ONE-STOP PORTAL

SUBMITTED IN PARTIAL FULFILLMENT FOR THE REQUIREMENT OF THE AWARD OF DEGREE OF

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE

Submitted by

KUSHAGRA VARSHNEY (2200290129012)

YASH VARSHNEY (2100290120199)

MANVI WALIA (2100290120103)

YASHVIKA GUPTA (2100290120200)

Supervised by

DR. ABHISHEK GOYAL

Assistant Professor

Session 2024-25

DEPARTMENT OF COMPUTER SCIENCE

KIET GROUP OF INSTITUTIONS, GHAZIABAD

(Affiliated to Dr. A. P. J. Abdul Kalam Technical University, Lucknow, U.P., India)

May 2025

DECLARATION

We hereby declare that this submission is our own work and that, to the best of our knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text.

Date:-

Signature:

Name: Kushagra Varshney

Roll No.: 2200290129012

Signature:

Name: Yash Varshney

Roll No.: 2100290120199

Signature:

Name: Yashvika Gupta

Roll No.: 2100290120200

Signature:

Name: Manvi Walia

Roll No.: 2100290120103

CERTIFICATE

This is to certify that Project Report entitled **"One-Stop Portal: A Comprehensive Platform for Student Engagement and Assessment"** which is submitted by **Manvi Walia, Kushagra Varshney, Yashvika Gupta, Yash Varshney** in partial fulfilment of the requirement for the award of degree **B. Tech. in Department of Computer Science** of **Dr. A.P.J. Abdul Kalam Technical University, Lucknow** is a record of the candidates' own work carried out under my supervision. The matter embodied in this report is original and has not been submitted for the award of any other degree.

.

Date:

Supervisor

Dr. Abhishek Goyal

(Assistant Professor)

ACKNOWLEDGEMENT

It is with immense pride that we are presenting the report of our **B. Tech Project** conducted during our Final Year. We are grateful to **Dr. Abhishek Goyal**, Department of Computer Science, KIET, Ghaziabad, for his unfailing guidance, insightful suggestions, and meticulous inputs, which enabled us to sharpen our approach in this project.

We also take this opportunity to thank **Dr. Ajay Kr. Shrivastava**, Department Head, for his constant support and encouragement. We also thank the faculty members of the **Department of Computer Science**, KIET, Ghaziabad, for their help and guidance.

Furthermore, we recognize our fellow students for their cooperation and sensitivity in exchanging ideas, which allowed us to learn.

Lastly, we also wish to express gratitude to our families for the loving support, patience, and encouragement that drove us through this experience.

Date:

Signature:

Name: Kushagra Varshney

Roll No.: 2200290129012

Signature:

Name: Yash Varshney

Roll No.: 2100290120199

Signature:

Name: Yashvika Gupta

Roll No.: 2100290120200

Signature:

Name: Manvi Walia

Roll No.: 2100290120103

ABSTRACT

One-Stop Portal is an end-to-end web portal intended for colleges to facilitate involved student participation in learning activities. It integrates features like quizzes, coding contests, and event management into a simple interface. The portal is developed using the MERN stack, and the platform will be **scalable, secure, and accessible** on any device. **Multi-language code compilation, instant feedback, and secure login** are some of the features, making the learning process interactive and efficient. The architecture, features, and potential future additions like AI-based tests and third-party integration are explained in layman's terms in this report.

Built with the **MERN stack (MongoDB, Express.js, React.js, and Node.js)** and scalable, high-performance, and secure, the system offers real-time execution of code, email authentication, and optimized user management among other features. Multi-programming support, including compiling and running code in real time with an integrated compiler via Rapid API, JWT-based authentication, async operations, and secure API management also enhance the security of the system, while the easy-to-use React.js interface offers easy navigation and responsiveness across devices.

This report outlines the system architecture, technology selection, security features, and performance tuning implemented on the portal. Furthermore, user feedback also justifies its success in increasing learning interest and academic performance. It can be made to integrate future advancements such as AI-based learning recommendations, automated assessment, and third-party integration, which further cement the portal as an end-to-end education administration system.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

Abbreviation	Full Form
MERN	MongoDB, Express.js, React.js, Node.js
JWT	JSON Web Token
UI/UX	User Interface / User Experience
LMS	Learning Management System
API	Application Programming Interface
IDE	Integrated Development Environment
PWA	Progressive Web Application
RBAC	Role-Based Access Control
UAT	User Acceptance Testing
AES	Advanced Encryption Standard
2FA	Two-Factor Authentication
DBMS	Database Management System
SDLC	Software Development Life Cycle
CI/CD	Continuous Integration / Continuous Deployment
MVC	Model View Controller
DFD	Data Flow Diagram

Abbreviation	Full Form
ER	Entity-Relationship
GDPR	General Data Protection Regulation
FERPA	Family Educational Rights and Privacy Act
RTM	Requirements Traceability Matrix

SDG MAPPING

SDG 4: Quality Education

The One-Stop Portal is promoting **SDG 4** by offering a new, technology-based portal that increases **student participation, interactive learning, and academic access**. Through **real-time quizzes, coding contests, automated assessments, and multi-language programming support**, the system ensures a **dynamic and inclusive learning experience**. It eliminates traditional challenges such as **manual grading delays, limited accessibility, and inefficient feedback mechanisms**, replacing them with **automated evaluations, personalized insights, and secure authentication**. By leveraging modern web technologies, the portal supports **equal learning opportunities**, ensuring students from diverse backgrounds can **develop essential technical skills** and **bridge the digital divide** in education.

SDG 9: Industry, Innovation, and Infrastructure

*The **One-Stop Portal*** promotes **SDG 9** by modernizing academic management through **cloud-based automation, secure data processing, and scalable web technologies**. Built using the **MERN stack (MongoDB, Express.js, React.js, and Node.js)**, the platform streamlines **student assessments, event coordination, and real-time code execution**, reducing administrative burdens while enhancing efficiency. Secure authentication via **JWT tokens**, real-time data handling, and optimized APIs ensure **high performance, security, and seamless scalability**. Through, the integration of the newest digital solutions, the system improves education infrastructure, increases technological innovation, and encourages schools' digitalization.

CHAPTER 1
INTRODUCTION

1.1 Introduction

The phenomenal growth rate of web-based learning technology has transformed the learner experience of course material significantly. Outdated methods, conventionally relying on hand grading and delayed feedback, have proven to be insufficient in an environment of changing learning. To counter, the One-Stop Portal was a centralized strategy to computerize student interaction with automated features and analysis. Built on the MERN stack, the app provides **real-time coding, safe authentication, and event handling** with simplicity—all for the purposes of learning effectiveness and accessibility.

The system itself employs modern web technologies, including the MERN stack (MongoDB, Express.js, React.js, and Node.js), to provide a secure, scalable, and interactive gateway. It enables real time code execution, automated testing, event handling, and user authentication via a seamless digital interface. The students can **participate in coding competitions, submit quizzes, and monitor their performance**, improving their learning experience.

By optimizing training processes with automation and by offering immediate feedback, the One-Stop Portal eliminates human inefficiencies to provide an easy, convenient, and interactive learning environment. Scalability and security features of the system make it a value-added for schools to offer an innovative, technologically rich learning environment.

Moreover, the portal is special in its built-in compiler, where you may execute code in a range of programming languages like Python, Java, and C++ directly inside the browser. It's not merely that this **IDE-like setup** accelerates the learning process but also eliminate dependence on third-party software, generating it more accessible to a larger audience.

User experience is also improved by secure email-based verification, cross-device responsive design, and seamless performance under high traffic due to backend optimization processing and indexing strategies in MongoDB. Instructors appreciate user-friendly quiz and event management capability, and the modular design of the system makes it easily scalable or Flexible in line with evolving pedagogical needs.

In the following years, the **One-Stop Portal** would incorporate AI adaptive quizzes, game-based learning, and advanced analytics with a goal of tailoring learning. These features would make learning interactive, engaging and productive for learners as well as instructors.

1.2 Project Category

The project falls under Academic Engagement and Assessment Platform, which is aimed at being to simplify student participation, grade automatically, and maximize learning experiences for educational institutions.

Most Significant Features of This Type:

1. Management of Quiz and Contest

The platform allows teachers to build, customize, and schedule coding challenges and quizzes in the best possible way. There are online exams for the students with automatic scoring and instant feedback, for accuracy and efficiency.

2. Real-Time Code Execution

Along with a code compiler that supports multiple languages, the platform allows students to code, run, and test their code in real-time. This mode is well-suited for coding competitions and technical testing, to design an experiential learning setting.

3. Student Performance Monitoring

The portal has a structured database of the students' score, history of participation, and progress monitoring. Teachers are able to produce detailed performance reports to determine student's strengths and weaknesses.

4. Event Management and Notifications

The system is automated for registration of academic events, reminders, and result announcements, minimizing manual effort while remaining updated and interactive.

5. Security and Authentication

Secure JWT-based authentication allows only authenticated users to access academic resources, safeguarding data privacy and against unauthorized access.

6. Personalized and User-Friendly Interface

The platform includes a user-friendly dashboard, editable quiz templates, coding problems, and user roles, thus being flexible to teachers and learners both.
The **One-Stop Portal** is a comprehensive academic management system, providing an engaging, effective, and safe electronic learning experience for students and institutions.

1.3 Objectives

Greater Student Involvement:

One-Stop Portal provides an interactive learning management system that encourages active learning, coding competitions, and quizzes that keeps learners engaged in the learning process all the time.

Real-Time Performance Monitoring:

Students and teachers can track quiz scores, coding challenge outcomes, and classroom performance in real time, making data-driven suggestions and evidence-based decisions possible for optimization.

Effective Event and Test Conduct:

Computerized creation of quizzes, programming problems, and event registration prevents human errors, administrative inconvenience, and inefficiency in the process.

Smooth Learning Process:

The portal's instant execution of code, auto-marking, and multi-language programming make learning engaging for students, and that enhances skill acquisition and problem-solving ability.

Secure and Scalable System:

Deployed on MERN stack technologies, the platform is secure, scalable, and has user authentication support, therefore giving a secure and trusted environment for learning to students and institutions.

More Accessibility and Cooperation:

The system allows students and teachers to communicate through web interfaces, exchange assessments, and give instant feedback, resulting in more interaction and availability across the board.

Improved Efficiency in Academic Work:

With automated assessment, reduced grading time and quick results, the system optimizes the productivity of operations in schools such that lecturers can spend more time teaching and guiding students.

1.4 Report Structure

The report structure for the One-Stop Portal: A Comprehensive Platform for Student Engagement and Assessment is:

1. **Title Page:**
   - Title of the Report :- One-Stop Portal: A Comprehensive Platform for Student Engagement and Assessment
   - Project Name
   - Date
   - Name of Team Members

2. **Table of Contents:**
   - Listing of all the sections and subtopics along with page numbers to enable quick location.

3. **Executive Summary:**
   - Brief overview of the project.
   - Summary of major objectives, findings, and recommendations.
   - Highlights of the project accomplishments and setbacks.

4. **Introduction:**
   - Background of the project.
   - Scope and boundaries of the project.
   - Overview of the report organization.

5. **Project Overview:**
   - Description of the academic engagement platform.
   - Key functionality and features.
   - Target audience (students, teachers, academic administrators).
   - Technology stack employed (MERN stack, cloud storage, APIs).

6. Requirements Analysis:

- Functional requirements: Quiz management, coding contests, event planning.
- Non-functional requirements: Performance, Security, Usability
- Stakeholder requirements: Educators, Students, Administrators

7. Design and Architecture:

- Overview of the system architecture.
- Design principles and methods employed.
- Detailed description of major components/modules.
- Database schema and data model.

8. Implementation:

- Overview of the development process.
- Technologies and tools employed.
- Challenges encountered during implementation and solutions implemented.
- Code structure and organization.

9. Testing and Quality Assurance:

- Overview of testing methods employed (e.g., unit testing, integration testing, user acceptance testing).
- Test cases and scenarios.
- Test results and findings.
- Steps taken to ensure software quality.

10. Deployment:

- Overview of the deployment process.
- Infrastructure setup and configuration.
- Deployment environment and server specifications.
- Steps taken to facilitate a seamless deployment process.

11. Maintenance and Support:

- Description of regular maintenance tasks.
- Bug tracking and resolution process.

- User support mechanisms in place.

12. Future Enhancements:

- Possible future features and functionalities.
- Areas for improvement as per user feedback.
- Long-term expansion plan for the platform.

13. Conclusion:

- Summary of important findings and achievements.
- Thoughts on the project experience.
- Lessons learned and recommendations for upcoming projects.

14. References:

- List of all sources used in the report (e.g., research papers, articles, documentation).

15. Appendices:

- Additional information, such as detailed technical documentation, diagrams, charts, or project artifacts.

CHAPTER 2
LITERATURE REVIEW

2.1 Literature Review

Conventional education systems tend to suffer from inefficiencies like delayed grading, limited student interaction, and weak feedback loops. In response to these inefficiencies, institutions have turned more and more to digital platforms that offer automated grading and increased interaction. Technologies like cloud-hosted Learning Management Systems, AI-powered quizzes, and live coding sessions have improved administrative tasks as well as improved the student learning experience. Current systems, while functional, tend to lack intuitive dashboards or instructor-controllable features—oversights that the One-Stop Portal seeks to address.

Creation of Online Academic Portals

The conventional evaluation processes needed hand-written paper-based tests and quizzes, which were labor-intensive and error-prone. As digital learning evolved, institutions began using online quiz sites and coding environments that support automated marking, immediate feedback, and performance monitoring. Sites such as Moodle, HackerRank, and CodeChef have proven the utility of digital evaluation tools in enhancing learning effectiveness and participation. The sites also enable remote access, adaptive testing settings, and engaging user experiences.

Technological Advancements in Educational Administration

The incorporation of cloud-based learning management systems (LMS), AI-based testing, and live coding environments has greatly improved the quality and availability of education. Sites based on contemporary stacks like **MERN (MongoDB, Express.js, React.js, and Node.js)** have enabled the creation of scalable, modular, and responsive portals. Real-time code execution environments—such as embedded compilers or APIs such as RapidAPI—have made it possible for learners to immediately test their code, get automated feedback, and refine their skills iteratively. Additionally, email-based authentication is used extensively to protect user privacy and secure access.

Alongside student-facing functionality, the newer academic platforms are adapting to encompass powerful administrative features. Some of these features extend to the ability to customize quiz development, schedule events, manage participants, and monitor academic activity in real time. Unfortunately, most of the current systems are lacking when it comes to providing intuitive admin dashboards or real-time config options. The One-Stop Portal fulfills this by providing an easy-to-use admin dashboard where teachers can create, deploy, and manage scholarly activities and monitor engagement levels and user caps—total control without technical hassle.

Challenges in Traditional Assessment Methodologies

Regardless of the advances in technology, there are still a lot of institutions that continue to use archaic assessment methods. Such methods incorporate manual grading, limited feedback loops, and non-computer-based workflows, resulting in more faculty workload and longer learning insights. Studies confirm that students are more receptive to prompt feedback and dynamic systems, noting an emerging requirement for computer-based academic solutions that are responsive, data-based, and user-driven.

Impact of Digital Learning Platforms on Academic Performance

Various research indicates that digital academic engagement platforms result in better learning outcomes, student satisfaction, and institutional effectiveness. Real-time evaluation systems and automated coding challenges not only streamline administrative tasks but also encourage active learning and higher-order thinking. For instance, adaptive quiz systems and gamification-based

learning platforms have been demonstrated to increase student motivation and retention by up to 35%, while facilitating constant performance tracking and customized learning streams.

Integration with Current Academic Frameworks

Innovating platforms like Coursera, EdX, and Canvas have proved the significance of interoperability in digital education systems. Their framework provides effortless integration with institutional databases, content delivery systems, and analytics dashboards. Yet, most home-grown systems remain less scalable and customizable in features, restricting their applicability in different academic ecosystems. Study of flexible, API-based platforms is essential to ensure that digital portals find a match with mixed institutional needs.

Conclusion

The growing use of AI-based academic management systems underscores the significance of automation in student evaluations and interactions. Future developments in machine learning, adaptive learning algorithms, and blockchain-based credentialing can transform academic management and online learning platforms. The research also has to look into the trade-off between automation and personalization in learning spaces, so that digital platforms optimize performance as well as address individual needs of the learners.

2.2 Research Gaps

1. User Experience (UX) and Customization in Learning Platforms

Most academic management systems emphasize automation but are not personalized learning platforms. There is a need for research to investigate the use of adaptive quizzes, AI-based recommendations, and customized study plans.

2. Scalability of Online Learning and Assessment Portals

Although LMS software and coding interfaces are available, few researches investigate scalable designs that can manage high-volume student engagement. Subsequent research may use cloud-based distributed systems to facilitate high-traffic academic activities.

3. Automated Assessments' Effect on Learning Outcomes

While computerized assessments enhance efficiency, few studies measure their effect on student retention, interaction, and grades. Empirical studies are necessary to confirm these assertions.

4. Security and Data Privacy in Online Learning

The automation of educational evaluations poses questions regarding student data privacy, detection of cheating, and secure authentication. Ethical AI-based monitoring systems must be researched to ensure integrity of online evaluations.

5. Effectiveness of AI-Based Personalized Learning Models

AI-based learning platforms can process student performance and recommend personalized learning resources. Yet, more research must be done to investigate the accuracy and efficiency of these models.

6. Adoption Barriers in Educational Institutions

In spite of the progress in digital academic platforms, most institutions are slow to embrace automated learning systems because of cost, training, and technology constraints. Studies are necessary to determine adoption factors and resistance-overcoming strategies.

7. Academic Digitalization Future Trends

As blockchain credentials, metaverse classrooms, and AI tutors gain traction, more studies are necessary to determine the potential of next-generation academic engagement platforms.

2.3 Problem Formulation

In contemporary education, efficient student engagement and assessment are key to maintaining learning efficiency and skill acquisition. Nonetheless, conventional academic processes are hampered by the inefficiencies of manual processes, a lack of instant feedback, and administrative burden.

Notwithstanding the presence of computerized learning platforms, there are a number of challenges facing educational institutions:

- **Limited Automation:** Most educational institutions are still dependent on manual evaluations, time-consuming grading, and non-interactive learning patterns, which minimize engagement and efficiency.
- **Delayed Feedback & Student Performance Tracking:** With no real-time evaluations, students lack immediate feedback, which affects their learning journey and retention levels.
- **Security and Cheating Prevention:** Online assessment platforms need to have secure authentication processes to avoid unauthorized access and academic dishonesty.
- **Scalability Challenges:** Current platforms might not be able to manage large-scale exams, coding competitions, and real-time collaborative learning effectively, restricting their adoption.
- **Integration with Existing Learning Models:** Most institutions have a hard time integrating new learning platforms with pre-existing curriculum frameworks, faculty work processes, and student accessibility.

The **One-Stop Portal** eliminates these issues through an interactive, automated, and scalable platform that maximizes student engagement, facilitates streamlined assessments, and provides instant feedback. Institutions need a secure, adaptive, and AI-based academic portal to enhance learning efficiency, student engagement, and faculty productivity.

CHAPTER 3
PROPOSED SYSTEM

3.1 System Proposed

One-Stop Portal is a web-based integrated portal that aims to transform school academic interaction, testing, and event management. It automates routine tasks such as quiz development, grading, and event management and allows for real-time interaction and in-depth performance analysis. Developed using high-level web development tools, it offers students, teachers, and administrators a hassle-free and elegantly simple experience.

The portal has two major interfaces:

1. A Student Interface, which facilitates quiz/coding participation, code execution, performance monitoring, and so on.
2. An Admin Panel, which gives instructors and organizers the ability to set up academic events, manage user access, author assessments, and track activity.

Key Features & Technologies:

1. Automated Quiz and Contest Management

- Instructors and administrators can author, schedule, and publish quizzes or coding contests via a centralized admin portal.
- The system accommodates various question types, deadlines, scoring rules, and participant caps.
- Submissions are automatically graded and tracked, allowing for immediate performance tracking and minimizing instructor workload.

2. Real-Time Code Execution and Evaluation

- By incorporating a cloud-based compiler via Rapid API, the portal supports a number of programming languages like Python, Java, and C++.
- Code can be written and executed directly within the platform itself, and thus, the portal is ideally suited for learning and competitive exam purposes without the need to access any other software.
- Users are able to input, construct, and execute code in the portal, without having to use third party Integrated Development Environments (IDEs).

3. Secure User Authentication and Authorization

- The platform provides secure access via email-based verification and JWT (JSON Web Token)-based session management.
- Passwords are stored using bcrypt, and email verification links ensure unauthorized signups are avoided.
- Role-based login distinguishes access rights for students, teachers, and admins to ensure data integrity and control over operations.

4. Scalability and Responsive Design

- Developed on the MERN stack, the platform is responsive on all devices and scalable to support large academic events involving thousands of users.
- Non-blocking backend operations and document-oriented storage by MongoDB guarantee low-latency performance, including high concurrent loads.

This platform is a big step towards an active, secure, and data-rich learning experience, streamlining processes and improving the learning experience as a whole.

3.2 System's Unique Features

The One-Stop Portal differs from run-of-the-mill Learning Management Systems (LMS) due to its holistic approach—**integration of real-time engagement, automation, customization, and secure academic workflow** in one environment.

Key Differentiating Features:

1. **Holistic Quiz, Exam & Event Tracking**
   - Instructors can create subject-level quizzes with gated access, randomly ordered questions, and tagging for difficulty levels.
   - The software tracks rich performance statistics such as response time, correctness, and trend of participation to enable optimization in course delivery by instructors.
   - Organizers can facilitate technical contests, registrations, and team contests with minimal reliance on third parties.
   -
2. **Live Coding Environment**
   - Integrated IDE-like experience aids in hand-on learning as well as competitive coding.
   - Code runs in real-time with language choice, error logs, and test case analysis.
   - Appropriate for learning as well as assessment needs, this environment closes the gap between teaching and doing.
   -
3. **Custom Performance Dashboards**
   - Students gain personalized insights into quiz scores, accuracy in code, and strengths or weaknesses on a topic-wise basis.
   - Faculty dashboards offer summed-up reports on student engagement, leaderboard views, and test timelines.
   - These insights enable data-driven decisions to enhance both teaching and learning approaches.

4. **Role-Based Access and Admin Control Panel**

The administrators maintain total control over platform activity such as:

- User administration (add/remove members)
- Event creation and scheduling
- Setting up quizzes, contests, and content uploads
- Setting member limits and access time
- This administrative layer is necessary to achieve institutional discipline and academic integrity.

5. Interactive, Scalable Architecture

- Modular front-end modules constructed in React.js provide quick development and simple maintenance.
- Node.js and Express.js offer optimized routing, API management, and asynchronous execution.
- MongoDB supports flexibility in saving varied academic data structures, such as quiz banks, submissions, and student records.
-

6. Future-Ready Infrastructure

- The portal has been planned to support future features such as:
- AI-based adaptive quizzes
- Gamification modules
- Blockchain-based credential verification
- Offline access via PWA (Progressive Web Apps)

CHAPTER 4
REQUIREMENT ANALYSIS AND SYSTEM SPECIFICATION

4.1 Feasibility Study

4.1.1 Technical Feasibility

The One-Stop Portal is technology-driven, built on a strong and scalable technology platform delivering performance, security, and flexibility.

- **Technology Stack:** With the support of the MERN technology stack, the portal is completely full-stack, modular, and responsive. Dynamic data is stored using MongoDB, and smooth backend operations are ensured by Express.js and Node.js, while the interactive and responsive frontend interface is created using React.js.

- **System Compatibility:** The portal is hosted on all the popular web browsers and devices, and is developed using responsive layouts and cross-platform support. RESTful APIs provide seamless communication between frontend and backend.

- **Scalability:** Designed to handle numerous users simultaneously, the system can handle real-time quizzes, compiler requests, and academic events without any loss of performance and with minimal delay.

- **Integration Readiness:** Because of the modularity, it can be easily integrated with external education services, third-party APIs, and AI services.

The One-Stop Portal has excellent technical feasibility with smooth integration, secure access, and excellent usability, positioning it as a solid academic management tool.

4.1.2 Economic Feasibility

One-Stop Portal is an affordable economically-priced website that provides maximum educational value with minimal long-term operating cost.

- **Cost Appraisal:** Significant development expenses are:
- Frontend and backend development
- Database installation
- Code compiler API integration
- Security services and authentication facilities
- Hosting infrastructure and support tools

- **Sustainability:** Scalable hosting on cloud platforms like AWS, Render, or MongoDB Atlas is flexible and cost-effective.
- Revenue Generation Models
- Institutional subscription plans
- Advanced coding and testing tools
- Certification modules and data-driven analytics
- Third-party integration or event sponsorship

- **Return on Investment (ROI):** The portal enhances administrative efficiency, reduces workload, and enhances learning performance—resulting in cost avoidance in the long term and improved academic performance.

  The platform possesses a robust economic model for schools with a suitable cost-benefit fit.

4.1.3 Operational Feasibility

Operational feasibility is all about system use, adoption by stakeholders, and process integration.

User Interface and Experience: The portal features an easy-to-use and responsive interface to all the staff, students, and administrators.

Adoption Readiness: Minimal training because of guided interfaces, interactive dashboards, and self-documenting modules. Step-by-step documentation and onboarding guides also facilitate adoption.

Support and Training: Support documentation, helpdesk access, and training videos are provided to facilitate successful user adoption and ongoing use.

The low learning curve, high usability, and in-built support of the system ensure successful integration into educational systems for use.

4.2 Software Requirements Specification (SRS)

4.2.1 Data Requirements

1. Student and Faculty Information

- Name, Roll Number, Email ID
- Course Description and Department
- Secure login credentials

2. Assessment Data:

- Question sets and programming languages

- Code input, output, and running results
- Compiler error logs and submission times

3. Event and Participation Records:

- Timed examination and scheduled academic activities
- Participant registration details and attendance reports.

4. Security and Compliance:

- AES-encrypted sensitive data
- Academic record restores and backup points

The **One-Stop Portal** ensures secure, effective, and policy-compliant processing of data.

4.2.2 Functional Requirements

1. Quiz and Test Management:

- Admin/faculty can create, edit, and publish quizzes
- Students receive instant scoring and feedback
- Admin determines participant number and event length

2. Real-Time Code Compilation:

- Multi-language support code (e.g., Python, Java, C++)
- Real-time error reporting and execution feedback

3. Performance Monitoring:

- Students understand analytics such as speed and accuracy
- Instructors view individual and batch-level performance reports

4. User Authentication and Role Management:

- Implement JWT secure login for everyone
- Admin, Faculty, and Student role-based access

5. Data Security and Backup:

- AES encryption of sensitive data
- Periodic data backup and rollback facility

These elements offer strong academic procedures, user protection, and interactive participation.

4.2.3 Performance Requirements

1. Response Time:

- Quiz loading, code execution, and dashboard rendering must occur within 2 seconds to satisfy the user.

2. Scalability:

MongoDB indexing and optimized API calls provide system responsiveness under load.
System must support 100+ simultaneous users within a second at peak usage.

3. Reliability & Uptime:

- 99.9% availability with redundancy on highly scalable cloud infrastructure.

4. Data Processing Efficiency:

- Non-blocking server design enables the processing of multiple users in real-time.

5. Load Balancing & Performance Monitoring:

- Auto-scaling and load balancing controls to handle spikes.
- Server performance monitoring utilities monitor CPU/memory usage, and API bottlenecks.

The system is scaled for high throughput, real-time behavior, and seamless operation under scholarly loads.

4.2.4 Maintainability Requirements

1. Code Maintainability:

- Modular MVC-based architecture for reusability and neat separation of concern.

2. Version Control:

- Git version control (GitHub/GitLab) for branch management, updates, and rollback.

3. Documentation:

- Developer documentation, API documentation, and user guides for initial setup and subsequent development.

4. Automated Testing & CI/CD:

- Unit and integration tests to catch problems early.
- Continuous Integration pipelines deliver faster releases with less error

5. Plugin & Module Integration:

- Facilitates dynamic insertion of modules for new features or third-party integration.

The portal is designed with future-proofing in mind using best coding practices and maintainability.

4.2.5 Security Requirements

1. Data Protection:

- AES-256 encryption for storing all sensitive data (user credentials, submissions, etc.)

2. Privacy Protections:

- Meets GDPR and FERPA requirements for education data privacy
- Institutional data management policies required by system design

3. Multi-Factor Authentication (MFA):

- OTP/Email-based 2FA for additional login security

4. Role-Based Access Control (RBAC):

- Access controlled based on user role
- Admin can see and track user activity logs
- Threat Detection and Automated Audits
- Intrusion detection systems to notify suspicious login/IP activity
- Periodic security scanning and vulnerability scanning of codebases

One-Stop Portal maintains system integrity and user anonymity and is therefore suitable for deployment in educational institutions.

4.3 Software Development Life Cycle (SDLC) Model Utilized

The Agile Model was utilized to handle One-Stop Portal development by making incremental changes, adaptive planning, and concurrent working with stakeholders.

Adaptive Planning: Agile enabled the team to respond adaptively to evolving academic needs, technological advancements, and user feedback.

Sprint-Based Iterations: The process of development was divided into 2-week sprints with clearly defined frontend, backend, database, and integration test milestones.

Cross-Functional Teamwork: Stand-ups and review meetings among developers, testers, faculty, and student beta-users kept everyone in constant synchronization with user needs.

Rapid Feedback Integration: Constant demonstrations and feedback sessions facilitated more rapid decision-making and improved usability of the system. Agile SDLC ensured quick releases, quality assurance, and close alignment with institutional objectives.

4.4 System Design

4.4.1 Data Flow Diagram

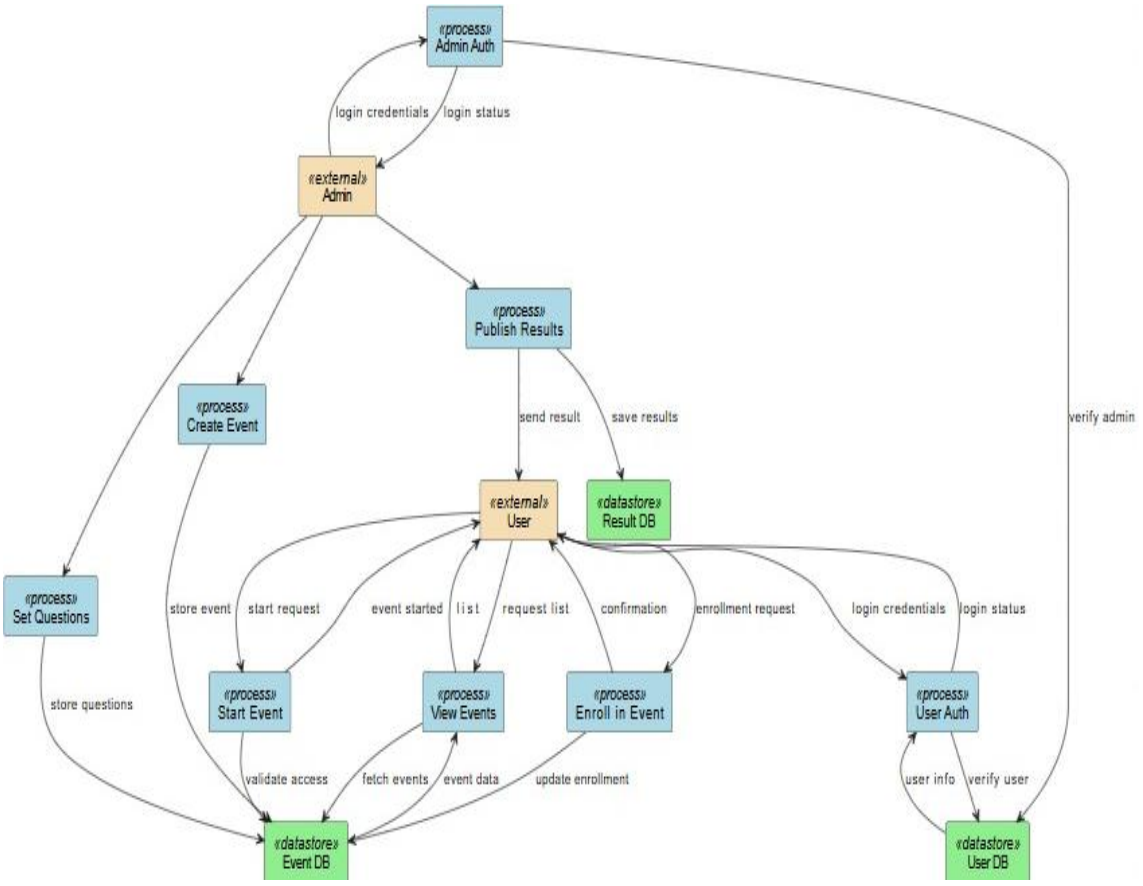


Fig. 1. Data Flow Diagram of One stop Portal

4.4.2 Use Case Diagram

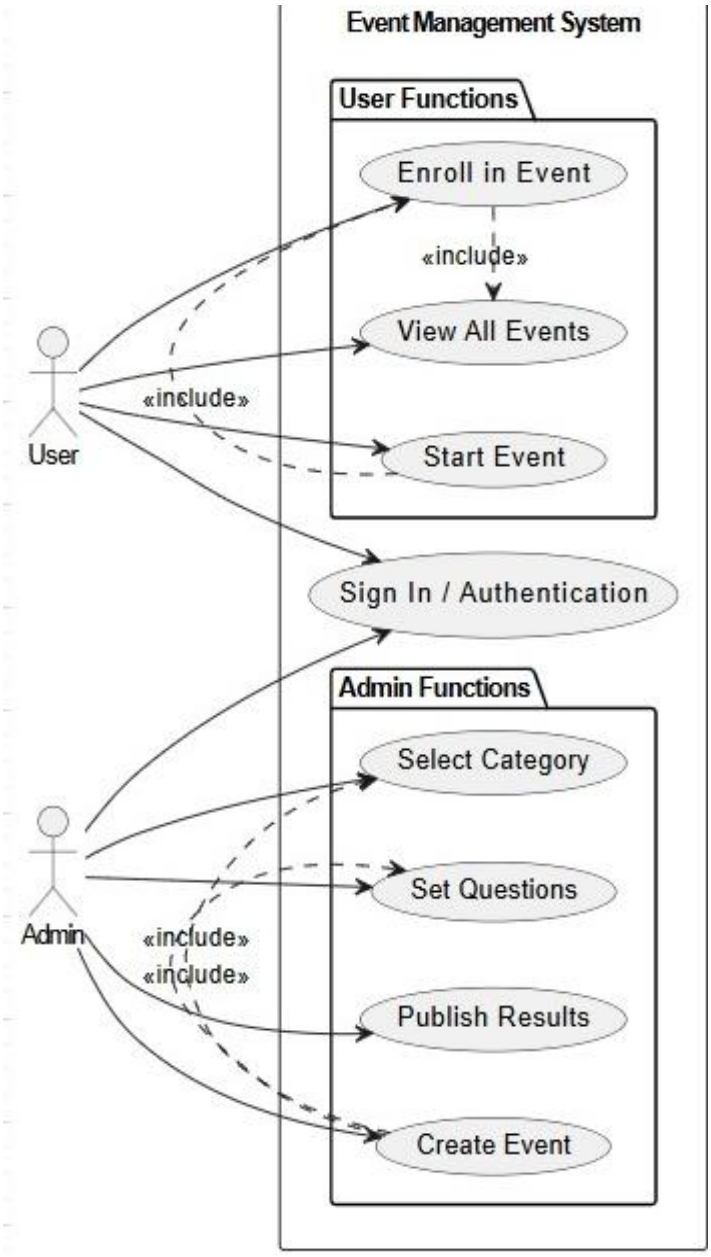


Fig. 2. Use Case Diagram of One Stop Portal

4.3 Database Design

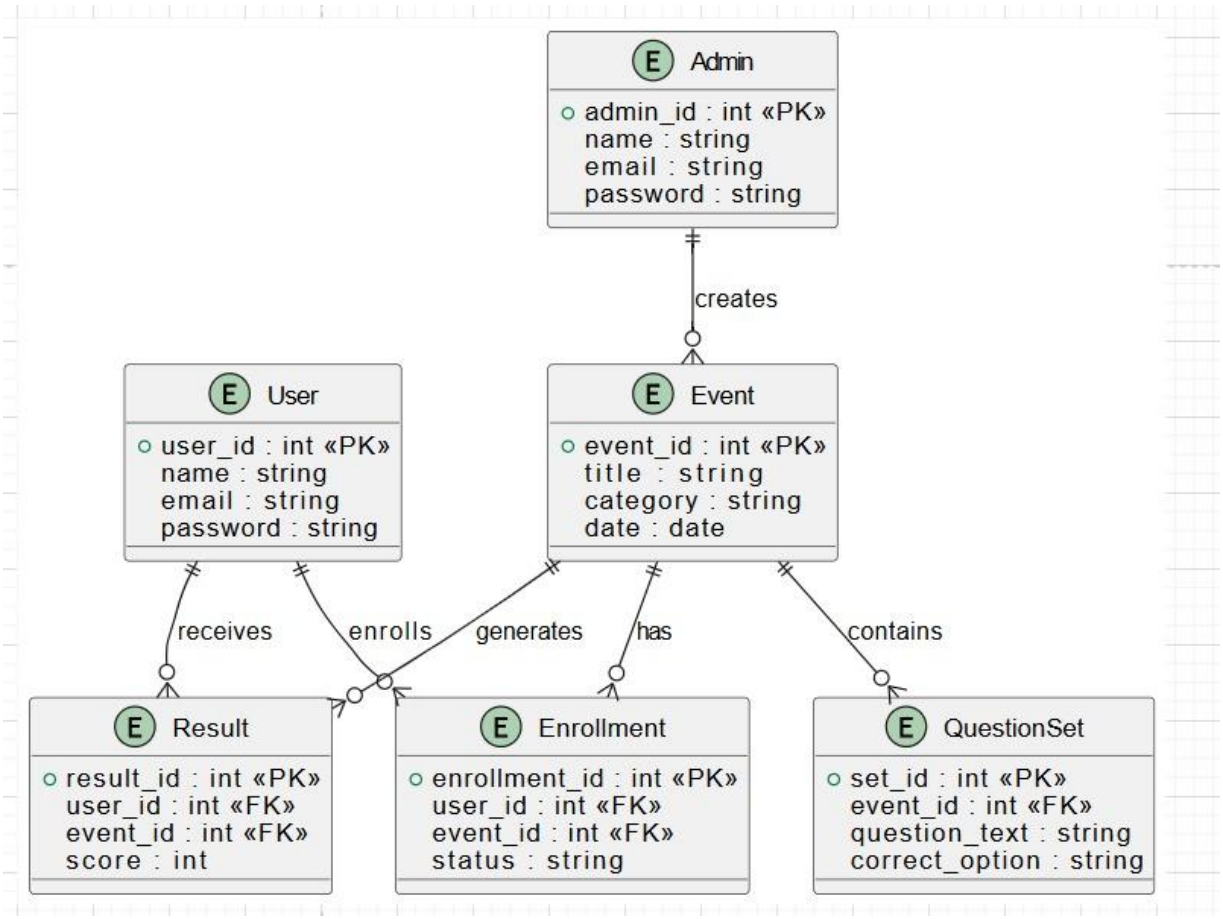


Fig. 3. ER Diagram of One Stop Portal

CHAPTER - 5
IMPLEMENTATION

5.1 Introduction Tools and Technologies used

One-Stop Portal is crafted with a combination of latest technologies to make it effective, scalable, and secure in the management of academia.

1. Frontend Development

- React.js: Employed to create an interactive and dynamic user interface.
- Tailwind CSS: For styling and UI/UX enhancement.

2. Backend Development

- Node.js & Express.js: Handles API calls and server processes.
- PostgreSQL: A secure relational database to store student records, tests, and reports.

3. Development & Deployment:

- GitHub & Git: Employed for versioning to monitor code changes. - Render / Neon PostgreSQL / Vercel Hosting: To host and maintain constant uptime. These technologies are synergistic to offer a high-performance, scalable academic management system.5.1 Introduction Tools and Technologies used

CHAPTER 6
TESTING AND MAINTENANCE

6.1 Testing Techniques and Test Cases Used

1. Requirements Analysis:

- Ensure that all necessary functionality such as creating invoices, processing payments, computing tax, and handling customers is coded and well tested.

2. Requirement Traceability Matrix (RTM):

- Trace each requirement to isolate test cases for full test coverage.

3. Functional Testing:

- Positive Testing: Check the proper generation of the invoices, correct taxation, and correct payment processing.
- Negative Testing: Test the way the system behaves with invalid data, computation failure, and authentication attempts.

4. Security Testing:

- Data Encryption: Ensure all the sensitive information are encrypted.
- Authentication & Authorization: Establish user session security.

5. Usability Testing:

- UI Testing: Ensure that the invoice management interface is easy and intuitive to navigate.
- Workflow Testing: Ensure that the payment processing workflow, invoice editing workflow, and invoice creation workflow is smooth.

6. Performance Testing:

- Load testing was also conducted to see how the platform reacts to concurrent user activity and transactions, with stable performance even during high-demand situations.
- Scalability Testing: Test how the system responds as data increases.

7. Regression Testing:

- Automate key test cases in a manner that no changes will affect existing functionalities.

8. Data Integrity Testing:

- Verify quiz score accuracy, coding competition rankings, and saved user submissions to maintain data integrity.

9. Compatibility Testing:

- Compatibility tests were conducted to ensure that the platform is in proper working order and usage on varied devices, browsers, and screens.

10. User Acceptance Testing (UAT):

- Collect feedback from students, organizers, and administrators to test the usability and effectiveness of the platform.

6.1.1 Test Cases

6.1.1.1 Test Case Name: User Signup

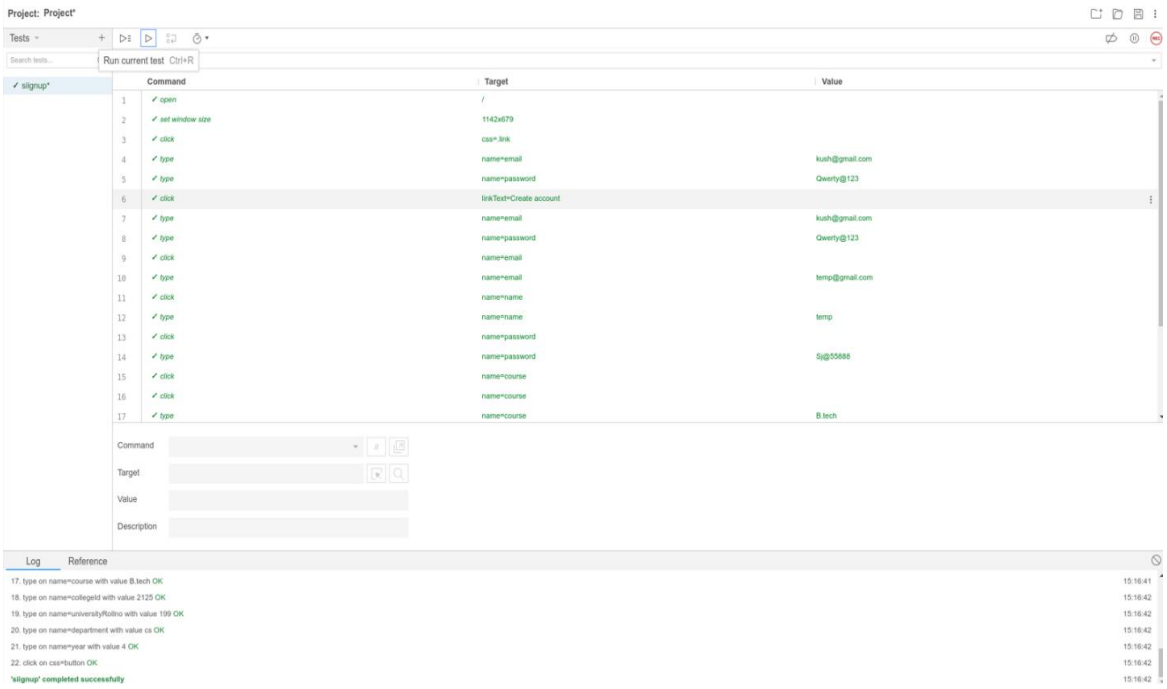


Fig. 4. Test Case 1: User Signup

6.1.1.2 Test Case Name: User Login

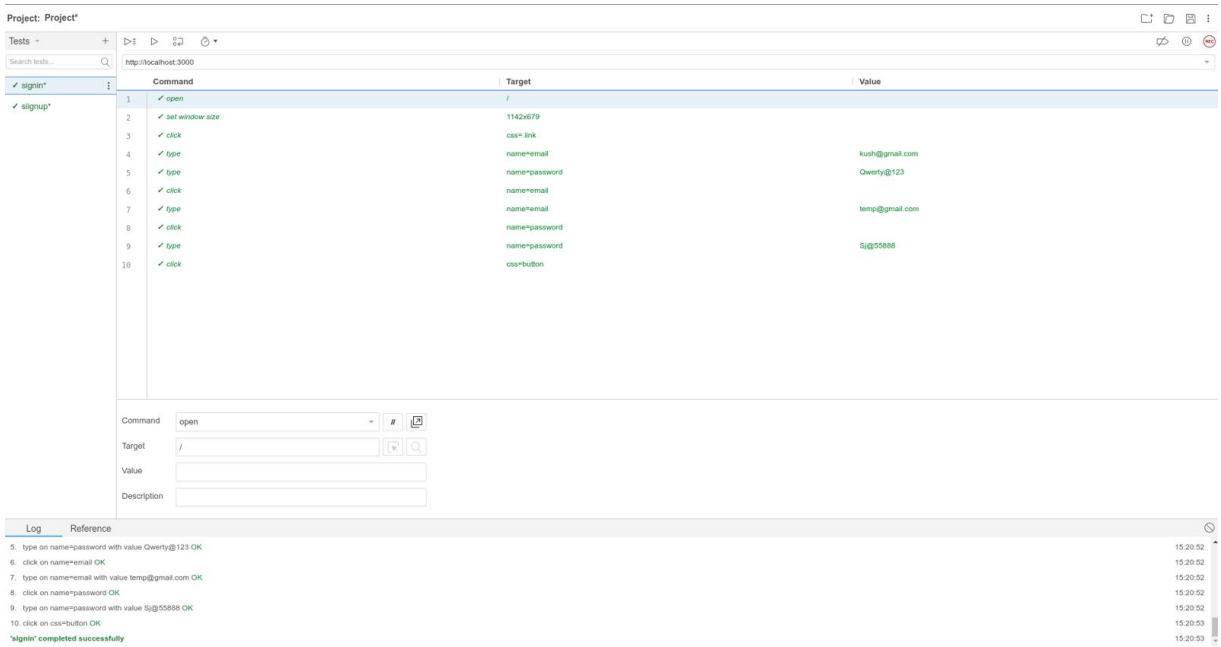


Fig. 5. Test Case 2: User Login

6.1.1.3 Test Case Name: Event Create

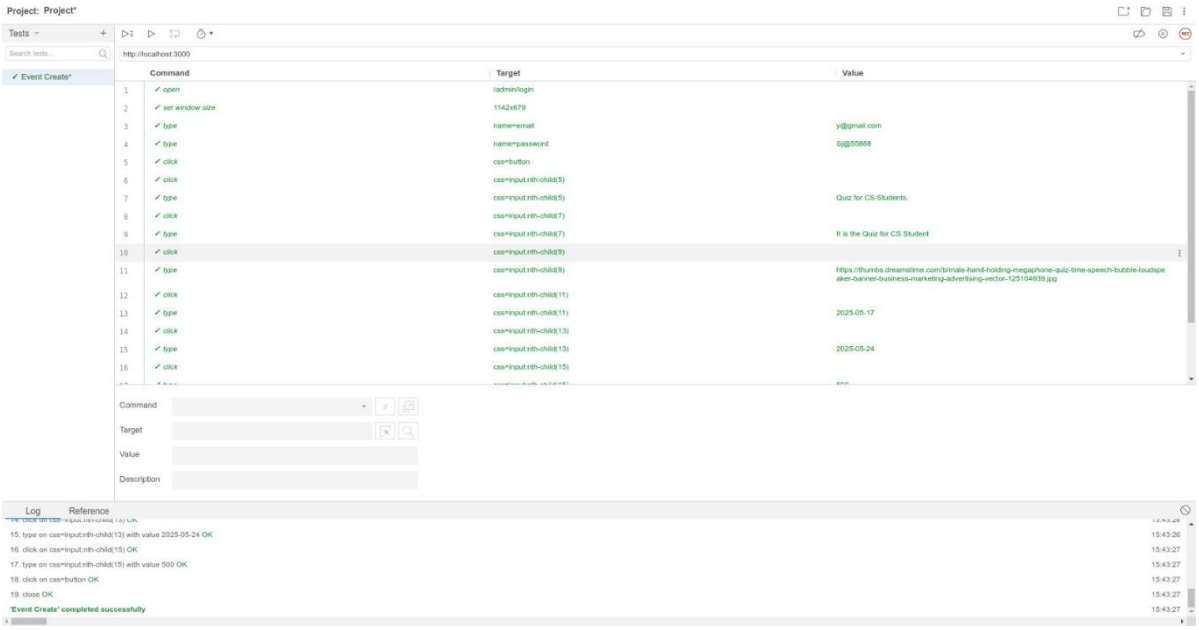


Fig. 6. Test Case 3: Event Create

6.1.1.4 Test Case Name: Coding Competition Create

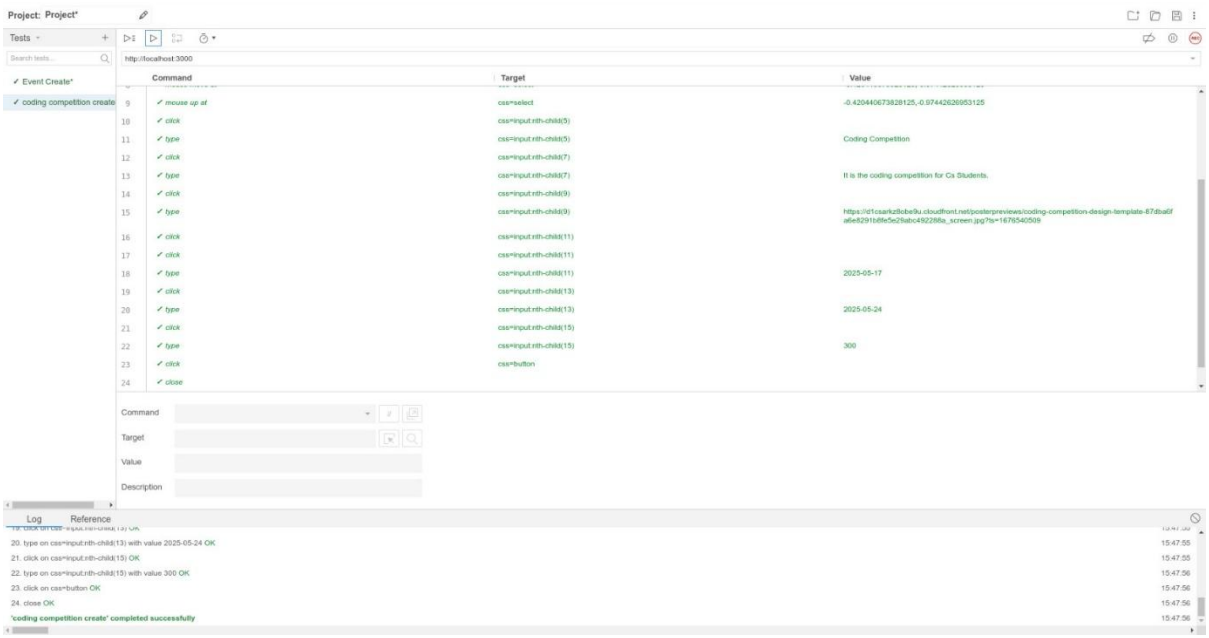


Fig. 7. Test Case 4: Coding Competition Create

6.1.1.5 Test Case Name: Quiz Add Questions

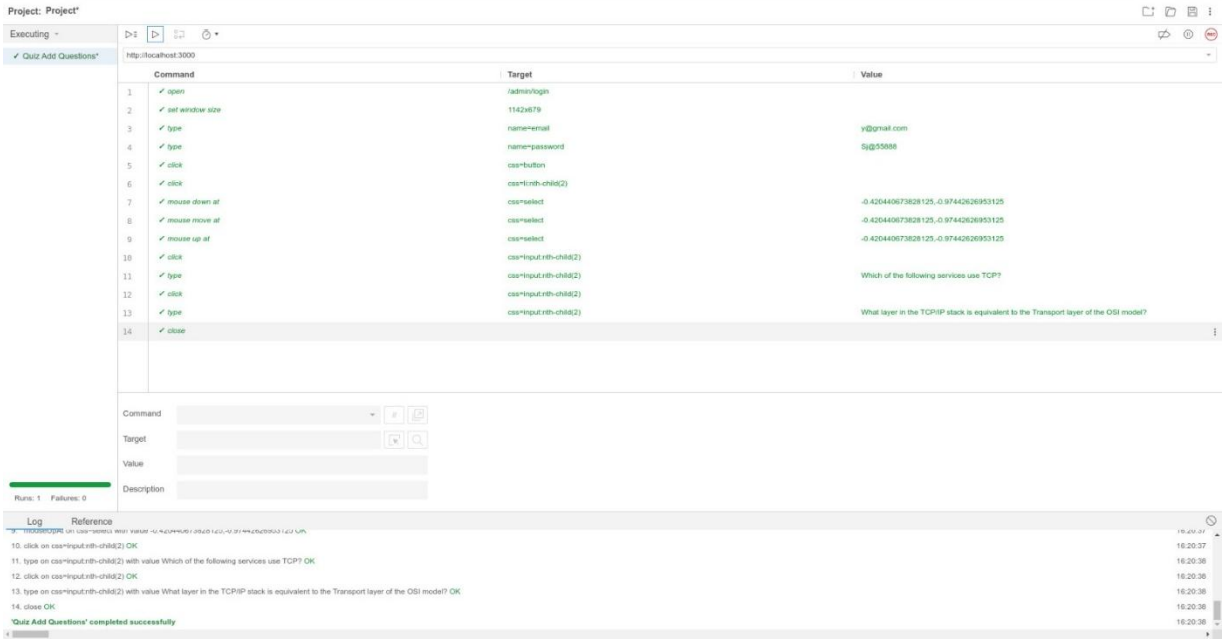


Fig. 8. Test Case 5: Quiz Add Questions

6.1.1.6 Test Case Name: Edit Quiz Questions

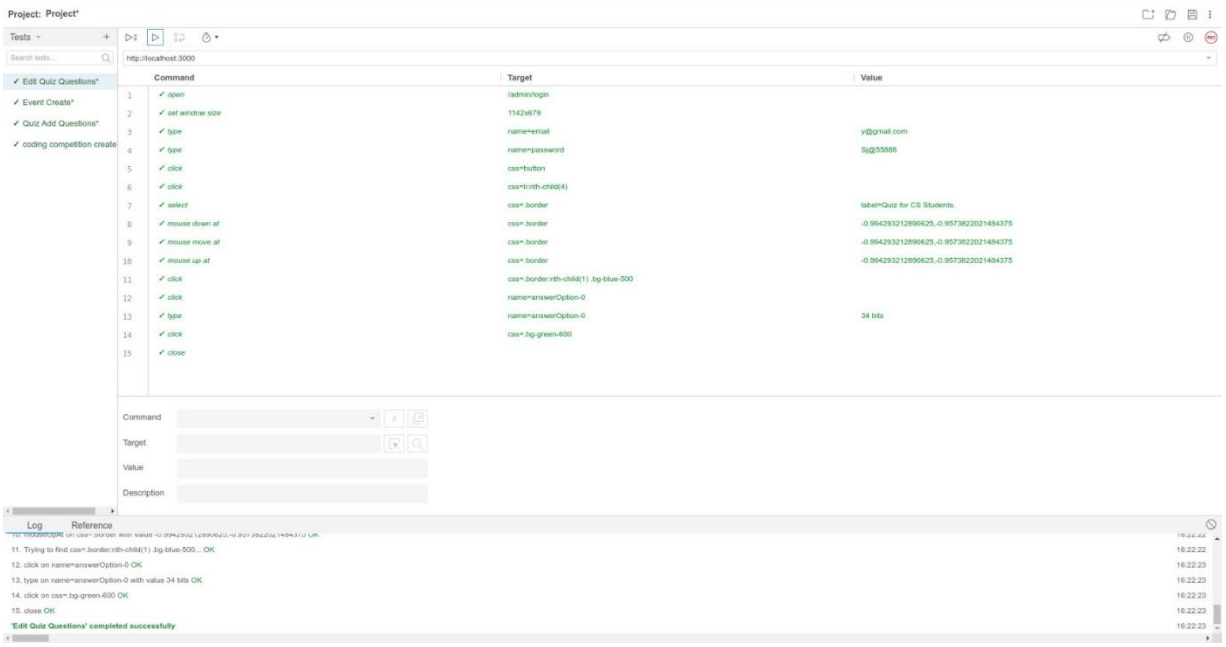


Fig. 9. Test Case 6: Edit Quiz Questions

6.1.1.7 Test Case Name: Start Quiz

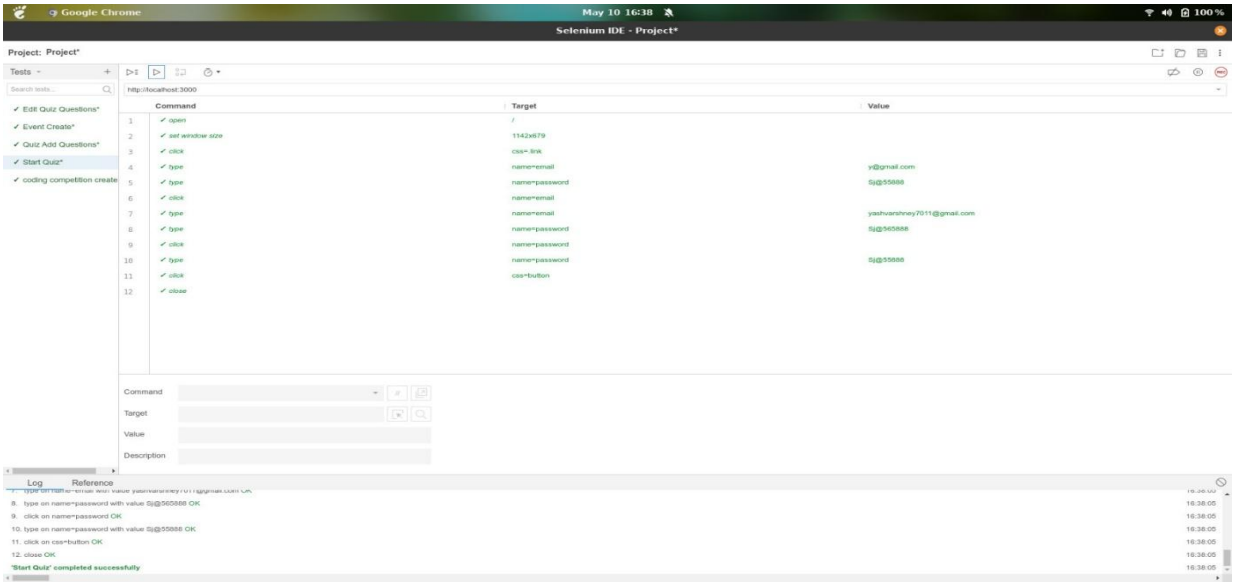


Fig. 10. Test Case 7: Start Quiz

6.1.1.8 Test Case Name: View Results

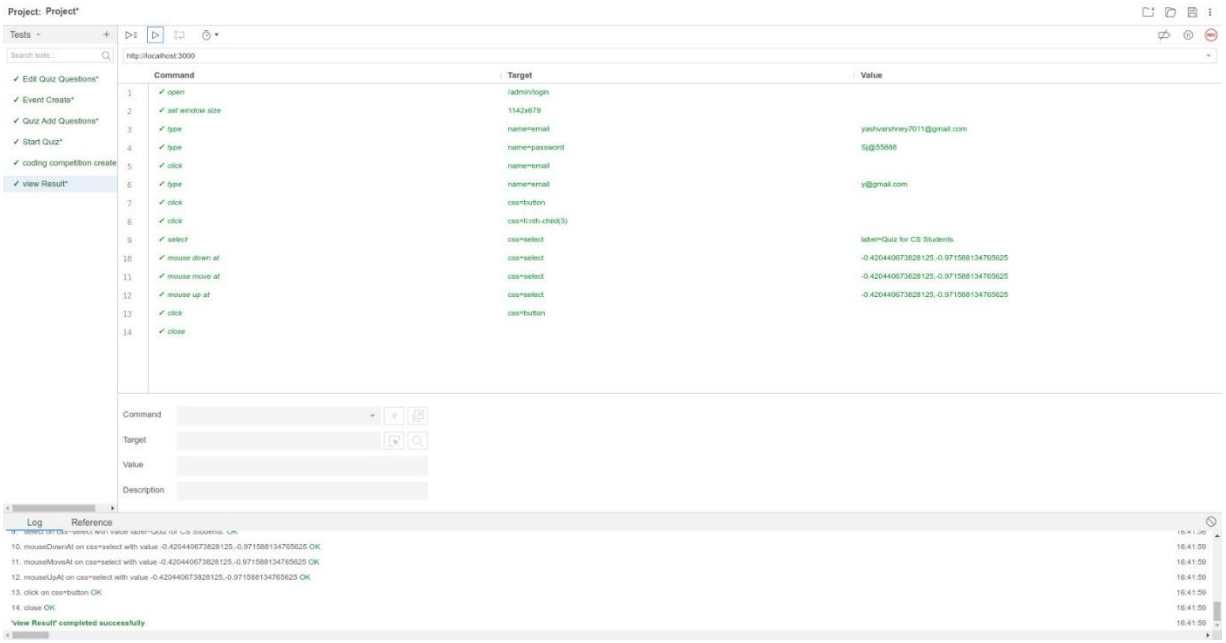


Fig. 11. Test Case 8: View Results

6.1.2 Test Cases

Test Case ID	Test Scenario	Steps to Execute	Expected Result
TC01	Validate User Registration	1. Navigate to the Sign-up page. 2. Enter a valid email, username, and password. 3. Click on "Sign Up."	User account is created successfully.
TC02	Validate User Login	1. Navigate to the Login page. 2. Present valid credentials. 3. Click on "Log In."	User is logged in and redirected to the dashboard.
TC03	Verify Incorrect Login	1. Navigate to the Login page. 2. Enter invalid credentials. 3. Click "Log In."	Error message displayed: "Invalid Credentials."
TC04	Check Quiz Creation	1. Navigate to the "Create Quiz" page. 2. Enter quiz title, description, and questions. 3. Click "Save."	Quiz is created and added to available quizzes successfully.
TC05	Verify Competition Registration	1. Navigate to the "Competitions" page. 2. Select a competition. 3. Click "Register."	User is successfully registered for the competition.
TC06	Validate Duplicate Usernames	1. Try registering with an existing username. 2. Click "Sign Up."	Error message displayed: "Username already taken."
TC07	Verify Code Compilation	1. Navigate to the coding competition page. 2. Enter code in a supported programming language. 3. Click "Run."	Code executes and displays expected output.
TC08	Validate User Role Management	1. Admin assigns different roles to users (Student, Organizer, Administrator). 2. Users log in and access role-specific functionalities.	Users can only access features based on their assigned roles.
TC09	Verify Secure Certificate Generation	1. Complete a competition successfully. 2. Navigate to the "Certificates" section.	Certificate is generated and securely stored.
TC10	Validate Dashboard Metrics	1. Navigate to Dashboard. 2. Check total users, competitions, and quiz participation data.	Dashboard displays correct and real-time statistics.

Table 1. Test Cases

CHAPTER - 7
RESULTS AND DISCUSSIONS

7.1 Description of User Module

The User Module is the central functionality of the One-Stop Portal that ensures **hassle-free participation in coding competitions and quizzes**. It enables students, organizers, and administrators to interact with the system in a hassle-free manner.

Key Features:

- **Dashboard:**
  - Displays important figures such as active quizzes, future competitions, and performance overviews.

- **Quiz and Competition Management:**
  - Allows users to create, edit, and schedule quizzes and coding competitions with rules defined by the users.

- **Performance Monitoring:**
  - Enabling students to monitor their score, ranking, and performance in a series of competitions.

- **User Roles and Permissions:**
  - Offers role-based access control for administrators, organizers, and students to control their own work.

- **Feedback Mechanism:**
  - Following a try for a quiz or event, users may provide feedback on difficulty, clarity, and usability to enhance subsequent tests.

- **Scalability and Extensibility:**
    - The user module is implemented in a component-based and modular fashion such that new features (e.g., peer review) or new roles (e.g., Invigilator, Reviewer) can be added easily.

7.2 Main Findings of The Project

Positive Findings:

1. Improved Competition Management:

- The platform streamlines quiz and coding competition management, reducing the amount of manual work required for event planners.

2. User-Friendly Interface:

- It has been easy for both the participants and organizers to work with the website, with features to join, manage, and create contests.

3. Automated Result Notifications:

- Computerized result calculations save time and effort in manual grading, improving accuracy and efficiency.

4. In-Depth Data Analysis:

- The site offers student performance, competition activity, and ranking trend reports for improved decision-making.

5. Enhanced Faculty Productivity:

- Faculty and event administrators cite considerable savings in time of quiz setup, grading, and result analysis.

6. Secure and Structured Data Handling:

- Information is encrypted and partitioned by user roles for secure and compliant scholarly process.

7. Potential for Real-Time Collaboration (Future Scope):

- With its backend scalability, the platform is poised for integration with collaborative features such as peer review modules or forum discussions.

Areas of Improvement:

1.Performance Enhancement:

- There have been some instances of slow response times during peak traffic events, necessitating database query and backend processing optimizations.

2.Security Enhancements:

- Although basic authentication mechanisms are implemented, role-based access control and regular security audits would enhance data security further.

3. Customization Features:

- Organizers have asked for more customization features for quizzes, including different time limits, question banks, and grading systems.

4.Multilingual Support:

- The system can be expanded to support other programming languages during the coding contests.

Overall, the One-Stop Portal efficiently facilitates organization and participation for competitions. Further improvements in performance, security, and customizing features will make it even more effective in the future.

7.3 Brief Description of Database

Brief Summary of the Database – One Stop Portal

Database Title:

- OneStopPortalDB

Database Management System (DBMS):

- MongoDB

Summary:

- The database handles efficiently users, competitions, results, and resource materials.
- - It has a document-oriented schema for flexibility, rapid retrieval, and scalability.
- User-to-user relationships, competitions, and submissions are handled by references and indexing.

Critical Tables and Columns:

1. Users Table:

- Fields: user_id, name, email, role (student/organizer/admin), registered_events, password_hash

2. Clients Table:

- Fields: competition_id, title, description, type (quiz/coding), start_time, end_time, organizer_id, difficulty_level

3. Questions Collection:

- Properties: question_id, competition_id (FK), question_text, options (for quizzes), correct_answer, language (for coding), test_cases

4. Submissions Collection:

- Columns: submission_id, user_id (FK), competition_id (FK), question_id (FK), code (for code competitions), selected_option (for quizzes), status (correct/incorrect)

5. Results Collection:

- Fields: result_id, user_id (FK), competition_id (FK), total_score, ranking

6. Resources Collection: -

- Fields: resource_id, title, content_type (video/article/code snippet), language, uploaded_by

7. ErrorLogs Collection: -

- Attributes: log_id, error_message, timestamp This well-organized database facilitates easy functioning for competition management, result monitoring, and resource availability within the One-Stop Portal.

7.4 Snapshots of One Stop Portal

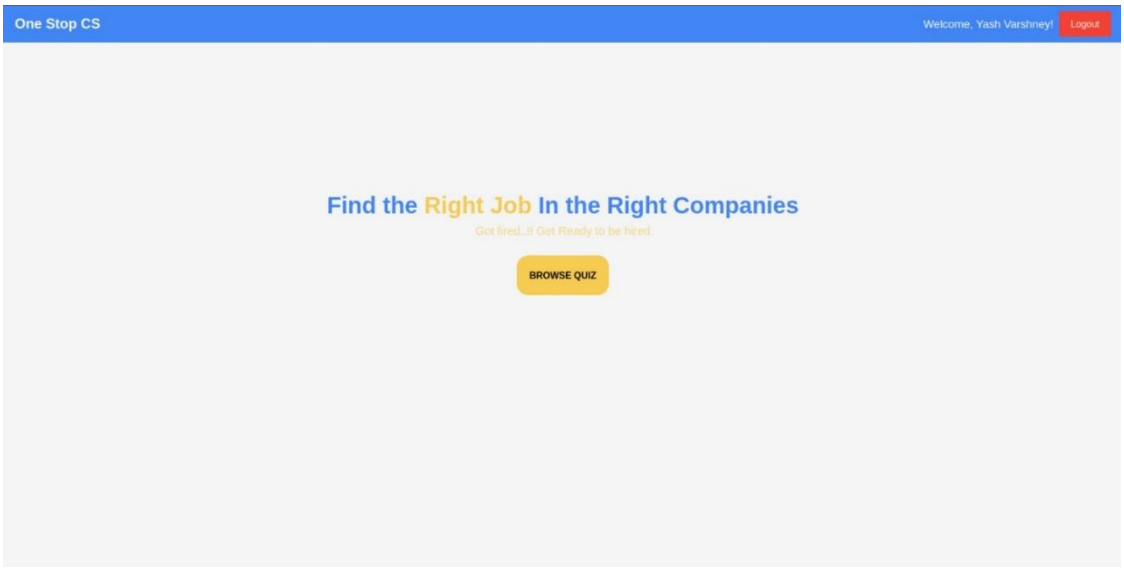


Fig 12. Home Page

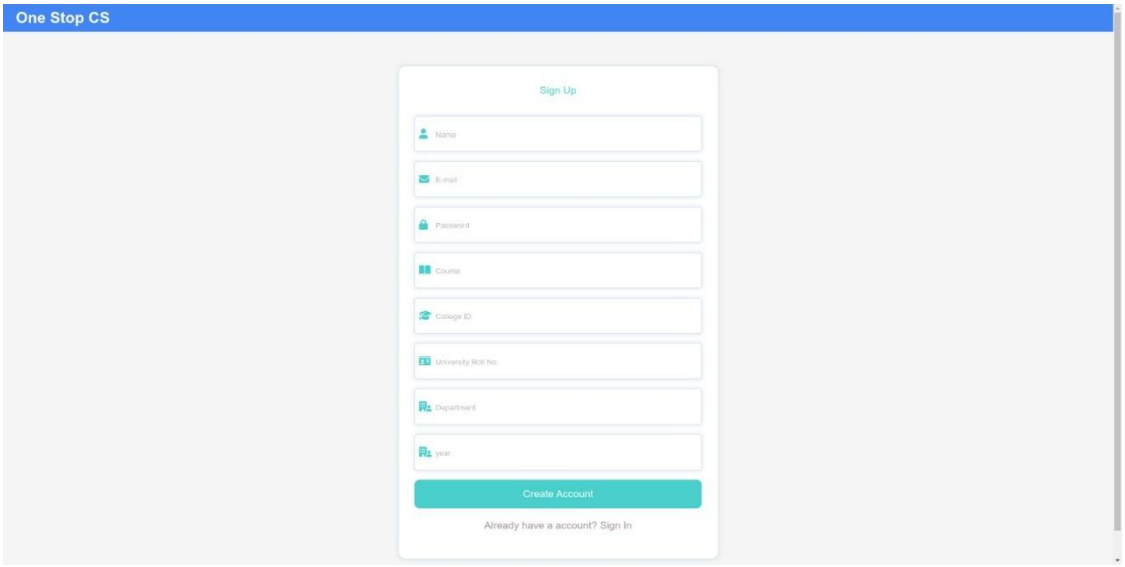


Fig. 13. Sign Up Page

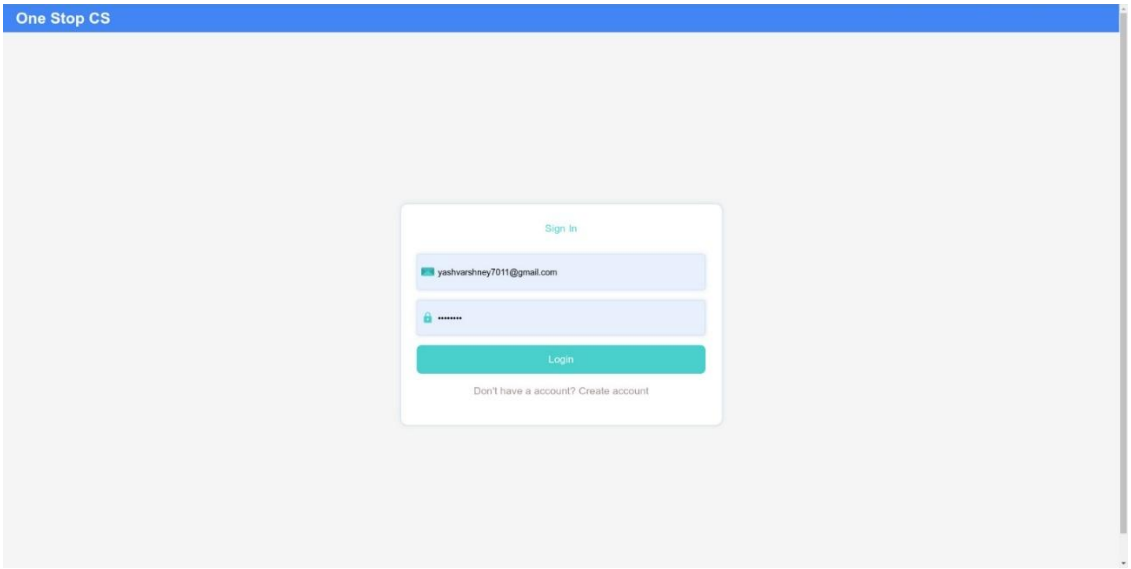


Fig. 14. Sign In Page

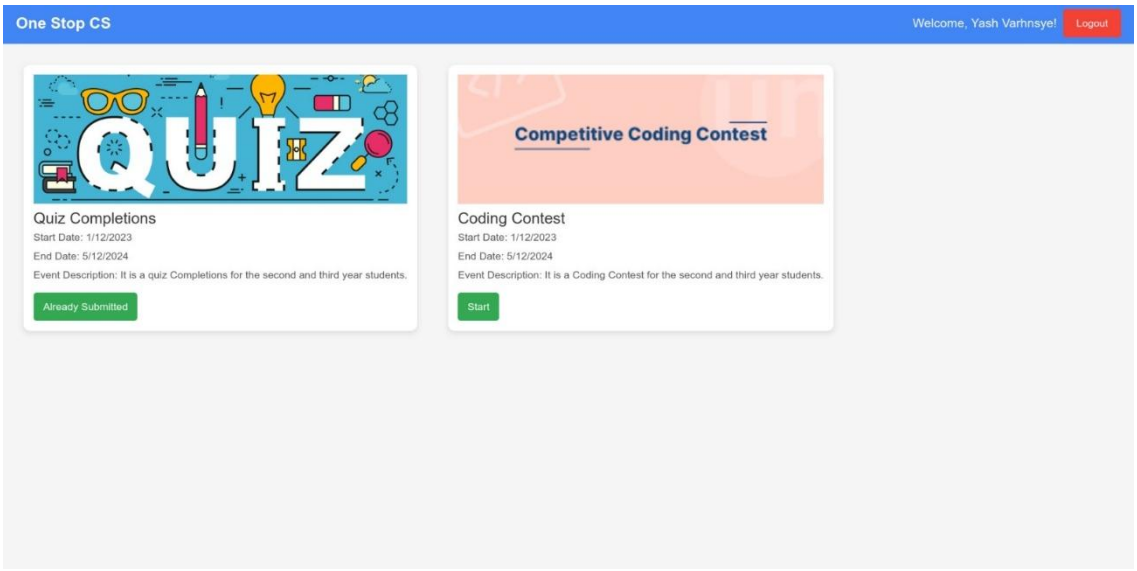


Fig. 15. Dashboard

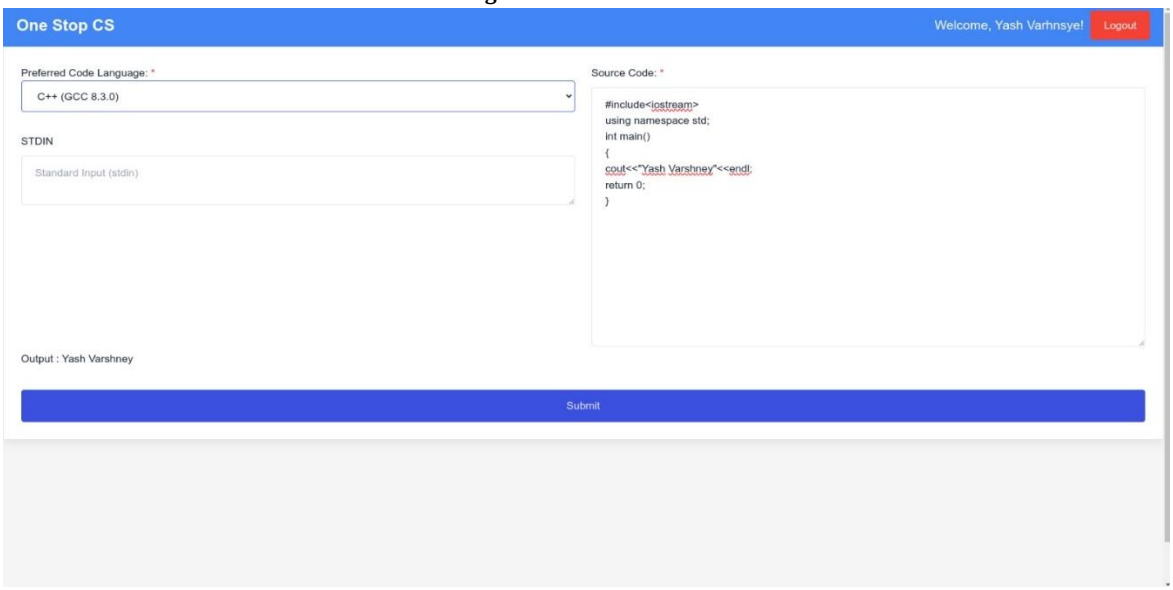


Fig. 16. Coding Compiler

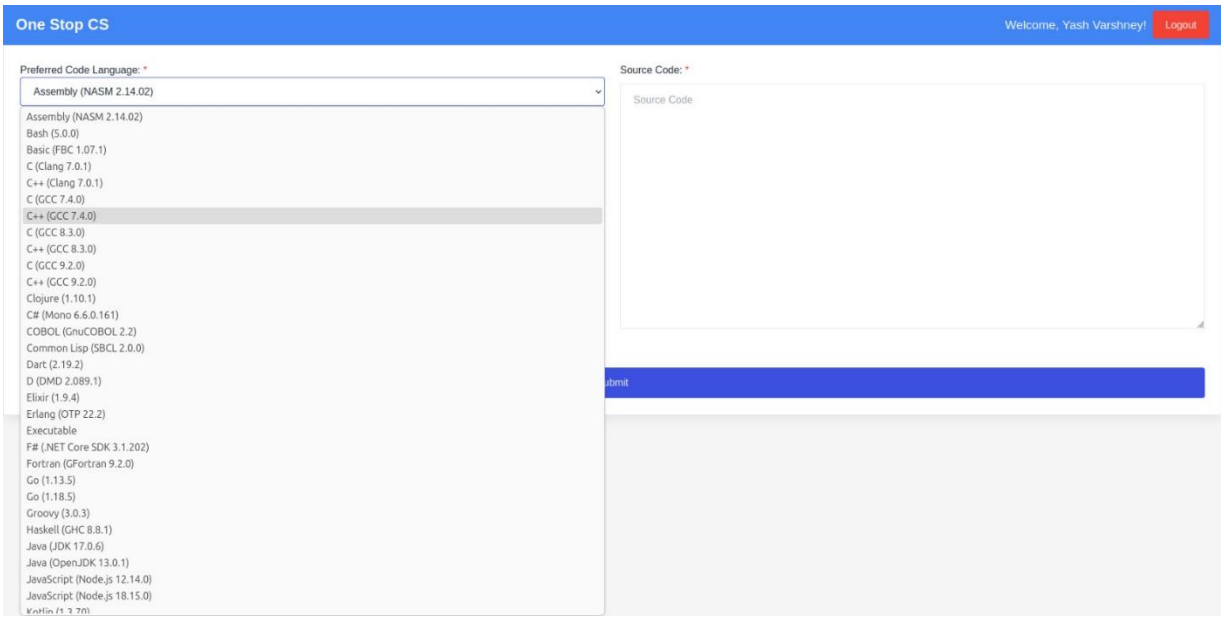


Fig 17. Programming Language Choices

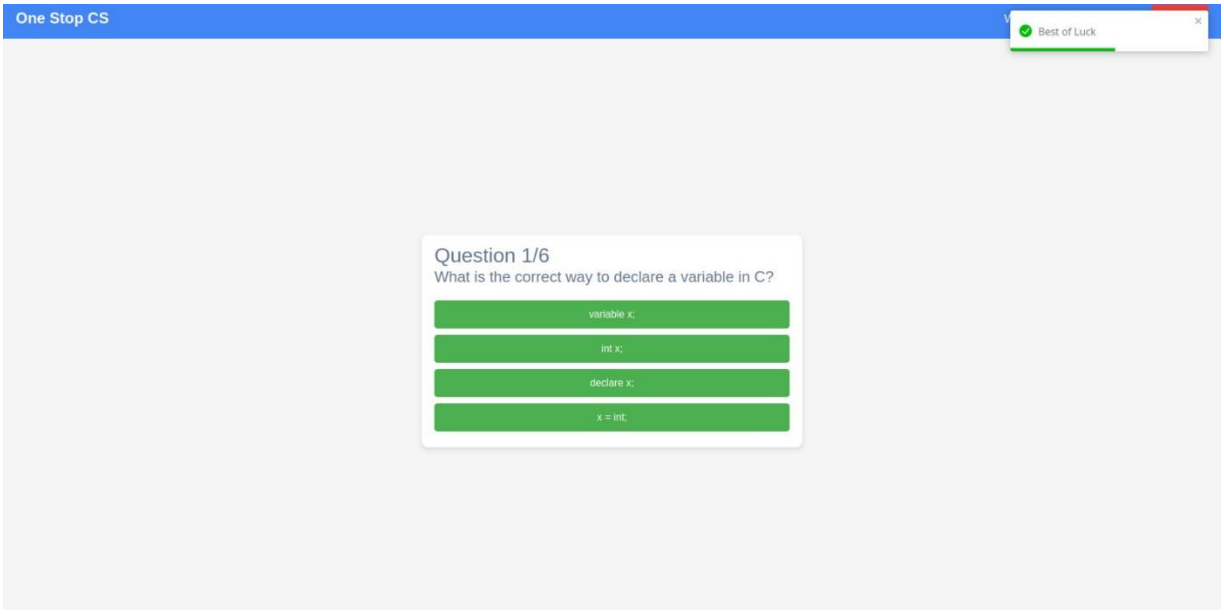


Fig 18. Quiz

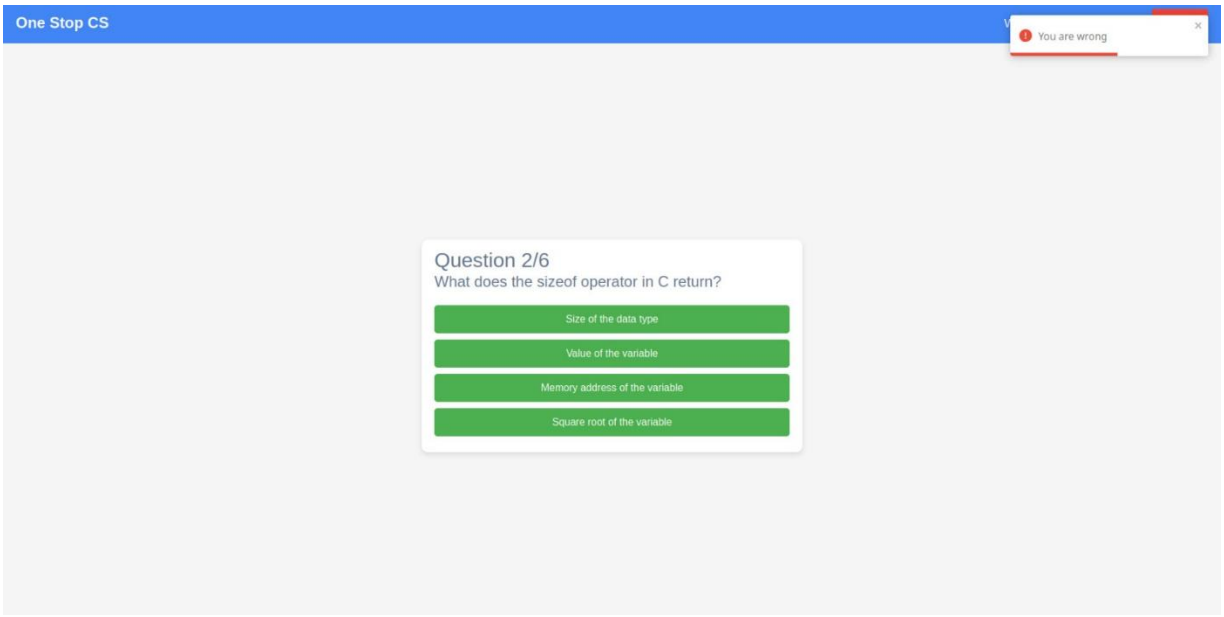


Fig 19. Quiz Real Time Result

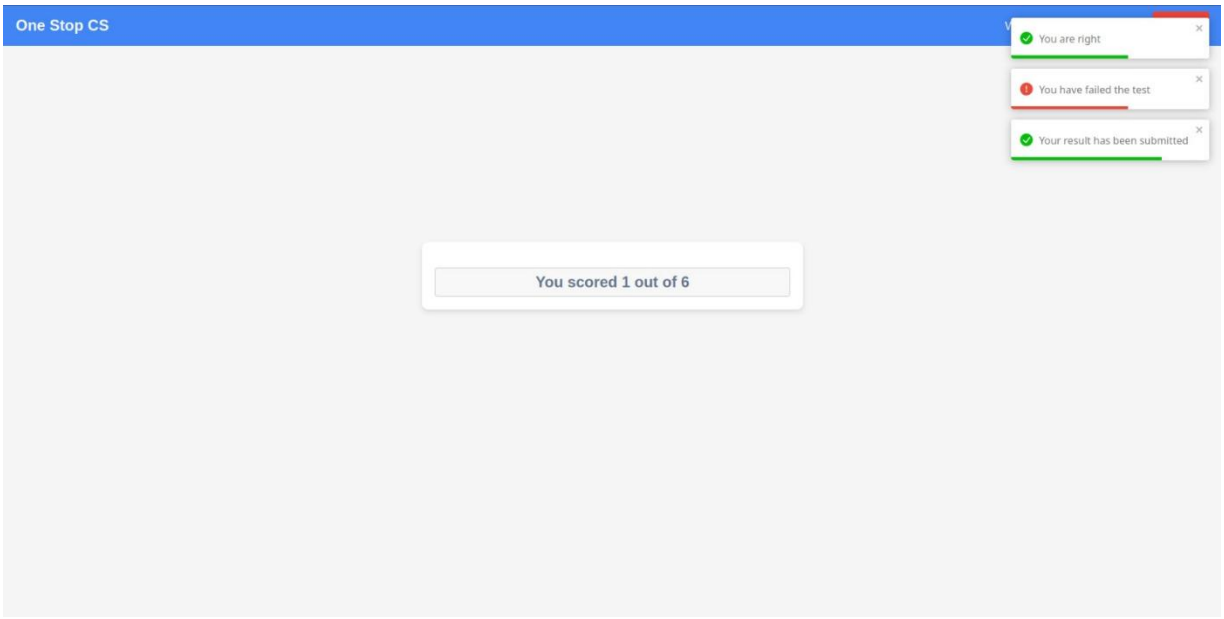


Fig 20. Final Score

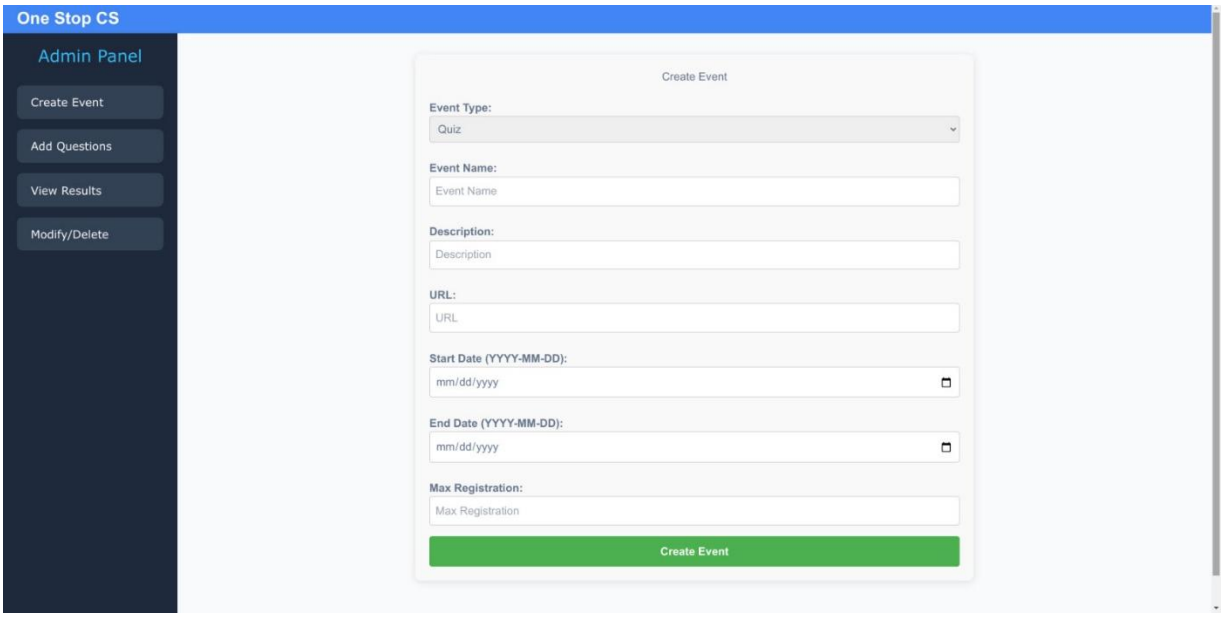


Fig 21. Backend Event Creation

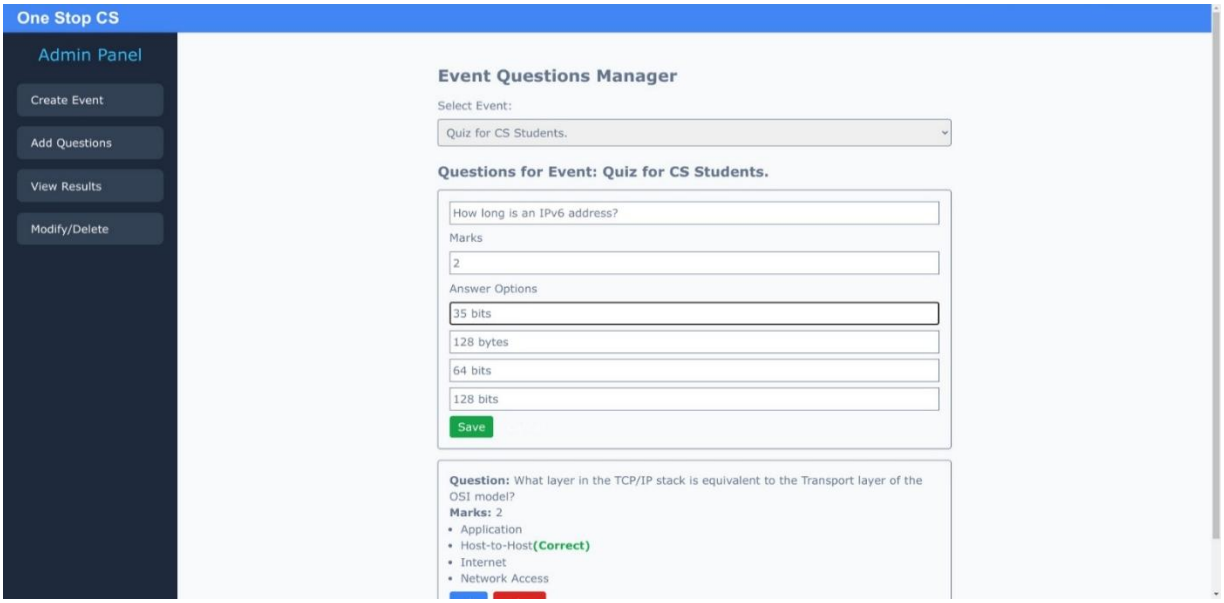


Fig 22. Adding Questions

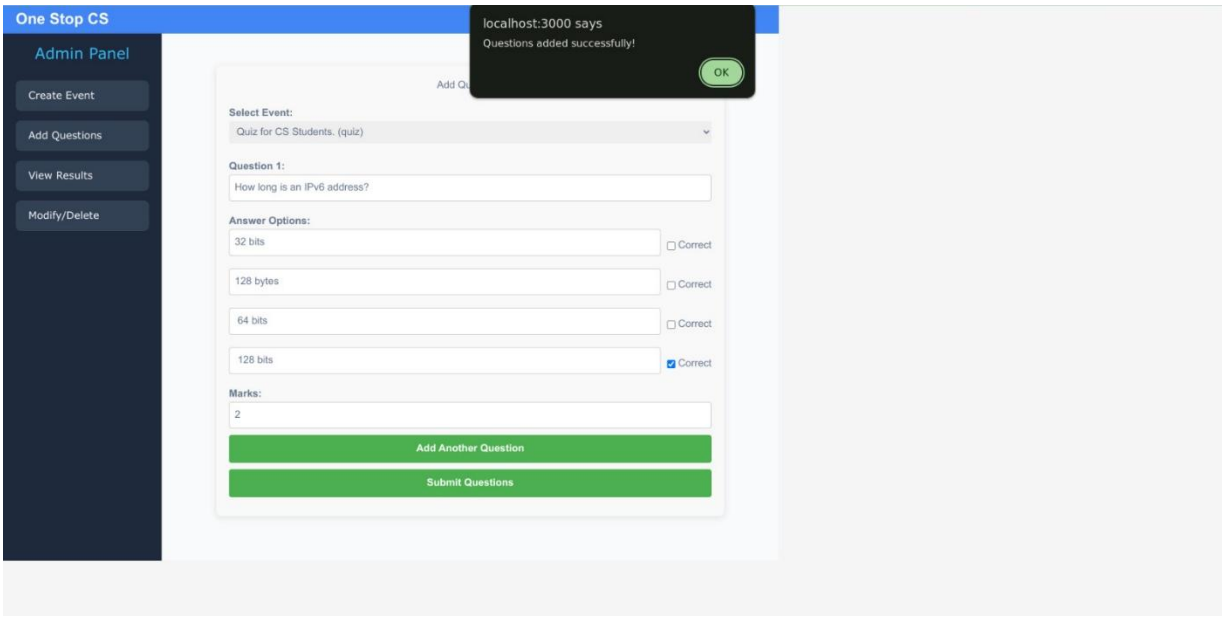


Fig 23. Quiz Created Successfully

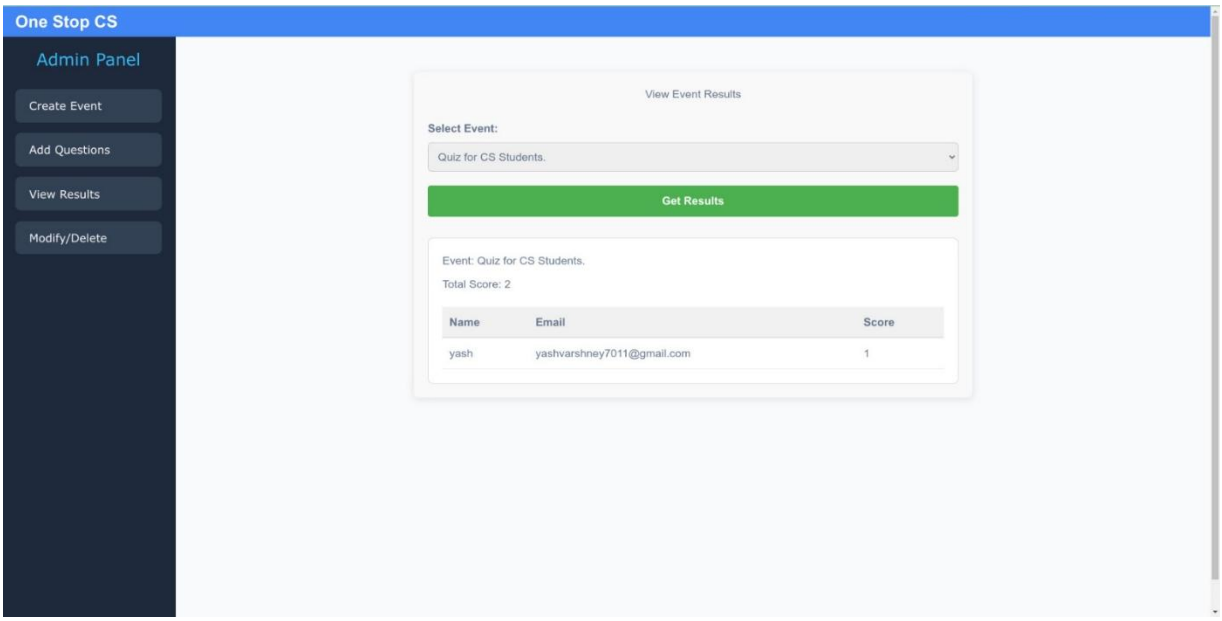


Fig 24. View Event Results as Admin

CHAPTER -8
CONCLUSION AND FUTURE SCOPE

Conclusion

One-Stop Portal has effectively tackled crucial issues of dealing with academic quizzes and coding competitions by providing an **integrated, in-house solution** that does not rely on third-party tools. It integrates functionality, accessibility, and security to facilitate the whole lifecycle of an academic or competition event—ranging from creation to participation to analysis of results.

At its essence, the system provides an end-user experience via a responsive interface that responds across devices, making it easy for students to participate and for faculty and administrators to manage with ease. Two-step email verification provides secure access and user legitimacy, while embedding a real-time code execution environment allows students to write, test, and submit code immediately in several programming languages (Python, Java, C++, etc.) with an IDE-like experience in the browser.

With the MERN stack, the platform is scalable and easy to maintain. The backend is asynchronous, the frontend is modular, and **MongoDB** is flexible to data—factors that make the platform stable and efficient. **React** drives a modular and interactive frontend, and Node.js and Express.js perform asynchronous operations and secure API routing. All of these technologies together offer a seamless, high-performance experience even when jointly employed by several participants.

In addition to that, the platform offers rich analytics dashboards that generate participant-by-participant performance reports, rankings, and engagement scores. These can be made use of by organizers and trainers to alter future event plans, identify areas of learning gaps, and provide individual feedback. The resource module, embedded within, brings value by offering participants relevant learning resources, such as tutorials, code snippets, or reference documents—thereby delivering an improved learning environment.

In addition to simplifying event management, the One-Stop Portal also transforms online scholarly interaction—providing an institution-driven, scalable, interactive, and effective solution.

Future Scope

Although the present system reveals excellent innovation, functionality, and user satisfaction, future possibilities are immense. Continued evolution and merging of upcoming technologies will be indispensable to keep up with relevance and achieve maximum impact in the future academic environment.

1. Advanced Role-Based User Management System

For further system security and efficiency in operations, a role-based, granular model of Access Control can be utilized. This would assign detailed privileges and dashboard roles to every user

category—e.g., students, organizers, faculty, reviewers, and super-admins. RBAC maintains data privacy, makes auditing easier, and enhances task delegation, notably when it comes to mass events.

2. Certificate Validation through Blockchain

Integrating blockchain technology will introduce a layer of trust, transparency, and tamper-proof integrity to digital certificates provided by the platform. Every certificate and contest outcome can be hashed and recorded on a decentralized ledger so that verifiable credentials for students who take part in quizzes and competitions can be issued. This is particularly useful for inter-institutional activities and recruitment-based contests.

3. LMS Integration and API Interoperability

As Learning Management Systems (LMS) such as Moodle, Canvas, and Google Classroom become more commonly used by educational institutions, One-Stop Portal integration via RESTful APIs can make academic operations more efficient. Having seamless LMS integration would enable synchronized event management, grade posting without manual intervention, and performance tracking within course modules.

4. Better Assessment Customization

Later versions may provide a drag-and-drop quiz builder and coding event wizard that enable event creators to:

- Set adaptive difficulty levels
- Assign individual timers for each question
- Allow partial scoring
- Employ randomized question banks
- Implement group/team-based competitions

Such flexibility would render the platform appropriate for a broader set of academic departments and technical clubs.

5. Multilingual Compiler Support

Presently supporting several popular languages (Python, Java, C++), the compiler may be augmented with Go, Ruby, Rust, Kotlin, JavaScript, and TypeScript. This would make room for

more flexibility for students and institutions working with different tech stacks. Language-specific IDE templates, linting utilities, and debugging support would add to the coding experience.

6. AI-Driven Personalization and Grading

Integrating machine learning models to process performance data would enable personalization of question suggestions, recommend areas for improvement, or even offer automated code review comments. AI-based grading for subjective questions (such as written explanations or logic flow) could also improve quiz assessment.

7. Gamification for Increased Engagement

Incorporating gamification features like badges, leaderboards, participation streaks, and achievement milestones can create positive competition and sustained student engagement. These have been shown to enhance participation rates and retention of learning.

8. Offline Availability and Progressive Web App (PWA)

Adding a PWA version of the portal would enable students to download quizzes or practice modules and be able to work offline. After going back online, the portal can sync attempts and submissions. This is very helpful in locations with poor or unstable internet connectivity.

9. Accessibility and Inclusive Design

To facilitate wider adoption and compliance with international standards such as WCAG, the system can be made to support:

- Screen reader compatibility
- Keyboard-only navigation
- Multilingual UI for regional language support
- High-contrast and dyslexia-friendly themes

The **One-Stop Portal** is not just a technological feat but also a significant step towards building an inclusive, intelligent, and future-proof academic environment. With its current capabilities

and a well-defined roadmap for growth, the platform is set to become a top tool in the world of digital education, connecting learners, teachers, and administrators through technology-led innovation.

REFERENCES

[1] Azita Iliya Abdul Jabbar and Patrick Felicia. Gameplay engagement and learning in game-based learning: A systematic review. Review of educational research, 85(4):740–779, 2015.

[2] Adeolu Olabode Afolabi and ER Adagunodo. Implementation of an improved data encryption algorithm in a web-based learning system. International Journal of research and reviews in Computer Science, 3(1):1407, 2012.

[3] Hidayat Arief. Designing and developing an adaptive online quiz system as an extension of a content management system. In proceedings intl conf information system business competitive ness, 2012.

[4] Shira Melody Berkovits. The effects of certain and uncertain reinforcement procedures on college students' quiz submission and performance. City University of New York, 2011.

[5] Daniel Coore and Daniel Fokum. Enhancing course assessment using a competitive programming setting. In Proceedings of the 50th ACM Technical Symposium on Computer Science Education, pages 449–455, 2019.

[6] Karim Dahdouh, Ahmed Dakkak, Lahcen Oughdir, and Fayçal Messaoudi. Big data for online learning systems. Education and Information Technologies, 23(6):2783–2800, 2018.

[7] Cory Gackenheimer. Introduction to React. Apress, 2015.

[8] Max Goldman, Greg Little, and Robert C Miller. Real-time collaborative coding in a web ide. Proceedings of the 24th annual ACM symposium on User interface software and technology, 155–164, 2011.

[9] Kurt Gutzmann. Access control and session management in the http environment. IEEE Internet Computing, 5(1):26–35, 2001.

[10] Sushma Malik and Anamika Rana. Competitive programming platform: a study of its requirement and advantages. JIMS81 International Journal of Information Communication and Computing Technology, 10(2):573–578, 2022

[11] Aleksandar Nikov, Igor Kulev, Pance Cavkovski, Anastas Misev, Vladimir Trajkovik, and Dimitar Trajanov. Codefu: coding competition as a tool for industry university collabo ration. In Proceedings of the 2014 international workshop on Long-term industrial collaboration on software engineering, pages 63–68, 2014.

[12] Florin-Valeriu Pantelimon, Razvan Bologa, Andrei Toma, and Bogdan-Stefan Posedaru. The evolution of ai-driven educational systems during the covid-19 pandemic. Sustainability, 13(23):13501, 2021.

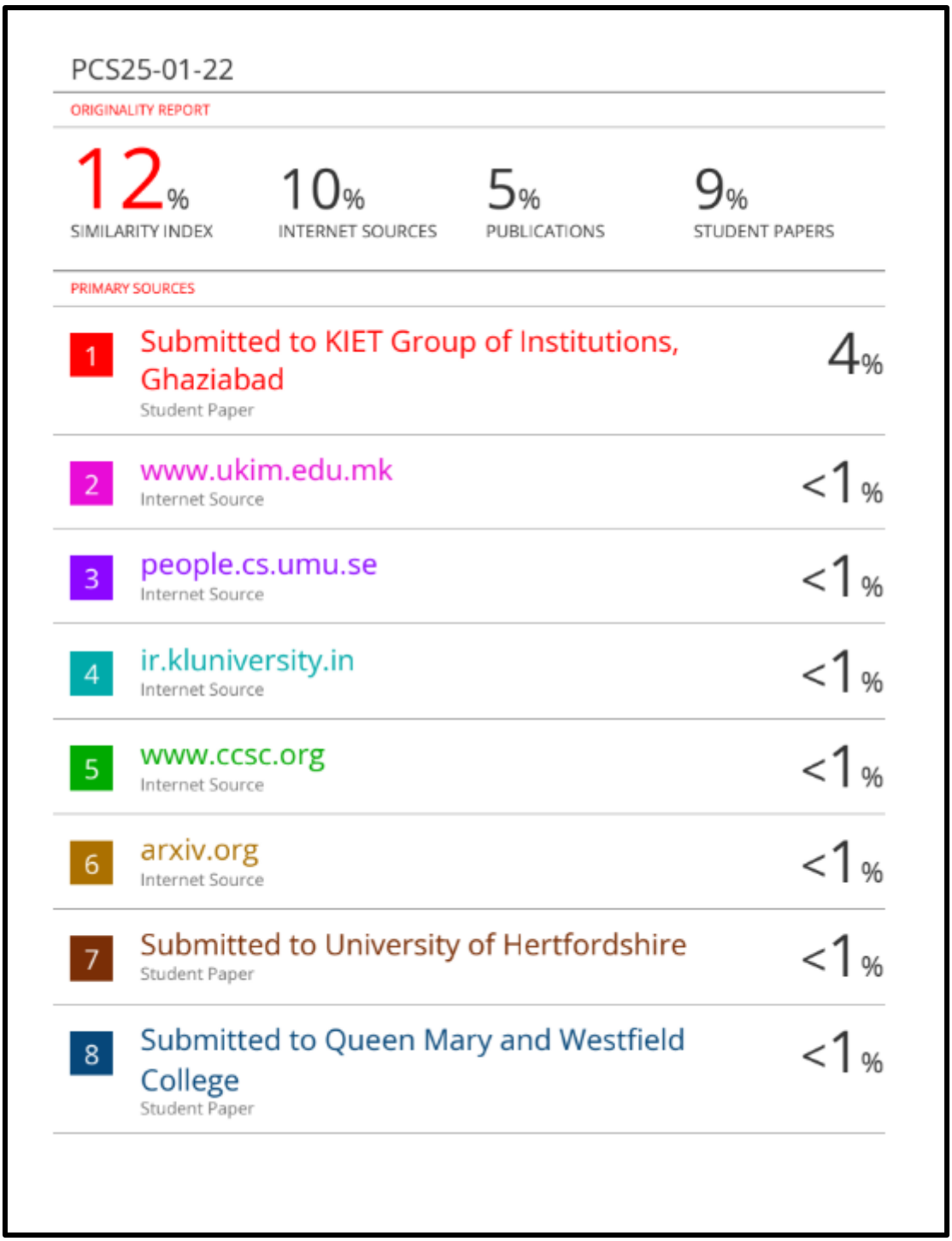
[13] Khalil Pinjari and Khan Nur. Smart event management system. International Journal of Computer Science Trends and Technology, 4(2):161–164, 2016.

[14] HPAH Piyumantha, DVS Prabhash, TK Weerasinghe, RTK Weerasiri, DI De Silva, and SMDTH Dias. Learning management system developed with the mern stack. International Journal of Engineering and Management Research, 12(6):149–155, 2022.

[15] Diogo Resende. Node. js high performance. Packt Publishing Ltd, 2015.

[16] Wikipedia, the free encyclopedia. Mongo distribution, 2022

Turnitin Plagiarism Report



PCS25-01-22

ORIGINALITY REPORT

12%	10%	5%	9%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

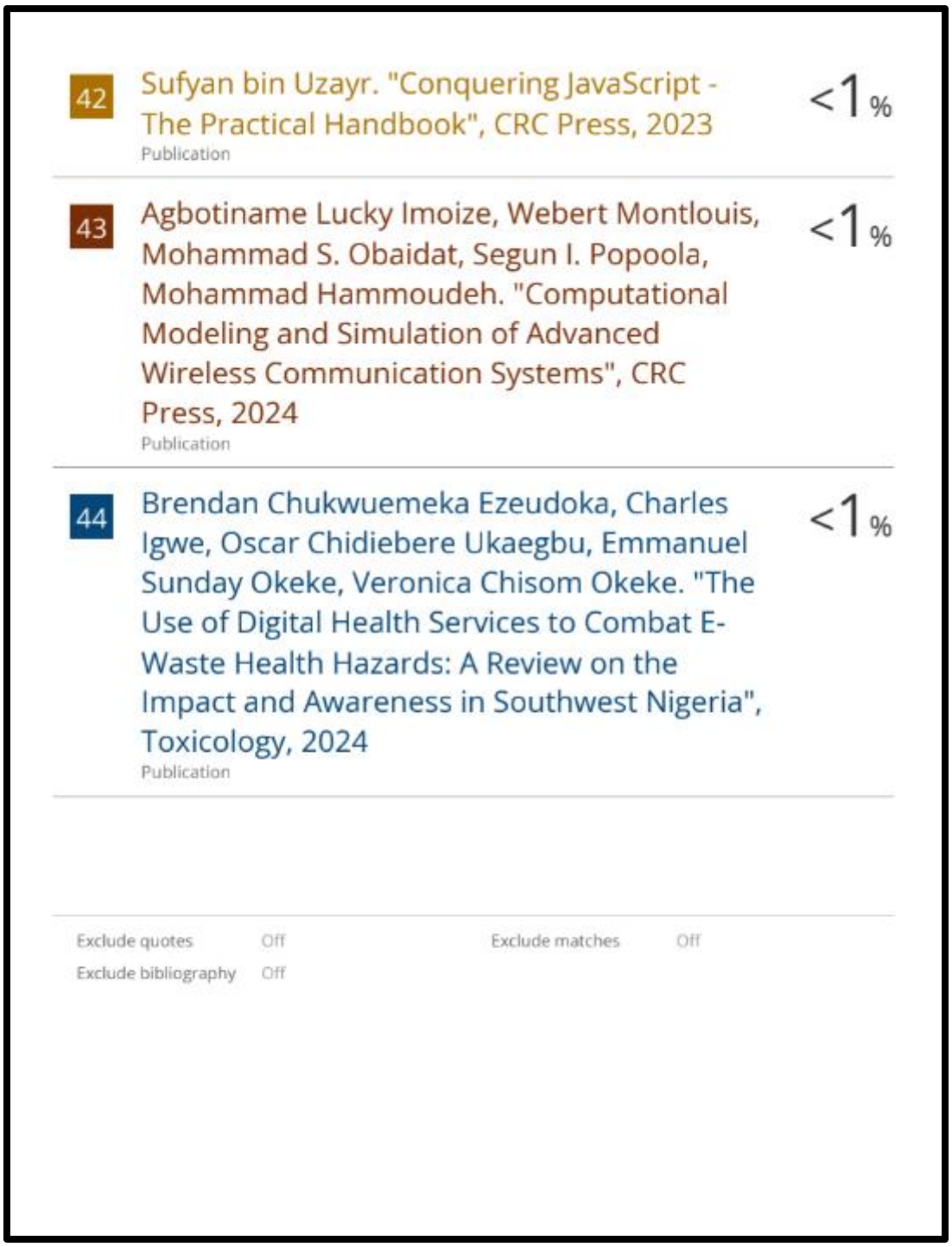
PRIMARY SOURCES

1	Submitted to KIET Group of Institutions, Ghaziabad Student Paper	4%
2	www.ukim.edu.mk Internet Source	<1%
3	people.cs.umu.se Internet Source	<1%
4	ir.kluniversity.in Internet Source	<1%
5	www.ccsc.org Internet Source	<1%
6	arxiv.org Internet Source	<1%
7	Submitted to University of Hertfordshire Student Paper	<1%
8	Submitted to Queen Mary and Westfield College Student Paper	<1%

9	Submitted to American Public University System Student Paper	<1%
10	Submitted to University of Teesside Student Paper	<1%
11	www.cscml.org Internet Source	<1%
12	Submitted to National Institute of Business Management Sri Lanka Student Paper	<1%
13	Submitted to University of Wales Institute, Cardiff Student Paper	<1%
14	www.coursehero.com Internet Source	<1%
15	pubmed.ncbi.nlm.nih.gov Internet Source	<1%
16	Submitted to New Zealand School of Education Student Paper	<1%
17	eprints.undip.ac.id Internet Source	<1%
18	lersse-dl.ece.ubc.ca Internet Source	<1%
	technodocbox.com	

19	Internet Source	<1 %
20	ijemr.vandanapublications.com Internet Source	<1 %
21	pubs.aip.org Internet Source	<1 %
22	Dr. Gomathi S. "Mastering Microsoft Dynamics 365 Business Central", Springer Science and Business Media LLC, 2024 Publication	<1 %
23	Submitted to University of Northumbria at Newcastle Student Paper	<1 %
24	www.gpcet.ac.in Internet Source	<1 %
25	www.al-burraq.com Internet Source	<1 %
26	Submitted to City University Student Paper	<1 %
27	www.mygreatlearning.com Internet Source	<1 %
28	Submitted to University of Wolverhampton Student Paper	<1 %
29	Submitted to Delhi Metropolitan Education Student Paper	<1 %


30 acquaintsofttech.stck.me
Internet Source
<1%
31 malenezi.github.io
Internet Source
<1%
32 constellation.uqac.ca
Internet Source
<1%
33 www.bushisecurity.com
Internet Source
<1%
34 medium.com
Internet Source
<1%
35 www.submittable.com
Internet Source
<1%
36 ebin.pub
Internet Source
<1%
37 eprints.nottingham.ac.uk
Internet Source
<1%
38 www.dowrodisha.gov.in
Internet Source
<1%
39 doku.pub
Internet Source
<1%
40 mdpi-res.com
Internet Source
<1%
41 www.scc.acad.bg
Internet Source
<1%


42
Sufyan bin Uzayr. "Conquering JavaScript - The Practical Handbook", CRC Press, 2023
Publication
<1%
43
Agbotiname Lucky Imoize, Webert Montlouis, Mohammad S. Obaidat, Segun I. Popoola, Mohammad Hammoudeh. "Computational Modeling and Simulation of Advanced Wireless Communication Systems", CRC Press, 2024
Publication
<1%
44
Brendan Chukwuemeka Ezeudoka, Charles Igwe, Oscar Chidiebere Ukaegbu, Emmanuel Sunday Okeke, Veronica Chisom Okeke. "The Use of Digital Health Services to Combat E-Waste Health Hazards: A Review on the Impact and Awareness in Southwest Nigeria", Toxicology, 2024
Publication
<1%
Exclude quotes Off
Exclude matches Off
Exclude bibliography Off

GIS SCIENCE JOURNAL

UGC-CARE Approved Group 'II' journal
ISSN NO: 1869-9391
Scientific Journal Impact Factor – 6.1

ACCEPTANCE LETTER TO AUTHOR

Dear Author,

With reference to your paper submitted **"One-Stop Portal: A Comprehensive Platform for Student Engagement and Assessment"** we are pleased to accept the same for publication in **GS Journal Volume 12, Issue 5, 2025.**

Manuscript ID: GSJ/13817

Please send the scanned copies of Registration form and Copyright form along with Payment Screenshot.

Processing charges for maintaining article online and soft copy of the E-certificate the registration fee is **2360INR.** Please note that the amount we are charging is very nominal & only an online maintenance and processing fee.

The Fee includes

Online Publication & E-certificates
Online maintenance and processing charge.
No limitation of number of pages.
Editorial fee.
Taxes.

Note:

- Paper will be published online within 48 hours after receiving the fee.
- In case of any query please do not hesitate to contact us at edoitorgsjournal@gmail.com early reply is appreciated.
- Fee paid for the publication of the paper does not refund under any circumstances.

DATE
8-May-2025

Sincerely,
Best regards,
M.palaniswami
http://gisscience.net/

M Palaniswami
Editor-in-chief
GISSCIENCE

DOI: 20.18001.GSJ

Patent Search

Invention Title	WEB-BASED SOLUTION FOR STREAMLINED BILLING AND INVENTORY MANAGEMENT IN SMES
Publication Number	04/2025
Publication Date	24/01/2025
Publication Type	INA
Application Number	202511002753
Application Filing Date	13/01/2025
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	COMPUTER SCIENCE
Classification (IPC)	G06Q0010087000, G06Q0030040000, G16H0010600000, G06N0020000000, G06Q0020100000

Inventor

Name	Address	Country
Mr. Akash Goel	Computer Science Department, KIET Group of Institutions, Delhi-NCR, Meerut Rd Ghaziabad Uttar Pradesh India 201206	India
Mr. Dev Varshney	Computer Science Department, KIET Group of Institutions, Delhi-NCR, Meerut Rd Ghaziabad Uttar Pradesh India 201206	India
Ms. Shreshthi Tayal	Computer Science Department, KIET Group of Institutions, Delhi-NCR, Meerut Rd Ghaziabad Uttar Pradesh India 201206	India
Ms. Vanshika Jain	Computer Science Department, KIET Group of Institutions, Delhi-NCR, Meerut Rd Ghaziabad Uttar Pradesh India 201206	India
Ms. Viyapi Tyagi	Computer Science Department, KIET Group of Institutions, Delhi-NCR, Meerut Rd Ghaziabad Uttar Pradesh India 201206	India

Applicant

Name	Address	Country	Natio
KIET Group of Institutions	Delhi-NCR, Meerut Rd Ghaziabad Uttar Pradesh India 201206	India	India

Abstract:

The present invention provides web-based solution for streamlined billing and inventory management in SMEs. It features secure OTP-based login, dynamic notificati real-time dashboards for actionable insights. The system automates repetitive tasks, such as invoice generation and inventory tracking, while providing comprehensi visualization. Its scalable, modular architecture allows customization and integration with external systems like payment gateways. It offers an affordable, streamline enhance operational efficiency and data accuracy, empowering SMEs to focus on growth and innovation. Figure 1

Complete Specification

Description:TECHNICAL FIELD

[0001] The present invention relates to the field of software application for business management and inventory management systems, and more particularly, th present invention relates to the web-based solution for streamlined billing and inventory management in SMEs.

BACKGROUND ART

[0002] The following discussion of the background of the invention is intended to facilitate an understanding of the present invention. However, it should be appr that the discussion is not an acknowledgment or admission that any of the material referred to was published, known, or part of the common general knowledge ir jurisdiction as of the application's priority date. The details provided herein the background if belongs to any publication is taken only as a reference for describing t problems, in general terminologies or principles or both of science and technology in the associated prior art.

[0003] The present invention addresses critical challenges faced by small and medium-sized enterprises (SMEs) in managing business operations, including:

- High Costs: Offers an affordable alternative to expensive ERP systems, eliminating high upfront costs and complex maintenance requirements.
- Inefficient Workflows: Integrates billing, inventory, and customer management into a single platform, streamlining operations and reducing reliance on disconn systems like spreadsheets.
- Data Inaccuracy: Automates processes, reducing human errors in billing, inventory tracking, and financial reporting.
- Lack of Integration: Provides a fully integrated system where updates in one module (e.g., sales) automatically reflect in others (e.g., inventory and reports).
- Limited Accessibility: Ensures mobile accessibility, enabling business owners to manage operations on the go.

View Application Status