

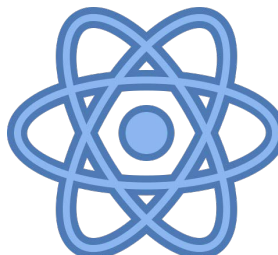




QuizMasterPro



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	5 th
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
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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

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

EXPLORER

UNTITLED (WOR...

QuizMasterPro_WebEdition

backend

ERD

node_modules

public

Queries

_test.sql

1st sane quies.txt

GrantQueries.sql

InsertionQueries.sql

InsertionQueries1.sql

Procedures.sql

quies.sql

Rough Schema.txt

Tables.sql

src

.gitignore

package-lock.json

package.json

postcss.config.js

README.md

tailwind.config.js

OUTLINE

TIMELINE

InsertionQueries1.sql

QuizMasterPro_WebEdition > Queries > InsertionQueries1.sql

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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').

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SQL

EXPLORER

UNTITLED (WOR...

QuizMasterPro_WebEdition

backend

ERD

node_modules

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postcss.config.js

README.md

tailwind.config.js

OUTLINE

TIMELINE

Procedures.sql

QuizMasterPro_WebEdition > Queries > Procedures.sql

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-- For Route /insertattemptedquiz

-- Insert Attempted Quiz Procedure

CREATE OR ALTER PROCEDURE InsertAttemptedQuiz

@QuizSessionID INT,

@QuestionString1 NVARCHAR(255),

@StudentAnswer1 NVARCHAR(255),

@CorrectAnswer1 NVARCHAR(255),

@QuestionString2 NVARCHAR(255),

@StudentAnswer2 NVARCHAR(255),

@CorrectAnswer2 NVARCHAR(255),

@QuestionString3 NVARCHAR(255),

@StudentAnswer3 NVARCHAR(255),

@CorrectAnswer3 NVARCHAR(255),

@QuestionString4 NVARCHAR(255),

@StudentAnswer4 NVARCHAR(255),

@CorrectAnswer4 NVARCHAR(255),

@QuestionString5 NVARCHAR(255),

@StudentAnswer5 NVARCHAR(255),

@CorrectAnswer5 NVARCHAR(255),

@QuestionString6 NVARCHAR(255),

@StudentAnswer6 NVARCHAR(255),

@CorrectAnswer6 NVARCHAR(255),

@QuestionString7 NVARCHAR(255),

@StudentAnswer7 NVARCHAR(255),

@CorrectAnswer7 NVARCHAR(255),

@QuestionString8 NVARCHAR(255),

@StudentAnswer8 NVARCHAR(255),

@CorrectAnswer8 NVARCHAR(255),

@QuestionString9 NVARCHAR(255),

@StudentAnswer9 NVARCHAR(255),

@CorrectAnswer9 NVARCHAR(255),

@QuestionString10 NVARCHAR(255),

@StudentAnswer10 NVARCHAR(255),

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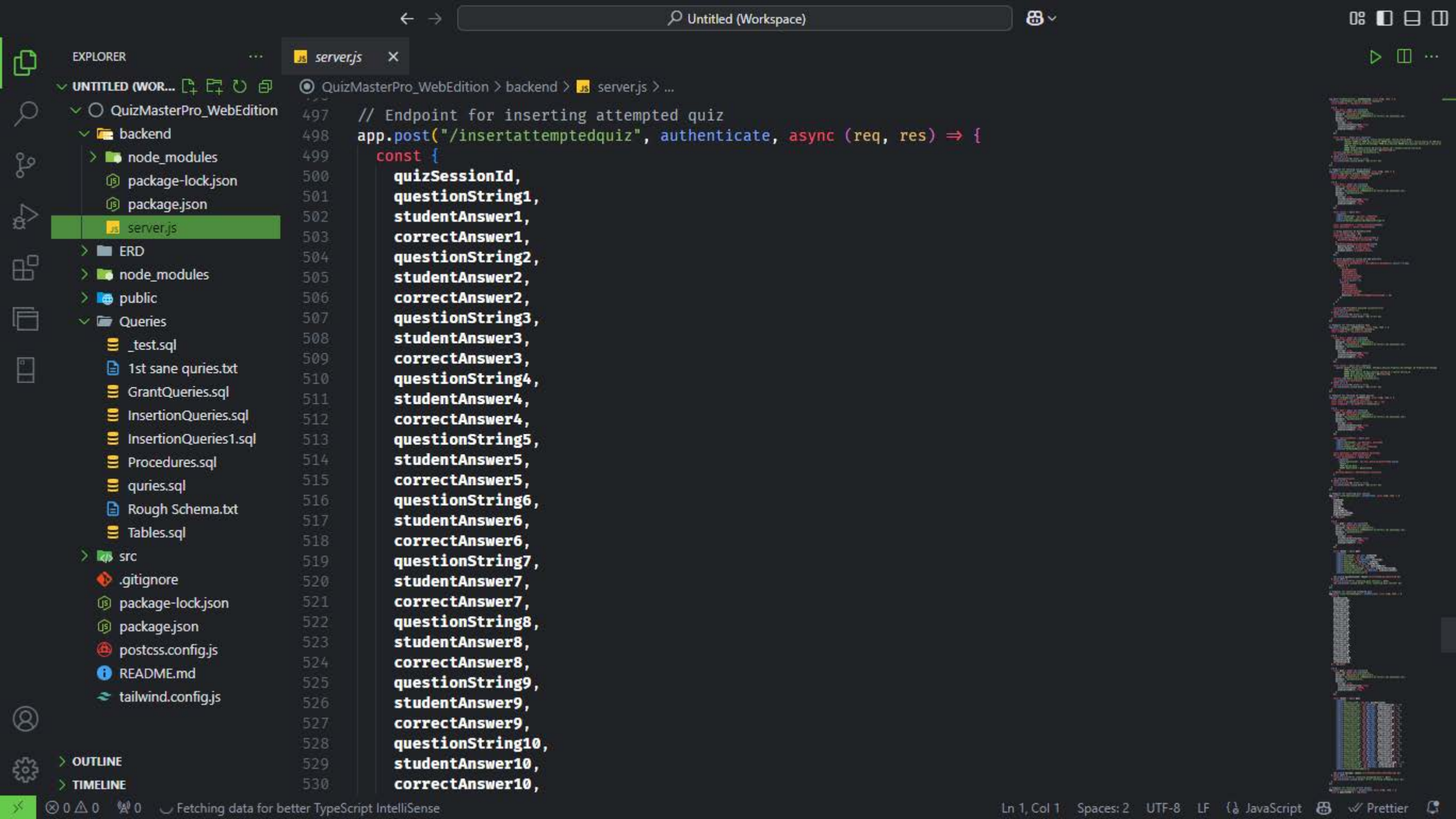
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SQL

MSSQL

Disconnected

Prettier



EXPLORER

UNTITLED (WOR...

QuizMasterPro_WebEdition

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

Home.jsx

QuizMasterPro_WebEdition > src > components > Home.jsx > ...

1 // src/Home.jsx

2 import React, { useEffect, useState } from "react";

3 import { useNavigate } from "react-router-dom";

4 import {

5 FaBrain,

6 FaChartLine,

7 FaBook,

8 FaMedal,

9 FaClock,

10 FaUserGraduate,

11 } from "react-icons/fa";

12 import { motion } from "framer-motion";

13

14 const FeatureCard = ({ icon, title, description, onClick }) => (

15 <motion.div

16 whileHover={{ scale: 1.05 }}

17 whileTap={{ scale: 0.95 }}

18 className="bg-gradient-to-br from-gray-800 to-gray-900 text-white p-6 rounded-xl shadow-xl hover:shad

19 onClick={onClick}

20 >

21 <div className="flex items-center mb-4">

22 {icon}

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

24 </div>

25 <p className="text-gray-300">{description}</p>

26 <div className="mt-4 flex justify-end">

27

28 Learn more >

29

30 </div>

31 </motion.div>

32);

33

34 const Home = () => {

35 const navigate = useNavigate();

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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


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



Select Account Type

 Admin

 Student

Sign in

Login successful