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(MJIIT)

SECD 2613-15 SYSTEM ANALYSIS AND DESIGN
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PHASE 3 - ANALYSIS AND DESIGN
ONLINE QUIZ PLATFORM

FACULTY OF MJIIT

GROUP 5

NAME	MATRIC ID
LING SIEW SIEW	A23MJ5060
ABDULRAHMAN SIAD TIFOW	A23MJ3061
HASSAN SAAD AHMED MOHAMMED	A23MJ3005

LECTURER: DR AMY HAMIDAH

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1.0 OVERVIEW OF THE PROJECT

This project is entitled as the Online Quiz Platform which aims at developing a website applicable for conducting an internet-based quiz or test. It is designed to address the needs of educational institutions, companies and organizations that are in search of an effective and effective approach to assess the acquired knowledge and existing skills. Some specific goals include having the ability to create a customizable application for quiz creation, making sure that the application is scalable and executes fast, maintaining extensive reports feature, and lead, implement high levels of security and data protection, integrate easily with other platforms and applications, and improve participant experience. It is made for administrators to manage learning processes, for instructors to monitor their lessons, students focusing on their assignments and progress, and the technical team that is in charge of platform development and support. The definition of the project's tasks includes the following steps: the design of a web application; the organization of authentication and access control to the application's data; the integration of third-party tools; testing of the developed application; the creation of documentation that will contain information about the created application and its use; training of personnel as to how to use the created application. A time frame has also been estimated as well as the cost implication so as to achieve the desired project outcome. The following are the possible risks associated with the project and how they will be managed.

2.0 PROBLEM STATEMENT

Face-to-face quizzes and assessments have limitations such as time, time zone differences and exhaust time consumed during the quizzes and assessments processes. As the current reality is filled with challenges and requires individuals, educational institutions, businesses and organizations to arrange remote assessment of knowledge and skills, it is necessary to turn to new efficient solutions. Some of the existing online quiz platforms might have some limitations such as unfriendly user interface, limited features and customization options, cannot accommodate multiple users or participants, and undeveloped or limited reporting features. However, some challenges associated with data security, privacy, and integration of a proposed system into an existing system may discourage users..

Hence, it makes sense to have a comprehensive and easily accessible online quiz that can fill these gaps. This platform should provide options for creating quizzes with the desired parameters, best integration with other systems and services, high workability when a large number of users use the platform, the ability to generate reports, and security features to protect user data. Through an interactional interface of administrators and participants which is quite interactive and even fun, the platform envisages to overhaul the traditional way quizzes and assessments are conducted to improve learning and organizational performance.

3.0 PROPOSED SOLUTIONS

1. **Development of a User-Friendly Interface:** Create a clear and user-friendly interface of the Web-based application that means to provide easy navigation and work with the tools for the administrators, instructors, and participants..
2. **Customizable Quiz Creation Tools:** Provide numerous options regarding the setting and forms of quizzes: the types of questions, time limits, grading/correcting options, multimedia features.
3. **Scalability and Performance Optimization:** Leverage the capabilities of modern technologies and develop scalable architecture that will allow serving a significant number of concurrent users and quizzes while maintaining high efficiency and quality of service.
4. **Comprehensive Reporting and Analytics:** Include comprehensive reporting capabilities to accommodate the administrators' or instructors' need concerning participant activity and performance, ratings, trends, and any other useful information on quiz results.
5. **Security and Data Privacy Measures:** Strong security measures such as confidentiality, integrity measures such as encryption, and user authentication measures as well as following privacy policies measures.
6. **Engagement Features:** The research will suggest incorporating features, which include the use of a leaderboard, a system of badges and awards, as well as options for social sharing in order to improve the experience of the participants by increasing their motivation and the level of cooperation.
7. **Mobile Compatibility:** Make sure the platform works on different devices (PCs, portable computers, tabs, mobiles) and browsers to permit people to access and engage it whenever and wherever they want to.
8. **Continuous Improvement and Support:** Plus, invest into further development and constant updates to address the emerging problems, add new features and fix the broken functions to make the platform continually relevant to the users needs and benefit from new technological development.

4.0 CURRENT BUSINESS PROCESS/WORKFLOW

1. SCENARIOS:-

i. Quiz management by lecturers and teachers:

Teachers and lecturers these days apply much effort on managing the process of giving quizzes, from preparation of questions manually to printing then setting time after that correcting and marking out grades. They do need a system that can create, set, publish and grade quizzes more efficiently.

ii. Students preparation and studying:

The same way it is hard for lecturers and teachers to deal with hard copy quizzes, it is also for students in terms of time wasting and difficulty to reach meant details or parts. A platform that provides all their needed quizzes will be their prior choice.

iii. Distance studying:

Students or even teachers that are on far distances can still work, collaborate and share their work together using the platform indeed of their different locations without having to waste their time, energy or fuel.

2. WORKFLOW:-

i. Quiz Creation:

In this stage, lecturers can print and distribute the questions after writing them down. Questions can be distributed through the platform itself or shared through email.

ii. Quiz administration:

Inside the platform, quizzes are held in a locked meeting room accessed by a passcode or can also be shared via email.

iii. Quiz submission:

Same as distributing and holding quizzes, they can be submitted through the platform or through email. All submissions will then be available for the person in charge (lecturer or teacher) to review and grade.

iv. Grading:

After submission of the quiz by students through either of the mentioned ways, The host can correct or grade the results manually inside the platform can list them in spreadsheets or gradebooks. Feedbacks can be provided for students to view.

v. Record keeping and analysis:

After grading results manually, the host can still find and access the data stored in the platform to analyze in the way they need.

5.0 LOGICAL DFD(AS-IS SYSTEM)

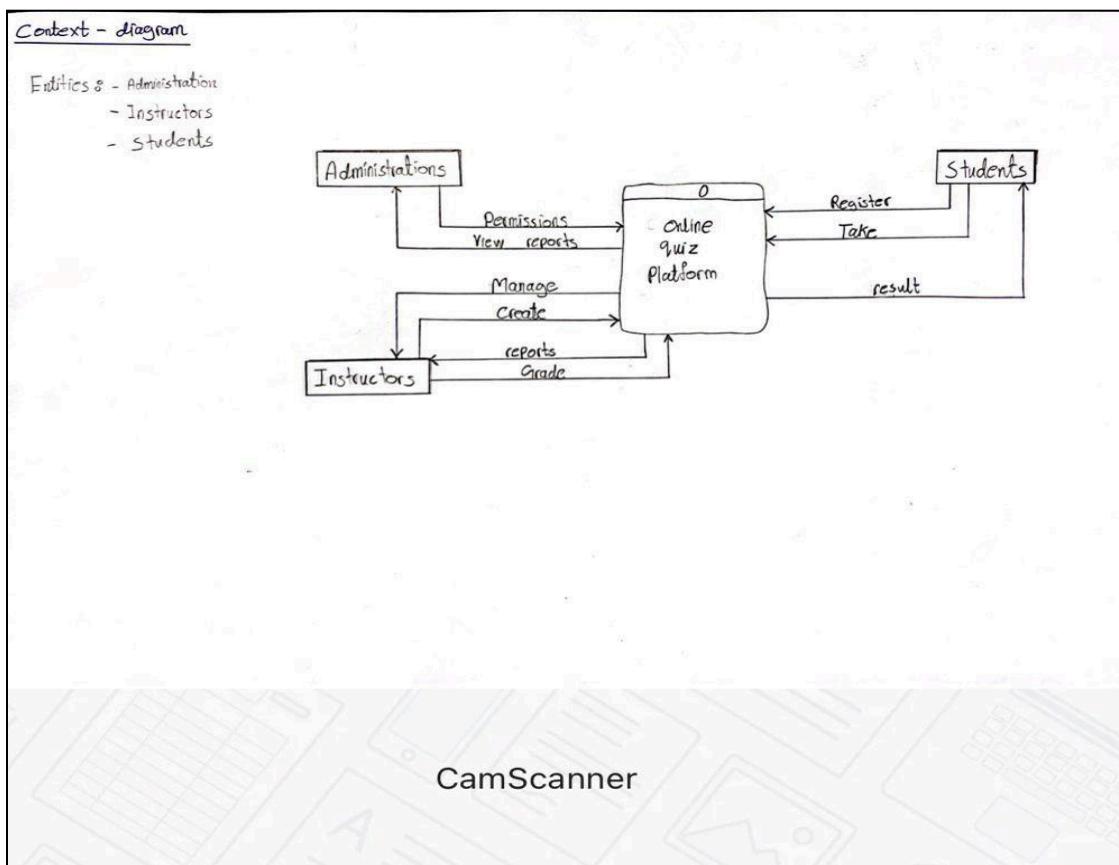


Figure 5.0.1 Context Diagram for Online Quiz Platform

Diagram 0

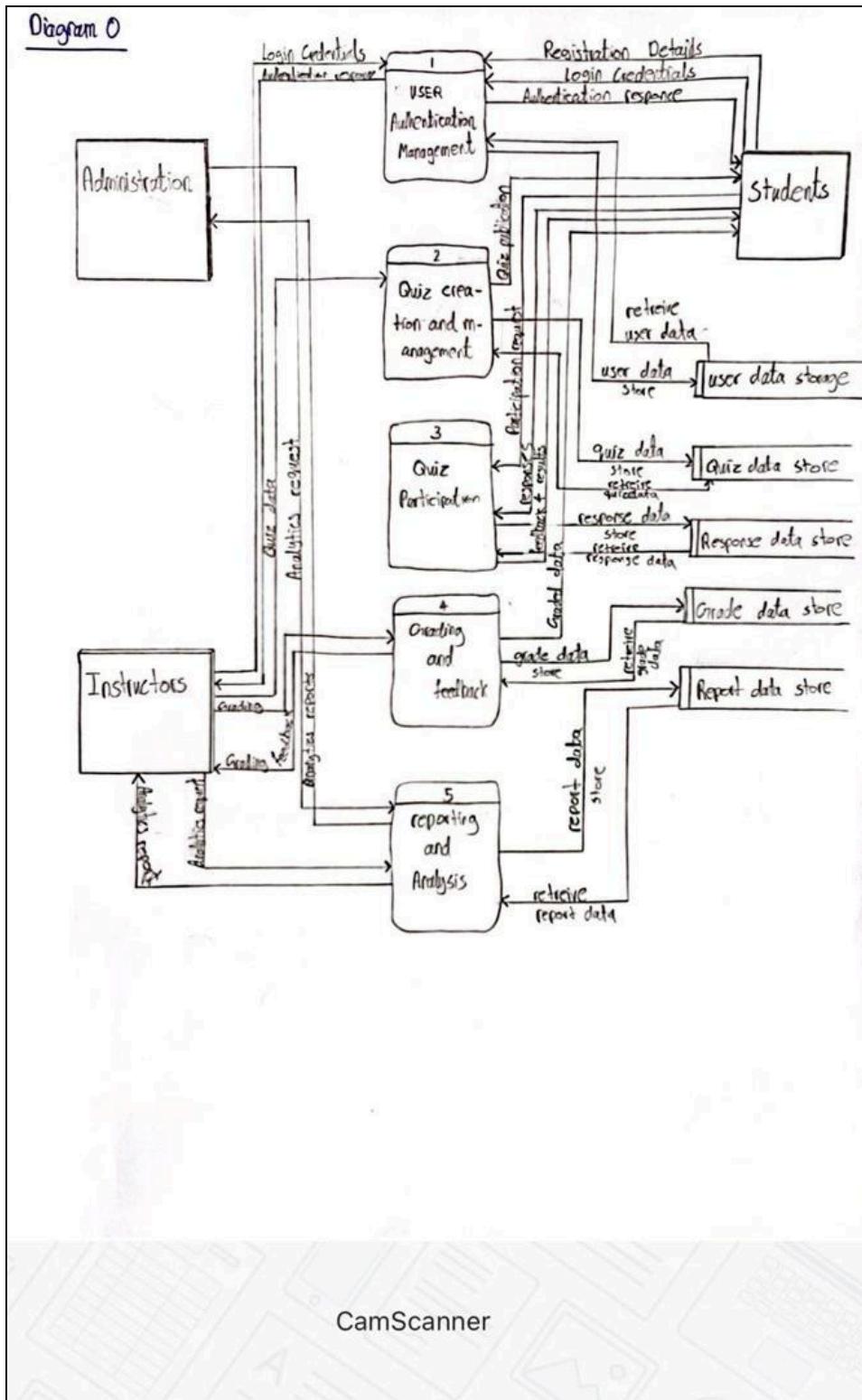


Figure 5.0.2 Diagram 0 for Online Quiz Platform

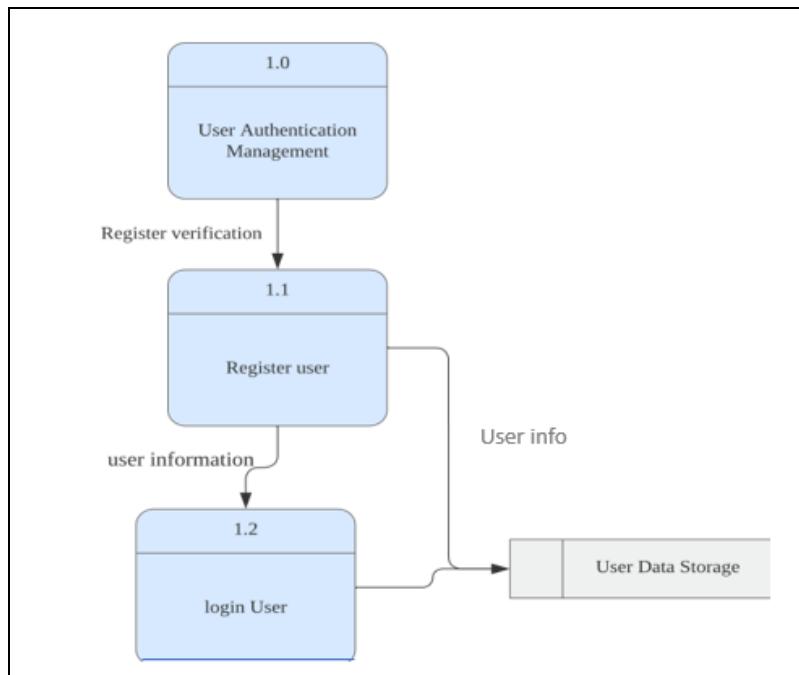


Figure 5.0.3 Child Diagram for User Authentication

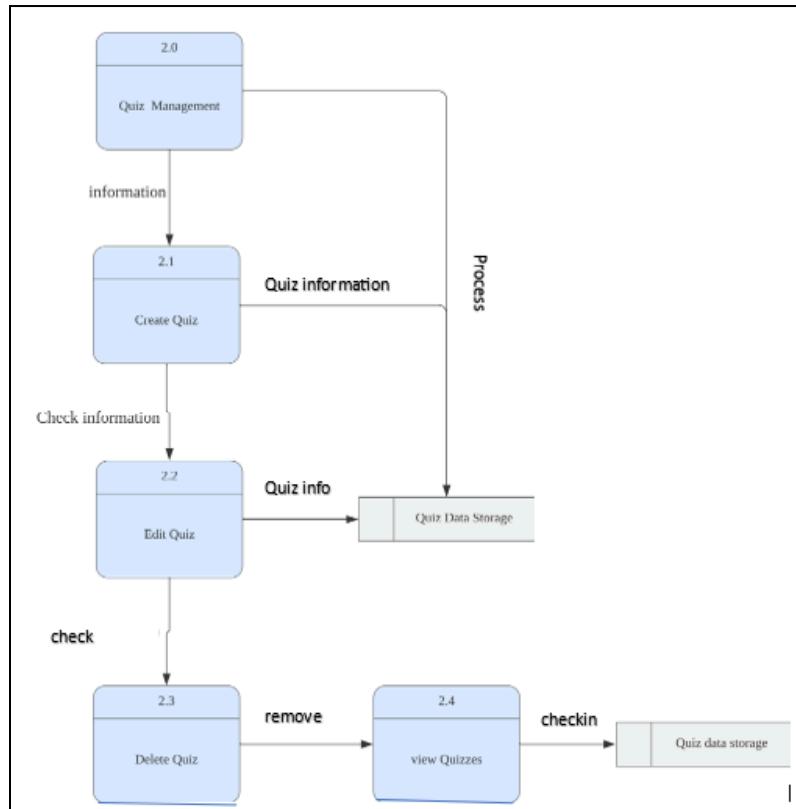


Figure 5.0.4 Child Diagram for Quiz Management



Figure 5.0.5 Child Diagram for Operation Management

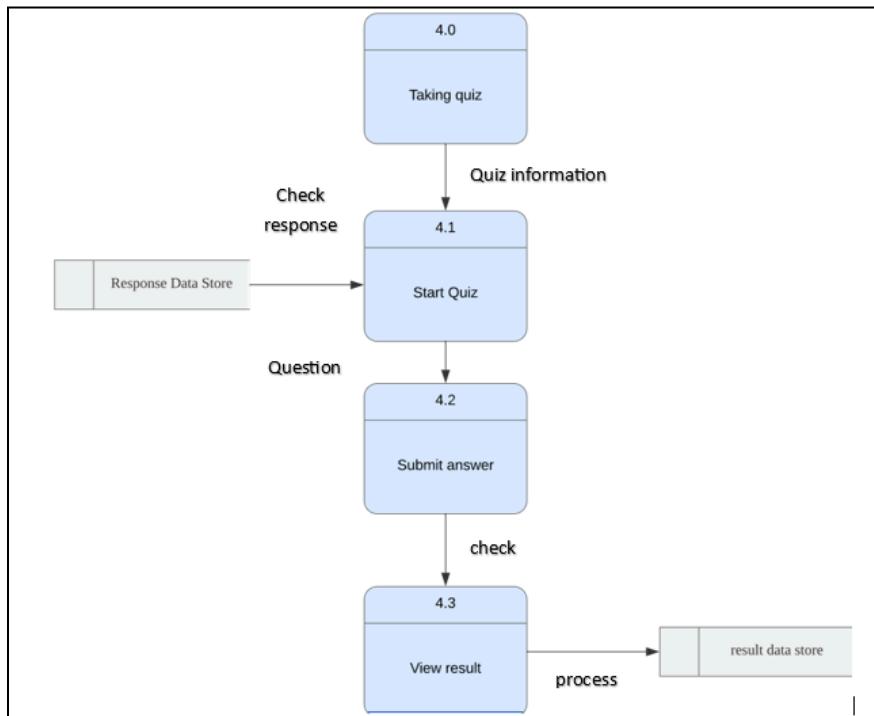


Figure 5.0.6 Child Diagram for Taking Quiz

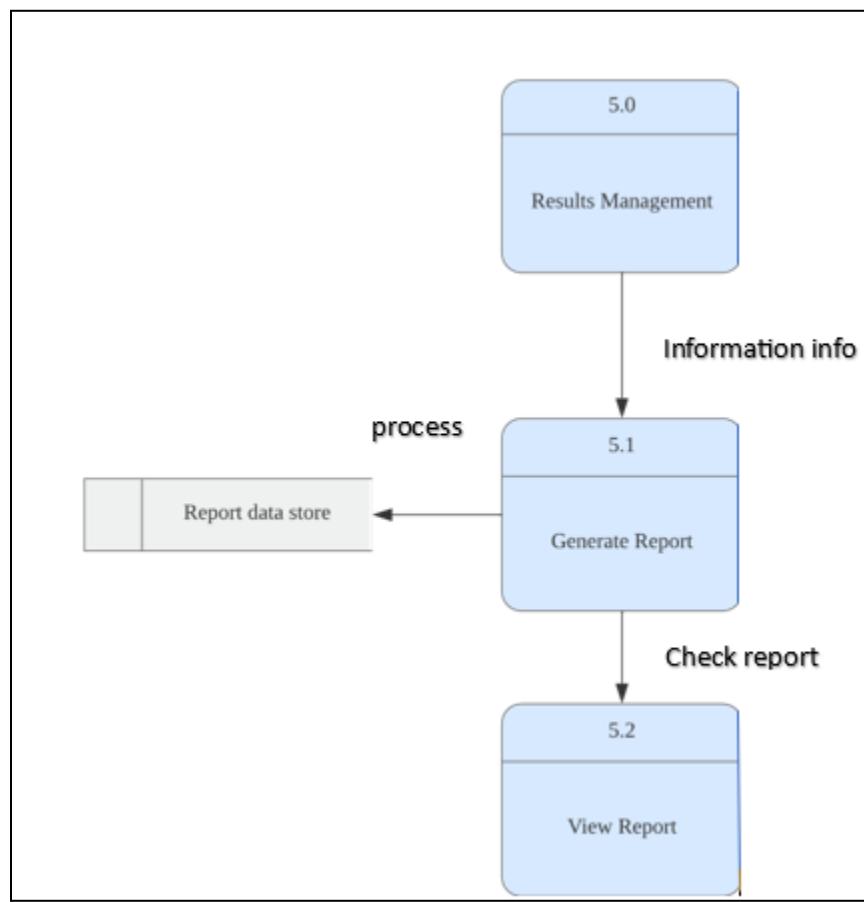


Figure 5.0.7 Child Diagram for Results Management

6.0 SYSTEM ANALYSIS AND SPECIFICATION

Overview

The Online Quiz Platform goal is to design a system that will support the scalable, independent and secure web-based application for delivering quiz and assessment online. The system will be useful to multiple entities, such as professors, students, data entry clerks, help desk personnel and information technology specialists. The features will be as follows: Setting up various quizzes and customizing them, detailed reports, high security and data privacy, integration, and mobile device compatibility. These features make it possible to have a pliable and safe learning environment that caters for the client's needs.

System Objectives

This new online quiz platform aims at the achievement of the following targeted goals to make a change in its functionality and in the lives of the users it serves.

1. This is to ensure the platform has a simple and easily manageable front-end for the users to work with.
2. It also has an option to adjust the input questions according to the preferences of the admin and users by offering customization tools like types of questions, time settings, and use of multimedia.
3. It ensures the system's capacity to accommodate multiple users and quizzes several at a go. Others are also said to have a rich feature set including comprehensive reporting and analytics.
4. Security: the use of security measures can secure user data as implemented by the presented system.
5. The platform engages the participants within the facility through other features such as leader-boards, badges, and social sharing buttons. AJAX makes applications compatible with various devices and browsers as the technology is built to run on multiple platforms.
6. There, it could improve functions and features of the platform at any time – that's an advantage of the proposed strategy.

Functional and non-functional system requirements

Functional requirements solidify the general characteristics of the system and features or activities that the system requires for its operation such as identity verification, quizzes organization, grading and generation of reports. In Non-Functional Requirements, the qualities of service from the system aspects such as performance, usability, reliability, scalability and security are defined. When it comes to functional requirements, they are

mainly focused on defining what the system has to do unlike non-functional requirements where it is mainly focused on defining how the system is to do it.

Functional Requirements:

1. User Authentication and Authorization

- User login and registration.
- Role-based access control for administrators, instructors, and students.

2. Quiz Management

- Create, edit, and delete quizzes.
- Set quiz parameters (time limits, question types, grading schemes).
- Schedule quizzes and notify participants.

3. Quiz Participation

- Students can access and take quizzes.
- Automatic submission of quizzes upon completion or time expiry.

4. Grading and Feedback

- Automatic grading for objective questions.
- Manual grading for subjective questions.
- Provide detailed feedback to students.

5. Reporting and Analytics

- Generate reports on quiz performance.
- Analyze trends and participant activity.
- Export data in various formats (word, PDF or Excel).

6. Security and Data Protection

- Encrypt sensitive data.
- Ensure secure transmission of data.
- Implement backup and recovery procedures.

7. Integration

- Integrate with third-party tools (e.g., LMS, CMS e.g., UTM portal).
- Provide API for external integrations.

8. Mobile compatibility and user engagement.

- Ensure the platform is responsive and works on various devices.
- Implement gamification features (leaderboards, badges).
- Enable the social sharing of achievements.

9. Continuous Improvement

- Regular updates and feature enhancements.
- Provide user support and troubleshooting.

The functional requirements include the definitions of core features sufficient to facilitate the proficient online quiz platform with user identification, the administration of quizzes, assessment, reporting, security measures, integration, mobile compatibility, and enhancements. Such considerations ensure that a solution for delivering contextual content is not only safe and intuitive but also infused into the learning process by data. Thus, for it to efficiently serve the aforesaid stakeholders; this new platform must meet The Functional 9 features mentioned above.

Non-Functional Requirements:

Performance: The system should be able to support up to 5,000 concurrent users with low latency.

Usability: It should be easy to use and understandable for individuals with different levels of technical proficiency. (Like instructors, and students)

Reliability: Ensure high availability with a yearly downtime of less than 1% or less than.

Scalability: The system should scale horizontally to accommodate growing user bases. Like: API for external integrations or other third-party tools (e.g., LMS or CMS).

Security: Respect industry or standards for all users' privacy and data security. This includes users such as instructors, students, APIs used for external integrations, and other third-party tools such as LMS or CMS.

6.1 LOGICAL DFD TO-BE SYSTEM (CONTEXT DIAGRAM, DIAGRAM 0, CHILD)

This part, using DFDs, will show the system from both a high-level (context diagram) and a more in-depth perspective (levels diagram).

The context diagram of the online quiz platform displays how the system communicates with users outside the system, system administrator, and any other outside data source that the system may interface with. The current approach provides an excellent starting point for over viewing the system and its major context boundaries and black box interfaces.

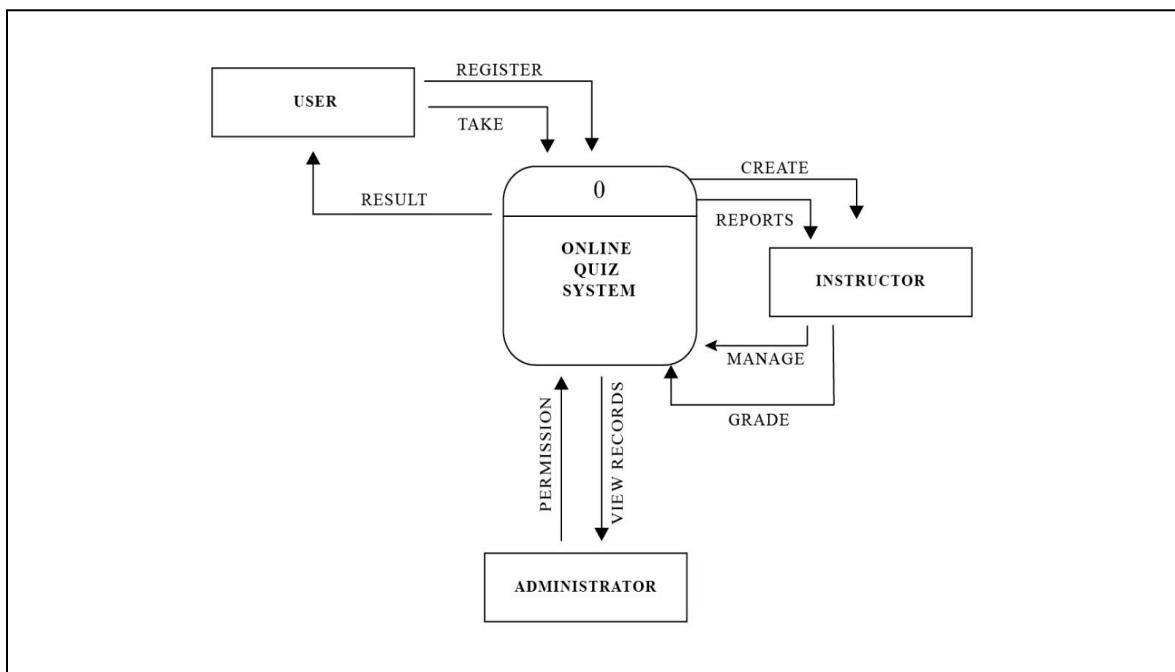


Figure 6.1.0: CONTEXT DIAGRAM

The diagram above illustrates the context diagram of an online quiz system. The system's key entities are the user (an external entity), the database, the online quiz system (a process), and the administrator (an external entity). The administrator controls the database content, and the system allows users to interact with the quiz and necessary data.

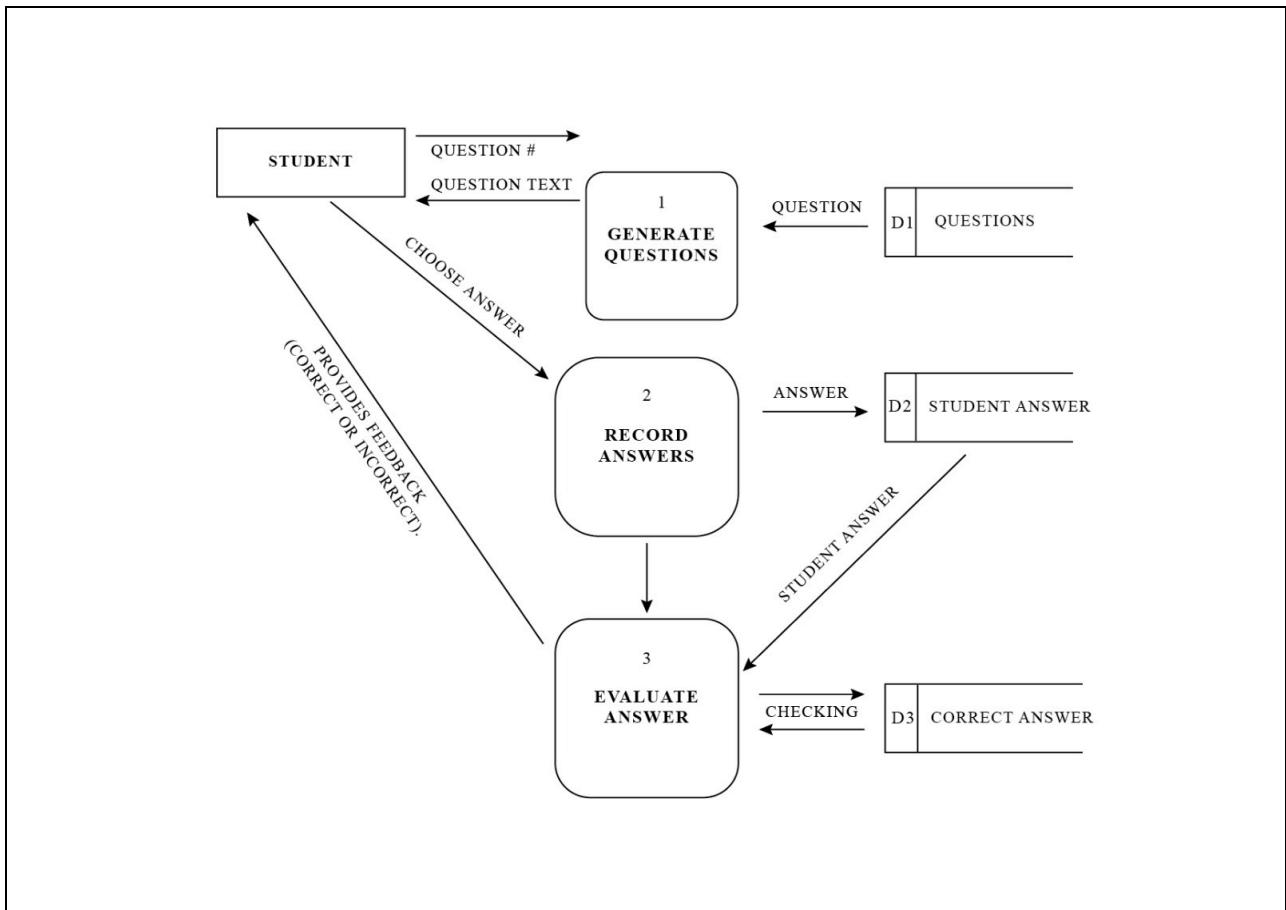


Figure 6.1.1: DFD LEVEL 0

The DFD level 0 above shows an assessment procedure of the online quiz platform, has how the process works. The generation of questions at random, and recording answers with all students and the recording of correct pupils inclusive are all critical operations. This makes it possible to evaluate students and come up with relevant criticism or comments that students need to work on.

The second component, “Evaluate Answers”, assesses the correctness of the given answer, which the student has typed in response to the question or statement. It saves the right answer and the student’s answer that can be later reviewed and compared. The process of evaluation of answers includes comparing the given by the student answer with the correct answer or with the answer template. This comparison provides information that can be used in calculating the accuracy of the student’s answer and the type of feedback or responses that are appropriate for the particular situation.

Due to the features of the system where the student gets questions randomly, the application can record the answers given by the student, and finally analyze the response received, it is possible to have a complete evaluation procedure carried out. This strategy can be beneficial because not

only can one give feedback to each student but also know how much the students progressed over time.

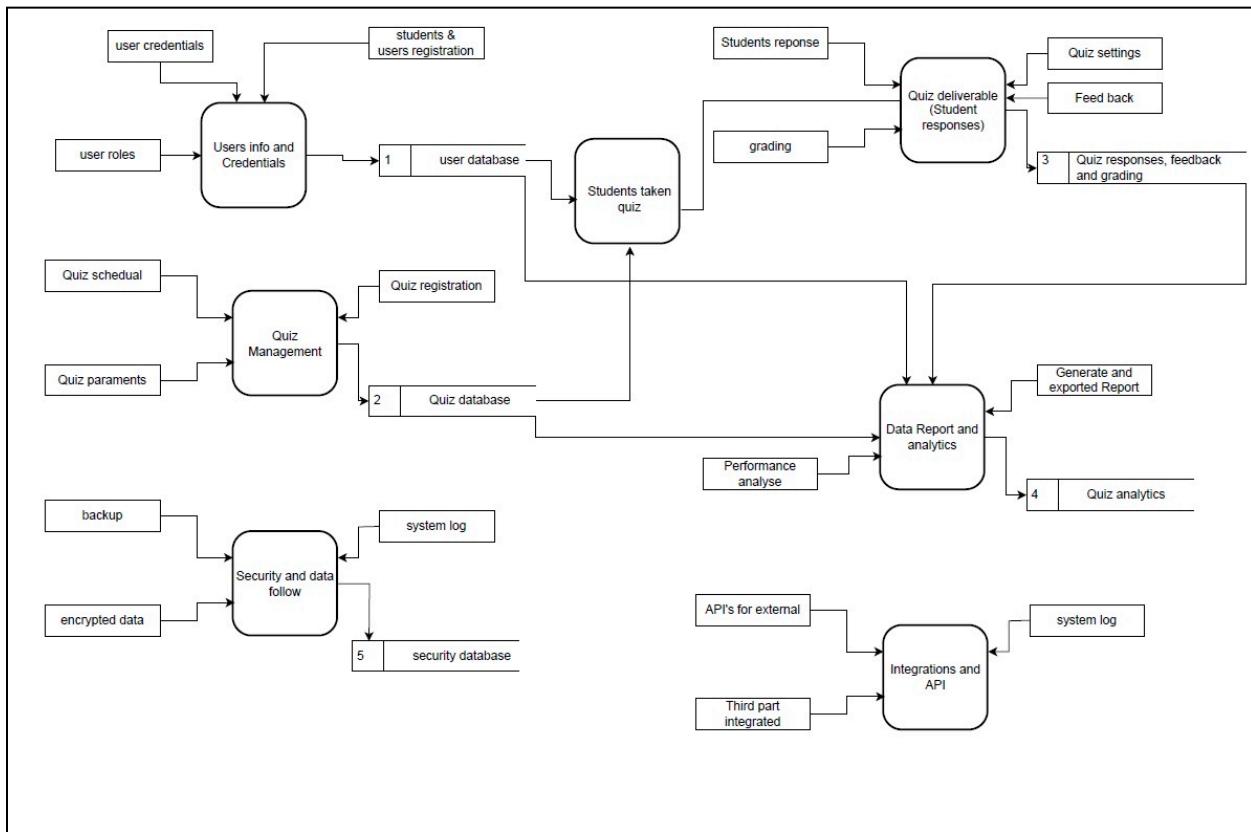


Figure 6.1.2: CHILD DIAGRAM

The following is an example of the child diagram that illustrates the sub sections and working of online quiz sites. From the graphic, it can be seen that the online quiz platform has a clear and organized user management platform, development and delivery of quiz, data organizing, analyzing tool, and safety measures that make the online evaluation system effective and secure. The main components are:

- User Credentials and Roles: Manages user login, registration, and access control according to established user roles.
 - Quiz Management: Allows you to create, schedule, and configure quiz parameters.
 - Quiz Database: Contains quiz-related information such as questions, answers, and user reactions.
 - Student Responses: Responsible for delivering quizzes to students, collecting responses, and grading.
 - Quiz Settings: Allows you to configure quiz deliverables, feedback, and analytics.

- Data Reporting and Analytics: Creates reports and analyzes quiz performance data.
- Security and Data: Encrypts user data and system logs to ensure secure storage.
- Integrations and APIs: Allows for third-party system integration as well as external access via APIs.

6.2 PROCESS SPECIFICATION (BASED ON LOGICAL DFD TO-BE)

1. User Management

- **Authentication and Access Control:** This module is responsible for the user login and signup process with the available types of authentication including the username/password and social accounts login. It maintains the user roles and privileges; access control regulations for ensuring that users are eligible to perform only the actions and get only the accesses of their entitlements.
- **User Profile:** This component contains the user's personal information, such as name, email, id, class, section, faculty and department. It enables users to update their profile information and interfaces with the authentication and access control systems.
- **Roles and Permissions:** This section defines and handles various user roles, including administrator, instructor, and student. It sets particular permissions and privileges to each role, ensuring that users can only access and conduct actions that are relevant to their responsibilities.

2. Quiz Management

- **Quiz Creation:** This part offers instructors a user-friendly interface for making personalized tests with a range of question formats (true/false, multiple-choice, short answer, etc.). It enables the incorporation of multimedia information, the establishment of time limitations, and grading choices. The system also keeps an easy-to-use question bank for organization and reuse.
- **Quiz Administration:** This module manages quiz scheduling and publishing, providing tools to configure quiz access, including time windows and passcodes. It also facilitates proctoring and invigilation techniques, such as camera surveillance and browser lockdown, to guarantee the validity of the evaluation procedure.
- **Quiz Scheduling:** This feature lets teachers plan when to start and terminate quizzes, as well as remind participants and send out messages. It also controls quiz visibility and availability, guaranteeing a seamless and well-organized assessment process.
- **Proctoring and Invigilation:** This part puts strong security measures in place to stop cheating and guarantee the validity of the evaluation procedure. It has tools to preserve the validity and impartiality of the evaluations, such as activity tracking, camera

surveillance, and browser lockdown. And also, provides reporting and alerts for any suspicious activities during the quiz.

3. Quiz Submission and Grading

- **Quiz Attempt:** Using this function, students can access and attempt the scheduled quizzes, according to the instructor's time constraints and other guidelines. The quiz attempts are saved by the student, guaranteeing a safe and easy evaluation procedure.
- **Answer Submissions:** This part manages how students submit their answers, making it possible to compile the answers in a seamless and orderly manner.
- **Feedback and Grading:** This module permits manual grading for subjective questions while automating the grading of objective questions. Additionally, it gives students performance feedback, assisting in the cycle of learning and evaluation.
- **Grade Book:** This part keeps track of students' grades and performance information, enabling instructors to assess and oversee their overall performance and enable efficient monitoring and reporting.

4. Reporting and Analytics

- **Quiz Performance Reports:** This feature provides administrators and instructors with reports on quiz performance, giving them an understanding of both the efficacy and performance of the tests as well as student data. It makes data-driven analysis and decision-making possible, which enhances the evaluation procedure.
- **Student Analytics:** This module monitors and evaluates each student's performance over time, pinpointing their areas of strength and weakness. Students can receive individualized support and guidance by using this information.
- **Instructor Analytics:** Based on the insights collected, this component helps instructors improve their quiz designs and teaching strategies by giving them statistics and insights on their performance and activity.
- **System consumption Reports:** With the help of this functionality, administrators may efficiently manage system resources and performance by tracking and reporting on user activity and system consumption.

7.0 PHYSICAL SYSTEM DESIGN

The computer hardware and network that it would need to undertake in order to offer the online quiz service. These associated components are servers, networking equipment and data storage appliances:

1. Server Infrastructure:

a. Web Servers:

Purpose: Host the front-end application and handle HTTP requests from users.

Specifications:

- CPU: Multi-core processors (e.g., Intel Xeon or AMD EPYC).
- RAM: 16-32 GB.
- Storage: SSDs for fast read/write operations.
- Network: High-speed network interface cards (NICs).

b. Application Servers:

Purpose: Process the business logic, including user authentication, quiz management, and scoring.

Specifications:

- CPU: High-performance multi-core processors.
- RAM: 32-64 GB, depending on the expected load.
- Storage: SSDs.
- Network: High-speed NICs.

c. Database Servers:

Purpose: Store and manage all persistent data, such as user accounts, quiz questions, responses, and scores.

Specifications:

- CPU: High-performance processors optimized for database operations.
- RAM: 64-128 GB.
- Storage: RAID-configured SSDs for redundancy and speed.

- Network: High-speed NICs.
- Database Software: SQL or NoSQL databases, depending on the data structure.

d. **Load Balancers:**

Purpose: Distribute incoming traffic across multiple web and application servers to ensure high availability and reliability.

Specifications:

- High-throughput capacity.
- Support for various load-balancing algorithms (e.g., round-robin, least connections).

2. **Networking Equipment:**

a. **Switches and Routers:**

Purpose: Facilitate internal and external network communications.

Specifications:

- High-speed and low-latency switches.
- Enterprise-grade routers with support for high traffic volumes.
- Redundant power supplies and ports for failover.

b. **Firewall:**

Purpose: Protect the network from unauthorized access and cyber threats.

Specifications:

- Advanced security features such as intrusion detection and prevention systems (IDPS).
- Support for VPN to secure remote access.

c. **Content Delivery Network (CDN):**

Purpose: Distribute static content (e.g., images, CSS, JavaScript) closer to users to reduce latency.

Specifications:

- Global network of edge servers.
- High bandwidth and low-latency connections.

3. Data Storage and Backup:

a. **Storage Area Network (SAN) or Network Attached Storage (NAS):**

Purpose: Provide centralized and scalable data storage solutions.

Specifications:

- High-capacity and high-speed storage devices.
- Redundant storage arrays to ensure data availability.

b. **Backup Solutions:**

Purpose: Ensure data is backed up regularly to prevent data loss.

Specifications:

- Automated backup software.
- Offsite or cloud backup storage

4. Disaster Recovery and Redundancy:

a. **Redundant Data Centers:**

Purpose: Ensure continuous operation in case of a failure in the primary data center.

Specifications:

- Geographically distributed data centers.
- Real-time data replication between primary and secondary data centers.

b. Uninterruptible Power Supply (UPS) and Generators:

Purpose: Provide backup power to ensure continuous operation during power outages.

Specifications:

- UPS systems with sufficient capacity for short-term power supply.
- Diesel generators for long-term power outages.

5. Security Measures:

a. Physical Security:

Purpose: Protect the physical hardware from unauthorized access.

Specifications:

- Secure data center facilities with controlled access.
- Surveillance cameras and security personnel.

b. Access Controls:

Purpose: Restrict access to critical systems and data.

Specifications:

- Multi-factor authentication (MFA).
- Role-based access control (RBAC).

7.1 PHYSICAL DFD TO-BE SYSTEM (DIAGRAM 0, CHILD, PARTITIONING, CRUD MATRIX, EVENT RESPONSE TABLE, STRUCTURE CHART, SYSTEM ARCHITECTURE)

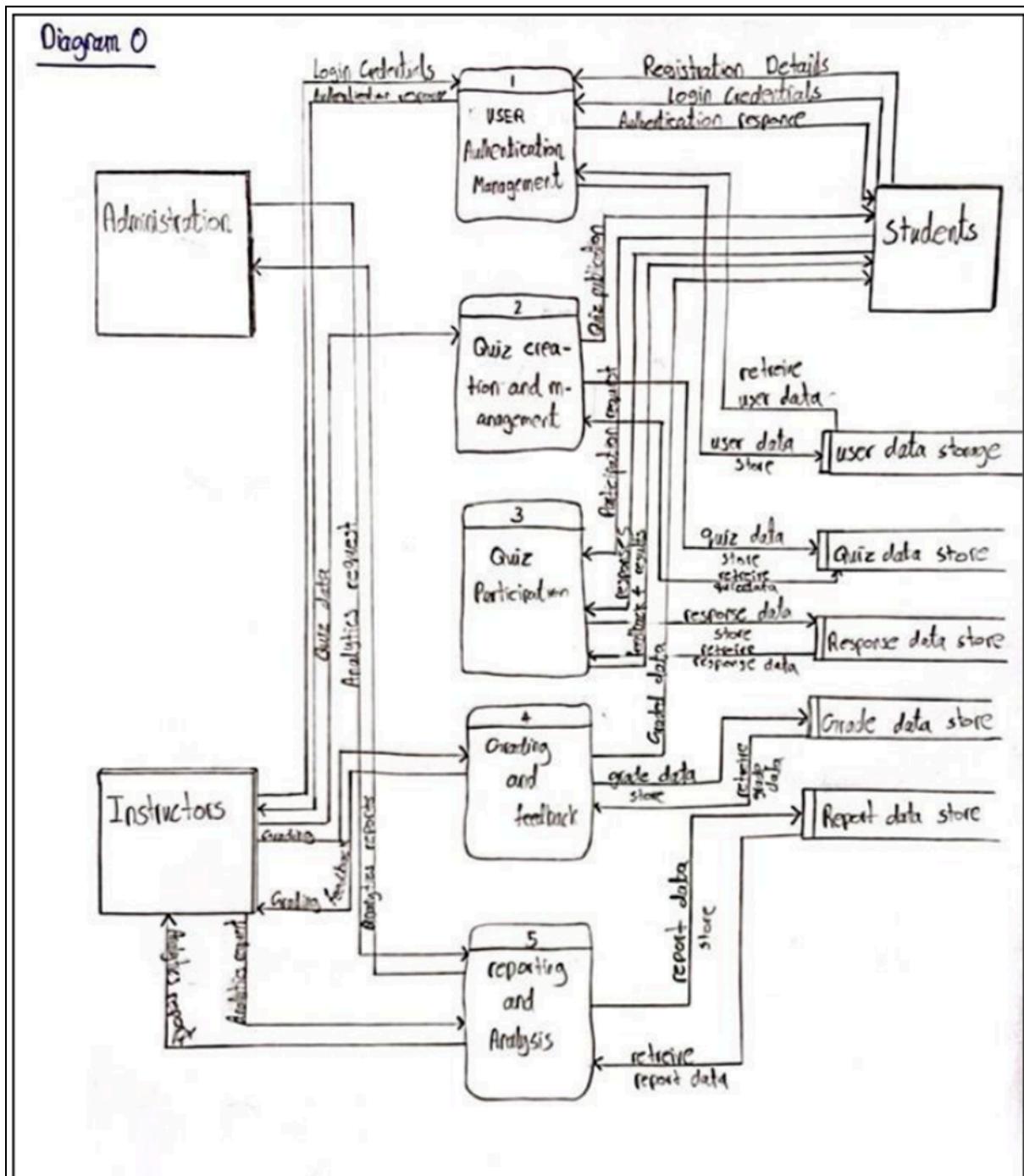


Figure 7.1.0 DIAGRAM 0

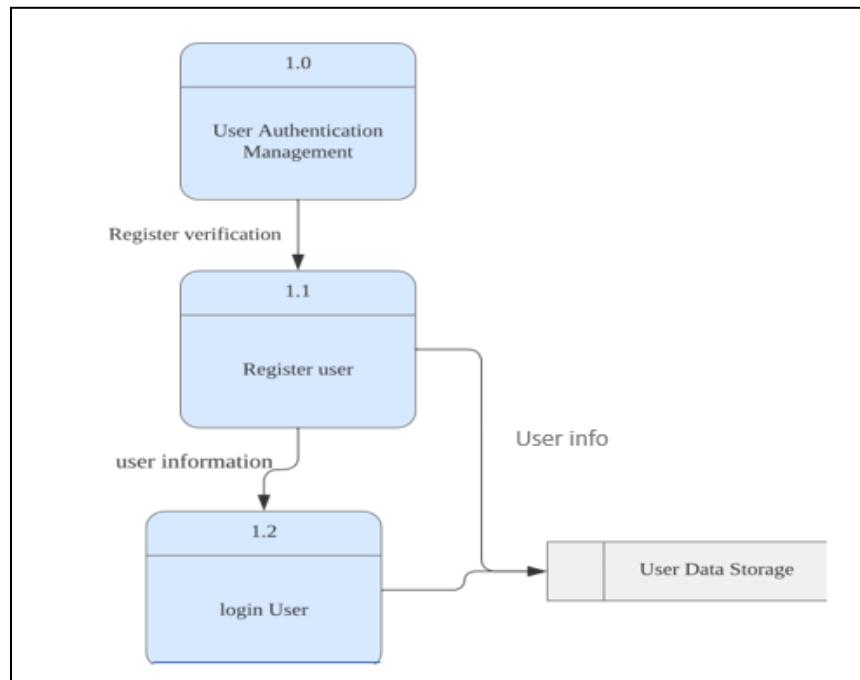


Figure 7.1.1 Child Diagram for User Authentication

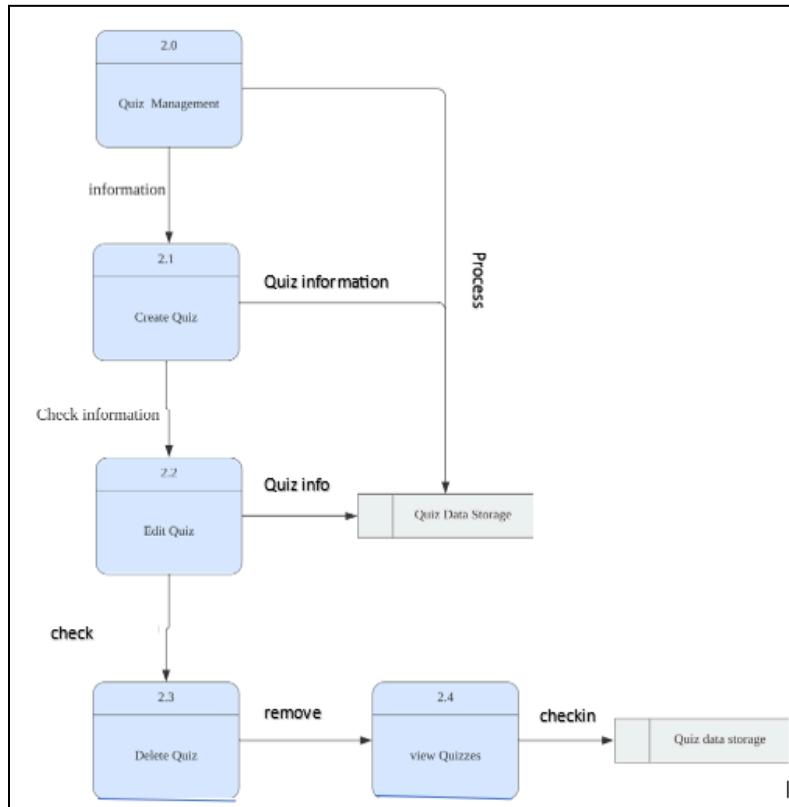


Figure 7.1.2 Child Diagram for Quiz Management

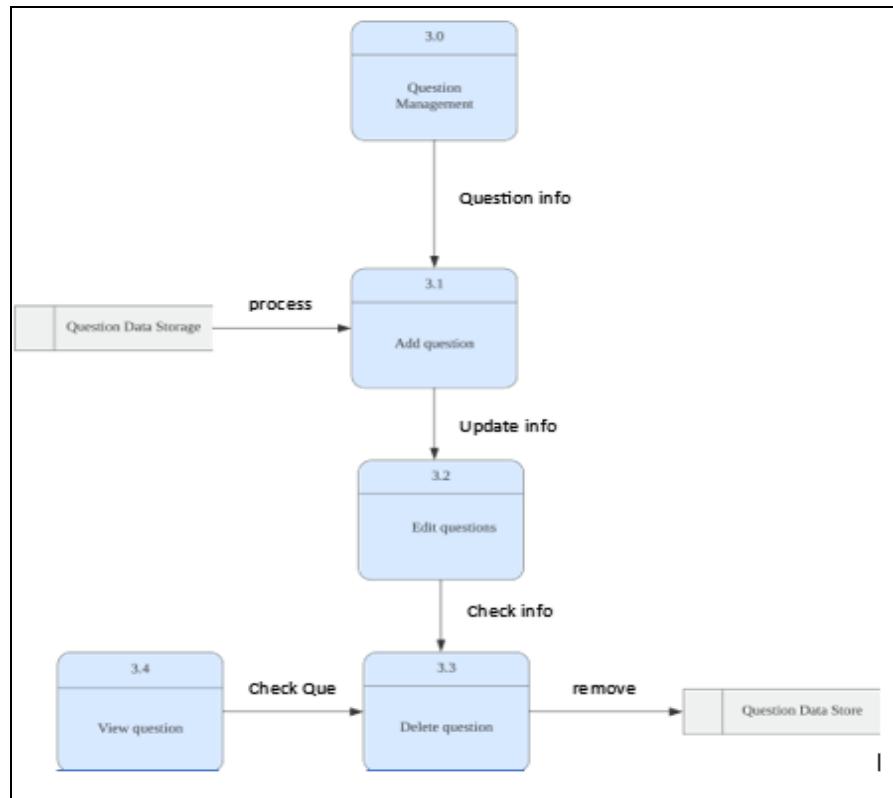


Figure 7.1.3 Child Diagram for Operation Management

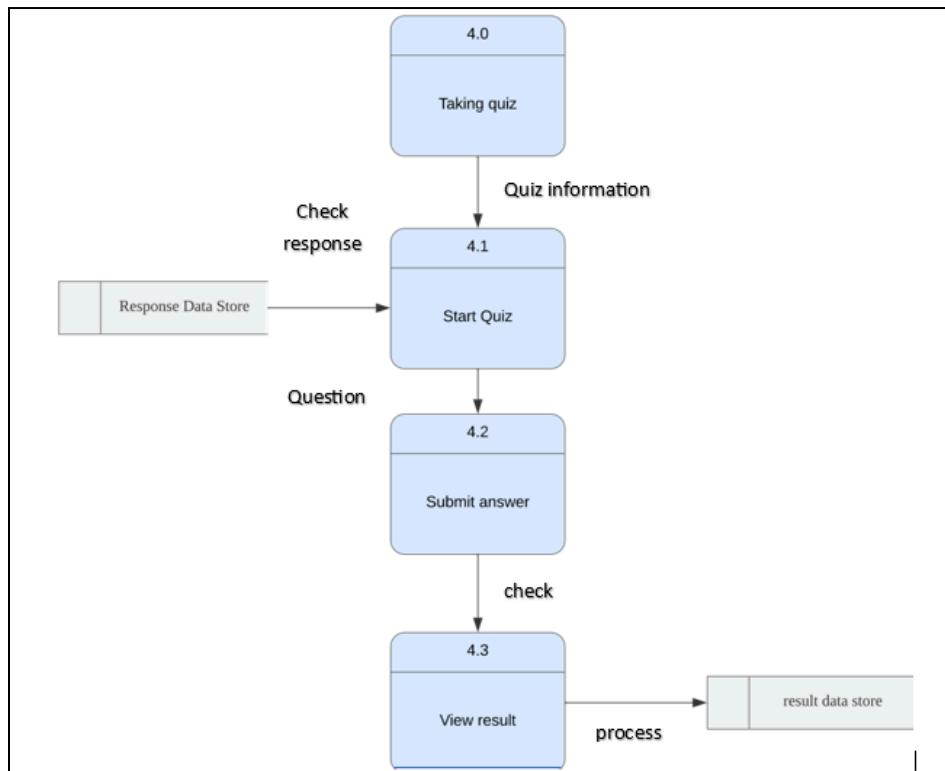


Figure 7.1.4 Child Diagram for Taking Quiz

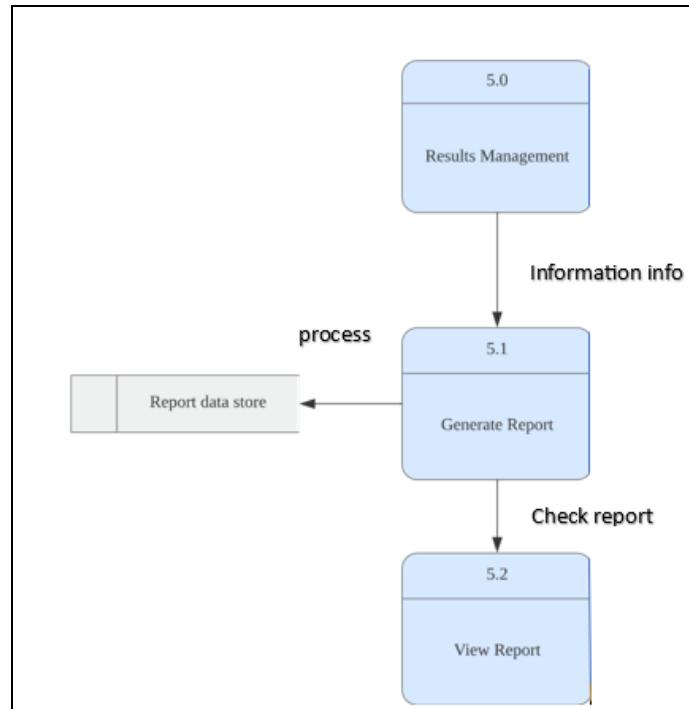


Figure 7.1.5 Child Diagram for Results Management

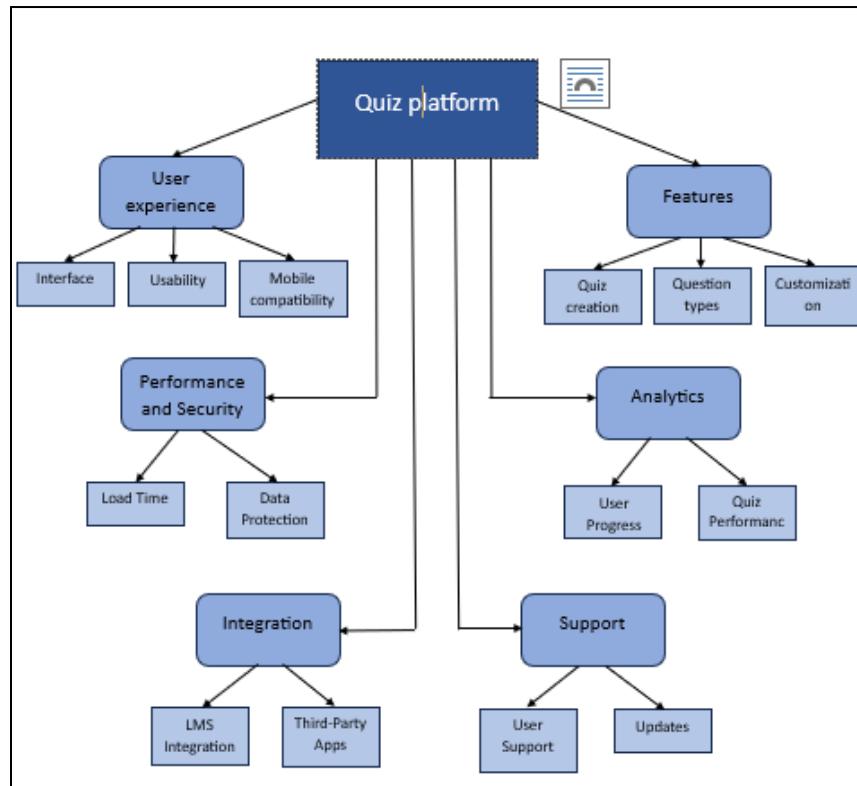


Figure 7.1.6: Partitioning

Table 7.1.1: Crud Matrix

Activity	Customer	Choice	Purchase	Purchase Detail
Customer login	R			
Choice inquiry		R		
Purchase checkout	U	U	U	R
Add account	C			
Close account	D			
Remove choice		D		
Change purchase	RU	RU	RU	CRUD
Purchase inquiry	R	R	R	R

Table 7.1.2: Event Response Table:

Event	Trigger	System Response
Registration	Submit registration form	Create account, send confirmation email
Login	Submit login credentials	Authenticate, show dashboard
Quiz creation	Submit quiz details	Store quiz, confirm creation
Quiz update	Edit quiz details	Update quiz, confirm update
Quiz deletion	Request deletion	Delete quiz, confirm deletion
Quiz taking	Start quiz	Load quiz, start timer
Quiz Submission	Submit answers	Store responses, calculate scores, feedback
View Quiz Results	Request results	Show results, explanations
Certificate Issuance	Complete quiz	Generate certificate, notify availability
Report Generation	Request report	Generate and display report
System backup	Scheduled backup	Create and store backup, confirm completion
User logout	Request logout	End session, redirect to login

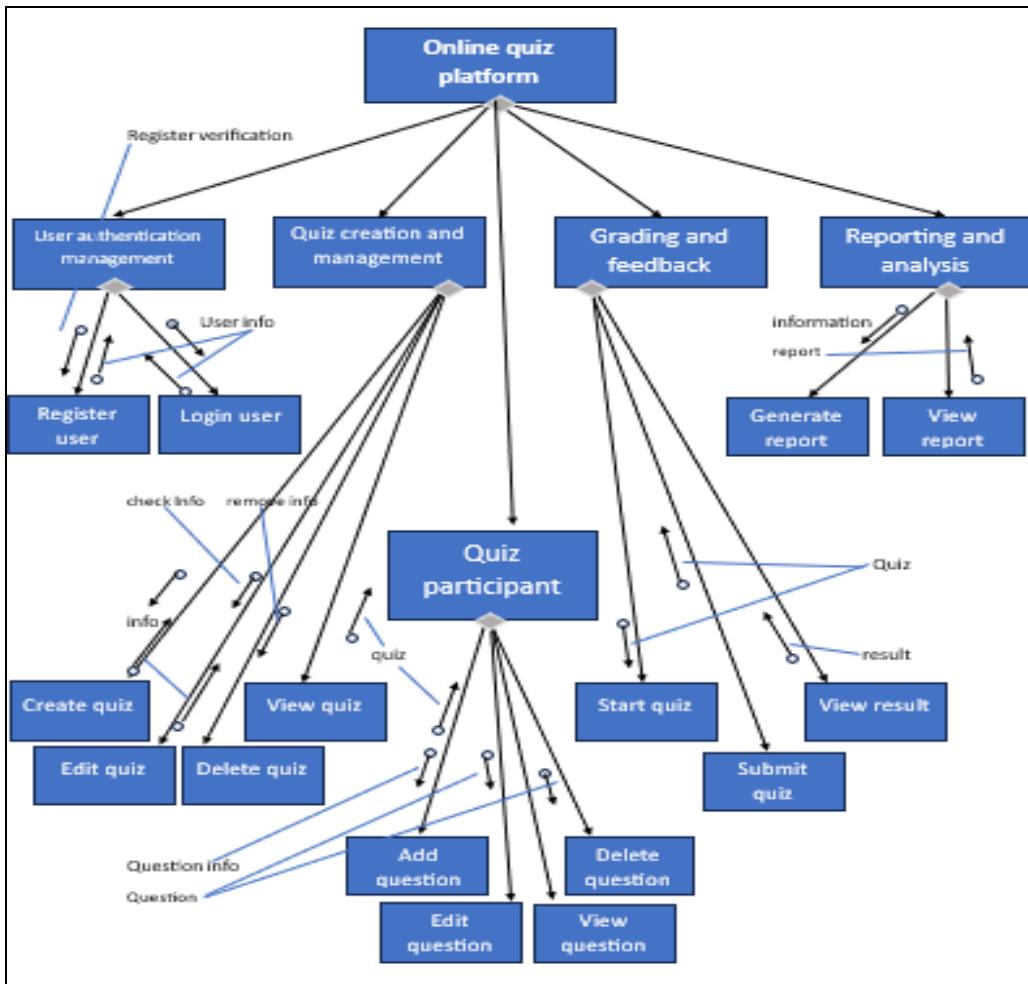


Figure 7.1.7: Structure Chart

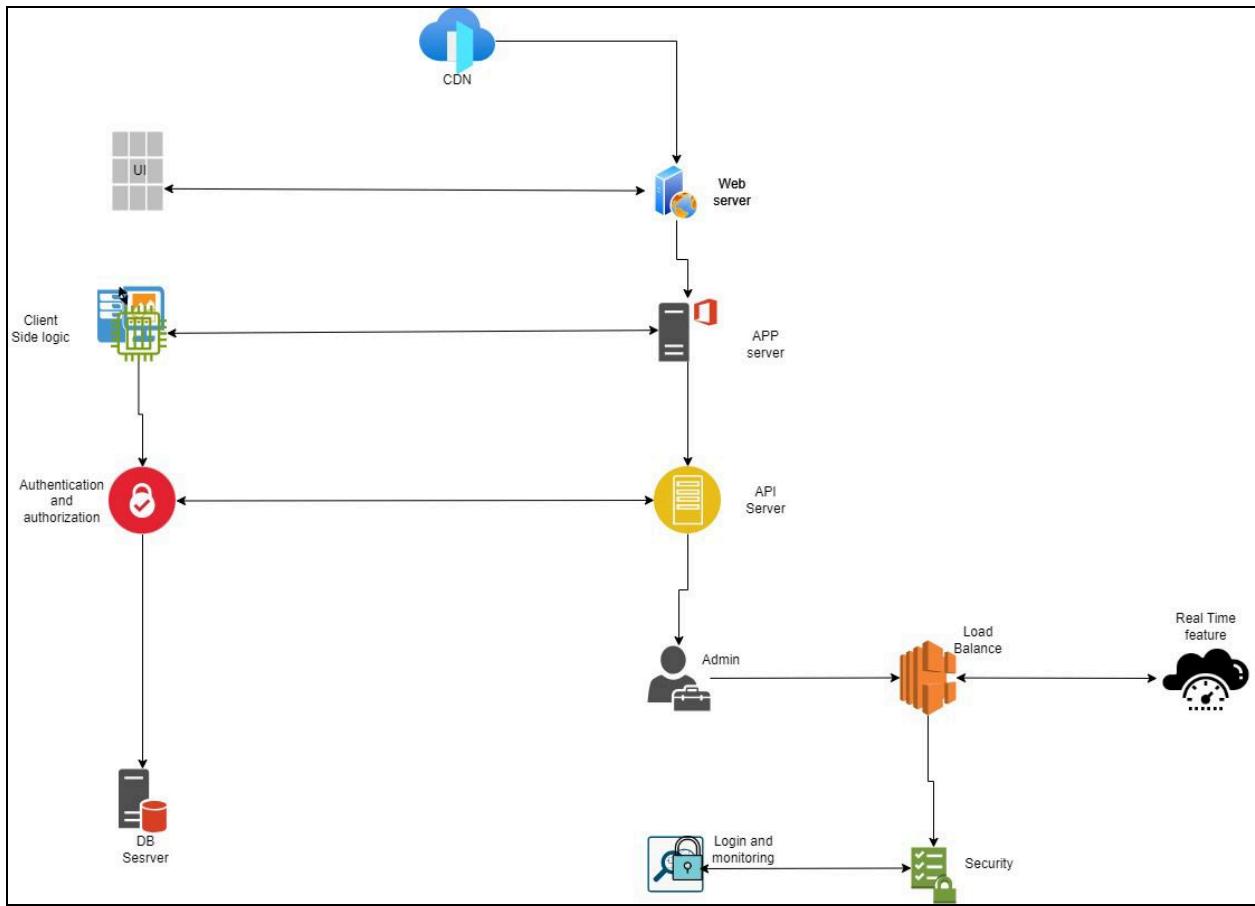


Figure 7.1.8: System Architecture

8.0 SYSTEM WIREFRAME

8.1 Create Account

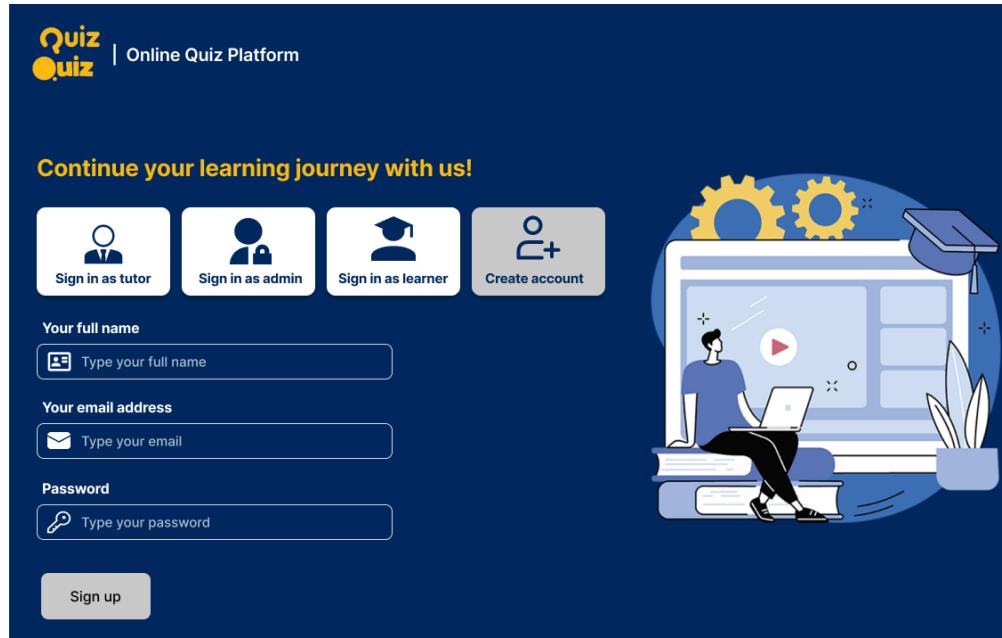


Figure 8.1.1 Create account

8.2 Forgot Password

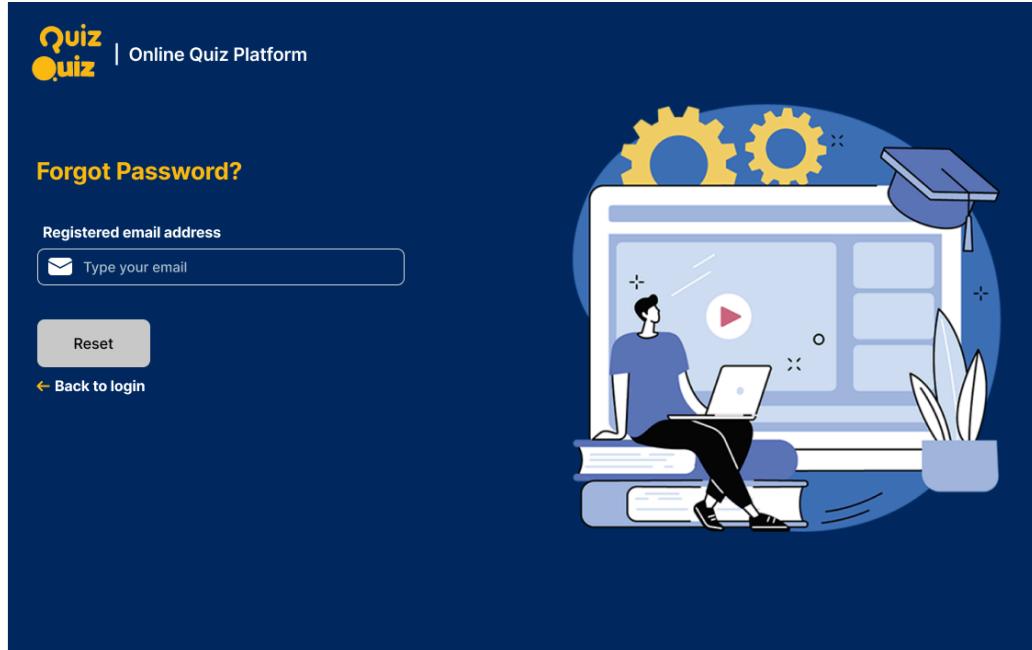


Figure 8.2.1 Enter Email Address for Verification

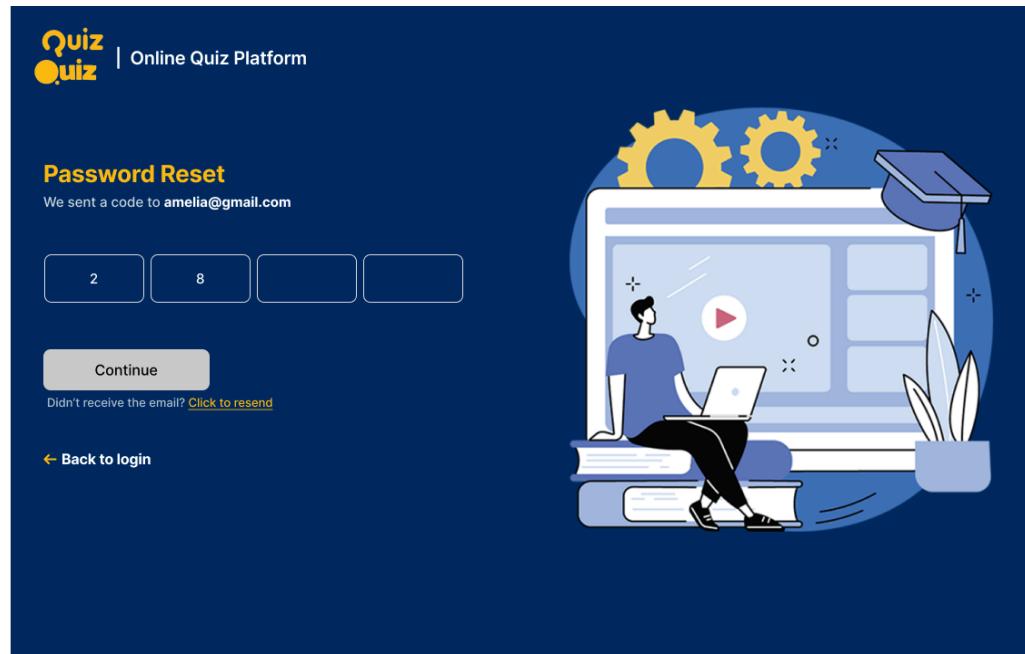


Figure 8.2.2 Code Verification

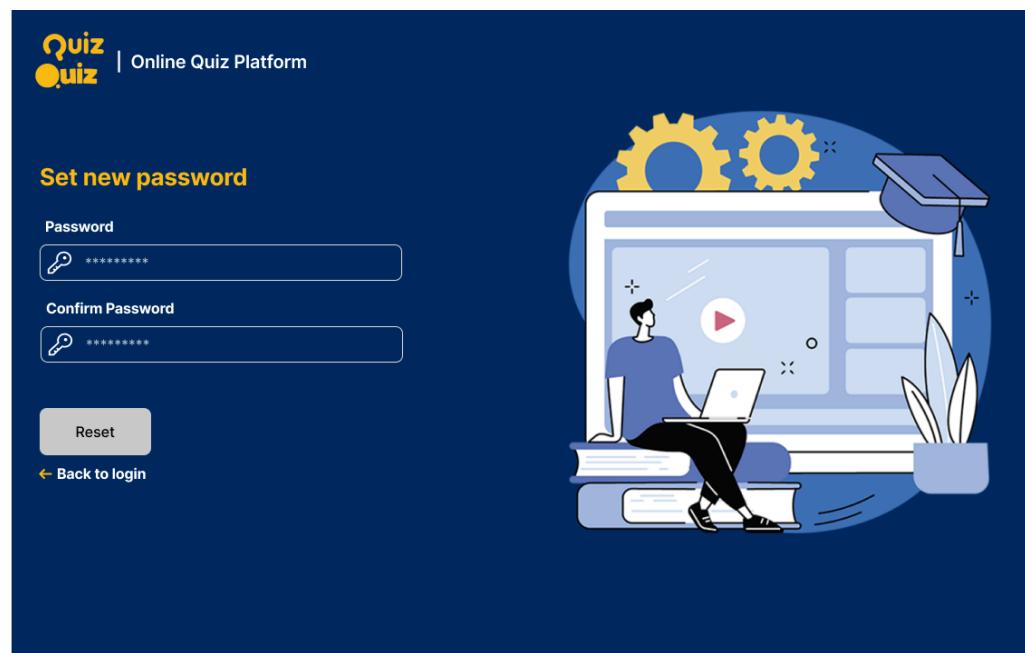


Figure 8.2.3 Password Reset

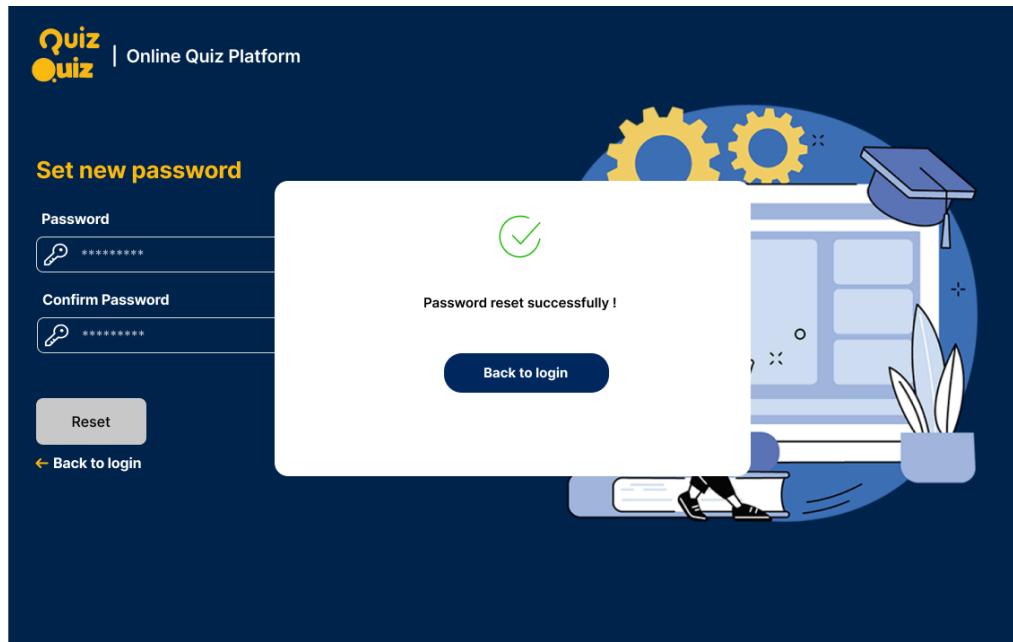


Figure 8.2.4 Password Reset Successful

8.3 Learner View

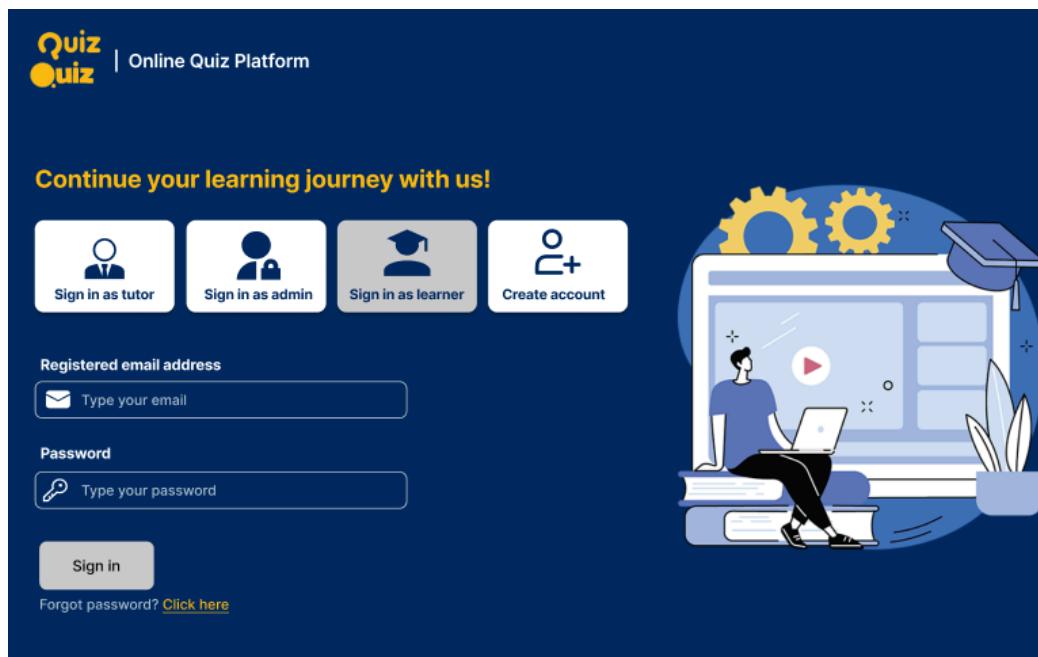


Figure 8.3.1 Sign In Page for Learner

Dashboard

Upcoming quizzes

- ULRS 1022 - Philosophy and current issues
15/05/2024 | 09:00am - 10:00am
[Open](#)
- SECR 1013 - Digital logic
10/05/2024 | 02:00pm - 03:00pm
[Open](#)

Courses enrolled

Course Title	Course Code	Group name
System Analysis and Design	SECD 2613	Section 15
System Analysis and Design	SECD 2613	Section 15

Completed quizzes

Course Title	Score	Carry Marks	Group name	Date
System Analysis and Design	77	11.55	Section 15	12/5/2024
System Analysis and Design	77	11.55	Section 15	12/5/2024

[Sign Out](#) [Help](#)

Figure 8.3.2 Home Page for Learner

Dashboard

Upcoming quizzes

- ULRS 1022 - Philosophy and current issues
15/05/2024 | 09:00am - 10:00am
[Open](#)
- SECR 1013 - Digital logic
10/05/2024 | 02:00pm - 03:00pm
[Open](#)
- SECR 1013 - Digital logic
10/05/2024 | 02:00pm - 03:00pm
[Open](#)

Leaderboard

Rank	User	Score
1		100%
2		70%
3		50%

Current rank

Rank	User	Email	Score
4		henrylau@graduate.utm.my	49%
5		henrylau@graduate.utm.my	45%
6		henrylau@graduate.utm.my	44%

[Sign Out](#) [Help](#)

Figure 8.3.3 Quizzes Page for Learner

Dashboard

Upcoming quizzes

- ULRS 1022 - Philosophy for our times | 15/05/2024
- SECR 1013 - DIGITAL LOGIC | 10/05/2024

You have added to a new course by your tutor

You have added to a new group by your tutor

Your upcoming quizzes for SECD 2613 is on 12/5/2024

Your results quizzes for SECD 2613 is out!

Your rank quizzes for SECD 2613 is out!

Rank	Student	Email	Score (%)
4	Henry Lau	henrylau@graduate.utm.my	49%
5	Henry Lau	henrylau@graduate.utm.my	45%
6	Henry Lau	henrylau@graduate.utm.my	44%

Figure 8.3.4 Notification Page for Learner

Dashboard

Upcoming quizzes

Quiz directory →

ULRS 1022 - Philosophy and current issues | 15/05/2024 | 09:00am - 10:00am

Courses enrolled

Courses directory →

Course Title	Course Code	Group name
613	ALJ114S	Section 15
613	ALJ114S	Section 15

Enter quiz's code provided by your tutor

CODE: ALJ114S

Completed quizzes

Course Title	Score	Time	Section	Date
System Analysis and Design	77	11.55	Section 15	12/5/2024
System Analysis and Design	77	11.55	Section 15	12/5/2024

ENTER

Results →

Figure 8.3.5 Enter Quizzes Code Page for Learner

The screenshot shows the Quiz Quiz application's dashboard. At the top right, the user is identified as 'Nur Aqillah bt Sidek' with the status 'Learner'. On the left, a vertical sidebar menu includes 'Dashboard', 'Quizzes', 'Courses', 'Results', 'Sign Out', and 'Help'. The main content area displays a quiz titled 'Philosophy for our times.' with the code 'ULRS 1022 - Philosophy and current issues'. It shows the date '15/05/2024' and time '09:00am - 10:00am'. A note at the top says 'Note: You can only attempt this quiz once!' and a 'Start quiz' button is present.

Figure 8.3.6 Quizzes Details Page for Learner

The screenshot shows a quiz question page. The question asks 'Answer question below:' followed by the text: 'Epistemology is the branch of philosophy that deals with the nature, scope, and limits of human knowledge. Some common questions in epistemology include:'. Three numbered questions are listed:

1. What is knowledge? This question explores the nature of knowledge and the conditions that must be met for a belief to be considered knowledge.
 propositional knowledge A justified true belief
2. What is the difference between belief and knowledge? This question examines the relationship between belief, truth, and justification.
[Empty answer box]
3. How do we acquire knowledge? This question delves into the ways in which humans come to know things, such as through perception, reason, memory, testimony, and intuition.
[Empty answer box]

A green 'Submit' button is located at the bottom right of the answer boxes.

Figure 8.3.7 Quizzes Question Page for Learner

The screenshot shows the Quiz Quiz application's dashboard for a learner named Nur Aqillah bt Sidek. The top navigation bar includes a 'Quiz Quiz' logo, a 'Dashboard' button, an 'Enter Code' button, a mail icon, and the user's name 'Nur Aqillah bt Sidek Learner'. On the left, a sidebar menu lists 'Dashboard', 'Quizzes', 'Courses', 'Results', 'Sign Out', and 'Help'. The main content area is titled 'Courses enrolled' and displays a table with two rows:

Course Title	Course Code	Group name
System Analysis and Design	SECD 2613	Section 15
System Analysis and Design	SECD 2613	Section 15

Figure 8.3.9 Courses Page for Learner

The screenshot shows the Quiz Quiz application's results page for a learner named Dayang Bella bt Abu Bakar. The top navigation bar includes a 'Quiz Quiz' logo, a 'Results' button, a 'New Quiz' button, a mail icon, and the user's name 'Dayang Bella bt Abu Bakar Learner'. On the left, a sidebar menu lists 'Dashboard', 'Quizzes', 'Courses', 'Results', 'Sign Out', and 'Help'. The main content area is titled 'Completed Quizzes' and displays a table with four rows:

Course Code	Score (100%)	Carry Marks (15%)	Class rank	Date	View Answer Sheet
SECD 2613	75	11.25	4	12/5/2024	<button>View</button>
ULRS 1022	90	13.50	1	12/5/2024	<button>View</button>
SECJ 2203	77	11.55	3	12/5/2024	<button>View</button>
SECI 1143	88	13.20	2	12/5/2024	<button>View</button>

Figure 8.3.10 Quizzes Results Page for Learner

The screenshot shows the Quiz Quiz platform interface. On the left is a sidebar with icons for Dashboard, Quizzes, Courses, Results, Sign Out, and Help. The main area is titled "Results" and shows a "Review answer" section. The learner's name is "Dayang Bella bt Abu Bakar Learner". The score is 80%. A question about epistemology is shown with two options: "propositional knowledge" (selected) and "A justified true belief". The "A justified true belief" option is marked as "Correct". Three numbered questions are listed, each with a Lorem Ipsum text box. The first question is marked as "Correct", the second as "Incorrect", and the third as "Correct".

Figure 8.3.11 Results in Details Page for Learner

8.4 Tutor View

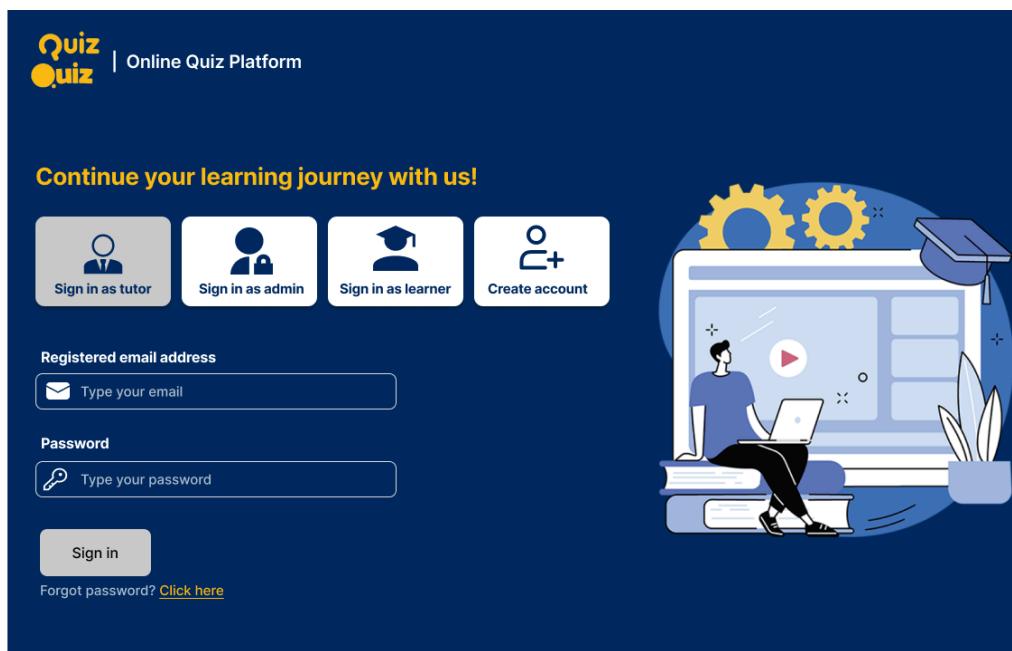


Figure 8.4.1 Sign in as tutor

Dashboard

Upcoming quizzes

- ULRS 1022 - Philosophy and current issues
15/05/2024 | 09:00am - 10:00am
No. of student's enrolled: 42 [Open](#)
- SECR 1013 - Digital logic
10/05/2024 | 02:00pm - 03:00pm
No. of student's enrolled: 42 [Open](#)

Completed quizzes

Title	Group name	No. of persons in group	Date
Assembly language	Group 1	23 persons	12 / 02 / 2023
C programming	Group 2	17 persons	12 / 02 / 2023
Python	Group 3	38 persons	12 / 02 / 2023

Students list

Group 1 Group 2 Group 3

- William Arthur
Class rank: 10th | Average score: 70% [View](#)
- Henry Lau
Class rank: 1st | Average score: 100% [View](#)
- William Arthur
Class rank: 10th | Average score: 70% [View](#)
- Henry Lau
Class rank: 1st | Average score: 100% [View](#)

Figure 8.4.2 Home Page for Tutor

Dashboard

Upcoming quizzes

- ULRS 1022 - Philosophy for our times
15/05/2024 | 09:00am - 10:00am
No. of student's enrolled: 42 [Open](#)
- SECR 1013 - Digital logic
10/05/2024 | 02:00pm - 03:00pm
No. of student's enrolled: 42 [Open](#)

Completed quizzes

Title	Group name	No. of persons in group	Date
Assembly language	Group 1	23 persons	12 / 02 / 2023
C programming	Group 2	17 persons	12 / 02 / 2023
Python	Group 3	38 persons	12 / 02 / 2023

Students list

Group 2 Group 3

- William Arthur
Class rank: 10th | Average score: 70% [View](#)
- Henry Lau
Class rank: 1st | Average score: 100% [View](#)
- William Arthur
Class rank: 10th | Average score: 70% [View](#)
- Henry Lau
Class rank: 1st | Average score: 100% [View](#)

Figure 8.4.3 Notification Page for Tutor

The screenshot shows the 'Quizzes' page for a tutor. The left sidebar includes links for Dashboard, Quizzes (which is selected), Students, Results, Sign Out, and Help. The main area has a title 'Quizzes' with a 'New Quiz' button and a user profile for 'Dayang Bella bt Abu Bakar Tutor'. It features two buttons: 'Set up a new quiz' (with a pencil icon) and 'Question bank' (with a folder icon). Below these are sections for 'Upcoming quizzes' and 'Completed quizzes'. The 'Upcoming quizzes' section lists 'ULRS 1022 - Philosophy and current issues' (15/05/2024, 09:00am - 10:00am, 42 students) and 'SECR 1013 - Digital logic' (10/05/2024, 02:00pm - 03:00pm, 42 students), each with an 'Open' button. The 'Completed quizzes' section lists three entries: 'Assembly language' (Group 1, 23 persons, 12 / 02 / 2023), 'C programming' (Group 2, 17 persons, 12 / 02 / 2023), and 'Python' (Group 3, 38 persons, 12 / 02 / 2023).

Figure 8.4.4 Quizzes Page for Tutor

The screenshot shows the 'Edit Quizzes' page for a tutor. The left sidebar includes links for Dashboard, Quizzes (selected), Students, Results, Sign Out, and Help. The main area shows a quiz titled 'Digital Logic Quiz 1' with the date 10/05/2024 and duration 02:00pm - 03:00pm. Configuration fields include 'Duration' (1 Hour), 'Number of questions' (30), 'Score per question' (1), and a 'Description' box containing 'Digital logic is'. Below these are buttons for 'Question bank used' (Bank one) and 'Randomize questions' (checked). An 'Edit' button is at the bottom right.

Figure 8.4.5 Edit Quizzes Page for Tutor

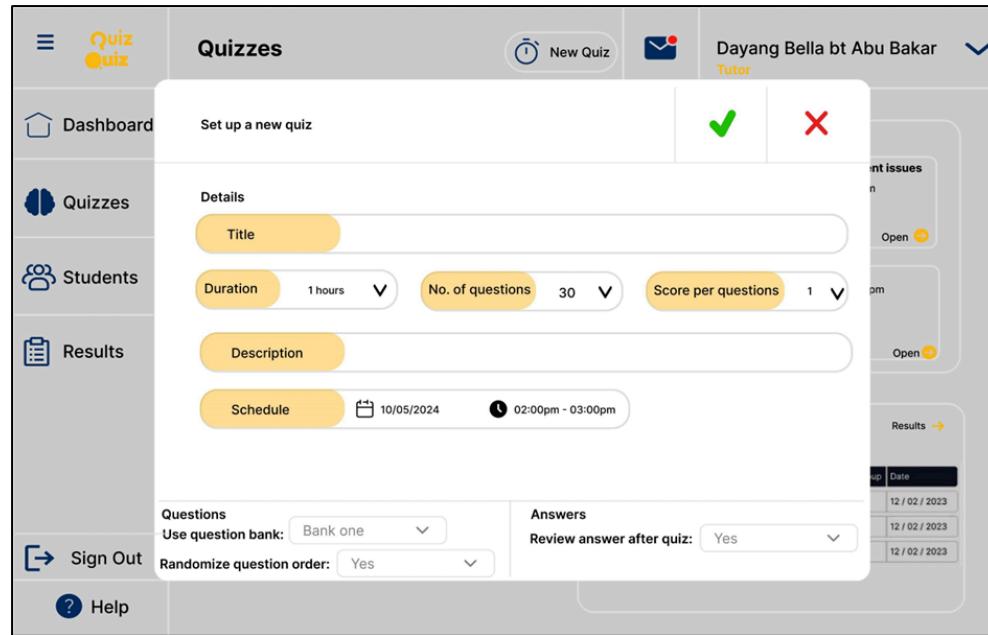


Figure 8.4.6 Set Quizzes Page for Tutor

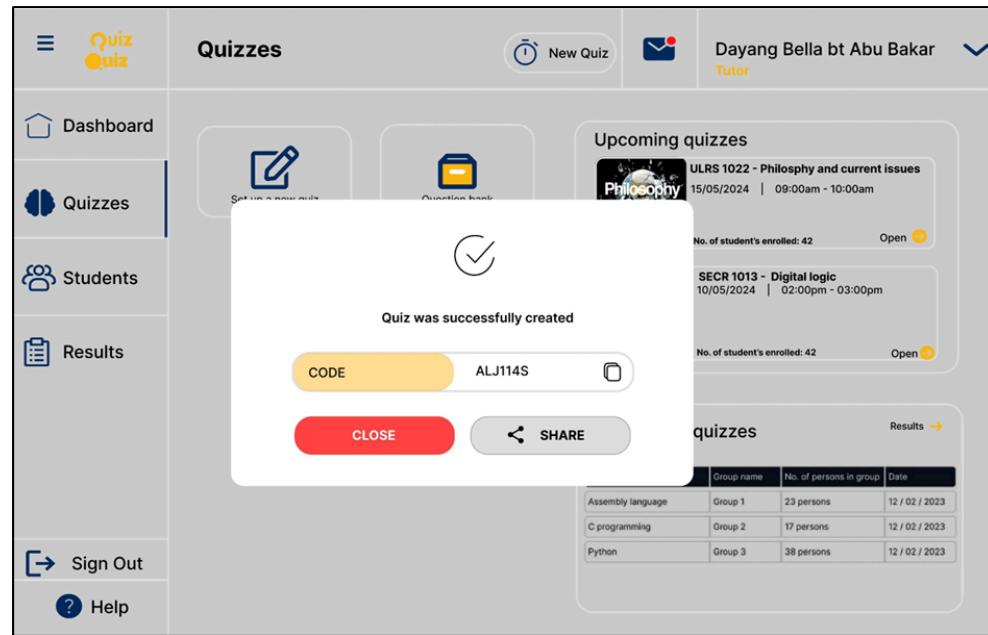


Figure 8.4.7 Quizzes Successfully Created Page for Tutor

Upcoming quizzes

- ULRS 1022 - Philosophy and current issues
15/05/2024 | 09:00am - 10:00am
No. of student's enrolled: 42 Open
- SECR 1013 - Digital logic
10/05/2024 | 02:00pm - 03:00pm
No. of student's enrolled: 42 Open

quizzes [Results](#)

	Group name	No. of persons in group	Date
Assembly language	Group 1	23 persons	12 / 02 / 2023
C programming	Group 2	17 persons	12 / 02 / 2023
Python	Group 3	38 persons	12 / 02 / 2023

Figure 8.4.8 Share Quizzes Code Page for Tutor

Digital Logic Quiz 1

10/05/2024 02:00pm - 03:00pm

Duration: 1 Hour

Number of questions: 30

Score per question: 1

Description: Digital logic is

Question bank used: Bank one

Randomize questions

[Publish](#)

Results

Student name	Score	Average	Time submitted
Jacob Hamuel	20	20	09:00
Jacob Hamuel	20	20	09:00
Jacob Hamuel	20	20	09:00
Jacob Hamuel	20	20	09:00
Jacob Hamuel	20	20	09:00
Jacob Hamuel	20	20	09:00
Jacob Hamuel	20	20	09:00
Jacob Hamuel	20	20	09:00
Jacob Hamuel	20	20	09:00
Jacob Hamuel	20	20	09:00

Figure 8.4.9 Publish Quizzes Page for Tutor

The screenshot shows the 'Students' page for a tutor. The top navigation bar includes 'Quiz Quiz' logo, 'Students' tab, 'New Quiz' button, and a user dropdown for 'Dayang Bella bt Abu Bakar' (Tutor). On the left sidebar, there are links for 'Dashboard', 'Quizzes', 'Students' (which is selected), 'Results', 'Sign Out', and 'Help'. The main content area displays a 'Students list' with three tabs: 'Group 1' (selected), 'Group 2', and 'Group 3'. Under 'Group 1', there are two rows of student profiles. Each profile card contains a student photo, name, class rank, average score, and a 'Mark' button.

Student	Class rank	Average score	Action
William Arthur	10th	70%	Mark
Henry Lau	1st	100%	Mark
Henry Lau	1st	100%	Mark
William Arthur	10th	70%	Mark
William Arthur	10th	70%	Mark

Figure 8.4.10 Students Page for Tutor

The screenshot shows the 'Students' marking page for a tutor. The top navigation bar includes 'Quiz Quiz' logo, 'Students' tab, 'New Quiz' button, and a user dropdown for 'Dayang Bella bt Abu Bakar' (Tutor). On the left sidebar, there are links for 'Dashboard', 'Quizzes', 'Students' (selected), 'Results', 'Sign Out', and 'Help'. The main content area displays a 'Students list' for 'William Arthur'. Below his name, it says 'Class rank: 10th | Average score: 70%'. Underneath, there are two entries for 'ULRS 1022 - Philosophy and current issues' from '15/05/2024 | 09:00am - 10:00am'. Each entry has a 'Mark' button with a plus sign.

Figure 8.4.11 Students Marking Page for Tutor

The screenshot shows a user interface for a quiz system. On the left is a vertical sidebar with icons for Dashboard, Quizzes, Students, Results, Sign Out, and Help. The main area is titled 'Students' and shows a student profile for 'William Arthur' with a class rank of 10th and an average score of 70%. Below this is a quiz titled 'ULRS 1022 - Philosophy and current issues' from 15/05/2024 at 09:00am - 10:00am. The first question asks: 'What is the difference between belief and knowledge? This question examines the relationship between belief, truth, and justification.' It contains placeholder text about Lorem Ipsum. The student has given a score of 1, marked as correct. The second question asks: 'How do we acquire knowledge? This question delves into the ways in which humans come to know things, such as through perception, reason, memory, testimony, and intuition.' It also contains placeholder text about Lorem Ipsum. The student has given a score of 2, marked as incorrect.

Figure 8.4.12 Students Marking in Details Page for Tutor

The screenshot shows a user interface for a quiz system. On the left is a vertical sidebar with icons for Dashboard, Quizzes, Students, Results, Sign Out, and Help. The main area is titled 'Results' and shows a section titled 'Completed Quizzes'. A table lists four completed quizzes, each with a 'View' button. The data in the table is as follows:

Title	Group name	No. of persons in group	Participants	Date	Action
System Analysis and Design	Section 15	31	31	12/5/2024	
System Analysis and Design	Section 16	31	31	12/5/2024	
System Analysis and Design	Section 15	31	31	12/5/2024	
System Analysis and Design	Section 15	31	31	12/5/2024	

Figure 8.4.13 Results Page for Tutor

The screenshot shows the 'Results' page for a tutor named Dayang Bella bt Abu Bakar. The left sidebar includes links for Dashboard, Quizzes, Students, Results, Sign Out, and Help. The main content area displays results for a quiz titled 'System Analysis and Design Section 15'. A table lists student names, scores, carry marks, class ranks, and dates. Each row has a 'View' button. Buttons for 'Export' and 'Print' are at the top right.

Student name	Score (100%)	Carry Marks (15%)	Class rank	Date	View Answer Sheet
William Arthur	75	11.25	4	12/5/2024	View
Henry Lau	90	13.50	1	12/5/2024	View
William Arthur	77	11.55	3	12/5/2024	View
Henry Lau	88	13.20	2	12/5/2024	View

Figure 8.4.14 Results Page in Details for Tutor

The screenshot shows the 'Results' page for a tutor named Dayang Bella bt Abu Bakar. The left sidebar includes links for Dashboard, Quizzes, Students, Results, Sign Out, and Help. The main content area displays results for a quiz titled 'System Section'. A modal dialog is open, allowing the user to 'Export as' Excel, PDF, or Word. Buttons for 'Cancel' and 'Save' are at the bottom of the dialog. The background table shows student names, scores, carry marks, class ranks, and dates. Each row has a 'View' button. Buttons for 'Export' and 'Print' are at the top right.

Student name	Score (100%)	Carry Marks (15%)	Class rank	Date	View Answer Sheet
William Arthur	77	11.55	3	12/5/2024	View
Henry Lau	88	13.20	2	12/5/2024	View

Figure 8.4.15 Results Page Export for Tutor

8.5 Admin View

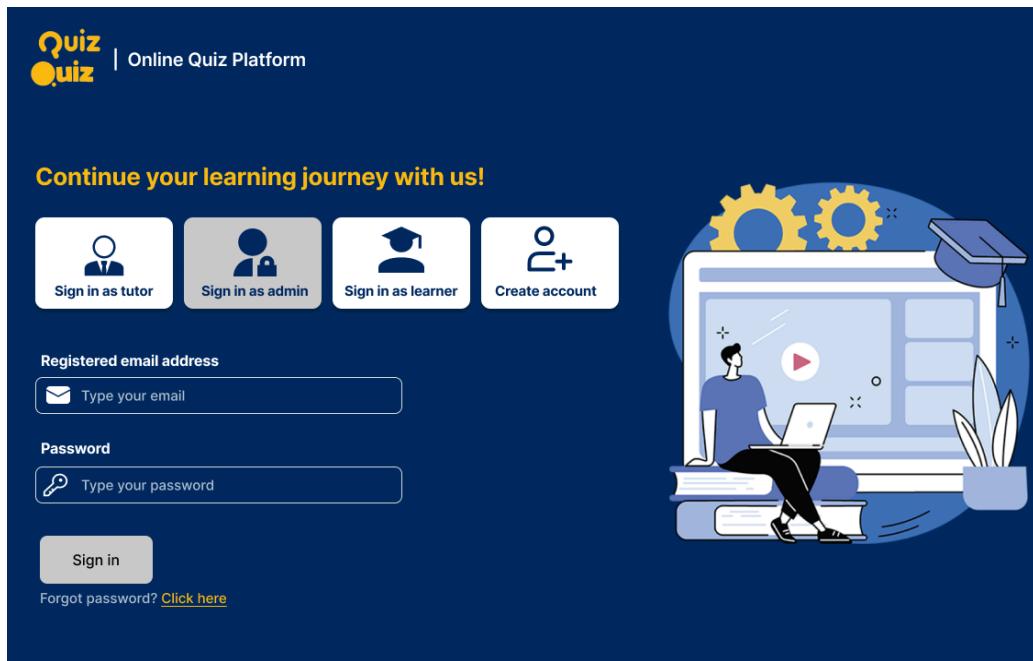


Figure 8.5.1 Home Page for Admin

The image shows the dashboard of the online quiz platform. On the left is a sidebar with icons for Dashboard, Students, Results, Sign Out, and Help. The main area is titled "Dashboard". It features two main sections: "Students list" and "Completed quizzes". The "Students list" section shows three groups: Group 1 (William Arthur, Class rank: 10th, Average score: 70%), Group 2 (Henry Lau, Class rank: 1st, Average score: 100%), and Group 3 (William Arthur, Class rank: 10th, Average score: 70%). The "Completed quizzes" section lists three quizzes: Assembly language (Group 1, 23 persons, Date: 12/02/2023), C programming (Group 2, 17 persons, Date: 12/02/2023), and Python (Group 3, 38 persons, Date: 12/02/2023). Below these is a "Quizzes Performance" section with a pie chart showing percentages for Knowledge Mastery (25%), Intellectual Progress (35%), and Quiz Proficiency (60%).

Figure 8.5.2 Home Page for Admin

The screenshot shows the 'Students' page for an administrator. The top navigation bar includes the Quiz Quiz logo, a 'Students' section, a mail icon, the user name 'Dayang Bella bt Abu Bakar', and an 'Admin' dropdown. On the left, a sidebar lists 'Dashboard', 'Students' (selected), 'Results', 'Sign Out', and 'Help'. The main content area is titled 'Students list' and features three tabs: 'Group 1' (selected), 'Group 2', and 'Group 3'. Below these tabs is a grid of student profiles. Each profile card contains a thumbnail, the student's name, their class rank, average score, and a 'View' button.

Profile	Name	Class rank	Average score	Action
	William Arthur	10th	70%	View
	Henry Lau	1st	100%	View
	Henry Lau	1st	100%	View
	William Arthur	10th	70%	View
	William Arthur	10th	70%	View

Figure 8.5.3 Students Page for Admin

The screenshot shows the 'Results' page for an administrator. The top navigation bar includes the Quiz Quiz logo, a 'Results' section, a mail icon, the user name 'Dayang Bella bt Abu Bakar', and an 'Admin' dropdown. On the left, a sidebar lists 'Dashboard', 'Students', 'Results' (selected), 'Sign Out', and 'Help'. The main content area is titled 'Completed Quizzes' and displays a table of quiz results. Each row in the table represents a completed quiz, showing its title, group name, number of participants, date, and a 'View' button.

Title	Group name	No. of persons in group	Participants	Date	Action
System Analysis and Design	Section 15	31	31	12/5/2024	View
System Analysis and Design	Section 16	31	31	12/5/2024	View
System Analysis and Design	Section 15	31	31	12/5/2024	View
System Analysis and Design	Section 15	31	31	12/5/2024	View

Figure 8.5.4 Results Page for Admin

The screenshot shows the Quiz Quiz application interface. On the left is a sidebar with icons for Dashboard, Students, Results (selected), Sign Out, and Help. The main area is titled 'Results' and shows a section for 'System Analysis and Design Section 15'. It displays a table of student results:

Student name	Score (100%)	Carry Marks (15%)	Class rank	Date	View Answer Sheet
William Arthur	75	11.25	4	12/5/2024	<button>View</button>
Henry Lau	90	13.50	1	12/5/2024	<button>View</button>
William Arthur	77	11.55	3	12/5/2024	<button>View</button>
Henry Lau	88	13.20	2	12/5/2024	<button>View</button>

Buttons for 'Export' and 'Print' are located at the top right of the results section.

Figure 8.5.5 Results Details Page for Admin

The screenshot shows the Quiz Quiz application interface, similar to Figure 8.5.5 but with a modal dialog open over the results table. The dialog is titled 'System Section' and contains an 'Export as' dropdown menu set to 'Excel', with options for 'PDF' and 'Word'. Below the dropdown are 'Cancel' and 'Save' buttons. The background table of student results is partially visible.

Figure 8.5.6 Results Page Export for Admin

9.0 SUMMARY OF THE PROPOSED SYSTEM

The proposed Online Quiz Platform aims to revolutionize the way quizzes and assessments are conducted by addressing the limitations of traditional face-to-face and existing online quiz systems. Designed to serve educational institutions, companies, and organizations, this platform provides a scalable, efficient, and secure solution for assessing knowledge and skills. Key features include a user-friendly interface that ensures smooth operation for administrators, instructors, and participants. Customizable quiz creation tools offer multiple options for creating quizzes, including various question types, time limits, grading options, and multimedia integration, allowing for tailored assessments. Leveraging modern technologies, the platform's architecture will handle numerous concurrent users and quizzes efficiently, ensuring high performance and reliability. Comprehensive reporting and analytics tools provide detailed insights into participant activity and performance, trends, and other relevant data, helping educators and administrators make informed decisions. Strong security protocols, including encryption and user authentication, will protect user data and ensure compliance with privacy policies. Engagement features, such as leaderboards, badges, awards, and social sharing options, will enhance participant motivation and engagement. Additionally, the platform will be designed to work seamlessly across various devices (PCs, laptops, tablets, and smartphones) and browsers, allowing users to access quizzes anytime, anywhere. Continuous improvement and support will be prioritized to address emerging issues, introduce new features, and maintain the platform's relevance with technological advancements.

Currently, the process of quiz management by lecturers and teachers involves manual preparation, distribution, and grading of quizzes, which is time-consuming and inefficient. Students face difficulties with hard copy quizzes, including time wastage and limited access to necessary materials. The platform will facilitate remote collaboration and quiz participation, eliminating geographical barriers and saving time and resources. The proposed workflow includes several stages: quiz creation, quiz administration, quiz submission, grading, and record keeping and analysis. They can also design tests and either administer them through the blackboard learning system, or through email. Quiz will be conducted in a passcode protected online meet or sent to classmates through email. All the submissions made by the participants can be done through the platform or through mail and all the submissions can be viewed for evaluation easily. Teachers can also enter the grades from the quizzes in the respective learning management system using features such as the spread sheets or grade books to give feedback to the learners. As graded results and data are produced, these will be saved in the platform for facilitated access and brewing as the circumstances warrant. In conclusion, this proposed Online Quiz Platform incorporates the improvement of the quiz management system's usability, efficiency, and security while revolutionizing the conventional approach to assessments.