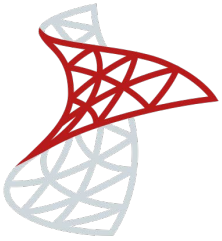
QuizMasterPro

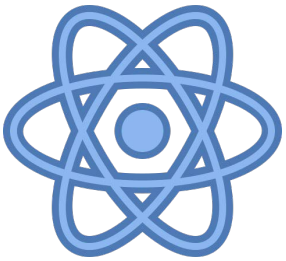
COMSATS University Islamabad, Lahore Campus
Block–B, Department of Electrical and Computer Engineering
COMSATS Institute of Information Technology, 1.5KM Defence Road, Off Raiwind Road, Lahore

Semester Project

1	**Course Code and Title**	CSC371 Database Systems I [FA22-BCE-A & B]
2	**Credit Hours**	3+1
3	**Assessment Type**	Semester Project
5	**Semester**	5th
6	**Resource Person**	Modassir Ishfaq
7	**Submission Date**	**13-12-2024**
8	**Assessment Details**	Semester Final Project

No.	Code and Name of Course	Name of Instructor	Lab Project Implementation details (Assignment, Project, Lab	Evaluation regime (how and when Lab Project is evaluated)
1	CSC-371	Modassir Ishfaq	Frontend + Backend consisting of GUI	Documentation Demonstration





Abstract

QuizMasterPro is an innovative web-based quiz management system developed to address critical vulnerabilities in existing online examination platforms. By leveraging modern web technologies and robust database design, the project aims to create a fair, secure, and user-friendly quiz environment for educational institutions.

- Advanced randomized questioning
- Immediate grading system
- Comprehensive performance analytics
- Enhanced academic integrity mechanisms

1 Introduction

1.1 Objective

The primary objective of QuizMasterPro is to develop a comprehensive, secure, and user-friendly web-based quiz management system that addresses the limitations of existing online examination platforms at COMSATS University Lahore Campus.

1.2 Background: The Origin Story

Identifying the Challenge

The existing student portal suffered from significant security vulnerabilities that allowed students to:

- Use Chrome extensions to automatically extract and search for quiz answers

  Exploit browser's 'Inspect Element' feature to reveal hardcoded correct answers
  Manipulate online assessment processes with relative ease

Motivation

Two young engineers, Faizan Shurjeel and Abdullah Laeeq, were driven by a vision to:

- Restore academic integrity
- Create a technologically advanced solution
- Develop a Free and Open-Source Software (FOSS) platform

Core Challenges

- Prevent answer extraction through browser tools
- Ensure fair assessment mechanisms
- Provide robust quiz management system

1.3 Technological Overview

Technology Stack:

- Frontend: React
- Backend: Express.js, Node.js
- Database: SQL Server
- Hosting: AWS RDS

2. *System Requirements*

Functional Requirements

1. Multiple-choice quiz format
2. Randomized question selection
3. Automatic start time tracking
4. Immediate grading system
5. Answer option obfuscation
6. Comprehensive performance analytics

Technical Requirements

- Real-time performance tracking
- Secure user authentication
- Cross-browser compatibility
- Responsive web interface

3. Technology Stack

Frontend

- React.js
- State Management: Redux
- Styling: Tailwind CSS

Backend

- Express.js
- Node.js
- WebSocket for real-time features

Database

- SQL Server
- ORM: Sequelize
- Hosted on AWS RDS

4. Key Innovations

Security Features

- Dynamic question randomization
- Client-side answer obfuscation
- Secure API communications
- Role-based access control

Performance Tracking

- Detailed quiz statistics
- Individual student progress monitoring

- Immediate grading mechanisms

5. Challenges Overcome

Technical Hurdles

1. SQL Server Management Studio Limitations
    - 32-bit software constraints
    - Poor development tooling
2. Technology Integration
    - Complex data routing
    - API data conversion challenges
    - Seamless technology ecosystem integration

Solution Strategies

- Custom configuration scripts
- Modular design approach
- Robust error handling mechanisms

6. Future Roadmap

Planned Enhancements

1. Next.js platform migration
2. Cross-platform mobile/desktop applications
3. AI-driven adaptive quizzing
4. Enhanced security features

7. Conclusion

Project Achievements

- Developed secure, user-friendly quiz platform
- Addressed online assessment vulnerabilities
- Created scalable FOSS solution

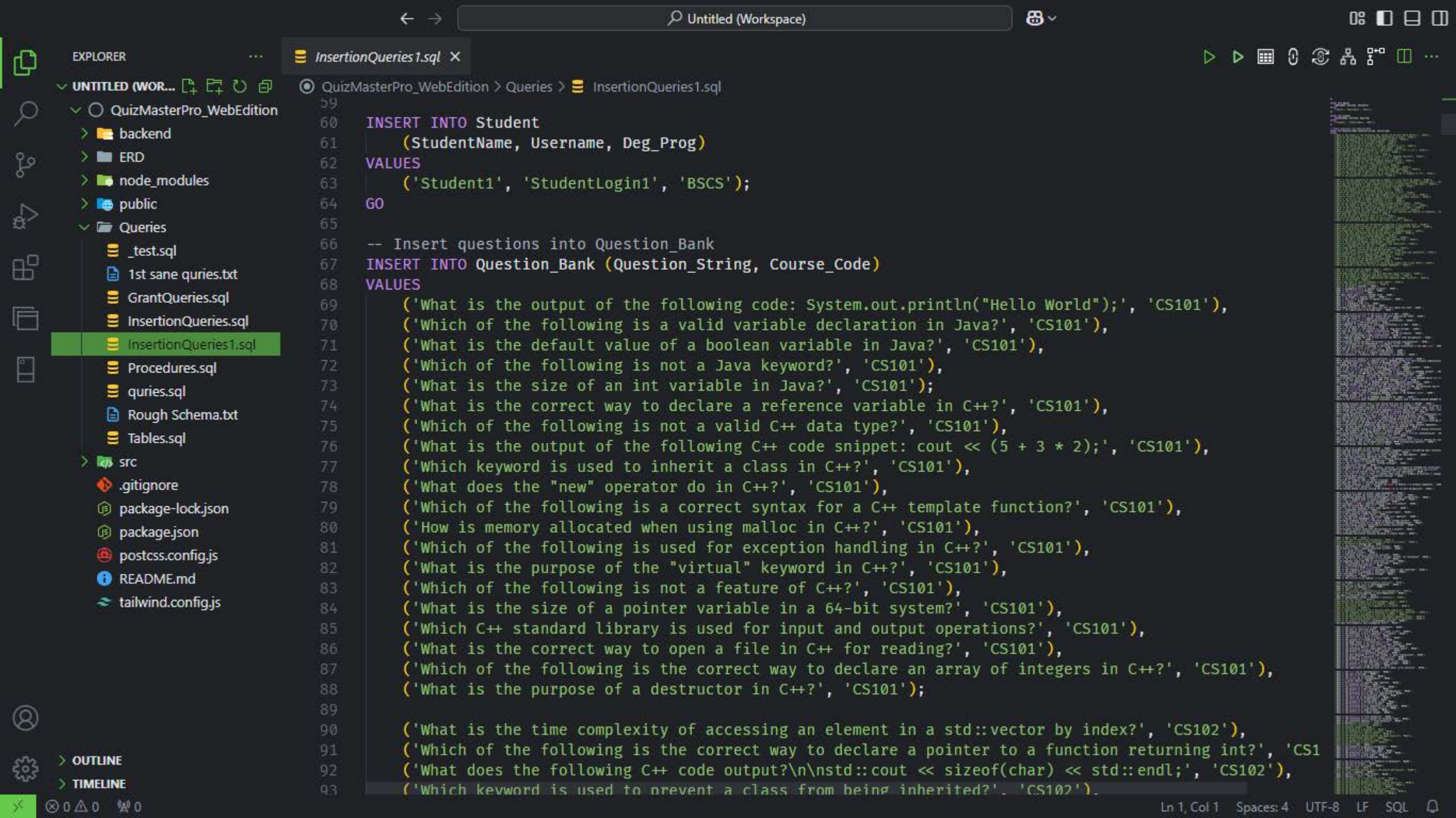
Key Learnings

- Importance of comprehensive security design
- Value of user-centric technological solutions
- Complexity of integrated software ecosystems

8. Acknowledgments

Special thanks to:

- COMSATS University Islamabad, Lahore Campus
- Course Instructor: Modassir Ishfaq
- Open-source community


Untitled (Workspace)
EXPLORER
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QuizMasterPro_WebEdition > Queries > InsertionQueries1.sql
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QuizMasterPro_WebEdition
backend
ERD
node_modules
public
Queries
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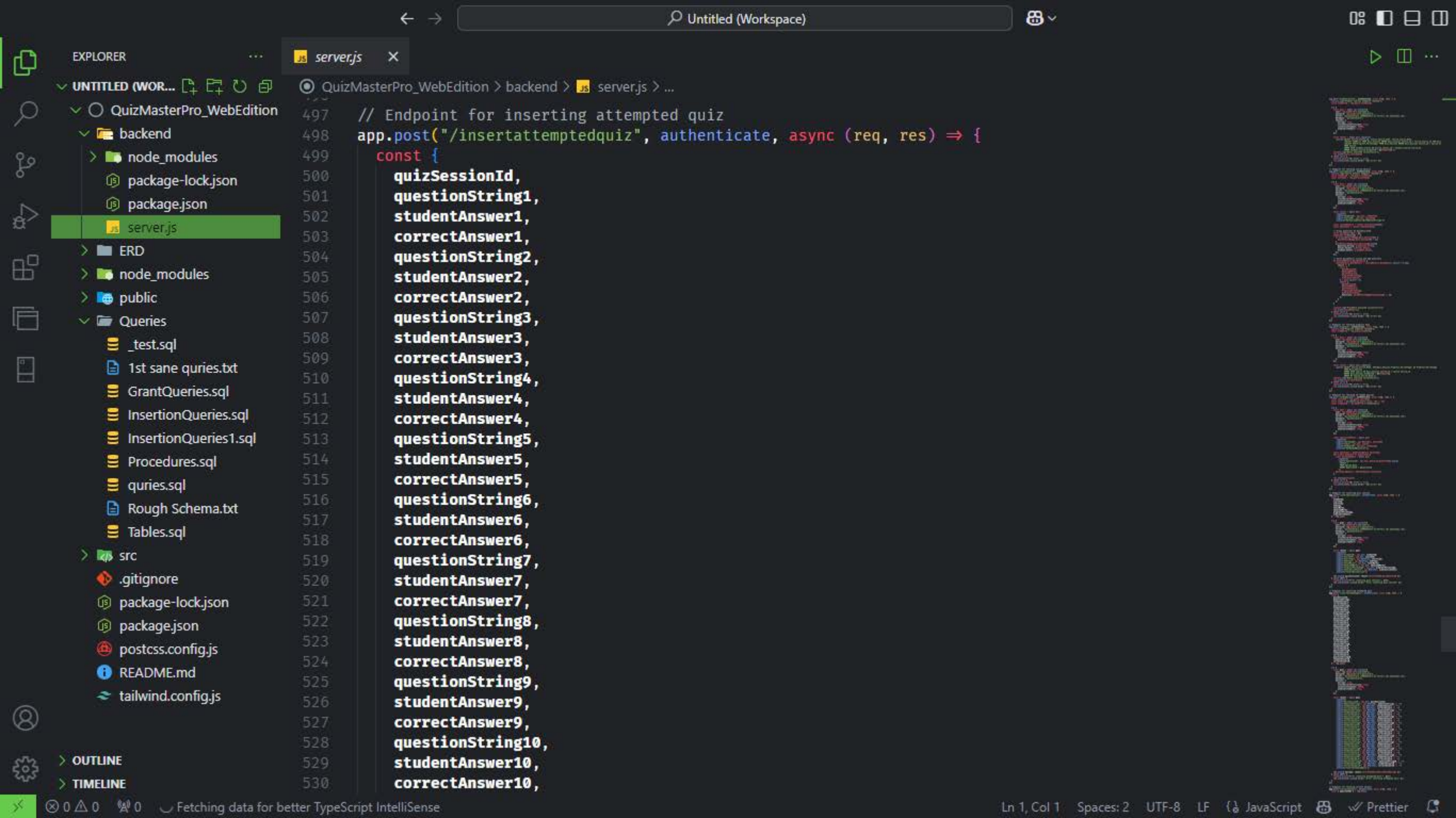
GrantQueries.sql
InsertionQueries.sql
InsertionQueries1.sql
Procedures.sql
quries.sql
Rough Schema.txt
Tables.sql
src
.gitignore
package-lock.json
package.json
postcss.config.js
README.md
tailwind.config.js
OUTLINE
TIMELINE
INSERT INTO Student
(StudentName, Username, Deg_Prog)
VALUES
('Student1', 'StudentLogin1', 'BSCS');
GO
-- Insert questions into Question_Bank
INSERT INTO Question_Bank (Question_String, Course_Code)
VALUES
('What is the output of the following code: System.out.println("Hello World");', 'CS101'),
('Which of the following is a valid variable declaration in Java?', 'CS101'),
('What is the default value of a boolean variable in Java?', 'CS101'),
('Which of the following is not a Java keyword?', 'CS101'),
('What is the size of an int variable in Java?', 'CS101');
('What is the correct way to declare a reference variable in C++?', 'CS101'),
('Which of the following is not a valid C++ data type?', 'CS101'),
('What is the output of the following C++ code snippet: cout << (5 + 3 * 2);', 'CS101'),
('Which keyword is used to inherit a class in C++?', 'CS101'),
('What does the "new" operator do in C++?', 'CS101'),
('Which of the following is a correct syntax for a C++ template function?', 'CS101'),
('How is memory allocated when using malloc in C++?', 'CS101'),
('Which of the following is used for exception handling in C++?', 'CS101'),
('What is the purpose of the "virtual" keyword in C++?', 'CS101'),
('Which of the following is not a feature of C++?', 'CS101'),
('What is the size of a pointer variable in a 64-bit system?', 'CS101'),
('Which C++ standard library is used for input and output operations?', 'CS101'),
('What is the correct way to open a file in C++ for reading?', 'CS101'),
('Which of the following is the correct way to declare an array of integers in C++?', 'CS101'),
('What is the purpose of a destructor in C++?', 'CS101');
('What is the time complexity of accessing an element in a std::vector by index?', 'CS102'),
('Which of the following is the correct way to declare a pointer to a function returning int?', 'CS1
('What does the following C++ code output?\n\nstd::cout << sizeof(char) << std::endl;', 'CS102'),
('Which keyword is used to prevent a class from being inherited?', 'CS102'),
Ln 1, Col 1
Spaces: 4
UTF-8
LF
SQL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package-lock.json
package.json
server.js
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_test.sql
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GrantQueries.sql
InsertionQueries.sql
InsertionQueries1.sql
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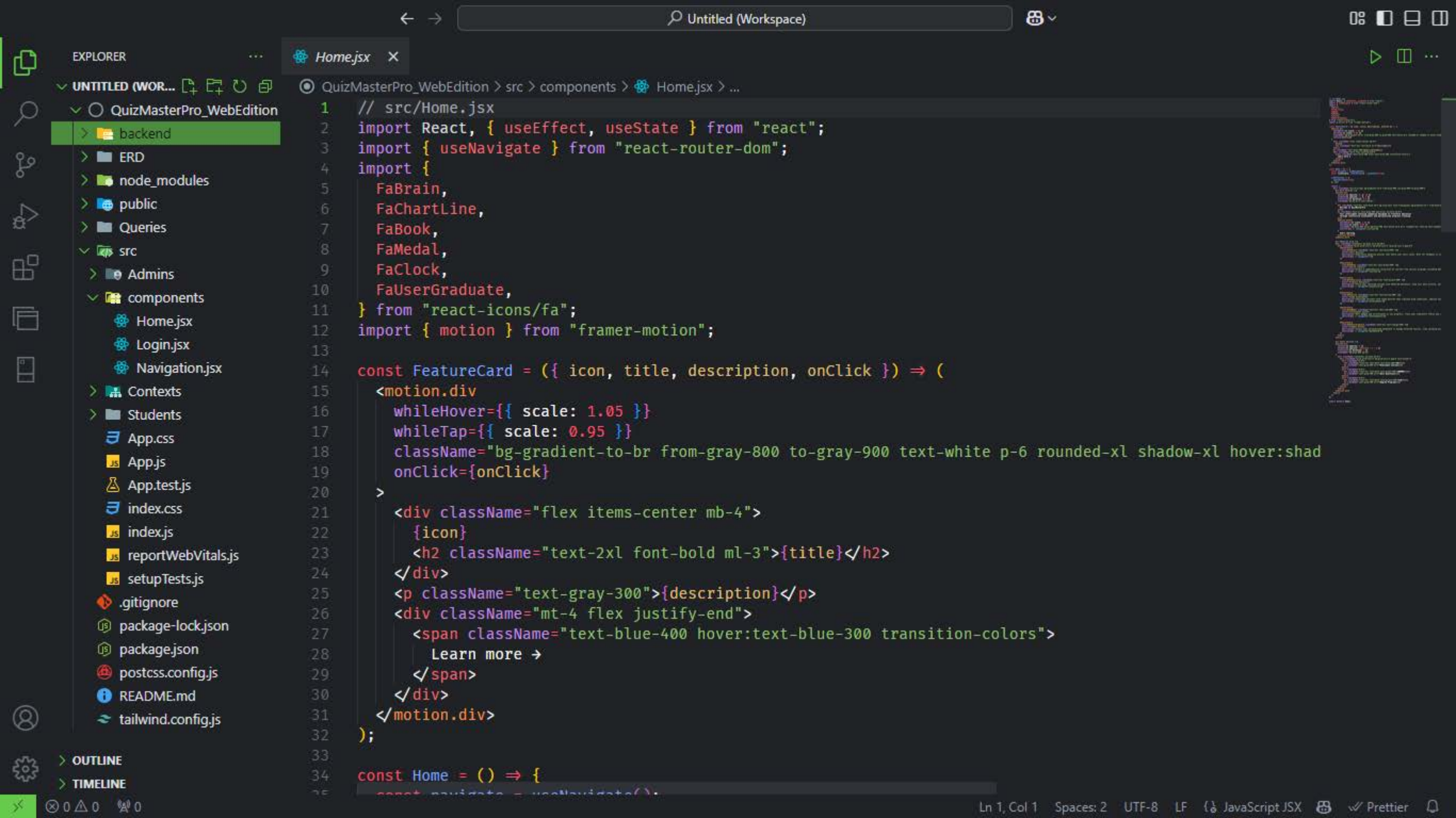
Rough Schema.txt
Tables.sql
src
.gitignore
package-lock.json
package.json
postcss.config.js
README.md
tailwind.config.js
OUTLINE
TIMELINE
QuizMasterPro_WebEdition > backend > server.js > ...
// Endpoint for inserting attempted quiz
app.post("/insertattemptedquiz", authenticate, async (req, res) => {
const {
quizSessionId,
questionString1,
studentAnswer1,
correctAnswer1,
questionString2,
studentAnswer2,
correctAnswer2,
questionString3,
studentAnswer3,
correctAnswer3,
questionString4,
studentAnswer4,
correctAnswer4,
questionString5,
studentAnswer5,
correctAnswer5,
questionString6,
studentAnswer6,
correctAnswer6,
questionString7,
studentAnswer7,
correctAnswer7,
questionString8,
studentAnswer8,
correctAnswer8,
questionString9,
studentAnswer9,
correctAnswer9,
questionString10,
studentAnswer10,
correctAnswer10,
Fetching data for better TypeScript IntelliSense
Ln 1, Col 1
Spaces: 2
UTF-8
LF
JavaScript
Prettier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backend
ERD
node_modules
public
Queries
src
Admins
components
Home.jsx
Login.jsx
Navigation.jsx
Contexts
Students
App.css
App.js
App.test.js
index.css
index.js
reportWebVitals.js
setupTests.js
.gitignore
package-lock.json
package.json
postcss.config.js
README.md
tailwind.config.js
OUTLINE
TIMELINE
QuizMasterPro_WebEdition > src > components > Home.jsx > ...
// src/Home.jsx
import React, { useEffect, useState } from "react";
import { useNavigate } from "react-router-dom";
import {
FaBrain,
FaChartLine,
FaBook,
FaMedal,
FaClock,
FaUserGraduate,
} from "react-icons/fa";
import { motion } from "framer-motion";
const FeatureCard = ({ icon, title, description, onClick }) => (
<motion.div
whileHover={{ scale: 1.05 }}
whileTap={{ scale: 0.95 }}
className="bg-gradient-to-br from-gray-800 to-gray-900 text-white p-6 rounded-xl shadow-xl hover:shad
onClick={onClick}
>

{icon}
<h2 className="text-2xl font-bold ml-3">{title}</h2>

{description}

Learn more →

</motion.div>
);
const Home = () => {
Ln 1, Col 1
Spaces: 2
UTF-8
LF
JavaScript JSX
Prettier

Welcome to QuizMasterPro

Your intelligent learning companion designed to transform education through interactive assessments and personalized progress tracking.

Start Learning

Smart Quizzes

Experience adaptive quizzes that match your skill level. With our database of carefully curated questions across multiple courses, master your subjects one quiz at a time.

Learn more →

Course Library

Access a comprehensive collection of courses from various programs including BSCS, BCE, BSSE, and more. Each course is structured for optimal learning and retention.

Learn more →

Progress Analytics

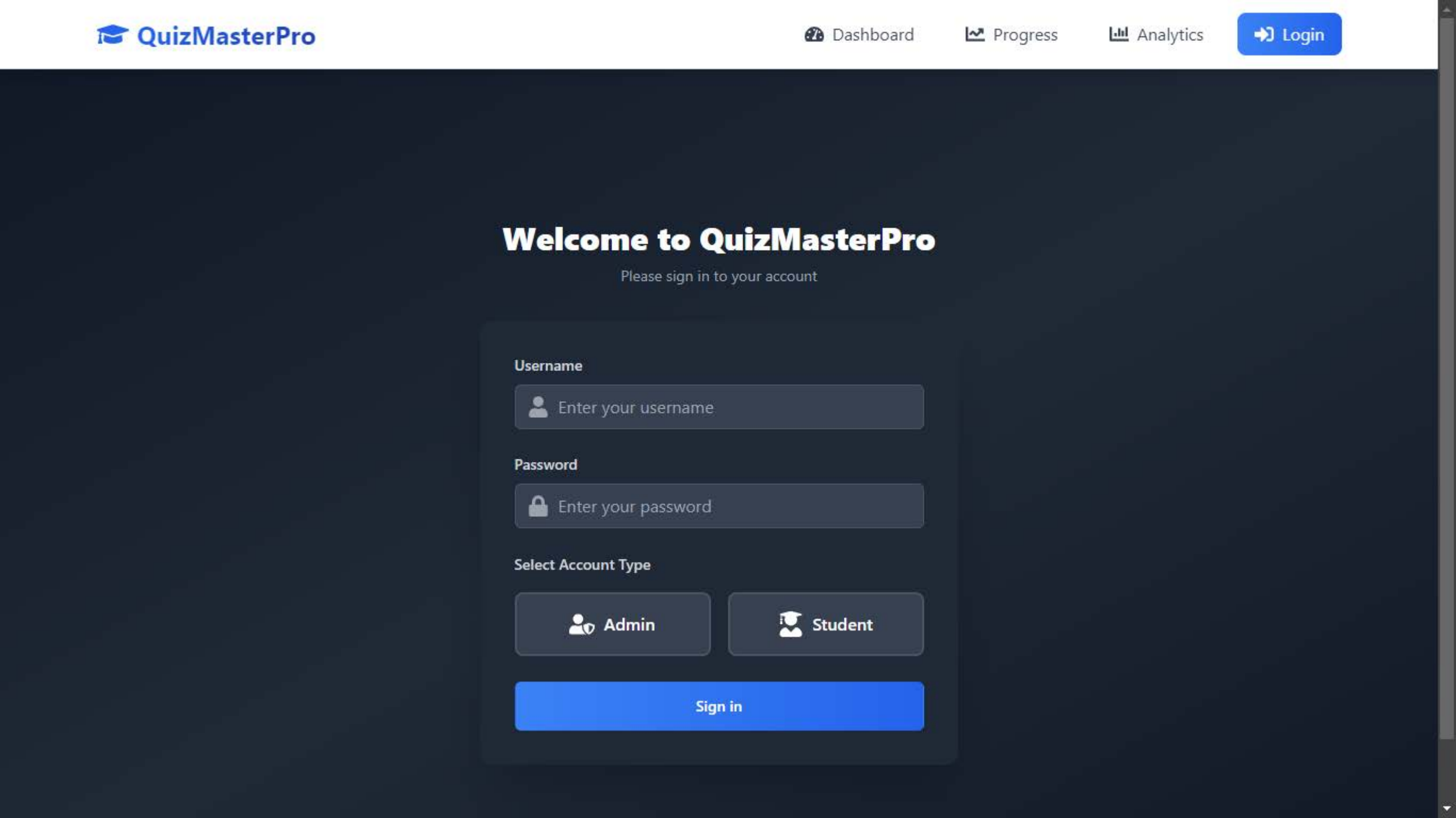
Track your learning journey with detailed analytics. View your quiz history, performance metrics, and improvement trends in real-time.

Learn more →

Timed Assessments

Achievement System

Student Portal


QuizMasterPro
Dashboard
Progress
Analytics
Login
Welcome to QuizMasterPro
Please sign in to your account
Username
Enter your username
Password
Enter your password
Select Account Type
Admin
Student
Sign in

Loading...

Welcome to QuizMasterPro

Please sign in to your account

Username

Abdullah

Password

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Select Account Type

Admin

Student

Sign in

Login successful