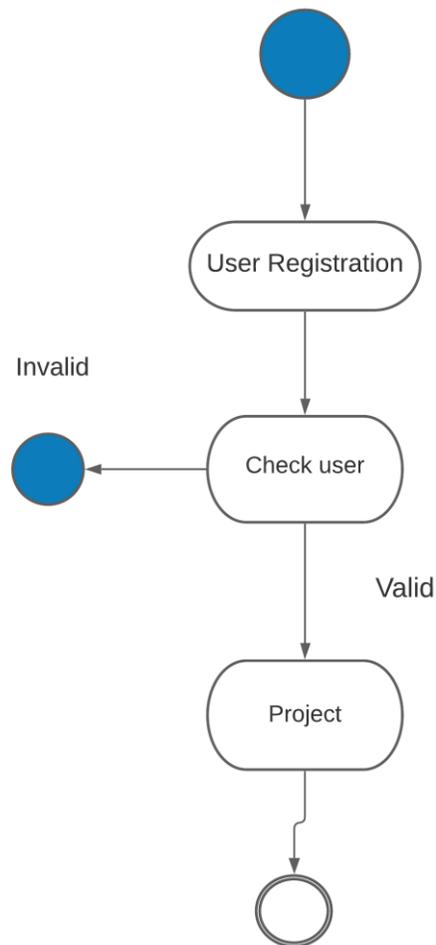


Figure 3.4: State Diagram

CHAPTER 4

Design Specification

4.1 Front-end Design:

The front end comes with what you see – HTML, CSS, React Js etc. React seems to be a JavaScript library that is declarative, fast, and flexible to create UI. In MVC, its 'V.' React JS is a component-based fully accessible front-end technology that is mainly accountable for the application's layered architecture. Facebook keeps it up. React employs a descriptive approach to facilitate the reasoning and efficiency of your application. It builds basic views for every State in your application and when your data changes, React will effectively update and make the correct component. The state view makes it easier to troubleshoot and much more predictable. A multi-component reaction application is constructed of each component to generate a tiny, reusable HTML element. In order to construct complex applications out of fundamental construction blocks, components can be nested in other components. A constituent may also have a hidden representation, for instance, a variable relating to the currently active tab might be stored by a Tab-List component. A bunch of Facebook engineers learned during the construction of client-side apps that DOMs are sluggish (the Document Object Model is an HTML- and XML-document API). It describes the logical structure and manner of accessing and handling a document). To speed it up, React provides a virtual DOM that's essentially a JavaScript DOM tree representation. So it uses the virtual version of the DOM whenever it has to be read or written. Then the virtual DOM will seek the best approach to update the DOM of the browsers. Control elements are simple structures and are inexpensive to construct, unlike browser DOM components. React DOM updates the DOM to match the components of the reaction. It is because JavaScript is incredibly quick and it's worth having a DOM tree in things to speed it up. Although React was designed to be used in the browser, it may also be used from the Node.js webserver due to its high architecture.

4.2 Back-end Design:

Simply said, it's a platform-dependent for free JavaScript and free and open-source development that enables users to easily develop network apps. This is a JS runtime on the V8 JavaScript motor of Chrome. Both Node as well as the JS executing on the same platform in your browsers It's an open-source engine that takes JS code and compiles it in a significantly quicker machine code. Uses a – anti I/O paradigm driven by events that makes it light and efficient. What is programming based on events? Essentially, your program flow is a different way of thinking. Your program flows are characterized by the occurring events. Object-Oriented Programming is a model of programming language wherein the program controls the flow of events. These events are watched by a code called an event listener which usually uses a callback function or method if it detects the event given to it. This manager handles the event by using the program code. As part of the language, Node offers the event loop. The moment you call Node it is not necessary to call a beginning function to establish a circuit that is waiting for events. The sequence begins the couple of seconds you commence node and ends only until the last callback is called so if you create a server you will never end this callback because it was always queuing for an HTTP request to come in and so your program will not be stopped until you tell the callback to stop. You will only start the loop when it comes to the very last callback.

4.3 Interaction Design and UX:

In terms of information interface, interaction structure is highly essential. This model is useful. Interaction Architecture relates in particular to the development of a user interface for a website. UX is fundamentally user pleasant due to the user-friendly construction of this website interface. The word "UX" relates to the process of the front end. Using the experimentation of a developer, it identified how they utilize and enhance an app/site. It ensures client loyalty via improved functions and effectiveness.

4.4 Implementation Requirements:

React is a Javascript framework used in the construction of user interfaces using reusable UI components to make single-page apps. React is used to construct interface applications that connect with the backend server. It will be beneficial for you to follow this article:

- 1) Node.js, Express, npm, and React.js previous experience.
- 2) Installed Node.js.
- 3) Text editor, VS Code preferring.
- 4) A Google Chrome Web browser.

MongoDB is a document-oriented fully accessible database. It is utilized to store more data and enables you to utilize them as well. MongoDB does not rely on the table-like relationship database management system but delivers completely alternative encryption and decryption method for the data, which is why the database is called NoSQL. The word "NoSQL" here refers to "non-relational." BSON is the storage format (similar to JSON format).

Drivers: Drivers that interact with MongoDB are available on your domain controller. C, C++, C#, & Net, Go, Java, Node.js, Perl, PHP, Python, Motor, Ruby, Scala, Swift, Mongoid are supported, drivers.

MongoDB Shell: MongoDB Shell is an interactively MongoDB JavaScript environment. It is utilized for inquiries, data changes, and administrative functions as well.

Storage Engine: That's an essential element of MongoDB used to handle the data saved on the disk as well as on the memory. Numerous internet companies can still have MongoDB. The conventional google analytics known as the Wired-Tiger Storage Engine is a good Storage Engine that produces products with your data such as reading, writing, etc., if you wouldn't want to use your customized web browser.

The Application Server has two main components; the first one is the Interface Design and the second is the Backscreen (server). The front end is where all the web or mobile device uses MongoDB. Websites, mobile applications, and default Android, iOS, and so forth include web-based and mobile phones. The backend comprises a server for control

in the specification, which providing a service or a mongo interface to utilize queries to interface with a MongoDB server.

These requests are forwarded at the database system to the MongoDB server. The MongoDB Connection is now sent to the operating system to receive queries. The server does not read data files or disks or memory associated metadata to the MongoDB server. The storage engine is responsible for transferring or writing the data in the files or memory after sending the received queries onto the storage engine.

CHAPTER 5

Implementation and Testing

5.1 Implementation of Database:

Make sure first that you have Node.js installed. Node 4.x or above is required for the current MongoDB Node.js Drivers version. I used Node.js 14.15.4 for these examples. For additional information on which version of Node.js is necessary for every edition of Node.js driver, see the MongoDB Compatibility Docs. You can simply communicate with both the MongoDB Node.js Driver using Node.js apps with MongoDB database. To attach to your database and perform the queries outlined in this Quick Start series you will require the driver. Node.js enables the construction of web servers and networking utilities with JavaScript as well as a set of 'modules.' Filesystem I/O, networking (DNS, HTTP, TCP, TLS/SSL, or UDP), binary data (buffers), encryption, data streams, and other fundamental functions are supplied with the module. The modules of Node.js employ an API meant to decrease server writing complexity. JavaScript is the sole language native to Node.js, however, several JS-to-compile languages may be used. Node.js apps may thus be written to Coffee Script, Dart, TypeScript, Clojure Script, and other applications. The primary usage of node.js is to develop web server network programs. The biggest difference between PHP and Node.js is that most of the functions in PHP blocks are not blocked until finished (instructions only run after prior commands are executed) (commands execute concurrently or even in parallel, and use callbacks to signal completion or failure).

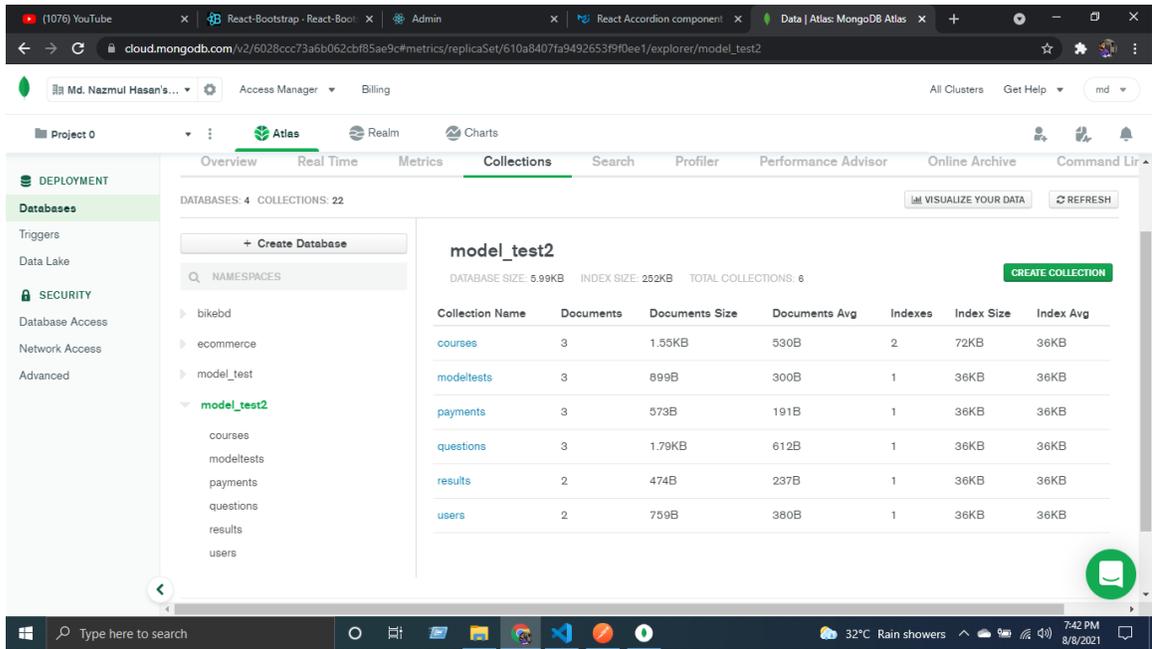


Figure 5.1: A representation of our Database

5.2 Implementation of Front-end Design

The consumer-side computing seems to be another term for the building on the front. React JS and Express Js styles are part of the customer's side for a website or web browser. That a person understands and relates to them naturally. The difficulty of front development is to continually changing the software or procedures for the creation of a front page, in order to realize that the artist is continuously learning the world. The aim of the software idea is to ensure that the consumers see the apps in an easy and accurate manner for the websites.

Here are some photos of our project.

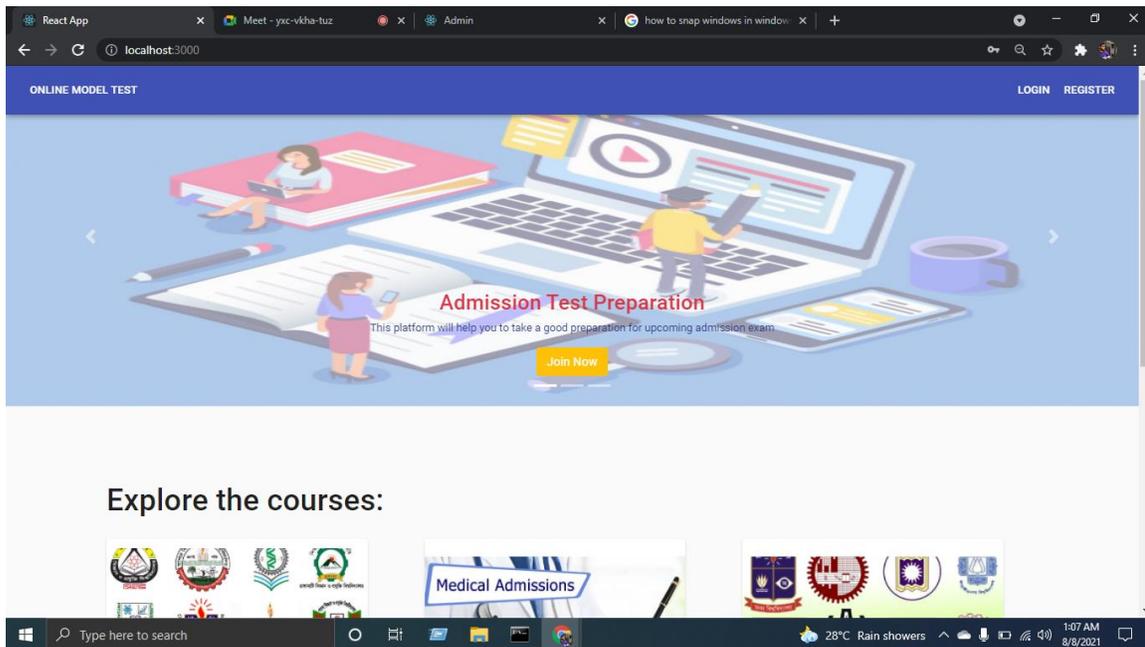
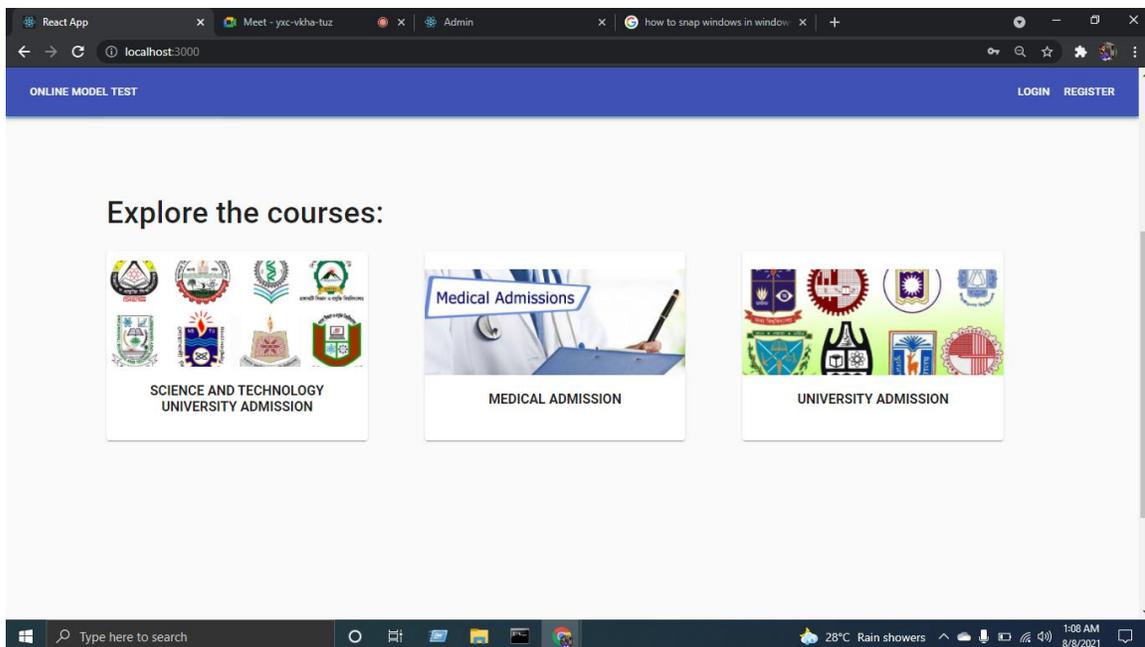


Figure 5.2: Home page



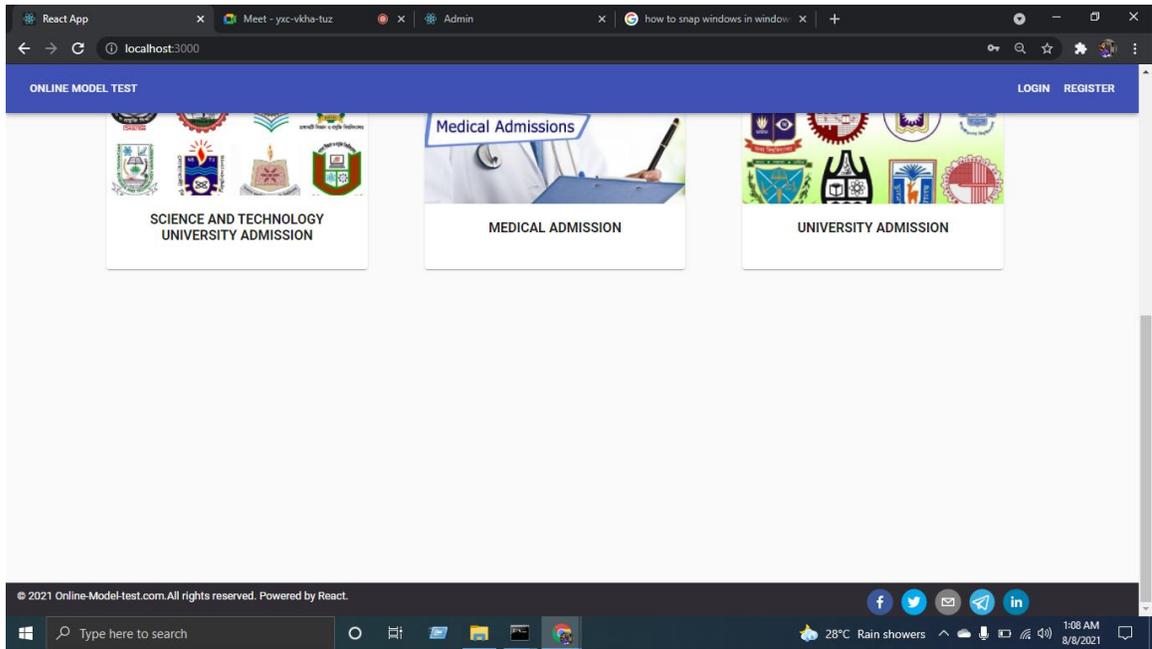


Figure 5.3: Home page (Lower part)

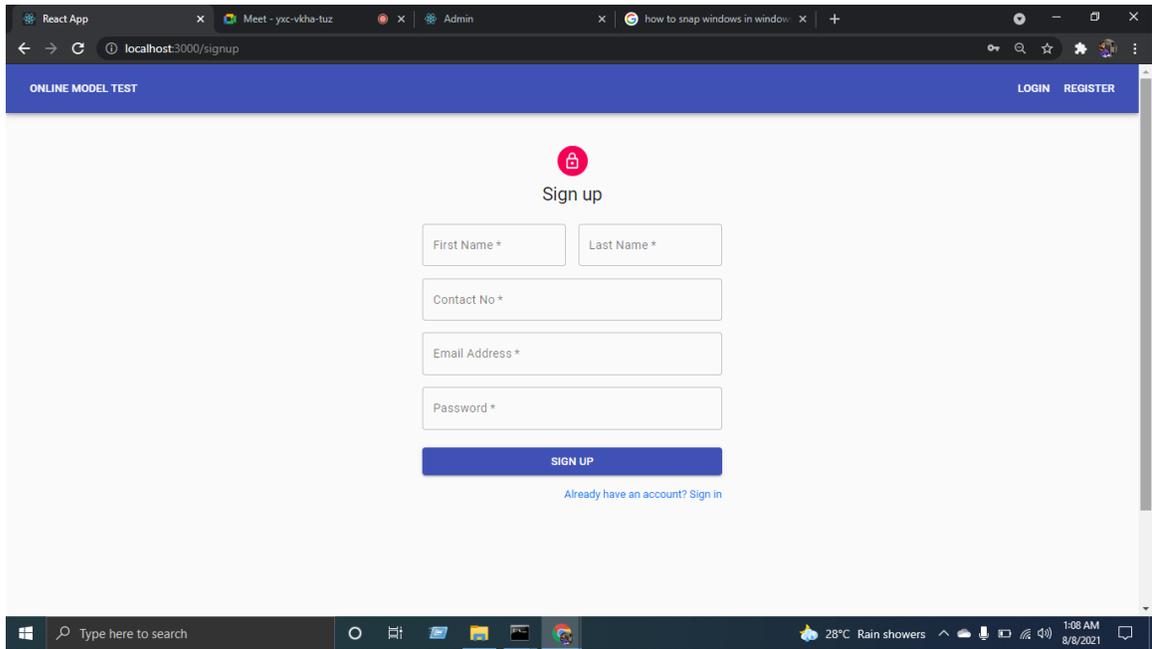


Figure 5.4: Registration page

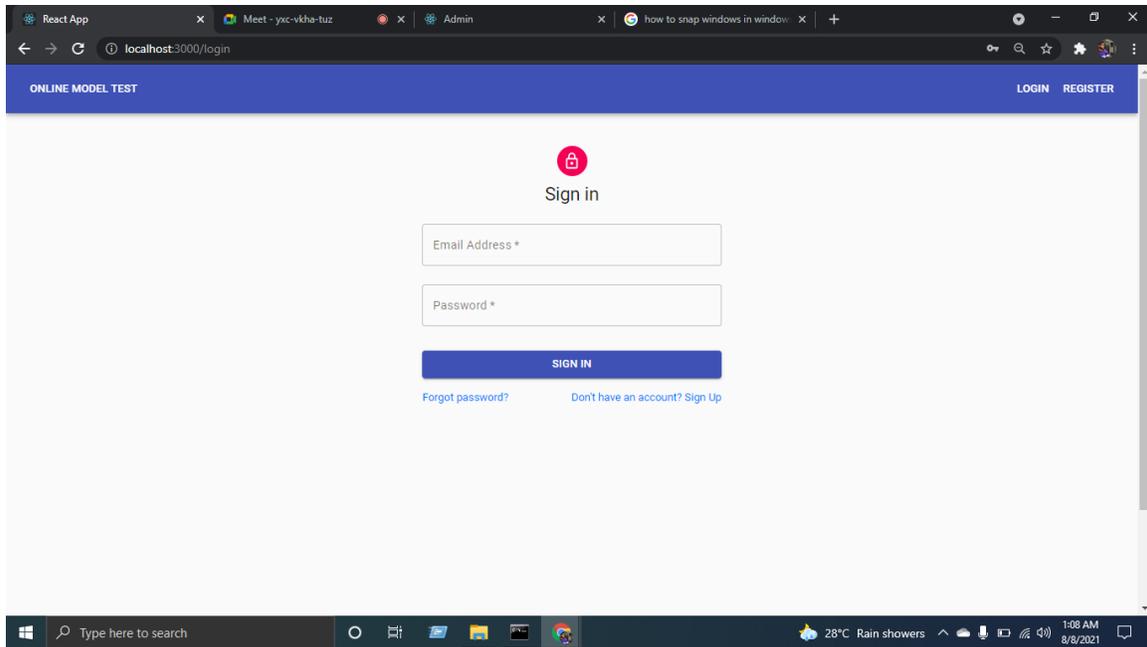


Figure 5.5: Log in Page

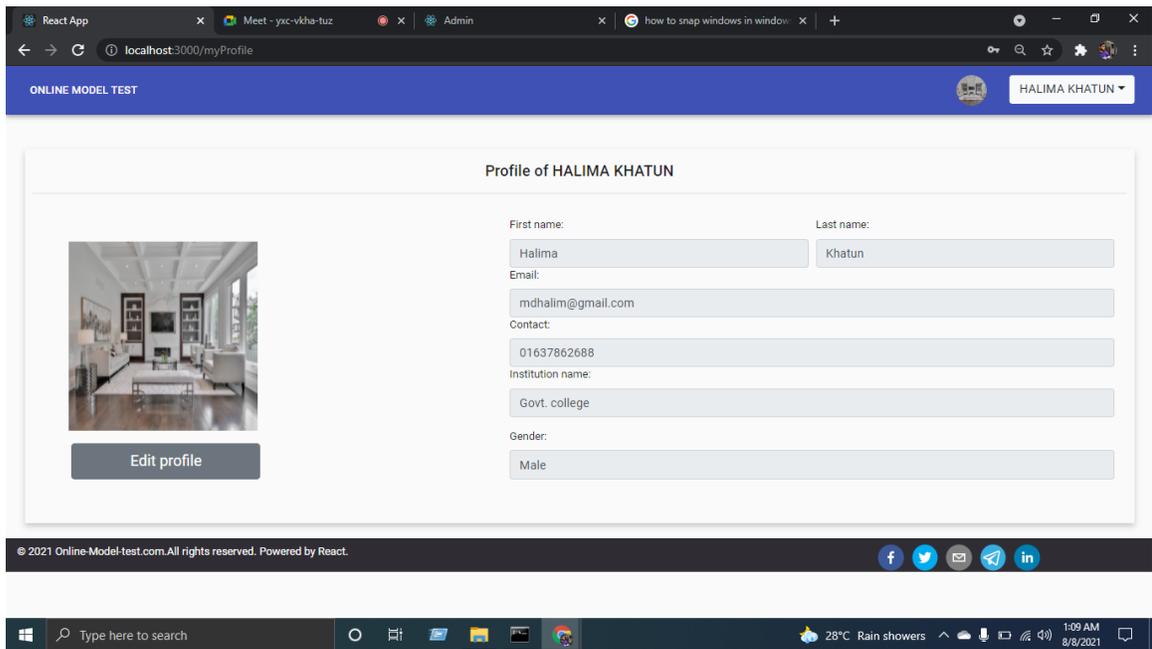


Figure 5.6: User profile

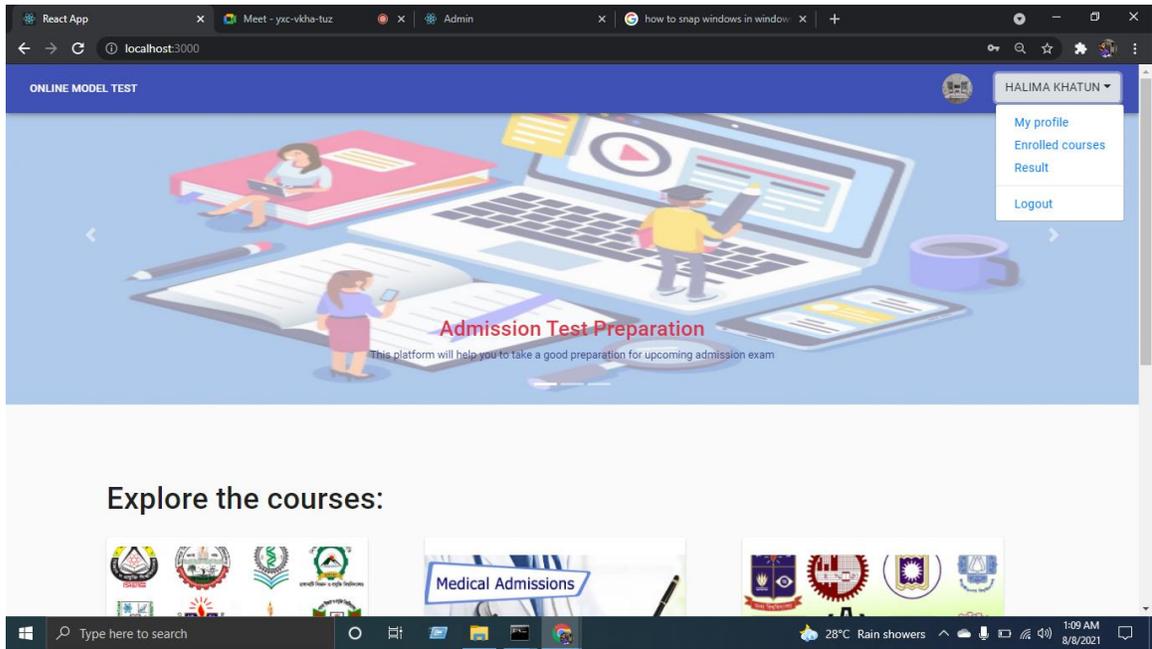


Figure 5.7: User dashboard

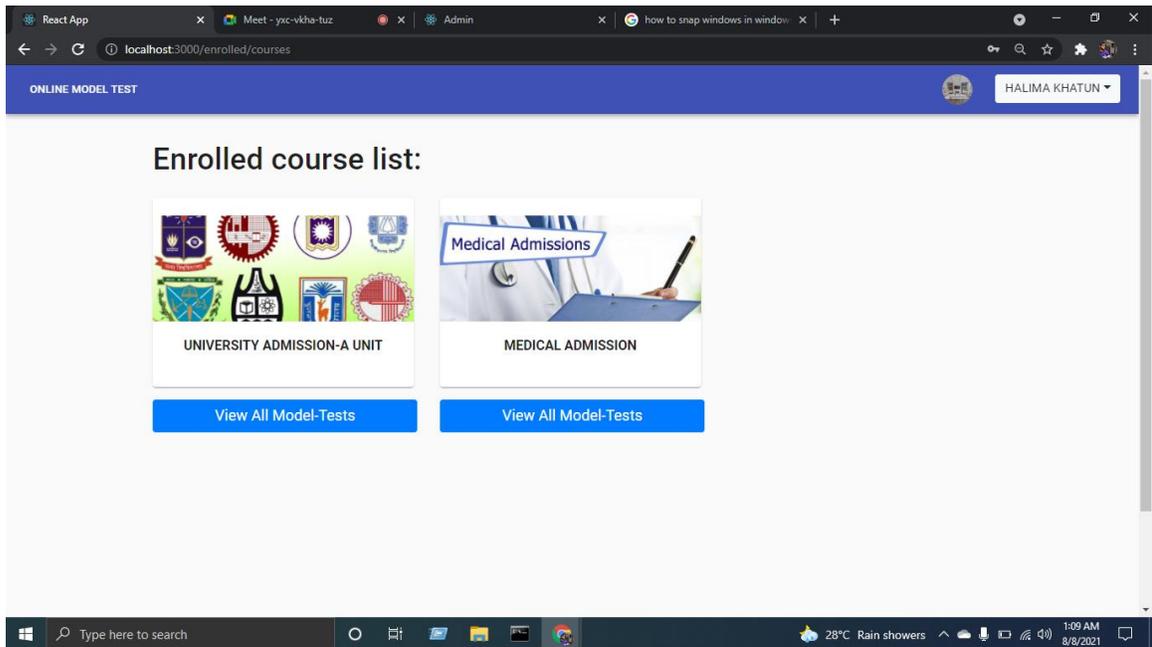


Figure 5.8: Enrolled courses by user

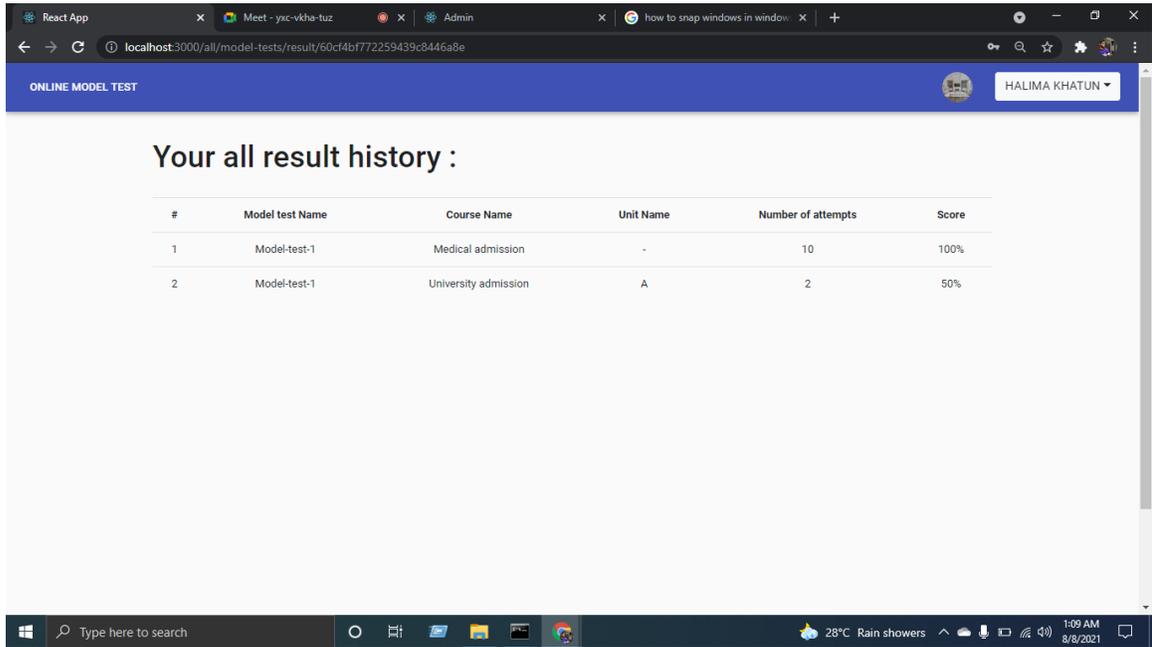


Figure 5.9: Previous quiz score

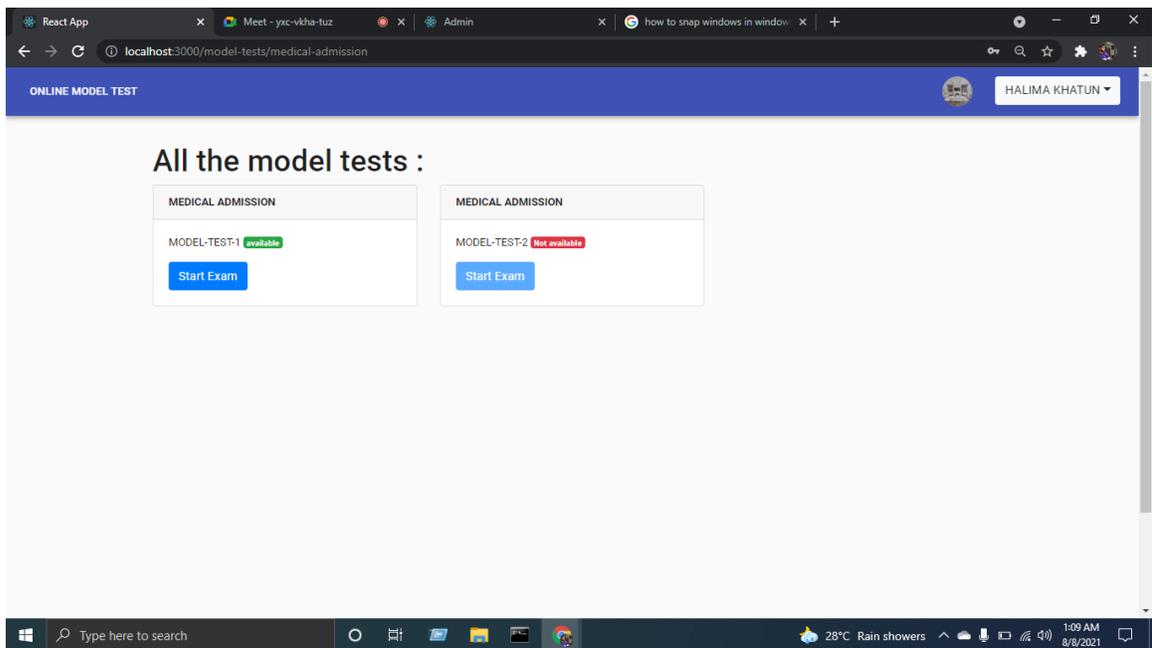


Figure 5.10: All quiz list

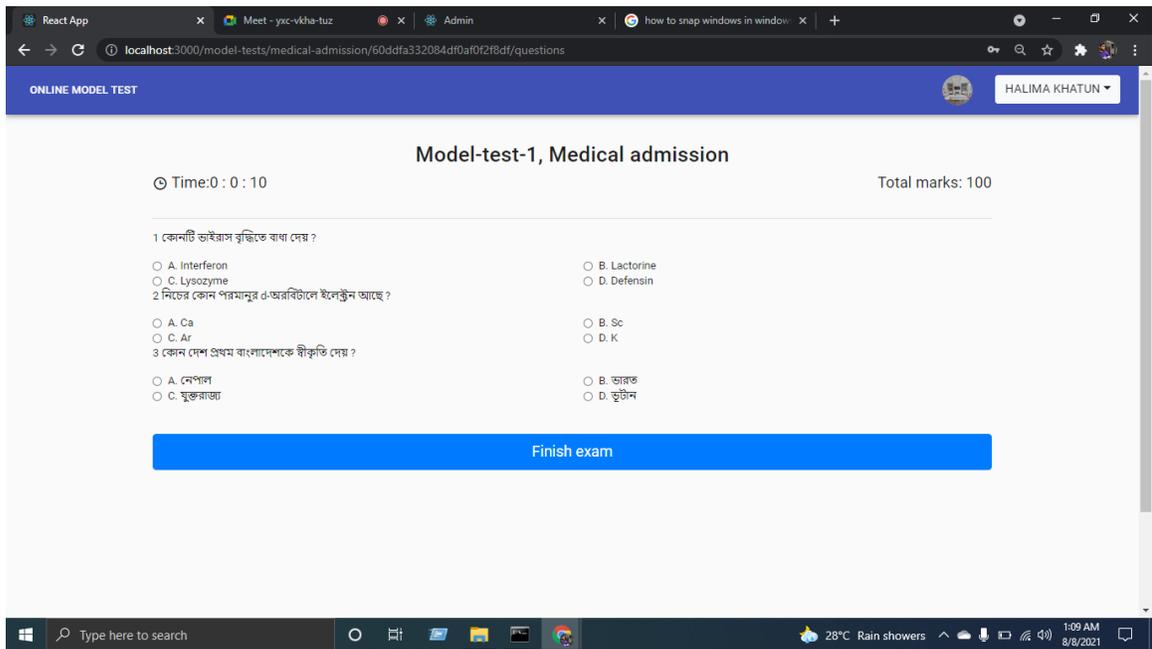


Figure 5.11: Sample quiz question

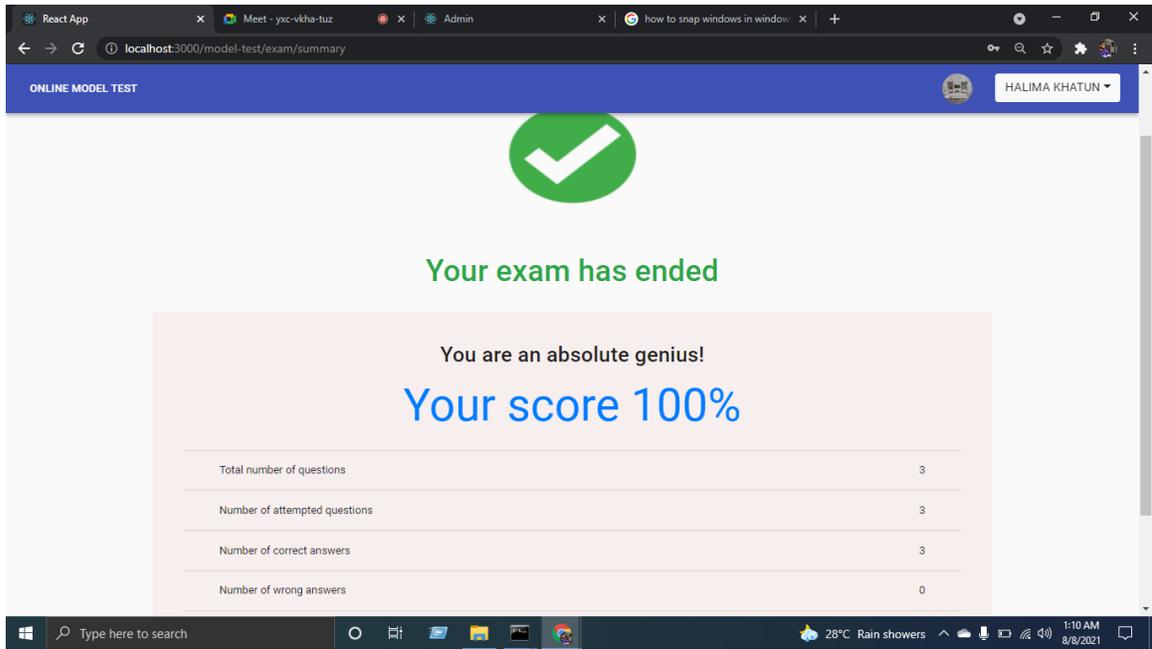


Figure 5.12: Quiz result

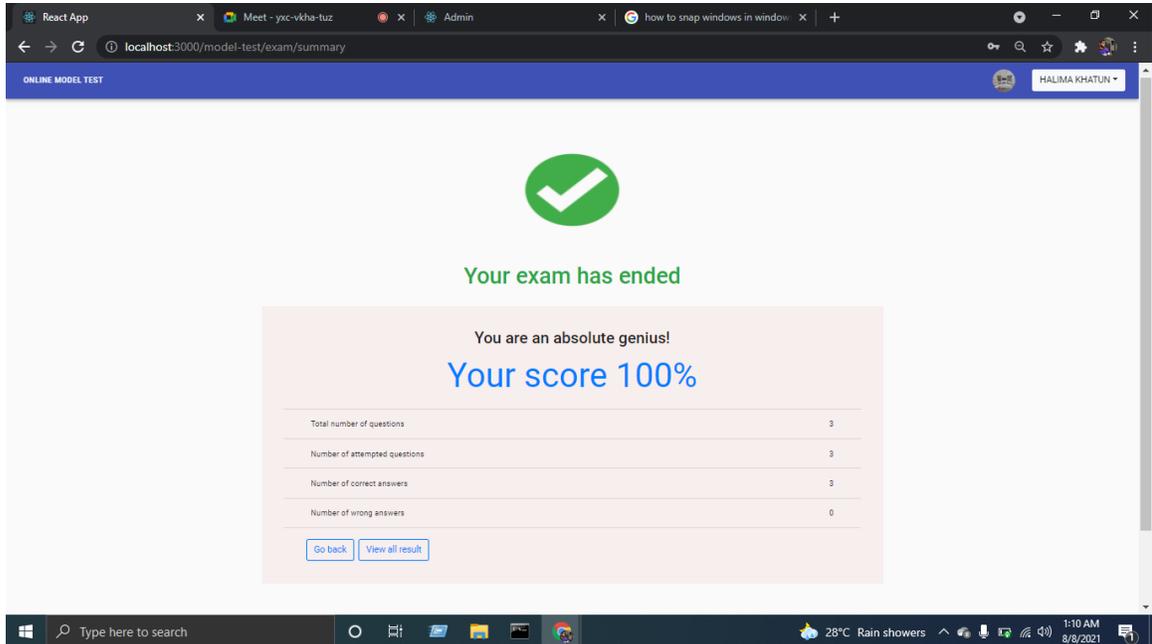


Figure 5.13: Score details

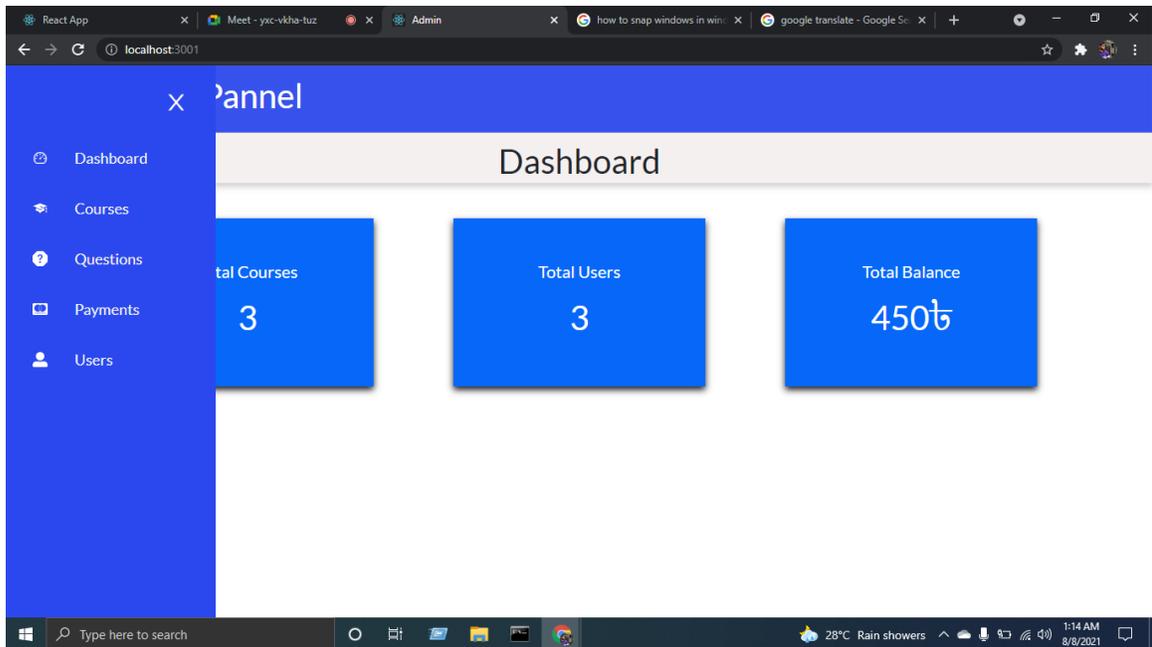
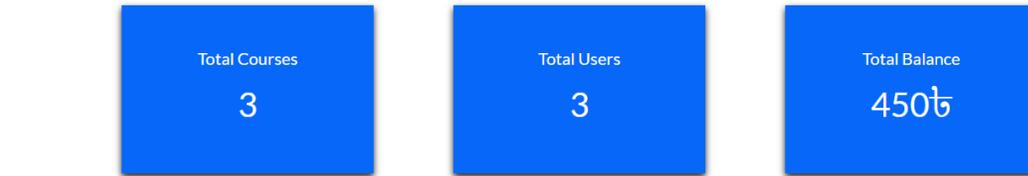
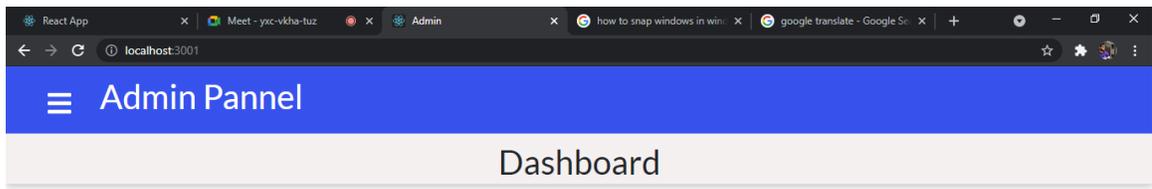


Figure 5.14:Admin Dashboard

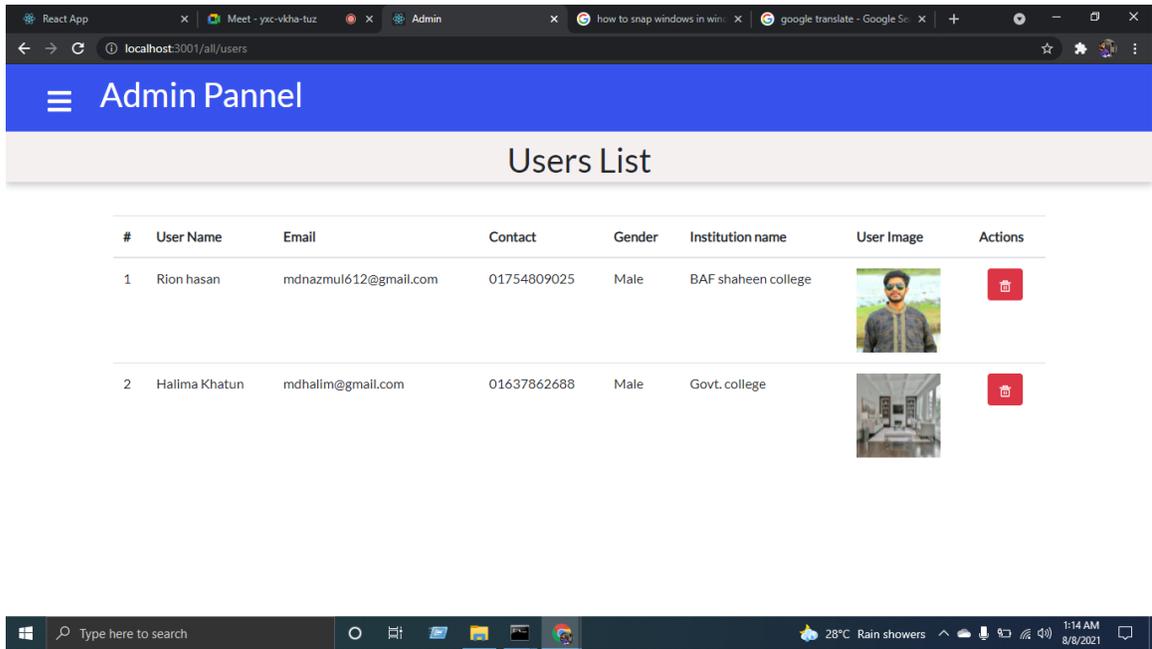


Figure 5.15:User list maintained by admin

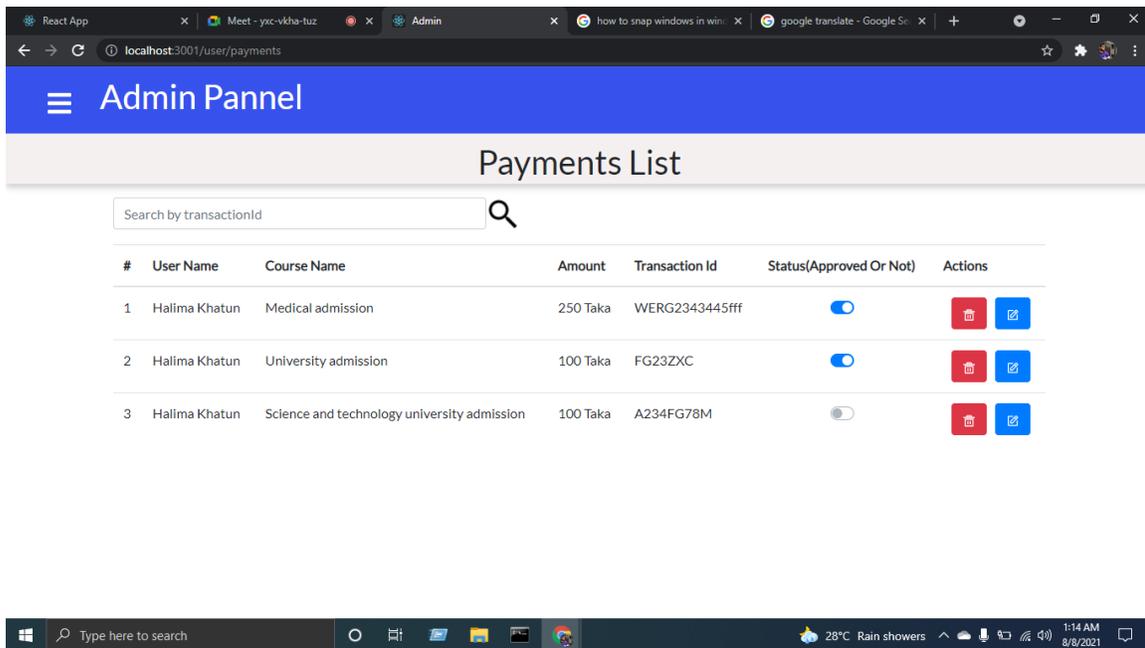


Figure 5.16: Payment details view (Admin)

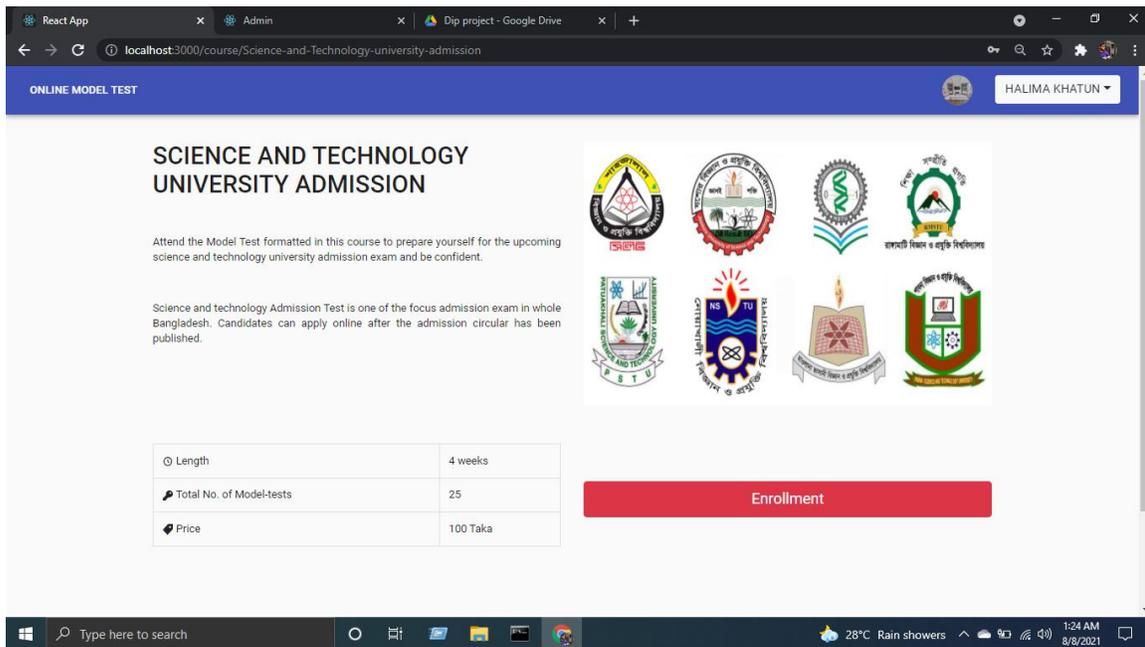


Figure 5.17: Enrollment and payment details

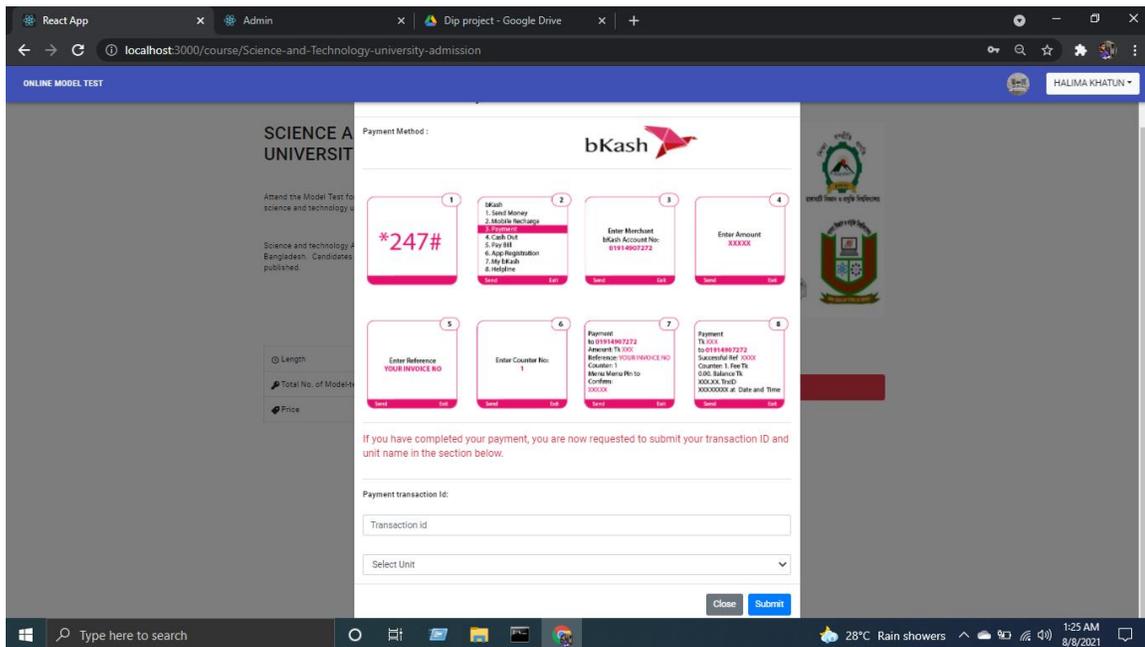


Figure 5.18:Payment procedure for user

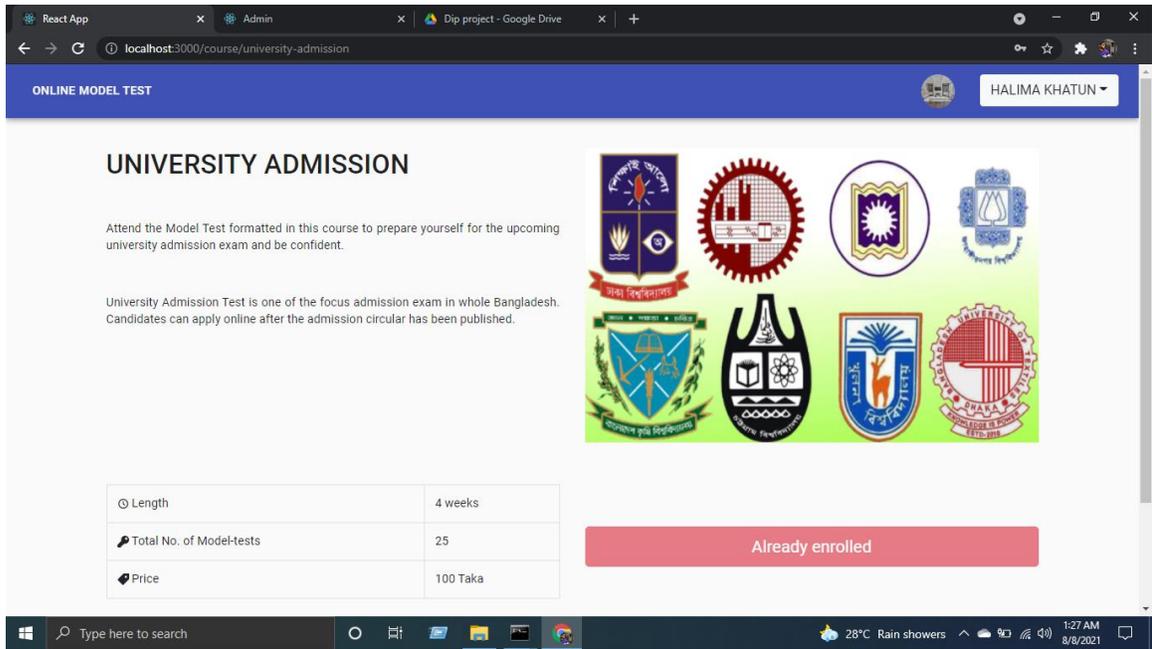


Figure 5.19:Enrolled course (user)

5.3 Implementation of Interactions:

The greatest innovative work on a stage takes place here. Participants collect more information on draft results together and optimize the stage information. Interviews, workshops, prototypes and internet communications might be included in this procedure. Not every communication such as minutes, reports, software monitors, or formal memos is documented and deemed informal. The goal is not to impede the contact process, but to promote. When most individuals decide that formal analysis and comments on draft results have to be carried out, the mechanism ends.

5.4 Testing Implementation:

These activities are performed once other management methodology procedures are completed or evaluated. Tests and assessments can be conducted simultaneously but are substantially distinct. They are both done in different ways. Prototyping is one of the most often utilized approaches and some of the others were created and implemented in this particular project. In addition to instrumentation, the final edition of the initial version identified and fixed shortcomings in particular ways. The prototype was performed in other studies including the usability assessment. The prototype can run all studies, including usability testing, and may be randomly tested by random individuals. Four primary challenges in this test are: how accurate the quiz answers are and how relevant the information, the presentation style, and the results are, and how fast users accomplish their main activities using the correct password, with the main task of an efficient and free login. The primary aspects of this test are four.

5.5 Test Case:

A Testing Phase is a series of operations performed to test your software application's specific feature or functioning. A test case comprises test steps, testing data, precondition, and postcondition, which are designed to validate any requirement for a given test environment. The test case consists of particular variables or circumstances which functionality testing may use to compare the predicted results with the actual outcomes to establish whether another software system performs in accordance with the customer's expectations. Any component that may be tested is described as a test scenario. It is a group of test scenarios that allows the test team to assess the project's positive and negative qualities. Test Scenario offers a high-level insight about what to verify.

- 1) Test cases assist ensure that the standards, guidelines, and client criteria are respected.
- 2) Helps verify customer objectives and expectations.
- 3) Enhanced information flow transparency, management, and reasoning.
- 4) The 'actual' user scenarios can be simulated.
- 5) Exposes mistakes or flaws.
- 6) The job of the test engineer is more structured and simpler when test cases are written.

5.6 Unit Test:

Unit testing is an important approach used in software development to testing individual components of programming language, sets of one or more components in the software program together along with accompanying control data, procedures for use, and policies and procedures, to evaluate whether the devices are suitable for use. Unit tests are usually automated, software engineers write and run tests to check that a potential application ("the unit") fulfills its design and operates accordingly. A unit may be a whole module in

procedural programming, although it is most often a single function or process. A whole interface, like a class, or an individual function, is usually a device for object-oriented programming. When you first write tests for the simplest test units, then the compound behavior, you may create complete tests for complicated applications.

5.7 Integration Test:

Integration testing is very important in application development during which the standalone executable elements are integrated and tested in group form (also termed integration and testing), abbreviated I&T. Integration testing is carried out to assess compliance with certain requirements of the system or component. It occurs before evaluation criteria and after unit testing. Functional requirements take their unit-tested input modules, group them in bigger aggregates, perform testing on these aggregates as described in an integrating testing process and produce an integrated approach ready to be tested. In the initial bottom-up test, the bottom of the hierarchy elements has been evaluated. They are then utilized for the testing of components of greater level. The procedure is continued until the component is tested at the top of the hierarchy. All modules, procedures, and functions at the bottom or low level are integrated and tested. The next level of modules will be produced and may be utilized for integration testing after the integrating testing of the lower-level integrated modules. And when all or more modules at the same phase of development are ready is this method beneficial. This technique can also aid in determining the software levels created and facilitate reporting in the form of a percentage quality of management. In top-down testing, the top-integrated modules are initially tested and the module branch is evaluated step - by - step till the finish. Testing sandwich mixes top-down and bottom-up testing. One restriction of this type of test is that circumstances not mentioned in specific integration tests are typically not checked other than confirming that the architecture items are executed.

5.8 Test Results and Reports:

The framework that addresses the test findings is necessary to allow easy estimation of test results. The results of this study are documents to record, classify the environment or the operational condition and compare the outcomes obtained from the organization's assessment tests with the targets. Finally, we would just get the results from usability tests. The challenge is then how to design the user configuration developer case collection to traverse it, since we have established the architectural framework of interaction. Interaction is nearly everywhere throughout the physical cosmos. Interaction is the key to a progressive and user-friendly interface. We are very much in need of the creation and development of an immersive system. As already said, we engage with our equipment with unique qualities.

CHAPTER 6

Impact on Society, Environment and Sustainability

6.1 Impact on Society:

We are trying to develop a website and we can say a web app that actually helps the student to take a good preparation for their admission test. If we think about the social aspect which we've created by our system, we can assume that the society will take our system or our project positively because it will help their children to be more focused on their study and practice in our system. By practicing in our system the students can take good preparation and be more confident to participate in the admission tests. As we already know that our present situation actually creates an online study environment for all sorts of students, schools, colleges, and mostly the universities actually taking online classes. So they are pretty much familiar with this system of study. So we are hoping that it will create a positive impact in society and we hope that the user will be satisfied with our system.

6.2 Impact on Environment:

As we are developing a software or we can say that and our web app so there is no significant influence on the environment for our system. We are not using any kind of Hardware so our system is fully software-based and we only have it's the web form, not any physical form. We can clearly say that our system does not have any kind of positive or negative impact on the environment. It is fully safe to use and has nothing to worry about.

6.3 Sustainability:

Project relevance, acceptability, political expediency, viability and adaptability will be determined in the sustainability study. The sustainability of projects is assessed by other

aspects such as financial analysis, risk analysis, communication and network determination, the operational plan, training, human resources development and capacity building, environment and community analysis. Funding has to be studied and reviewed to identify if the project is an independent enterprise, franchise, co-operative, joint venture, non-governmental or public organization etc. The justification, demand and supply, expenses, expectations or performance indicators which all are necessary for the project to qualify for funding are always explained in a project. The project specifies To identify affordability, demographic studies analyze the needs, revenues, interests, cultures, education and others. The legal and regulatory framework covers licenses and permits and numerous rules, regulations, regulations, regulations, regulatory provisions and procedures that are necessary by law to undertake initiatives in this environment. In particular, access to contemporary technology and systems should be adequately examined for the ICT infrastructure necessary for the project.

6.4 Ethical Aspect:

The key pillar of effective governance is transparency. The administration of software projects must be open with regard to all their operations, because it will develop employees' confidence in the management team. However, projects are exclusively carried out by management teams and nobody knows this. Sometimes staff speak to project managers' questionable actions, while in other situations, staff are not clear on project scope, since the top management doesn't explain them in full. Confidential information contains rules, pledges and limitations limiting access by a particular person or location to information. A development project manager is responsible to be a trustworthy man, since he understands a lot about ongoing projects, their time, their budget and business weakness and strengths. In certain situations, rival competitors cause the management team to disclose the company's sensitive information. The project coordinator for software needs to be loyal to his job and his staff. He is the principal person or software software development team that is accountable for the full implementation of their job. In order to do all this and to obtain outstanding outcomes,

they must be committed to each other through their subordinates and clients.

CHAPTER 7

Conclusion and Future Scope

In this part, we mention our choice and conclusion. Here we debate the breadth of the future and how it might have been ideal.

7.1 Discussion and Conclusion:

In this part of the conclusion, we are trying our best to give a bug-free system, and we are also trying to ensure that it is very easy to use and it is understandable to all kinds of users. We already created a preliminary stage of our system, and we are trying to build and add some more features in the future. In this preliminary stage, we have quiz options, different sector courses, and many more. As we already talked about that we have to maintain a team for different sectors like medicals, engineering, and other universities to create a very good environment and quiz questions and accurate answers. So we have to take some payment from the users to maintain our team and other expenses. But we are assuring that the payment fees are reasonable to all kinds of students. And we will also consider the user suggestions.

7.2 Scope for the Further Developments:

In the future scope, we point out some upcoming features which will come very soon. First, we will add a section where admins can add more and more questions, and then have the power to give any student access to dark horses. Soon we will try to add different types of payment method which is available in Bangladesh and try to automate the system. Because in this present preliminary stage, we are manually comparing the transaction IDs and give the access manually. We will try to make an automated system by which after completing the payment the system will automatically compare the transaction ID and it will automatically give the student or the user access to our system.

and different courses.

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