

**SMART QUESTION BANK AND EXAM MODEL FOR FUTURE
CAREER ASSESMENT**

BY

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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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APPROVAL

This Project titled “Smart Question Bank and Exam Model for Future Career Assessment”, submitted by **Farjanur Rahman Fahim** 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 **14 July 2024**.

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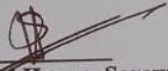
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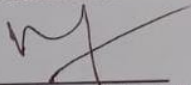
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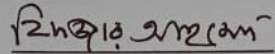
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DECLARATION

I hereby declare that, this project has been done by me under the supervision of **Dr. Fizar Ahmed**, Associate Professor, Department of CSE Daffodil International University. I 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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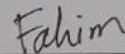
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Finally, I must acknowledge with due respect the constant support and patients of my parents.

ABSTRACT

This project study utilized A Smart question bank and exam model for future career assessment. The goal of this study is to improve future professional assessments through the creation and application of an online smart question bank, exam model, and learning management system (LMS). This project provides three separate features. Admin Dashboard, Students Dashboard, Teachers Dashboard. Each Dashboard has different features and functionality. Admin can access the full system. Basically, Admin approved teachers and students and created courses. And also, all courses and teachers' students list show on Admin Dashboard. Admin assign the teacher in different batches. The Teacher Dashboard has some features. Teachers can add lessons, provide learning resources, take exams, create bloom's category exam questions and give marks to the students. These marks show on the student's dashboard. Students can access only their dashboard. Enrolled course show in student's dashboard. Students can attend in bloom and mcq exams and they check their exam marks. The project shows great promise for closing the achievement absence between education and professional life, which will eventually result in a workforce that is more knowledgeable and flexible.

Keywords: Blooms, Question bank, Career.

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CHAPTER 1

Introduction

1.1 Introduction

The development of Smart question bank and exam model for future career assessment is play significant rule in educational and technology. For the benefit of students, teachers, and administrators, this revolutionary approach is intended to improve and expedite the process of learning and assessment. The platform has three primary dashboards: the admin dashboard, the student's dashboard, and the teacher's dashboard. Each has special features designed for its respective user base. Administrators are in complete control of the system; they can approve instructors and students, run courses, and place teachers in batches. In addition to creating tests based on Bloom's taxonomy, teachers can also add lessons, offer learning resources, and grade students. Students get access to their registered courses, can take tests, and can see their outcomes on a dedicated dashboard. All users are guaranteed a seamless and effective educational experience with this integrated approach.

1.2 Motivation

The motivation behind this Smart question bank and exam model for future career assessment is to improve the learning ability from a particular course. From this platform anyone can benefited as their ability. Usually, most of the online platforms provided skill trained or related thing, but not provide blooms category. From my developed system users can benefited according their ability score and mapping career via blooms category questions.

1.3 Objectives

The objective of the project is to leverage technology to improve training and education's efficacy, performance, and ease of use. Smart question bank and exam models gives the blooms category idea in skill educations and taring so that, student can understand about their career mapping. And also, objectives of this project are Efficient Learning management.

1.4 Expected Outcomes

The expected outcome of this web-based project mentioned below;

- Enhanced learning performance
- Particular Studying Strategy:

- Making Well-Informed Professional Decisions based on blooms category question bank.
- Improved Being skilled
- Improved Employment Preparedness

1.5 Project Management and Finnance

The development of any kind of project, but particularly project-based works, requires an effective management structure. I took sure to manage the project well while I put my smart question bank and exam model into practice. To implement this project, firstly I managed front-end design after that integrating database then complete with back-end. Financial support is not needed in this instance.

1.6 Report Organization

Seven chapters make up this report. The first chapter begins with the introduction and concludes with the report organization. The background information for the project is discussed in the next chapter. The introduction comes first, followed by the challenges we ran into while conducting my project. Third Chapter cover requirement specification. Additionally, it starts with an introduction and ends with design specifications in fourth chapter. All implementation and testing were also included in the fifth chapter along with a commentary of them. Additionally, Chapter 6 covered every impact on society, the environment, and sustainability. Lastly, Synopsis, conclusions, advice, and implications for additional study.

CHAPTER 2

Background

2.1 Preliminaries

- The scope of the project: List all of the features and functionalities that the system will have.
- User Requirements: Identify the primary users (students, librarians) and their specific requirements.
- Relevant Systems: Identify the relevant system of Learning Management System and exam modules.
- Cost and Resource Management: Allocate funds and personnel for the system's setup and ongoing operation.

2.2 Related Works

My Developed project is Smart question bank and exam model for future career assessment. Basically, this project kind of skill training modules. This project works provides several functionalities. Here, I showing some existing system that are relevant.

- Ostad [1]
- Interactive Cares [2]
- Bohubrihi [3]
- Programming Hero [4]
- Coursera [5]

1.

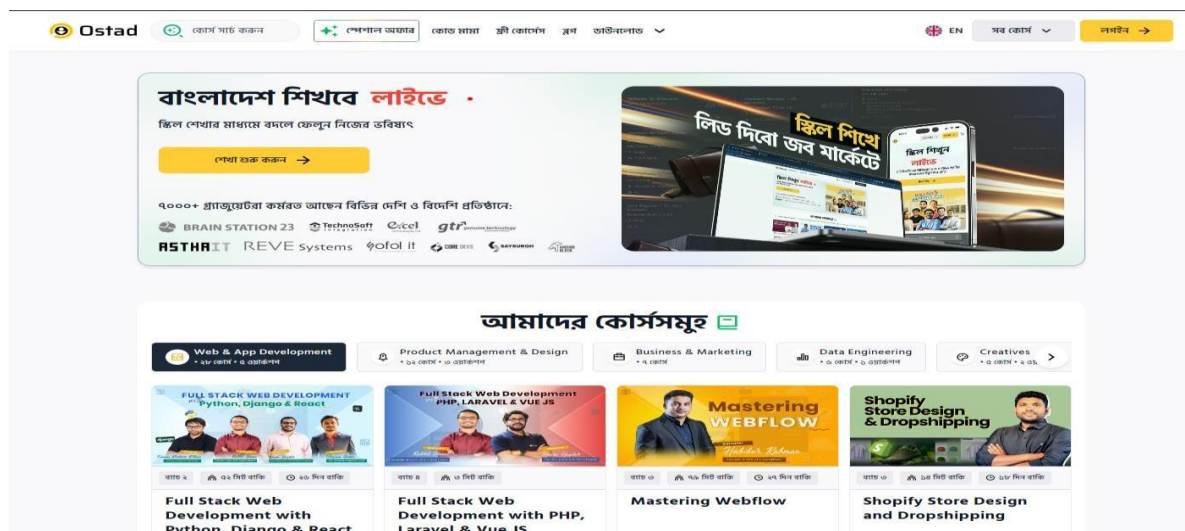


Figure 2.1: Ostad Website

2.

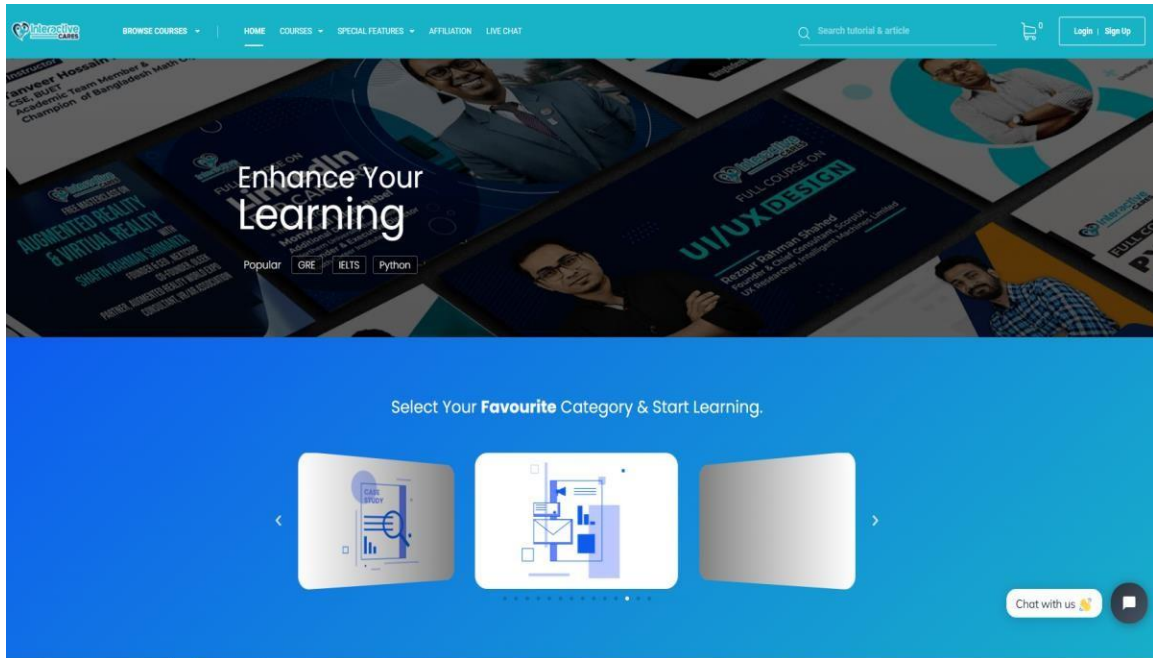


Figure 2.2: Interactive Cares Website

3.

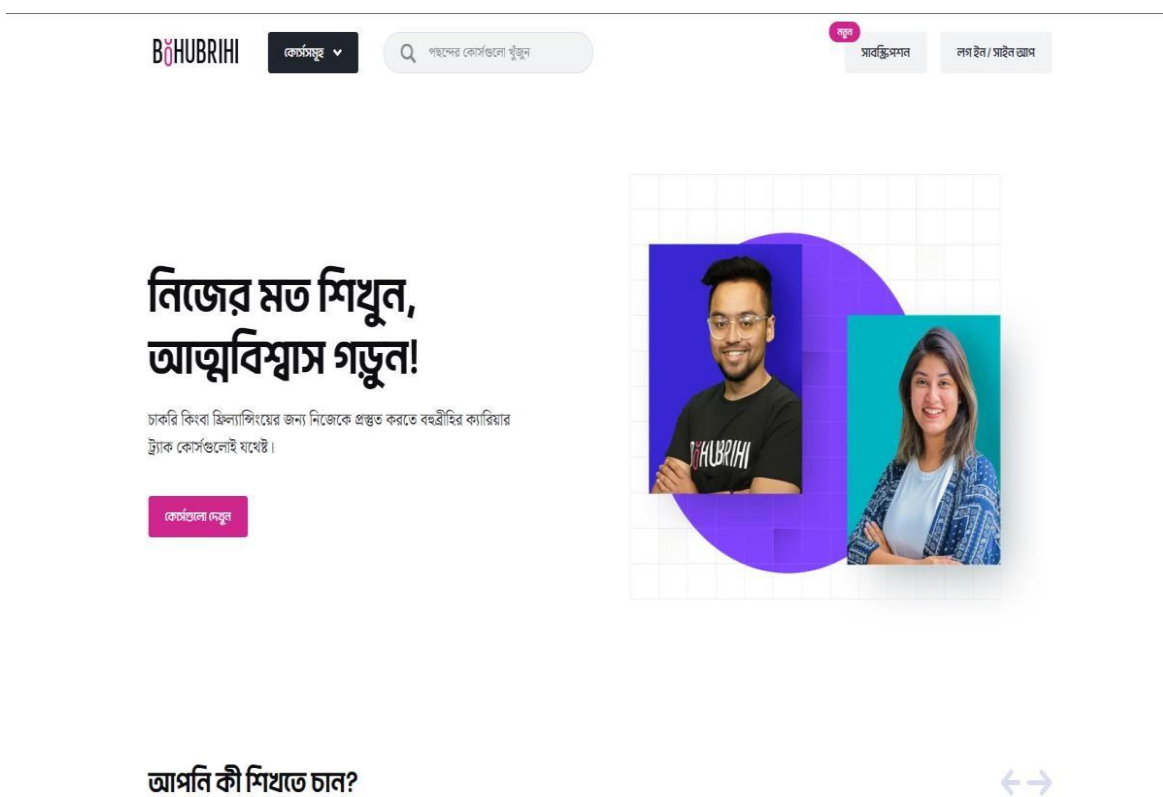


Figure 2.3: Bohubrihi Website

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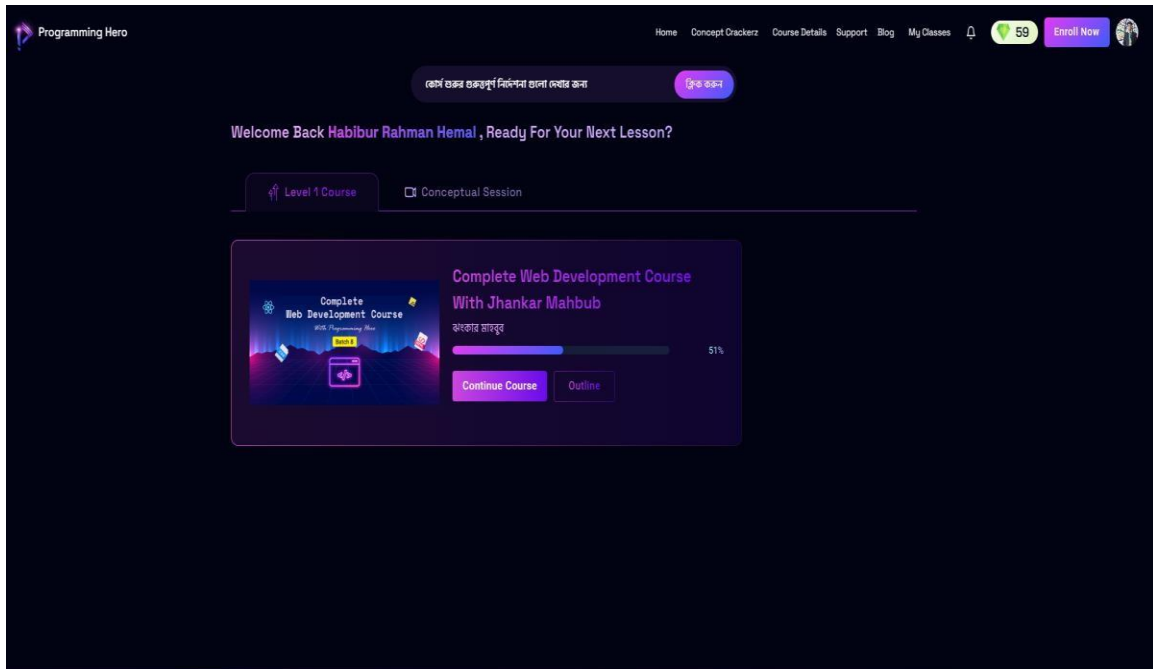


Figure 2.4: Programming Hero Website

5.

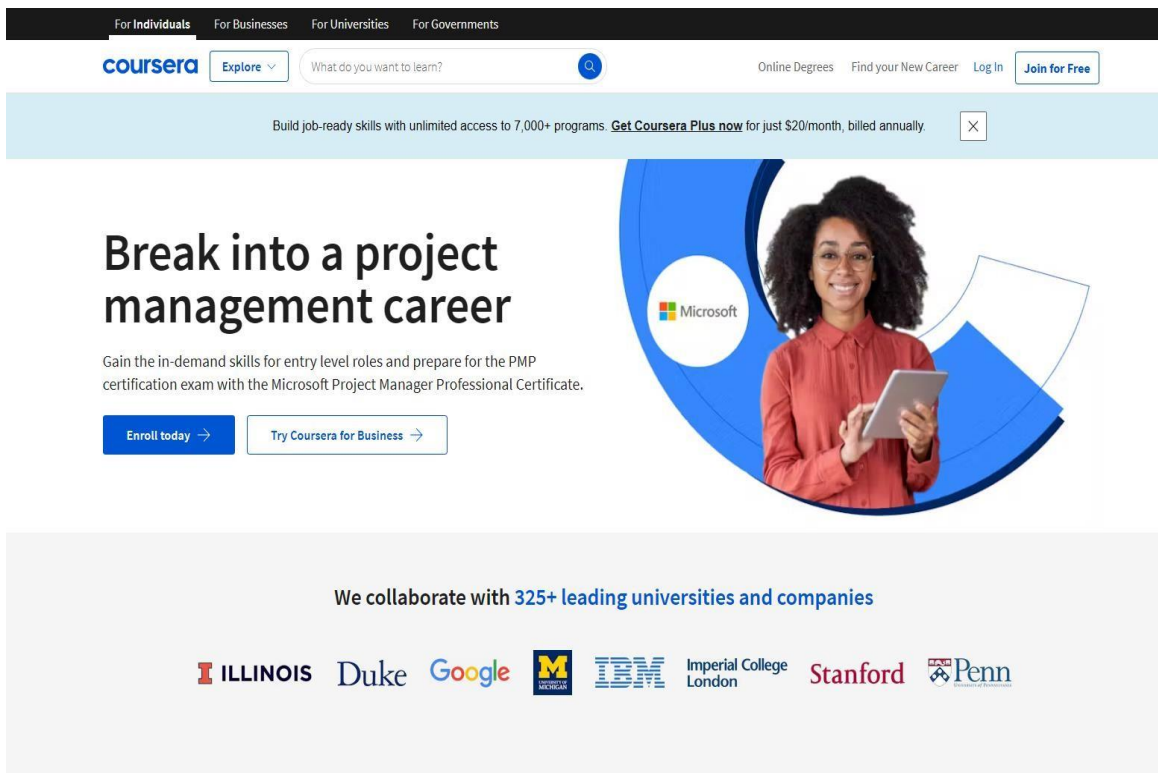


Figure 2.5: Coursera website

2.3 Comparative Analysis

In the section that follows, I compare related website work. For doing this, I generate a table that can make represent previous related work comparison.

Table 2.1: Comparing related works.

SL No	Name of Platforms	Provide Resources and Give Exam	Is available exam Based on blooms category question
1	Ostad	Yes	No
2	Interactive Cares	Yes	No
3	Bohubrihi	Yes	No
4	Programming Hero	Yes	No

2.4 Scope of the problem

Many issues could come up after creating a new model or system. As part of my project study, I created a smart question bank. Exam model and learning management system for future career assessments. My project provides a real-time learning system, and the exam model also indicates future career direction. Several problems take place to implementing this project. The problems possibly take place in multiple sections like Learning resources, exam model functioning, smart features, question handling, etc. During questions, creations and creating different sections possibly take place problems because of mistakes. When Providing learning resources then various plagiarized contents happen. Furthermore, user management and during exam times possibly cause technical issues. Finally, data safety and security oversight issues.

2.5 Challenges

- Make users friendly.
- Provide services with Dynamic Functionalities.
- Check the way System Control is being administered.
- Data Security and Database management.
- Users' adaptation to subscribed system.

CHAPTER 3

Requirement Specification

3.1 Business Process Modeling

When it comes to developing web applications, agile is a well-liked method. Projects with limited timelines and little starting information can benefit most from this practice. Many important components are included in the Agile methodology, including the following:

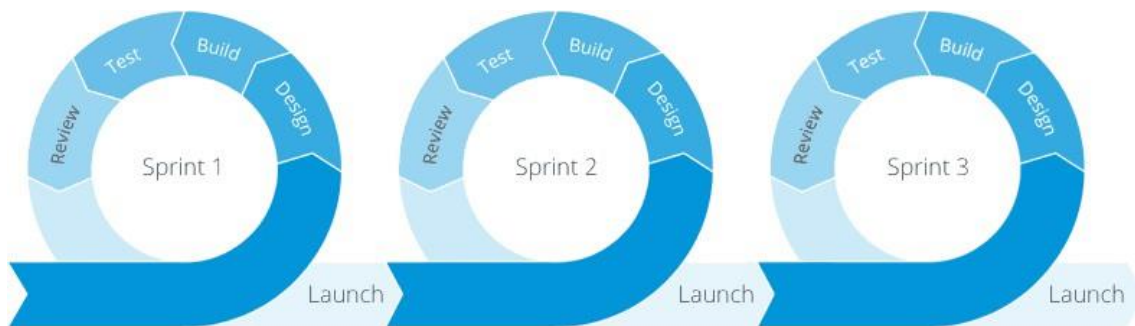


Figure 3.1: Agile Model

When tasks come up, they are completed because the project isn't meticulously planned out from the start. When working in groups, they prioritize doing the easier, more pressing assignments first. Agile also enables quick changes to the project's plan and scope in response to market developments. Complex web development projects including a lot of variables are a special fit for agile project management. Teams can work with it in short, scheduled iterations with predetermined goals and deadlines, but no set order.

Scrum of Agile Methodology:

Scrum is a particular application of Agile concepts that places a strong emphasis on substantial and daily cooperation across different development teams. Scrum is an iterative website building methodology that emphasizes the value of the team. Because it promotes order and self-control, this method works well for shorter tasks when team members are already disciplined. Scrum combines the structure and concentration of older systems with the iterative procedures and adaptability of contemporary Agile approaches. It divides the overall objectives into more doable tasks and requires teams to create software and deliver it to clients in set iterations, usually lasting two weeks. In this technique, meetings are essential since teams meet on a regular basis to monitor their progress and get input at the end of each cycle.

Extreme Programming of Agile Methodology:

The Agile style that strives to produce web applications of the highest caliber while remaining flexible enough to accommodate changing client needs is called Extreme Programming (XP). Like other Agile methodologies, XP emphasizes timely, small-scale job delivery that permits ongoing revisions and improvements as needed.

Lean of Agile Methodology:

The Lean approach is a set of techniques and a way of thinking. The Lean methodology was first developed in the manufacturing industry to increase production efficiency by reducing waste and raising customer value. Since then, it has been applied to a variety of industries, including web application development.

Bottom Line of Agile Methodology:

Developers have a great deal of choice when it comes to designing software that functions properly because there are numerous web development methodologies accessible for various project kinds. Since the creation of any plan depends on a wide range of variables, there is no one-size-fits-all approach or solution that guarantees success.

3.2 Requirement Collection and Analysis:

To implementing this both Hardware and software are required.

Hardware:

- Processor Intel i3 Processor
- Motherboard
- Ram
- Internet Card
- Graphics Card
- Hard Disk

Software:

- VS studio
- Xampp
- MYSQL

3.3 Use Case Modeling and Description

A use case diagram highlights the links between users and their individual functionalities while illustrating how a user interacts with a process. Such diagrams are frequently used in conjunction with other diagrams of a similar kind because of their adaptability and suitability in a variety of settings. Use case diagrams' concise format also helps brainstorming sessions and enhances stakeholder communication.

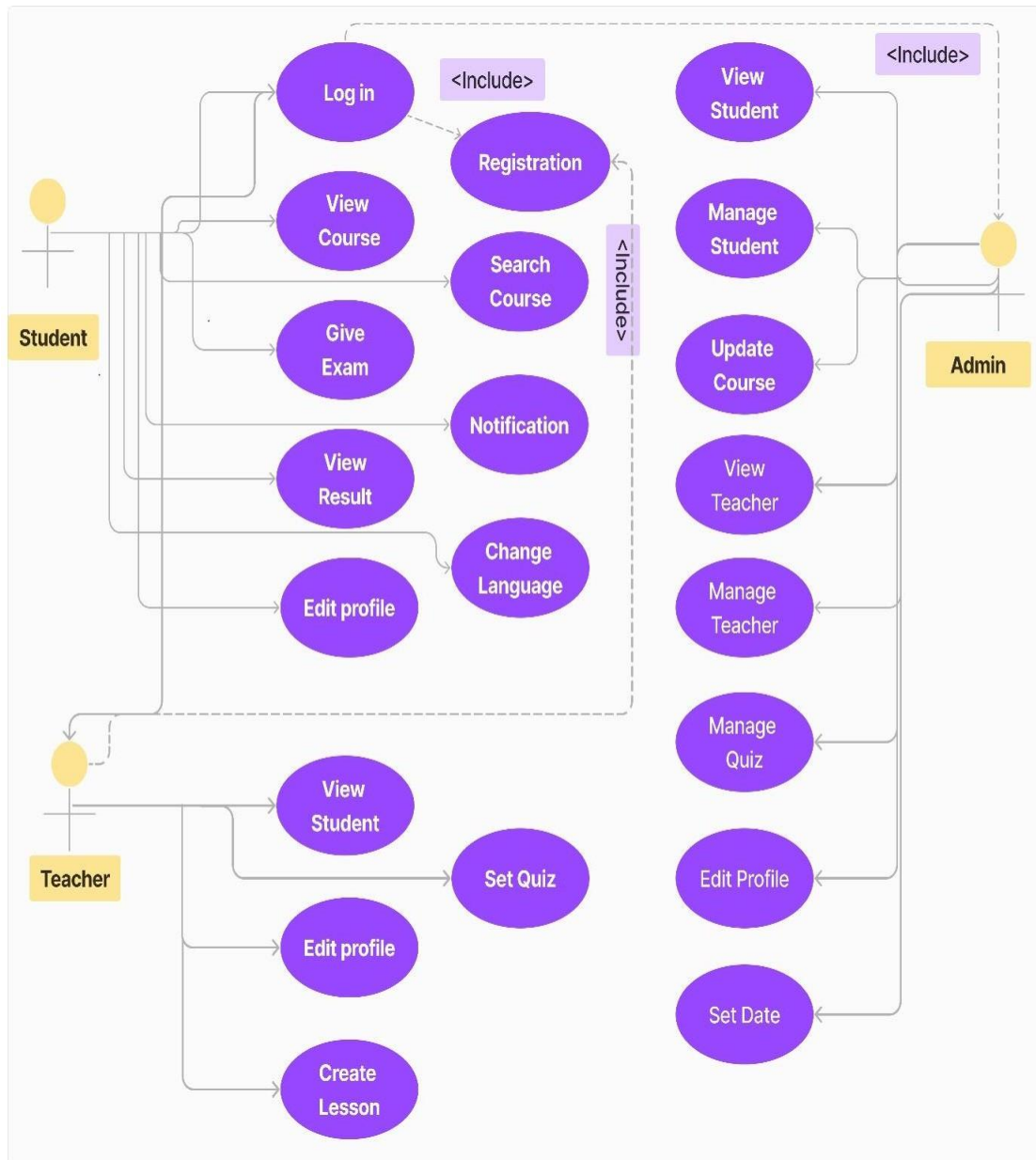


Figure 3.2: Use Case diagram

3.3.1 Data Flow Diagram

A data flow diagram (DFD) is a visual representation of the data flow in a procedure. These flowcharts provide a simple and efficient means of presenting on a single page the various parts of a process's data flow.

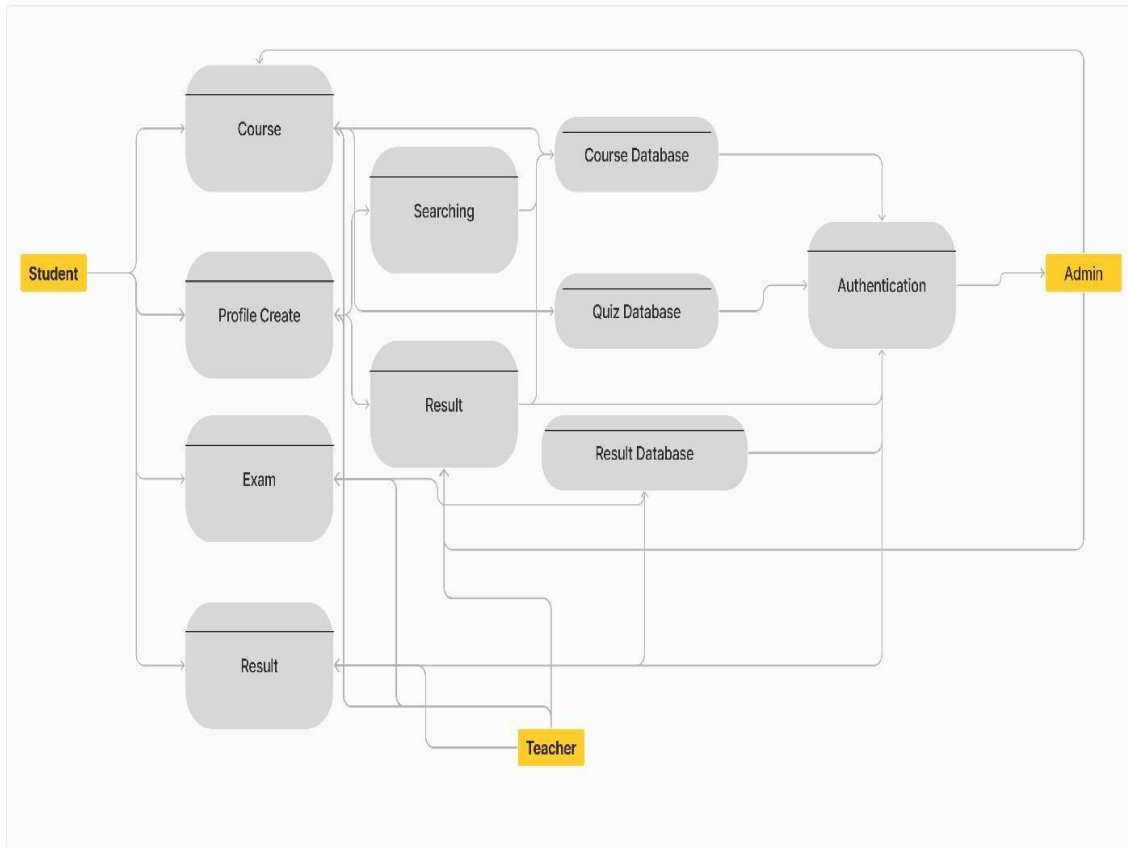


Figure 3.3: Data Flow Diagram

3.3.2 E-R Diagram

The system administrator is just one of the users who will have access to this system. Every user will have a personal ID that will allow them to be individually identified. Every user and administrator will have a unique profile. Personal information including their name, email address, phone number, physical address, and password will be stored in these profiles. The main components include the following: courses, exams, administrators, teachers, and students. A many-to-many link can be formed between students and courses by allowing each student to enroll in numerous courses. As a result, there is now a one-to-many relationship between Lessons and Courses and between Teachers and Courses. There may be several exams for each course that students must take. The Exams and Results

entities have a many-to-one relationship since the Results entity records the performance of the students in these exams.

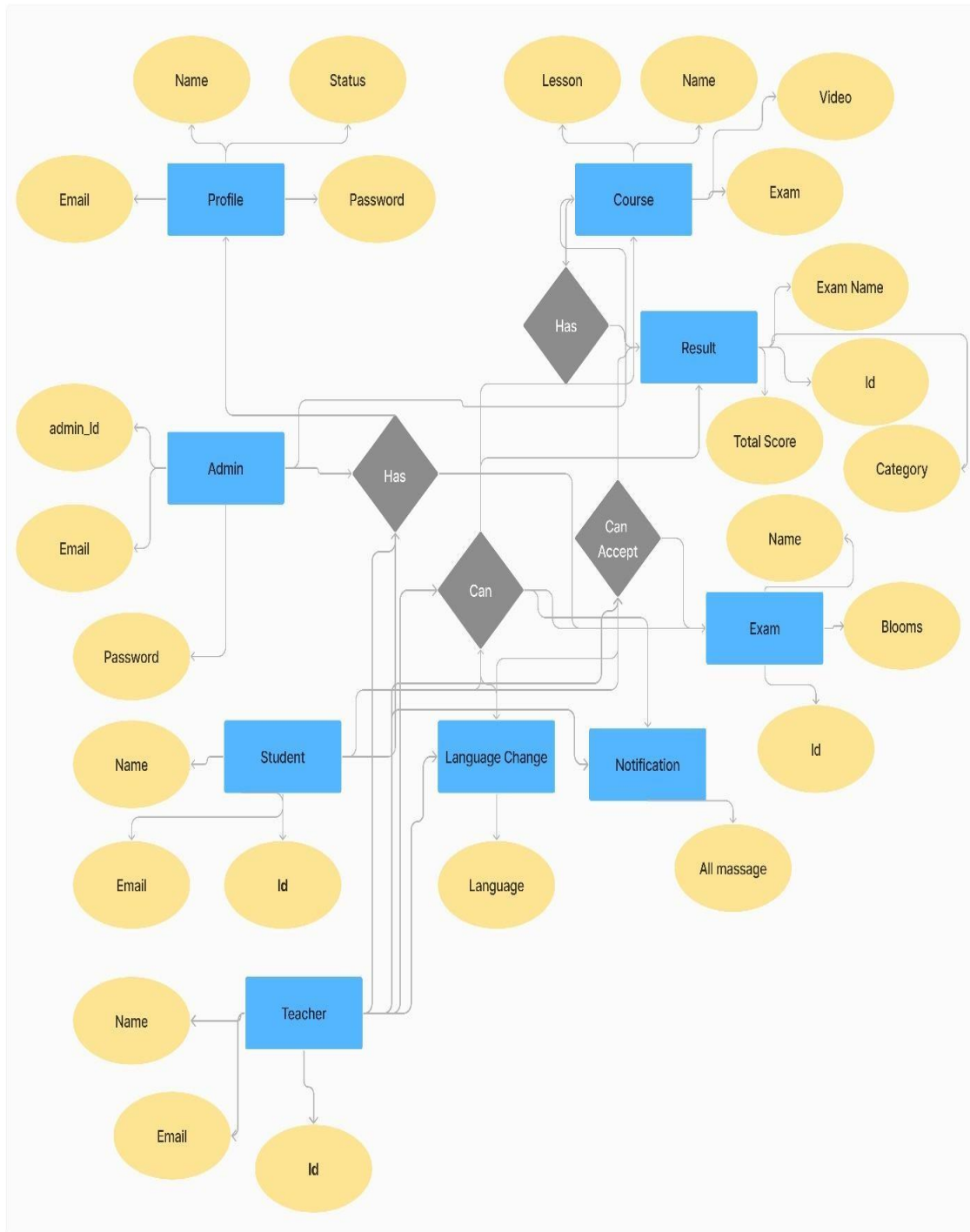


Figure 3.4: ER Diagram

3.3.3 Class Diagram:

Class diagrams are a useful tool in software design and modeling because they help visualize the links between various classes. We may abstractly depict software using these diagrams, all the way from the high-level code to the intricate source code. They display the names, characteristics, and relationships between the classes as well as, frequently, the methods connected to each class.

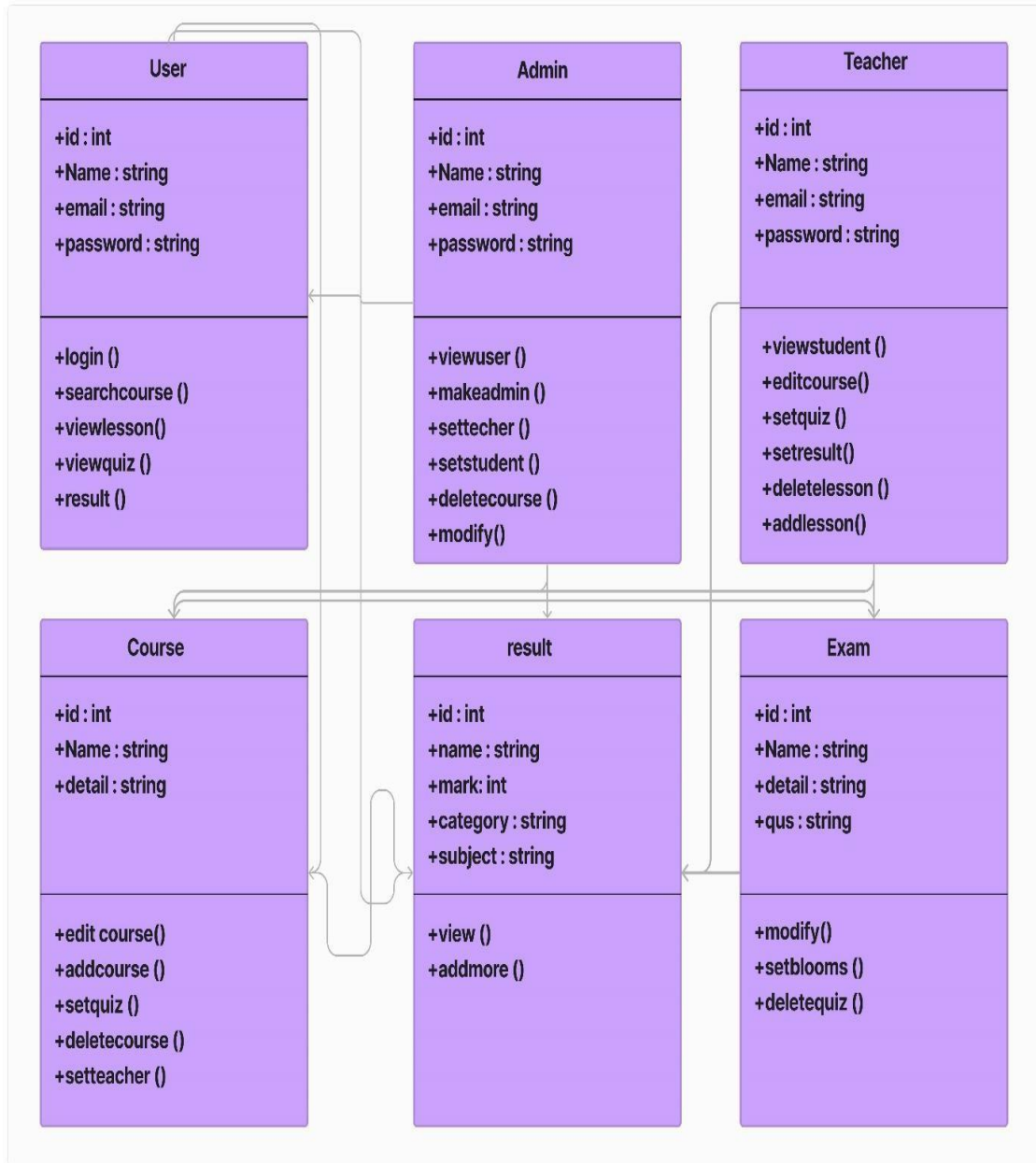


Figure 3.5: Class Diagram

3.4 Logical Data Mode

Sequence diagrams are frequently used in UML (Unified Modeling Language) dynamic modeling. These diagrams, which show the time and effort needed to complete an activity, are a sort of interaction diagram. With the help of sequence diagrams, which provide the details of a UML use case, you can simulate the inner workings of a complicated system or function.

3.4.1 Sequence Diagram for Admin

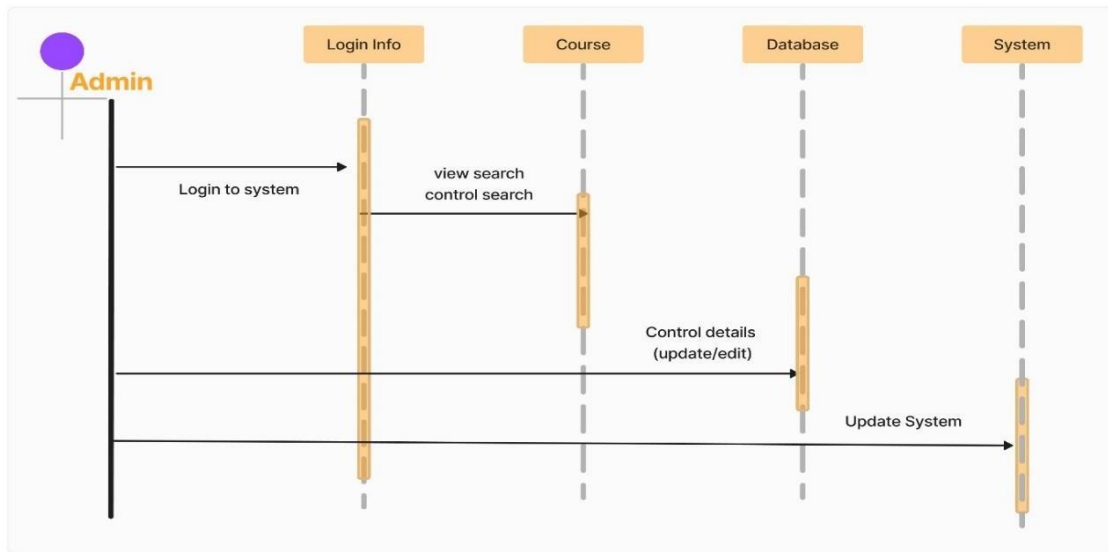


Figure 3.6: Sequence Diagram for Admin

3.4.1 Sequence Diagram for Teacher:

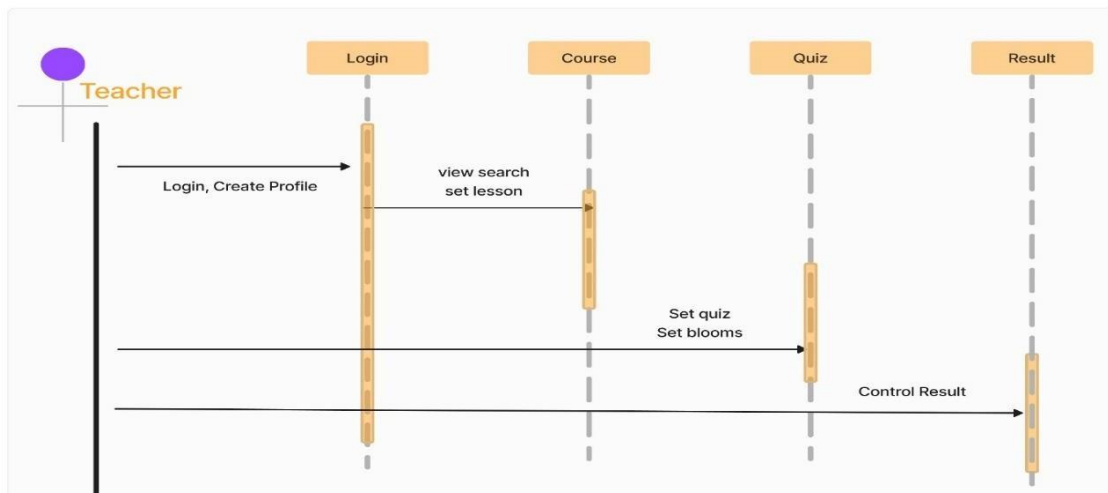


Figure 3.7: Sequence Diagram for Teacher

3.4.2 Sequence Diagram for Student

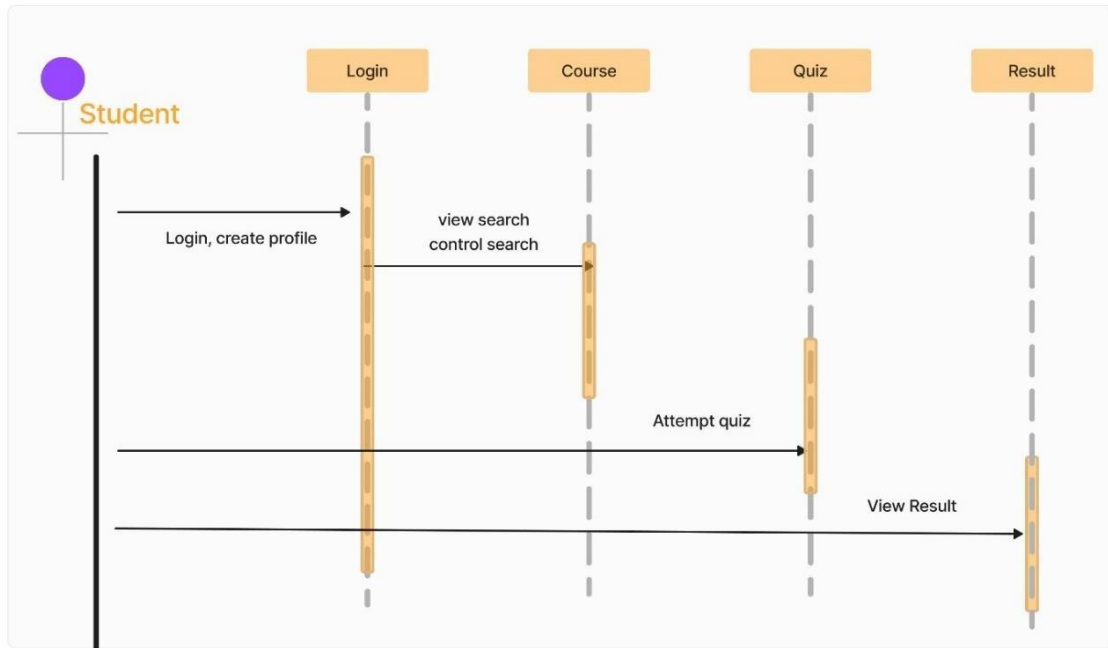


Figure 3.8: Sequence Diagram for Student

3.5 Design Requirement

The following technologies were used to create this application:

- Web page style and content are organized using HTML (Hypertext Markup Language).
- Cascading Style Sheets, or CSS, are used to style and design how web pages look.
- Frameworks: To improve interaction and guarantee responsive design, Bootstrap and JavaScript are used.
- PHP (Raw Code) is used for backend development and server-side scripting.
- Database: MySQL is used to manage and store data.

CHAPTER 4

Design Specification

4.1 Front-end Design

"Smart question bank and exam model for future career assessment" is the title of my developed web-based project. To implementing front-end design there are several programming languages and Frameworks are to be needed. HTML, CSS, JavaScript, PHP, and Laravel are used. Here, this website has Admin, Teachers, students' dashboard and also login and home page.

Home Page:

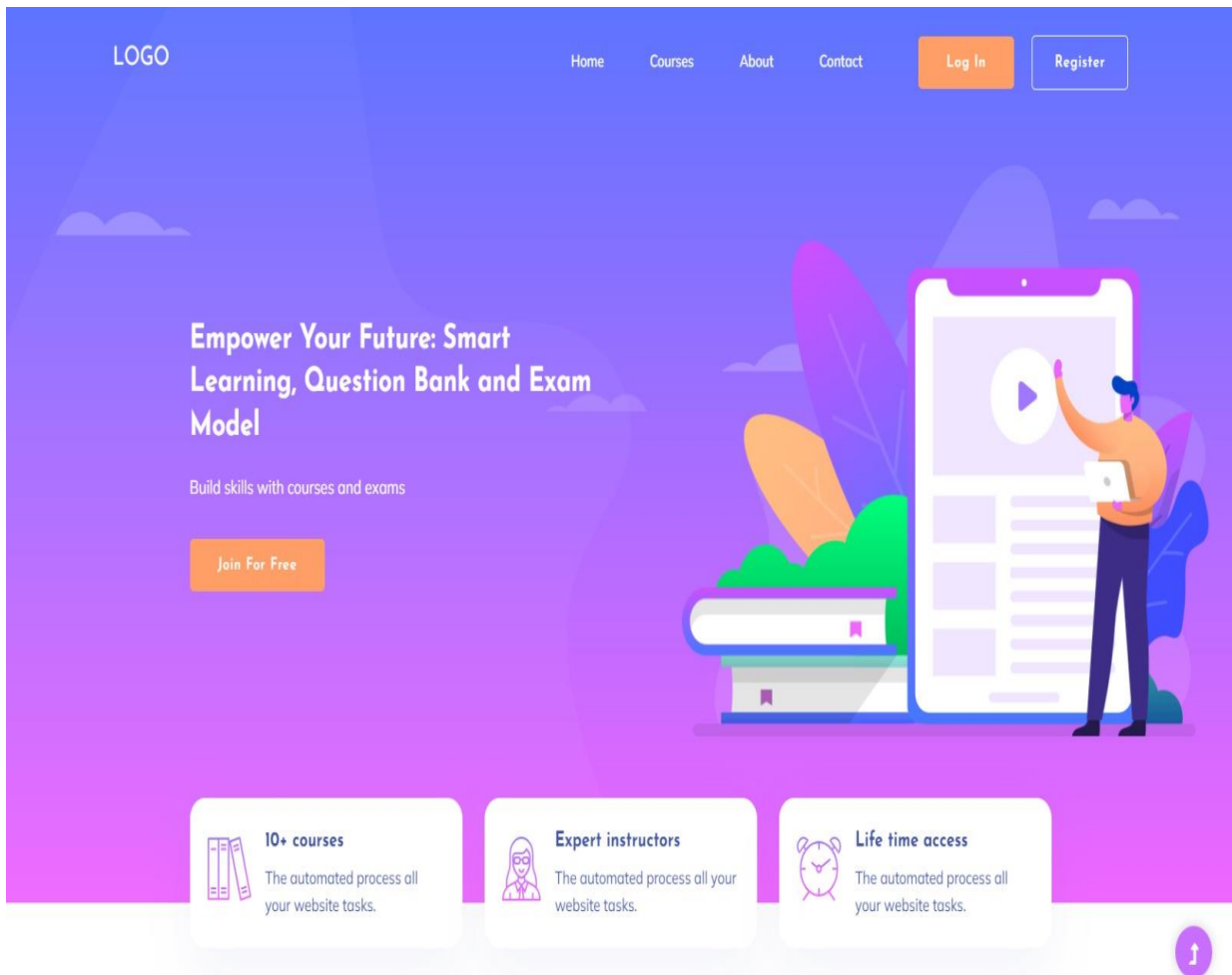
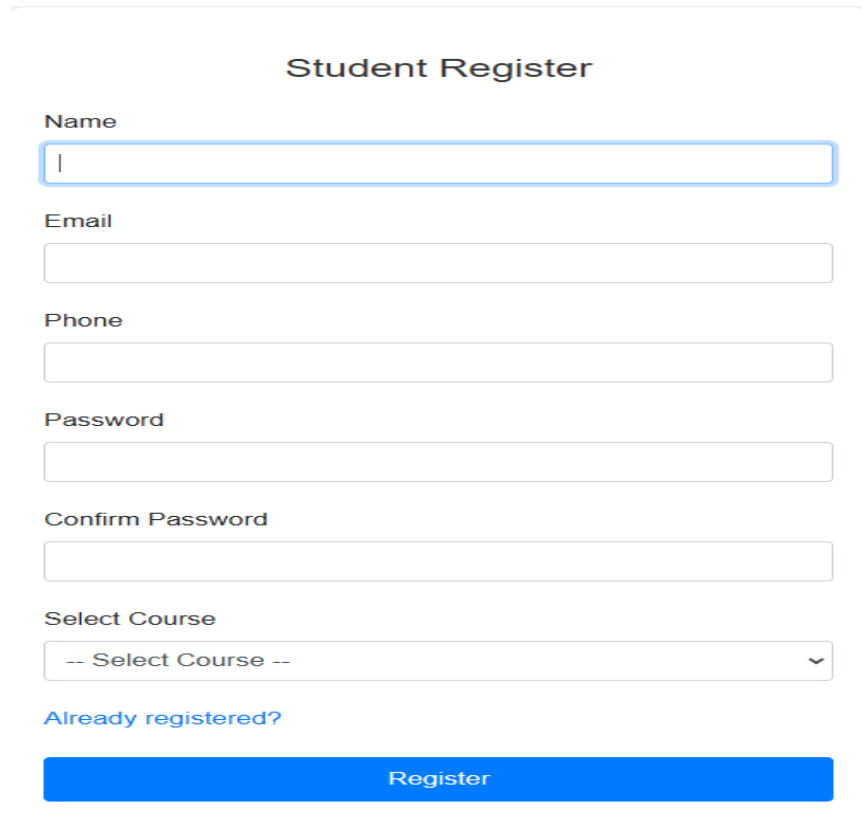


Figure 4.1: Home Page

Register Page: Here user type wise register is available. Students can register as per selected level with email and password.



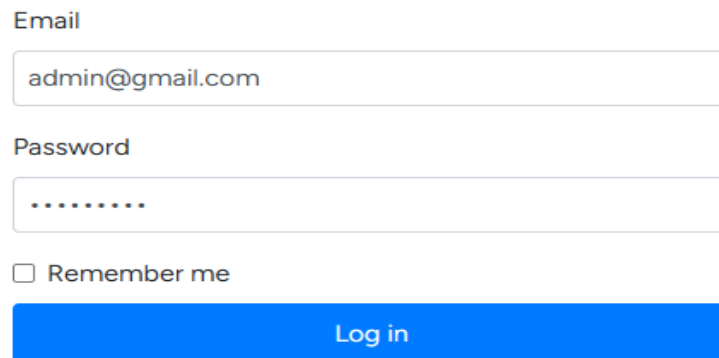
The form is titled "Student Register" and contains several input fields: "Name" (with a blue border), "Email", "Phone", "Password", and "Confirm Password". Below these is a "Select Course" dropdown menu showing "-- Select Course --". A link "Already registered?" is positioned above a blue "Register" button.

Figure 4.2: Register Page

Admin Dashboard:

Here, admin dashboard has some features. Admin can create course, approved teachers and students. And also assign teacher to different batch.

Admin Login



The form is titled "Admin Login" and contains two input fields: "Email" (with the text "admin@gmail.com") and "Password" (with masked characters "....."). Below the password field is a checkbox labeled "Remember me". A blue "Log in" button is at the bottom.

Figure 4.3: Admin Login

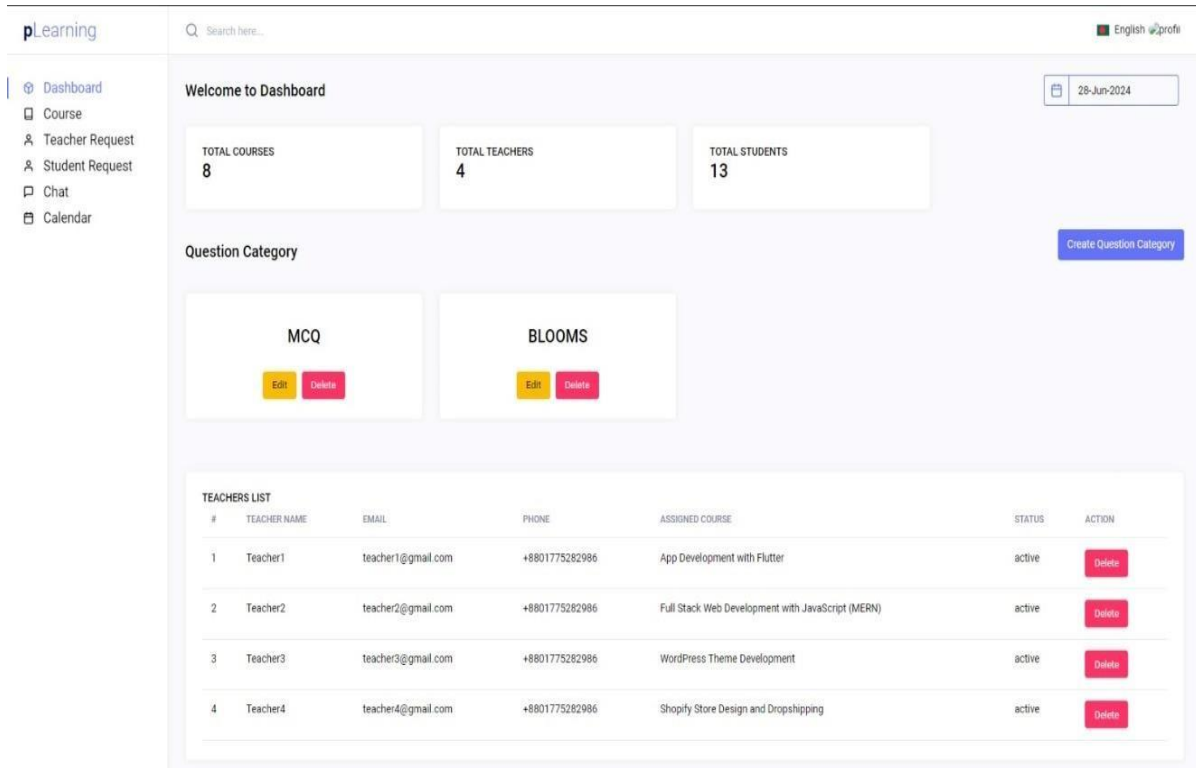


Figure 4.4: Admin Dashboard

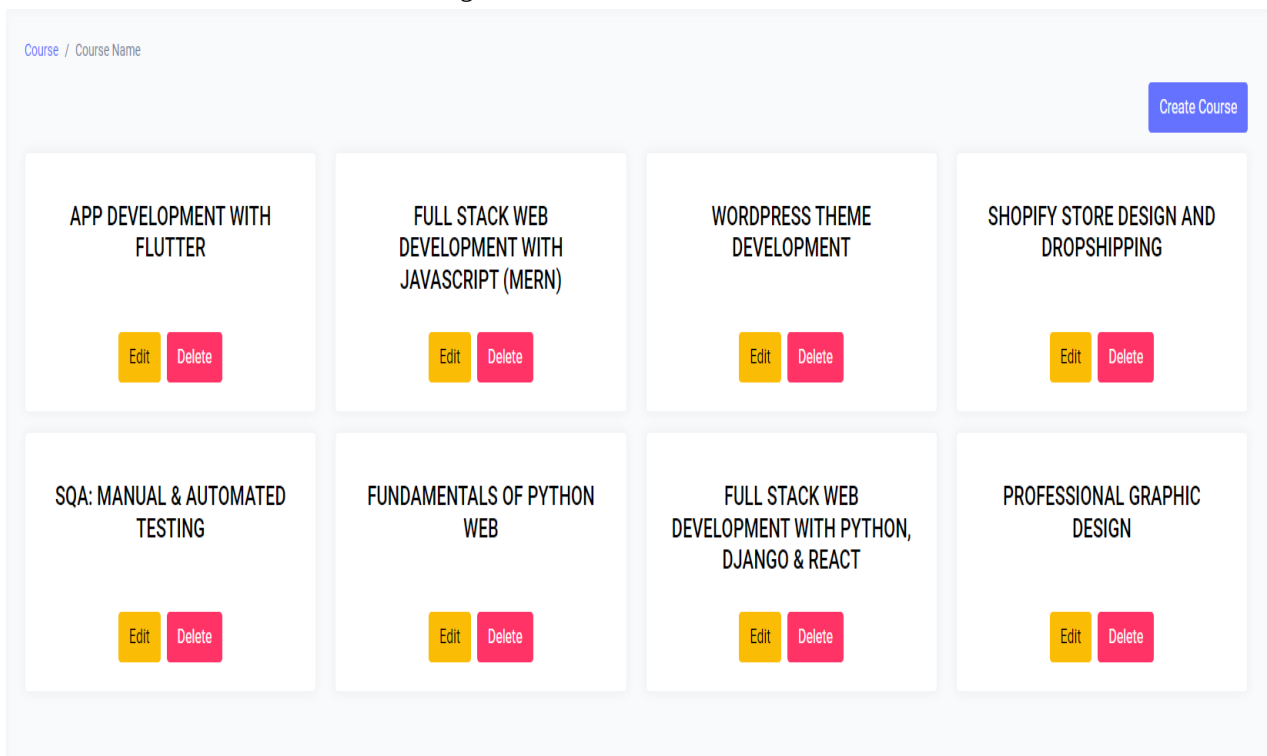


Figure 4.5: Admin course Create

TEACHER					
#	NAME	EMAIL	COURSE	ROLE	ACTIONS
1	teacher5	teacher5@gmail.com	SQA: Manual & Automated Testing	teacher	<button>Approve</button> <button>Reject</button>
2	teacher6	teacher6@gmail.com	Fundamentals of Python Web	teacher	<button>Approve</button> <button>Reject</button>
3	teacher7	teacher7@gmail.com	Full Stack Web Development with Python, Django & React	teacher	<button>Approve</button> <button>Reject</button>
4	teacher8	teacher8@gmail.com	Full Stack Web Development with Python, Django & React	teacher	<button>Approve</button> <button>Reject</button>
5	teacher9	teacher9@gmail.com	Professional Graphic Design	teacher	<button>Approve</button> <button>Reject</button>
6	Teacher10	teacher10@gmail.com	App Development with Flutter	teacher	<button>Approve</button> <button>Reject</button>
7	Teacher11	teacher11@gmail.com	App Development with Flutter	teacher	<button>Approve</button> <button>Reject</button>

Figure 4.6: Teacher Request

STUDENT					
#	NAME	EMAIL	COURSE	ROLE	ACTIONS
1	student5	student5@gmail.com	Shopify Store Design and Dropshipping	student	<button>Approve</button> <button>Reject</button>
2	student6	student6@gmail.com	SQA: Manual & Automated Testing	student	<button>Approve</button> <button>Reject</button>
3	student7	student7@gmail.com	SQA: Manual & Automated Testing	student	<button>Approve</button> <button>Reject</button>
4	student8	student8@gmail.com	Full Stack Web Development with Python, Django & React	student	<button>Approve</button> <button>Reject</button>
5	student9	student9@gmail.com	Professional Graphic Design	student	<button>Approve</button> <button>Reject</button>
6	Student10	student10@gmail.com	App Development with Flutter	student	<button>Approve</button> <button>Reject</button>
7	Student11	student11@gmail.com	App Development with Flutter	student	<button>Approve</button> <button>Reject</button>

Figure 4.7: Student Request

Teacher Dashboard: In teacher dashboard teacher can access some features. Such as add lesson, create exam, add learning modules, and give marks to students.

Course Teacher Login

Email

teacher1@gmail.com

Password

.....

☐ Remember me

[Forgot your password?](#)

Log in

[New Here? Register](#)

Figure 4.8: Teacher Login

Course / Course Name

APP DEVELOPMENT WITH FLUTTER

TOTAL STUDENTS
8

Students Registered to App Development with Flutter

#	STUDENT NAME	EMAIL	PHONE	REGISTERED COURSE	STATUS
1	student1	student1@gmail.com	+8801775282985	App Development with Flutter	active
11	Student10	student10@gmail.com	+8801775282985	App Development with Flutter	active
12	Student11	student11@gmail.com	+8801775282985	App Development with Flutter	active
13	Student12	student12@gmail.com	+8801775282985	App Development with Flutter	active
14	Student13	student13@gmail.com	+8801775282985	App Development with Flutter	active
15	Student14	student14@gmail.com	+8801775282985	App Development with Flutter	active
16	Student15	student15@gmail.com	+8801775282986	App Development with Flutter	active
17	Student16	student16@gmail.com	+8801775282985	App Development with Flutter	active

Figure 4.9: Teacher Dashboard

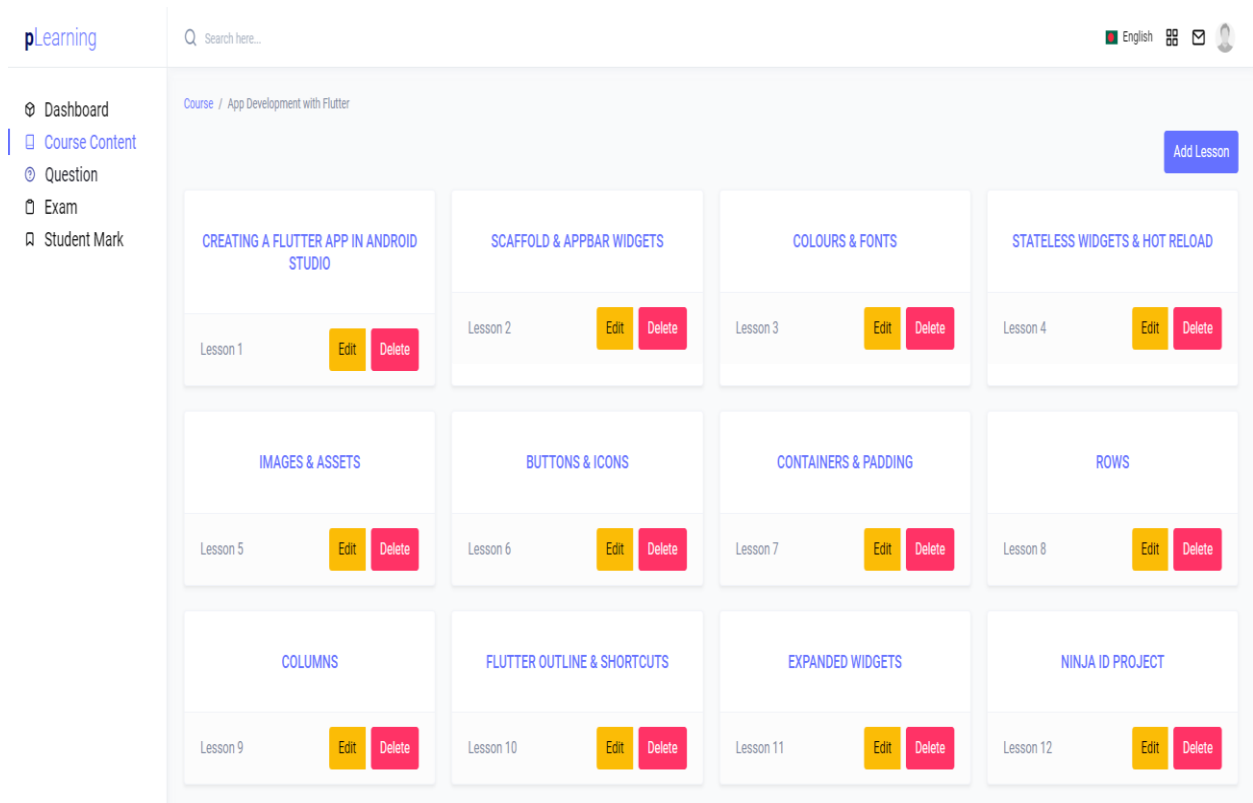


Figure 4.10: Course Content on Teacher Dashboard

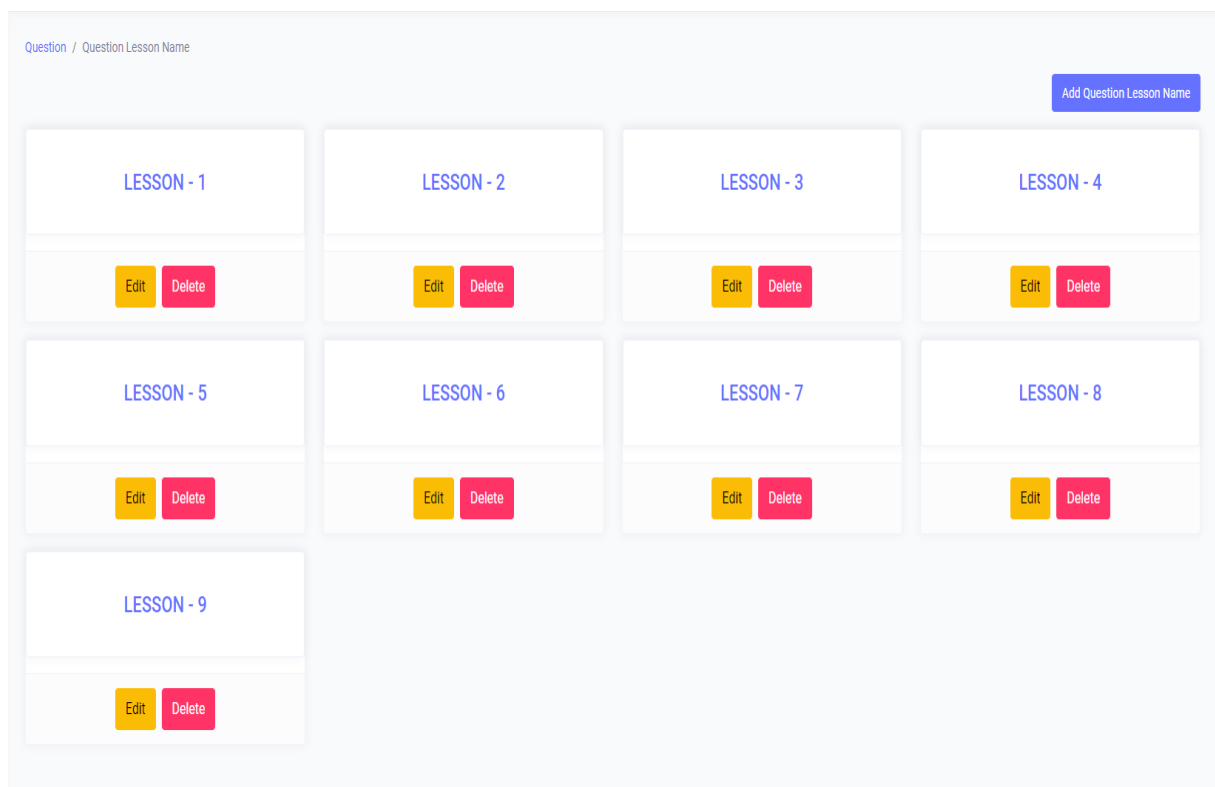


Figure 4.11: Teacher add lessons

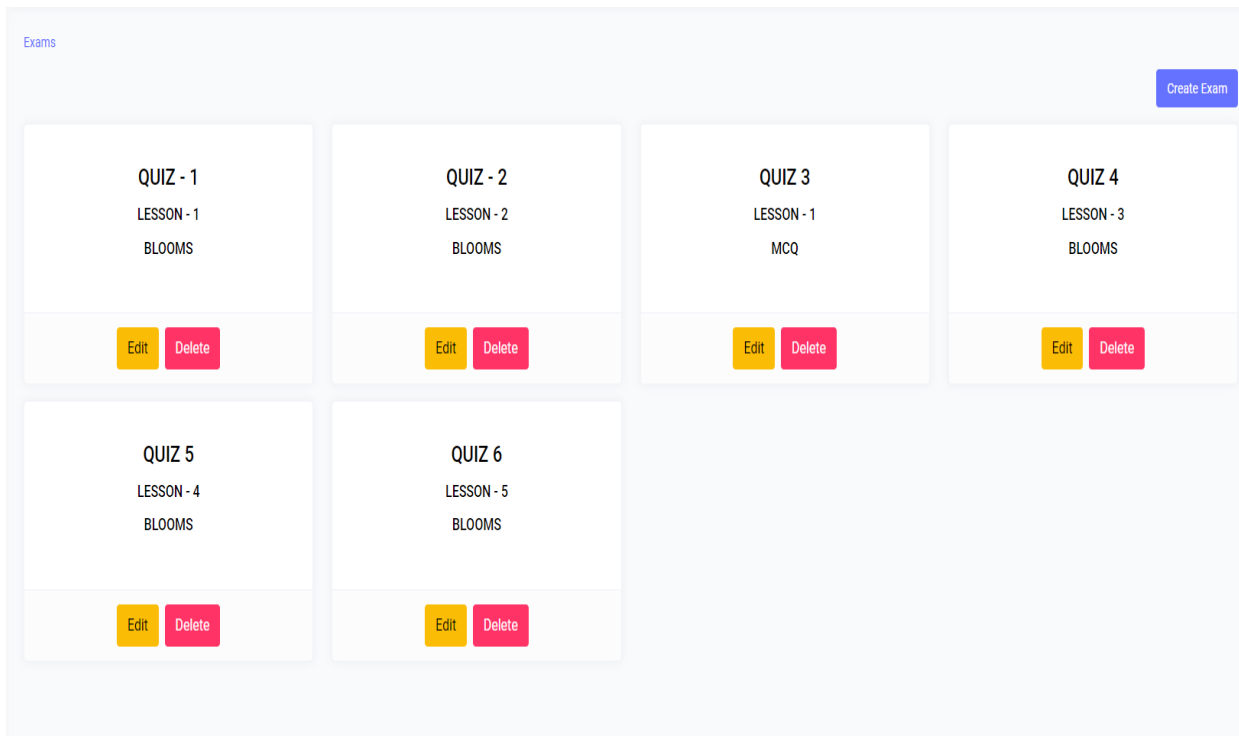


Figure 4.12: Teacher Create Exam

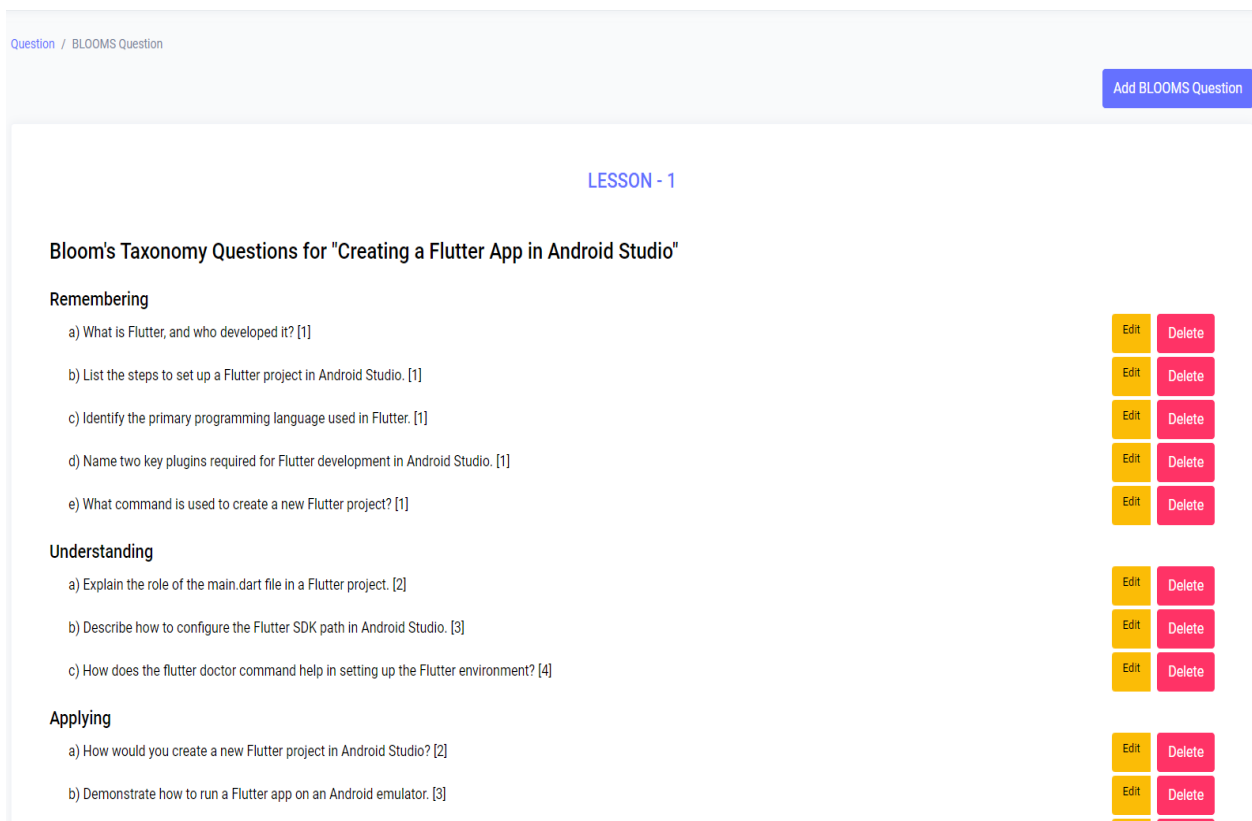


Figure 4.13: Add Blooms Questions

Question / MCQ Question
Add MCQ Question

LESSON - 1

What is Flutter?

Option A: A backend framework

Option B: A database system

Option C: An open-source UI software development toolkit by Google

Option D: A cloud storage service

Correct Option: c

EditDelete

Which programming language is primarily used in Flutter?

Option A: JavaScript

Option B: Dart

Option C: Python

Option D: Java

Correct Option: b

EditDelete

Figure 4.14: Add MCQ Questions

pLearning

- Dashboard
- Course Content
- Question
- Exam
- Student Mark

Q Search here...

English

Student Exam List

QUIZ - 1 BLOOMS	QUIZ - 2 BLOOMS	QUIZ 3 MCQ	QUIZ 4 BLOOMS
QUIZ 4 BLOOMS	QUIZ 5 BLOOMS	QUIZ 6 BLOOMS	QUIZ 7 BLOOMS
QUIZ 8 MCQ	QUIZ 9 MCQ	QUIZ 10 MCQ	QUIZ 12 BLOOMS
QUIZ 13 MCQ			

Figure 4.15: Give marks

Students Dashboard: Students can see enrolled course in dashboard. Students can see learning resources and give blooms question category exam.

Student Login

Email

Password

☐ Remember me

[Forgot your password?](#)

[Log in](#)

[New Here? Register](#)

Figure 4.16: Students Login

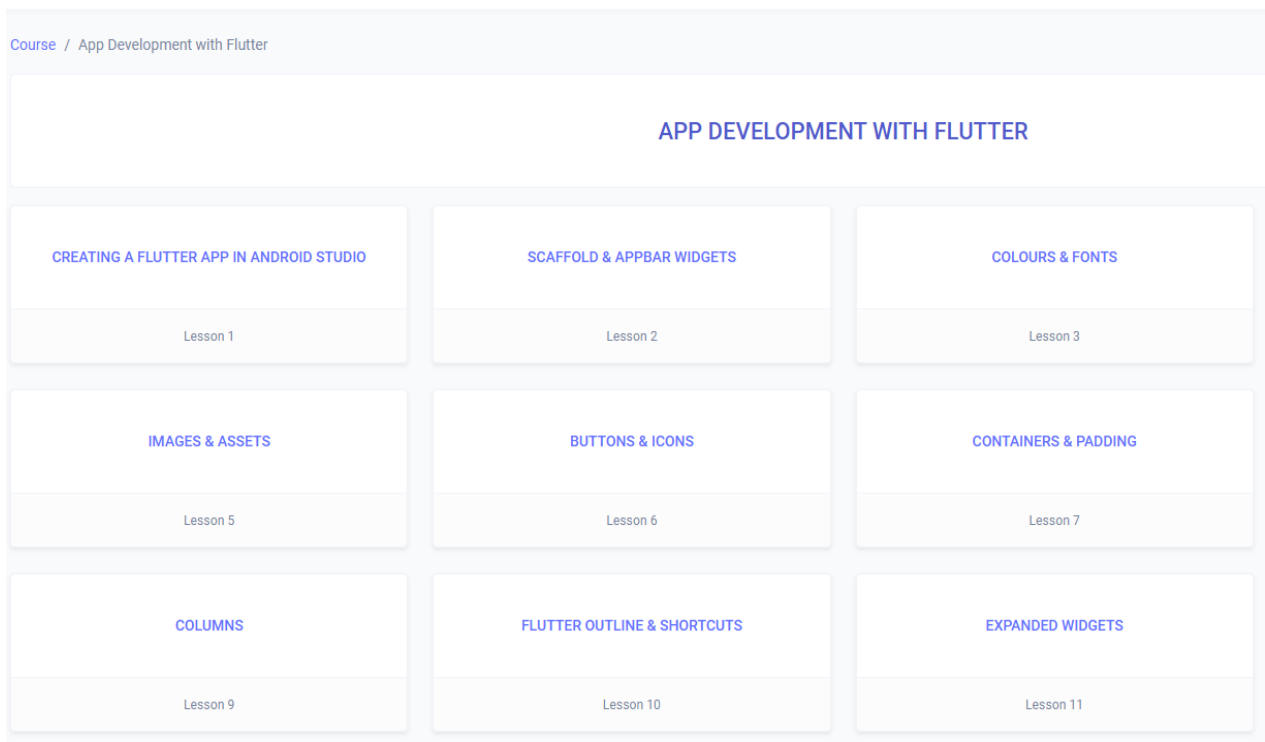


Figure 4.17: Students Dashboard

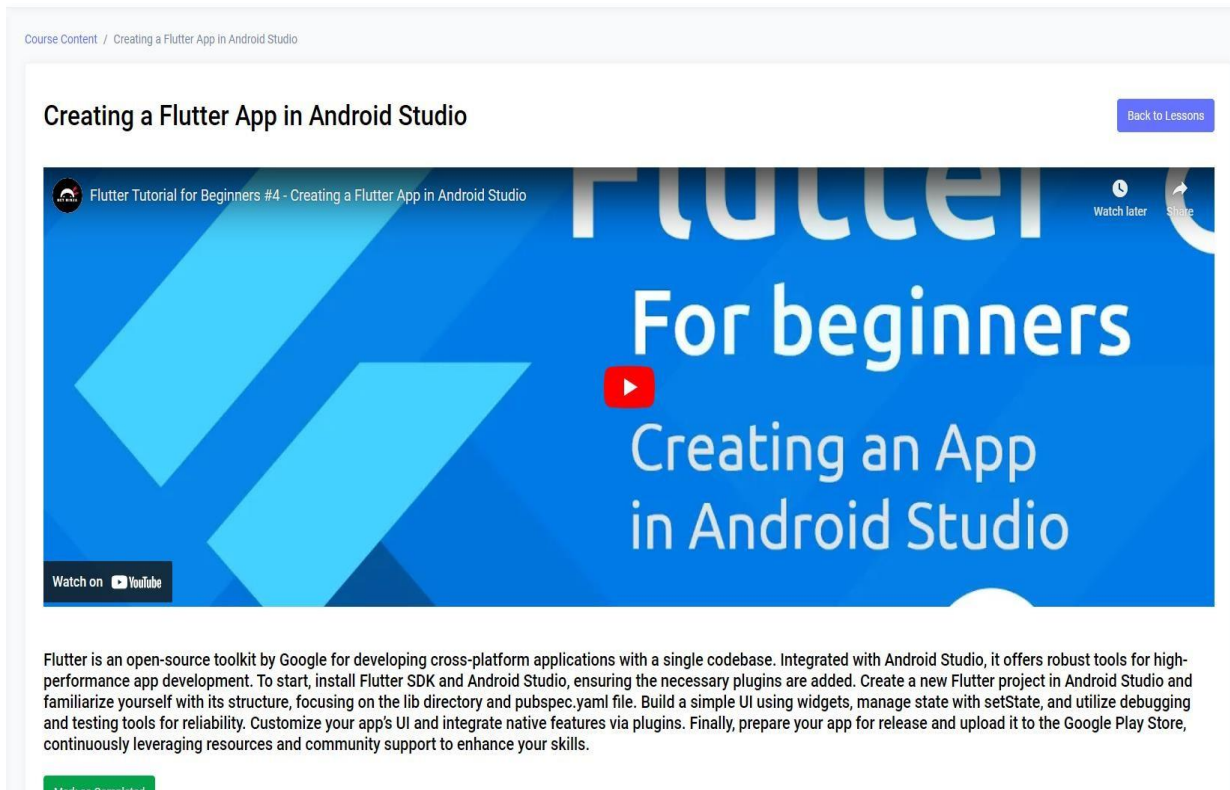


Figure 4.18: Enrolled course on Student Dashboard

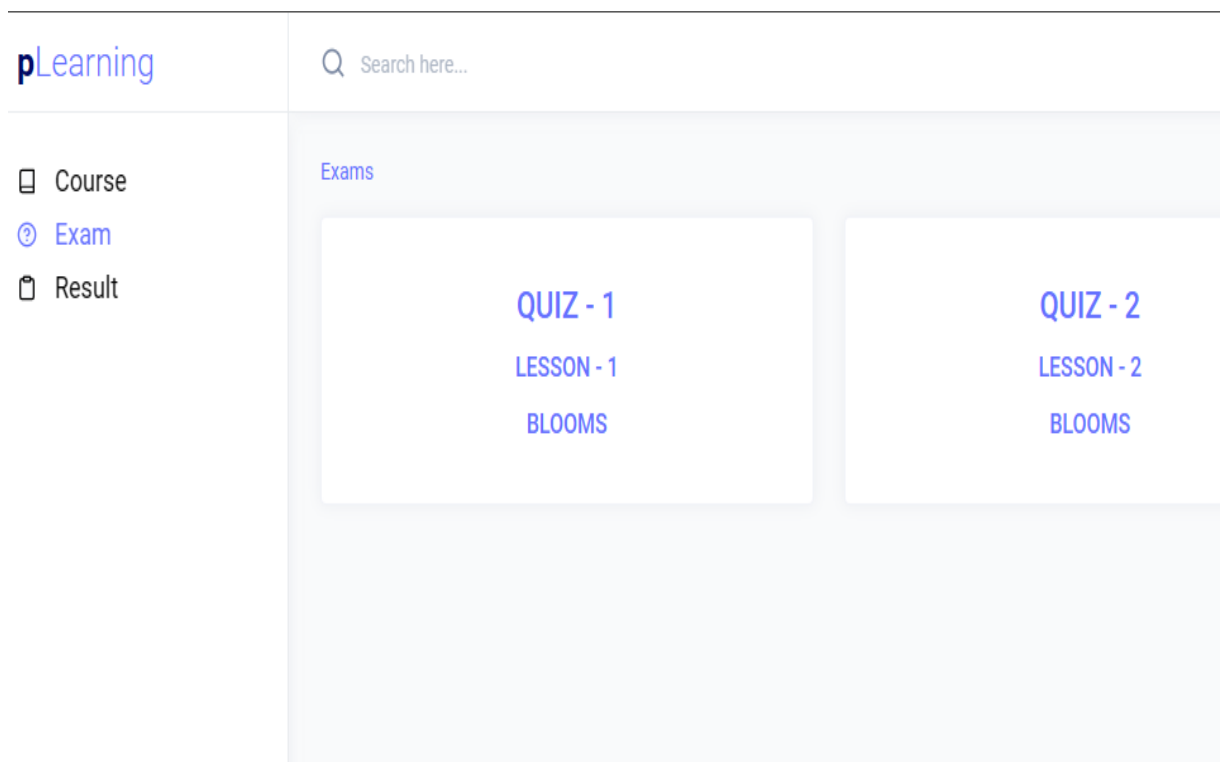


Figure 4.19: Give Exam on Student Dashboard

Exam / BLOOMS Exam

LESSON - 1

Bloom's Taxonomy Questions for "Creating a Flutter App in Android Studio"

Remembering

a) What is Flutter, and who developed it? [1]

Question Answer

b) List the steps to set up a Flutter project in Android Studio. [1]

Question Answer

Figure 4.20: Blooms questions

Exam Result

Exam Scores

EXAM NAME	QUESTION CHAPTER	QUESTION CATEGORY	TOTAL SCORE
-----------	------------------	-------------------	-------------

Figure 4.21: Check Result on Students Dashboard

4.2 Back-end Design

In this web-based project most of part done with dynamically. In back-end part most of part implemented and integrated with back-end. Teacher adds exam marks and it got from the student's dashboard. And also, CRUD operation with database, thus back-end works.

The screenshot shows the 'EDIT QUESTION CHAPTER' interface. On the left is a sidebar with navigation links: Dashboard, Course Content, Question, Exam, and Student Mark. The main content area has a search bar at the top. Below it, the title 'Question / Edit Question Chapter' is displayed. The form itself is titled 'EDIT QUESTION CHAPTER' and contains a 'Chapter Name' label followed by a text input field containing 'Lesson - 1'. At the bottom of the form is a blue 'Update Chapter' button.

Figure 4.22: Update from database

The screenshot shows the 'MCQ Response' table. The table has the following columns: #, QUESTION, RESPONSE OPTION, CORRECT OPTION, MARKS, and TIMESTAMP. It contains 15 rows of data, each representing a question and its corresponding response options, correct answer, marks, and timestamp.

#	QUESTION	RESPONSE OPTION	CORRECT OPTION	MARKS	TIMESTAMP
1	What is Flutter?	C	c	1	2024-06-29 11:43:18
2	Which programming language is primarily used in Flutter?	B	b	1	2024-06-29 11:43:18
3	What is the purpose of the pubspec.yaml file in a Flutter project?	A	a	1	2024-06-29 11:43:18
4	How do you create a new Flutter project in Android Studio?	A	a	1	2024-06-29 11:43:18
5	Which command is used to create a new Flutter project?	C	c	1	2024-06-29 11:43:18
6	What is the entry point of a Flutter application?	B	b	1	2024-06-29 11:43:18
7	Which widget is commonly used to define the basic visual layout structure of a Flutter app?	C	c	1	2024-06-29 11:43:18
8	What does the 'flutter doctor' command do?	C	c	1	2024-06-29 11:43:18
9	How do you run a Flutter app on an Android emulator in Android Studio?	A	a	1	2024-06-29 11:43:18
10	Which two plugins are essential for Flutter development in Android Studio?	A	a	1	2024-06-29 11:43:18
11	What is the role of the 'lib' directory in a Flutter project?	B	b	1	2024-06-29 11:43:18
12	Which widget is used to display a list of items in Flutter?	B	b	1	2024-06-29 11:43:18
13	How can you add a dependency to a Flutter project?	B	b	1	2024-06-29 11:43:18
14	What is the command to upgrade the Flutter SDK to the latest version?	A	a	1	2024-06-29 11:43:18
15	Which method is the starting point of execution for a Flutter app?	A	a	1	2024-06-29 11:43:18

Figure 4.23: Teacher got students data from Database

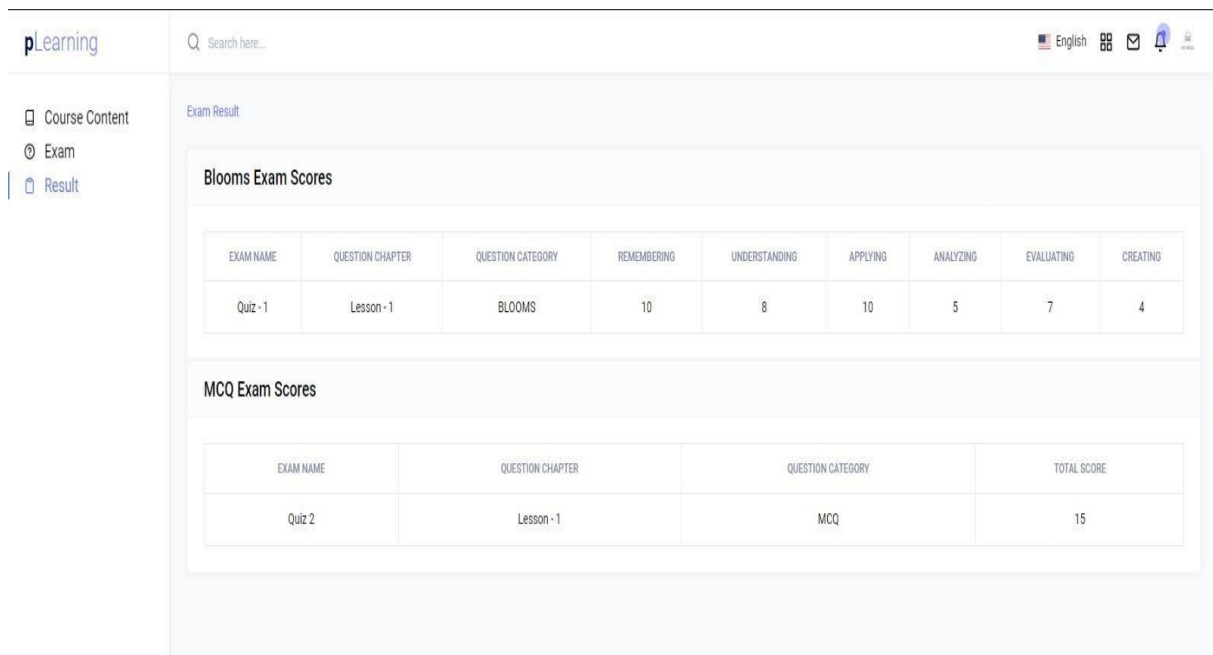


Figure 4.24: Students check marks from database

4.3 Interaction Design and User Experience (UX)

Developing a smooth and captivating user experience (UX) that promotes learning and ongoing use is essential to designing a successful learning website. Prioritizing accessibility, user-friendliness, and simplicity of navigation is essential for communicating design. Users are used this website with flexibility and need to user support and feedback for further development.

4.4 Implementation Requirements

To implementing this some things are required.

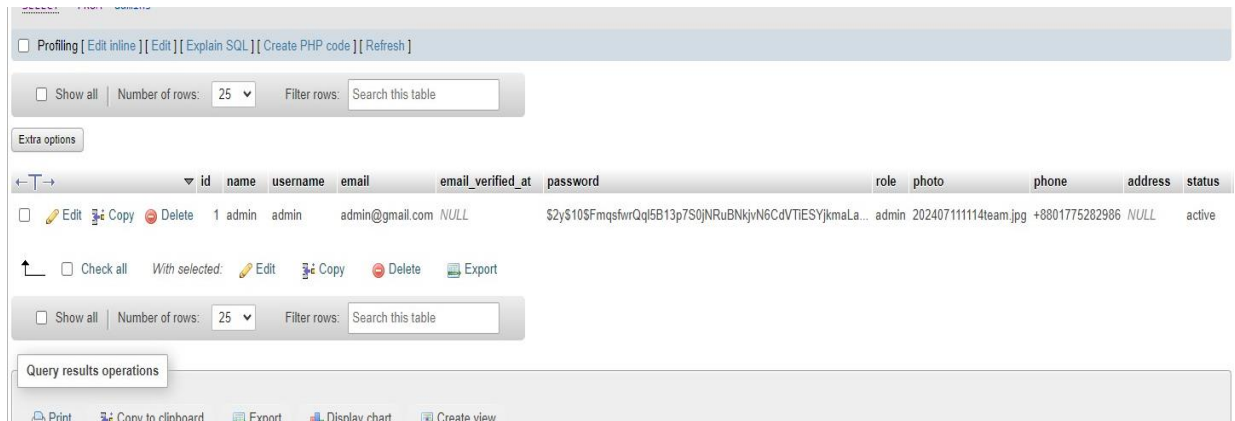
- Visual studio
- MYSQL
- Front-end design
- Back-end design
- Website hosting tools (For example, Netlify)
- Database Integration.

CHAPTER 05

Implementation and Testing

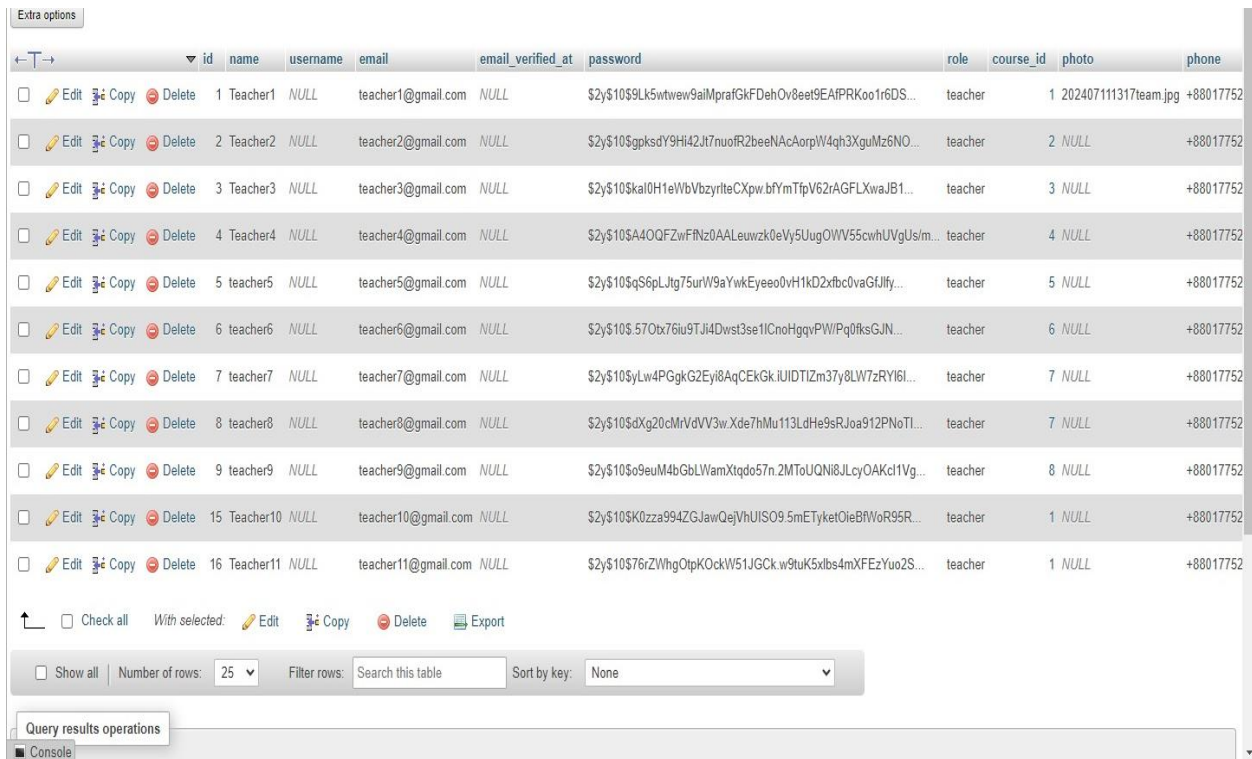
5.1 Implementation of Database:

Any website or any application must need a Database. The objective of the database is website or any application information stored, obtained and updated. In my developed project I used the MYSQL database. MYSQL is a structured database. To implement the database, I used CRUD (Create, Read, Update, Delete) operation. Now I Am showing Admin, teachers, and students' data from the database.



	id	name	username	email	email_verified_at	password	role	photo	phone	address	status
☐	1	admin	admin	admin@gmail.com	NULL	\$2y\$10\$FmqsfwrQql5B13p7S0jNRuBNk9vN6CdVTIESYjkmLa...	admin	202407111114team.jpg	+8801775282986	NULL	active

Figure 5.1: Admin Database



	id	name	username	email	email_verified_at	password	role	course_id	photo	phone
☐	1	Teacher1	NULL	teacher1@gmail.com	NULL	\$2y\$10\$9Lk5wtwew9aIMprafGkFDehOv8aeI9EAfPRKoo1r6DS...	teacher	1	202407111317team.jpg	+88017752
☐	2	Teacher2	NULL	teacher2@gmail.com	NULL	\$2y\$10\$gpkdsY9Hi42Jt7nuofR2beeNAcAorpW4qh3XguMz6NO...	teacher	2	NULL	+88017752
☐	3	Teacher3	NULL	teacher3@gmail.com	NULL	\$2y\$10\$ka10H1eVbVbzrylteCXpw.bfYmTfpV62rAGFLXwaJB1...	teacher	3	NULL	+88017752
☐	4	Teacher4	NULL	teacher4@gmail.com	NULL	\$2y\$10\$A40QFZwFfNz0AALeuwzK0eVy5UugOWV55cwhUVgUs/m...	teacher	4	NULL	+88017752
☐	5	teacher5	NULL	teacher5@gmail.com	NULL	\$2y\$10\$qS6pLJtg75urW9aYwkEyyeo0vH1kD2xfbc0vaGJlly...	teacher	5	NULL	+88017752
☐	6	teacher6	NULL	teacher6@gmail.com	NULL	\$2y\$10\$57Obx76iu9TJi4Dwst3se1CnoHgqvPW/Pq0fksGJN...	teacher	6	NULL	+88017752
☐	7	teacher7	NULL	teacher7@gmail.com	NULL	\$2y\$10\$yLw4PGgkG2Ey8AqCEkGk.iUIDTIZm37y8LW7zRYI6I...	teacher	7	NULL	+88017752
☐	8	teacher8	NULL	teacher8@gmail.com	NULL	\$2y\$10\$dXg20cMrVdVV3w.Xde7hMu113LdHe9sRJoas12PN0Tl...	teacher	7	NULL	+88017752
☐	9	teacher9	NULL	teacher9@gmail.com	NULL	\$2y\$10\$o9euM4bGblWamXtqdo57n.2MT0UQNI8JLcyOAKd1Vg...	teacher	8	NULL	+88017752
☐	15	Teacher10	NULL	teacher10@gmail.com	NULL	\$2y\$10\$K0zza994ZJawQeJvHUISO9.5mETyketOieBfW0R95R...	teacher	1	NULL	+88017752
☐	16	Teacher11	NULL	teacher11@gmail.com	NULL	\$2y\$10\$76rZWhtpOtpKocKw51JGck.w9tuK5xls4mXFEzYuo2S...	teacher	1	NULL	+88017752

Figure 5.2: Teacher Database

	id	name	username	email	email_verified_at	password	role	course_id	photo	phone	address
☐ Edit Copy Delete	1	student1	NULL	student1@gmail.com	NULL	\$2y\$10\$56zuQIRkyQQUG3v2l4/eM4qJXb/ieoIQ51cAcog7S...	student	1	NULL	+8801775282985	NULL
☐ Edit Copy Delete	2	student2	NULL	student2@gmail.com	NULL	\$2y\$10\$/q.wYsFzjH00k6aXzVqDei4aPV2CkaWOqLMR7fJ8XV...	student	2	NULL	+8801775282981	NULL
☐ Edit Copy Delete	3	student3	NULL	student3@gmail.com	NULL	\$2y\$10\$BUBzih7UZMjftUNSBn/MpuwMlgaDePpQMnidVxgVB6F...	student	3	NULL	+8801775282982	NULL
☐ Edit Copy Delete	4	student4	NULL	student4@gmail.com	NULL	\$2y\$10\$vnTZ4vR72hs9SPETzKj62.IZGBIO9HCUmPkqBoIUASh...	student	4	NULL	+8801775282983	NULL
☐ Edit Copy Delete	5	student5	NULL	student5@gmail.com	NULL	\$2y\$10\$7fWNmBVg73ebL5n7gS6bEO7x9ZXocEXLfdrxg8fdnL4...	student	4	NULL	+8801775282985	NULL
☐ Edit Copy Delete	6	student6	NULL	student6@gmail.com	NULL	\$2y\$10\$S01uDZGlyOXIRah1d.8d0uY8qJdA3gEtIB9P0wx/fhW3...	student	5	NULL	+8801775282986	NULL
☐ Edit Copy Delete	7	student7	NULL	student7@gmail.com	NULL	\$2y\$10\$/s1QP6jMowv8V6ThVTjn.6Hc/WznJyRoYNstNY3byD...	student	5	NULL	+8801775282985	NULL
☐ Edit Copy Delete	8	student8	NULL	student8@gmail.com	NULL	\$2y\$10\$Nlosb9VjK/p9jdcB5FQ/uFQW77T4acGVsHzm1h5Jt...	student	7	NULL	+8801775282985	NULL
☐ Edit Copy Delete	9	student9	NULL	student9@gmail.com	NULL	\$2y\$10\$mkiFIBRmhVPK2czO6Z7m.Rq1EymHTCXNpR460Obbt...	student	8	NULL	+8801775282985	NULL
☐ Edit Copy Delete	11	Student10	NULL	student10@gmail.com	NULL	\$2y\$10\$73rrkizG0StmpSjPaxARHe6zxV/CsyQ8YOJa8Uibwj0...	student	1	NULL	+8801775282985	NULL
☐ Edit Copy Delete	12	Student11	NULL	student11@gmail.com	NULL	\$2y\$10\$40cWIRGtrNrgmnGOOmshOL2EntjnLcQsFzycPnizhM...	student	1	NULL	+8801775282985	NULL
☐ Edit Copy Delete	13	Student12	NULL	student12@gmail.com	NULL	\$2y\$10\$NVD5PGw8CL5ksIZjEpFx9OTC/cJbqZDC5n8S4jvtmU...	student	1	NULL	+8801775282985	NULL

Figure 5.3: Students Database

5.2 Implementation of Front-end Design

To implemented front-end, I used several Programming languages and Frameworks; HTML, CSS, Bootstrap, JavaScript PHP, Laravel. HTML gives the basic structure and CSS and Bootstrap used style. Full project implemented in PHP Laravel. Moreover, to implement front-end design use case diagrams, class diagrams, sequence diagrams are helpful to requirement specifications. The responsive front-end design ensures flexibility and the best possible presentation on a range of devices, including tablets, smartphones, and desktop computers. The reason behind makes it responsive such that, all users can use this website with flexibly.

5.3 Testing Implementation

Testing is the significant issue for any type of web or mobile based application. After Design and developed my smart question bank and exam model web-based project, then the next phase is testing. Here, I used Unit Testing. Unit Testing is a part of Software Engineering where each particular component is tested. In my project all features, (Admin, teachers, students) are tested.

5.4 Test Result and Report:

Table 5.1: Testing Result

Serial No	Test Result	Expected Result	Result
1	Sign Up	Admin, Teachers, students can sign up with particular email	Success
2	Log In	All registered users can login.	Success
3	Request Approved	Admin can approve teachers and students' requests.	Success
4	Create Exam	Teachers can create lesson and blooms exam	Success
5	Give Exam	Students can give exam in their registered courses.	Success
6	Check Marks	Students can check their exam marks.	Success

CHAPTER 06

Impact on Society, Environmental and Sustainability

6.1 Impact on Society:

The Smart question bank and exam model learning management system (LMS) is a technology that can significantly improve education and professional preparation. It allows for tailored instruction, continuous feedback, and aligns the curriculum with industry standards, enhancing students' employability and productivity. The LMS also offers flexibility, allowing students to learn from anywhere and encouraging lifelong learning. It uses advanced analytics to facilitate data-driven decision-making, resulting in more effective teaching methods. It encourages critical thinking and problem-solving through self-directed learning. This approach promotes a more skilled and inclusive society by making high-quality education more accessible and better preparing students for the workforce. It also bridges the education-employment gap, benefiting both companies and individuals. This approach ensures equal opportunities for all students by reducing access barriers, providing tailored learning experiences, and promoting equality in education.

6.2 Impact on Environment

The Smart question bank and exam model learning management system (LMS) is a digital platform that reduces the need for tangible resources like paper, textbooks, and transportation, promoting an environmentally friendly and sustainable approach to education. This shift reduces waste and carbon emissions associated with traditional instructional materials and transportation. The LMS also reduces the need for paper, printing, and distribution, reducing deforestation and trash production. Additionally, the LMS reduces the use of fossil fuels and greenhouse gas emissions. Online learning also reduces the need for energy-intensive campus infrastructure, further promoting energy conservation. Centrally located online educational resources reduce the need for physical infrastructure, resulting in lower energy consumption and resource usage. LMS facilitates remote learning and virtual collaboration, reducing travel to conferences, meetings, and tests, and thus reducing carbon footprints.

6.3 Ethical Aspects

The ethical implementation of a Smart question bank and exam model learning management system (LMS) requires careful consideration of several factors. First, data privacy and security are crucial, as the system collects and stores a significant amount of student data. Strong encryption, safe data storage, and transparent privacy rules are

essential to protect students' rights. Secondly, the LMS should be inclusive, providing equal access to top-notch instruction for all students, regardless of their financial situation, location, or disability. The platform should be user-friendly, including for those with special needs. Frequent audits of the system's algorithms are necessary to prevent biases that could penalize specific student groups based on factors like gender or color. Transparency in the system's evaluation and guidance of student learning is also crucial to ensure transparency and impartiality. Lastly, the LMS should support and strengthen the role of teachers, requiring sufficient training and assistance for ethical implementation.

6.4 Sustainability Plan

Through digital transition, energy efficiency, and resource optimization, a sustainability strategy for a Smart question bank and exam model learning management system (LMS) aims to minimize environmental effect and promote long-term viability. The initiative seeks to reduce carbon emissions, eliminate electronic waste, and improve resource efficiency by moving to digital resources, cutting back on paper consumption, enhancing server efficiency, and encouraging virtual cooperation. Ethical and sustainable practices are ensured by regular monitoring, stakeholder interaction, and adherence to environmental regulations, which promotes a greener learning environment for all parties concerned. The LMS aims to enhance efficiency and reduce waste by managing hardware and software lifetimes, planning equipment purchases, usage, maintenance, and disposal. It emphasizes environmental consciousness and compliance with international norms through monitoring, reporting, and stakeholder education. This strategy improves educational achievements and contributes positively to environmental sustainability for future generations.

CHAPTER 7

Conclusion, and Future Work

7.1 Discussion and Conclusion

In conclusion, a major development in the fields of education and professional development is represented by the adoption of a Smart question bank, exam model, and learning management system (LMS) for future career evaluation. Using technology, this integrated approach creates a personalized, dynamic learning environment that can change to meet the needs of each individual student. In here students, teachers, and admin Dashboard are presented. Admin, teachers, students all features are visible in website. Admin can monitor both teacher and student, and also Admin assign and approves teachers. This smart question bank and exam model helps students develop their skill as they interested. Teachers provide all facilities to improve skills and gather others for their future. Students can give exam bloom's category; six levels of bloom's question are open for a student in every course. Students answer those questions which are students gained in course. After that students check exam marks. Thus, students can be empowered in their career.

7.2 Scope for Further Developments

After implementing my Smart question bank and exam model system for future career assessment, I realize some of the features of my developed project need updated futures. Those are described in the below;

- Intregating Artificial Intelligence and Machine Learning in this project.
- Firstly, I will give access to it for free, then slowly I will make the paid version.
- Add payment method in future.
- Developed an online Chat system for all users in their end.
- Increasing the capacity of the database.

References

- [1] <https://ostad.app/>
- [2] <https://interactivecares-courses.com/>
- [3] <https://bohubrihi.com/>
- [4] <https://web.programming-hero.com/dashboard>
- [5] <https://www.coursera.org/>
- [6] https://www.tutorialspoint.com/laravel/laravel_overview.htm
- [7] <https://www.tutorialspoint.com/php/index.htm>
- [8] <https://www.geeksforgeeks.org/sql-tutorial/>
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