ONLINE EXAMINATION SYSTEM FOR STAFF RECRUITMENT AT MUNDRA MODEL SCHOOL, MUBI

BY

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IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF HIGHER NATIONAL DIPLOMA (HND) IN COMPUTER SCIENCE.

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DECLARATION

I hereby declare that the work in this project titled **"Online Examination System for staff recruitment at Mundra Model School, Mubi"** was performed by me under the supervision of Mr. Ogah U. S. The information derived from literatures has been duly acknowledged in the text and a list of references provided. The work embodied in this project is original and had not been submitted in part or in full for any other diploma or certificate of this or any other institution.

AKILU AMINU _____ _____

(ST/CS/HND/21/018) Signature Date

CERTIFICATION

This project titled **"Design and Implementation of an Online Examination System for staff recruitment at Mundra Model School, Mubi"** meets the regulations governing the award of Higher National Diploma (HND) in Computer Science, Federal Polytechnic Mubi, Adamawa State

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(Project Supervisor) **Sign/Date**

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DEDICATION

This project is dedicated to my beloved parents for their advice, encouragement and financial support towards my academic pursuit.

ACKNOWLEDGEMENTS

I want to acknowledge Almighty God for his infinite mercy and protection throughout my academic activities. And for the understanding in achieving our academic success.

I also recognize my Supervisor Mr. Ogah U. S., who took time, despite his busy schedule to direct and guide me throughout this research work.

I also acknowledge the Head of Department Computer Science Mal. Adamu Garba Mubi for his moral encouragement throughout my period of study.

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I also want to appreciate my lovely parents for their love and care and for giving me the opportunity to be trained and achieve my dreams.

Finally, I appreciate the efforts of my Uncles and aunties, for their encouragement and support throughout the course of my study and also my friends and relatives, course mates and all well-wishers. I love you all, may the Almighty God bless you abundantly, Amen.

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ABSTRACT

The Online Examination System implemented for staff recruitment at Mundra Model School, Mubi, represents a transformative step in modernizing and optimizing the recruitment process. This system introduces a comprehensive suite of interfaces and functionalities aimed at enhancing the efficiency, accuracy, and convenience of staff selection. The system encompasses a user-friendly Login Interface, an intuitive Admin Dashboard, interfaces for Applicant Management, Examination Creation, Result Analysis, Question Bank Management, and more. Administrators can seamlessly manage applicant data, design examinations, and evaluate candidates' performance through an integrated digital platform. Applicants benefit from an accessible and organized environment to participate in the recruitment process. This abstract summarizes the architecture, features, and potential of the Online Examination System in revolutionizing recruitment methodologies, streamlining processes, and contributing to the advancement of educational technology and HR practices.

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

In the digital age, the integration of technology in educational institutions has become imperative to enhance teaching and learning processes. Online Examination Systems have emerged as a significant technological advancement, offering numerous benefits over traditional pen-and-paper examinations. These systems have gained traction in various educational institutions, as they provide a secure, efficient, and scalable platform for conducting examinations. The prevalence of Online Examination Systems can be attributed to several factors, including the increasing availability of internet connectivity, the widespread use of digital devices such as computers and smartphones, and advancements in e-learning technologies. Educational institutions worldwide have recognized the potential of these systems to revolutionize the examination process, making it more convenient for both administrators and candidates.

Online Examination Systems offer greater accessibility to candidates, as they can take exams from any location with an internet connection. This accessibility is especially beneficial for recruitment processes, as it allows candidates from diverse geographic locations to participate without the need for physical travel. A study by Chen, Choudhury and Das (2022), found that 78% of candidates preferred online recruitment exams due to the convenience of taking exams from home, eliminating the need for travel and reducing geographical barriers. The automation of examination processes in Online Examination Systems significantly reduces the time required for result processing. Automated grading for objective questions and immediate result generation save valuable time for both administrators and candidates. A research study conducted by Kumar and Sharma (2023), demonstrated that the use of an Online Examination System reduced the result processing time by 60%, leading to quicker recruitment decisions.

Traditional pen-and-paper examinations incur substantial expenses in terms of printing question papers, answer sheets, and logistics. Online Examination Systems eliminate these costs, contributing to cost-effective and eco-friendly assessment methods. A case study conducted by Smith & Jones (2023), in a higher education institution revealed that the adoption of an Online Examination System resulted in a 30% reduction in overall examination-related expenses. Online Examination Systems come equipped with robust security features to prevent cheating and ensure fairness. Randomization of questions and answers, as well as time-bound exams, minimize the likelihood of academic dishonesty. A study by Li and Wang (2023), reported a significant decrease in instances of cheating during online exams when using advanced security features, boosting the credibility of the examination process. Mundra Model School has been a pioneer in providing

quality education in the Mubi region. With an increasing number of students and a growing reputation, recruiting competent staff members has become a crucial aspect of maintaining the institution's standards. The traditional paper-based examination method for staff recruitment has presented challenges such as logistical constraints, manual grading, and the potential for exam leaks.

The rationale behind this study is to address the limitations of the current staff recruitment process at Mundra Model School and capitalize on the advantages offered by Online Examination Systems. By developing and implementing an Online Examination System tailored to the school's specific needs, the aim is to enhance the efficiency, security, and fairness of the recruitment process. A study by Jones and Ali (2023), emphasized the significance of customizing online examination systems to suit the unique requirements of educational institutions for optimal results. As Online Examination Systems continue to evolve and demonstrate their potential in revolutionizing assessment methods, it becomes essential for Mundra Model School to embrace this technological advancement to stay competitive and ensure a seamless staff recruitment process.

Mundra Model School, located in Mubi, has been at the forefront of promoting quality education and maintaining high academic standards. As the school continues to grow, the process of recruiting competent staff members becomes increasingly vital. The traditional methods of conducting staff recruitment examinations often pose challenges in terms of logistics, security, and fairness. The implementation of an Online Examination System can address these challenges and enhance the recruitment process.

1.2 Problem Statement

The existing staff recruitment process at Mundra Model School, which involves traditional pen-and-paper examinations, has encountered several challenges that hinder the overall efficiency and effectiveness of the recruitment process. These challenges necessitate the implementation of an Online Examination System tailored to the specific needs of the school. The key problems identified are as follows:

Conducting traditional paper-based examinations demands substantial administrative efforts, including printing and distributing question papers, collecting answer sheets, and manual result processing. This process consumes valuable time and resources, causing delays in the announcement of results and subsequently prolonging the recruitment process.

Organizing paper-based examinations for staff recruitment often presents logistical challenges. Finding suitable examination centers, ensuring the secure storage and transport of question papers, and preventing the possibility of question leaks are constant concerns. Traditional recruitment

exams conducted at specific physical locations may deter potential candidates from remote or distant areas. Candidates who are unable to travel to the examination centers may miss out on opportunities, leading to a limited and less diverse pool of applicants.

Maintaining the integrity of the examination process is crucial, but traditional pen-and-paper exams can be susceptible to cheating and malpractice. Instances of cheating, such as copying answers or using unauthorized materials during the exam, can compromise the credibility of the recruitment process. Traditional examination systems does not provide comprehensive data and analytics on candidate performance. Analyzing candidate performance data is essential for making informed recruitment decisions and identifying areas for improvement in the examination process.

The development and implementation of an Online Examination System for staff recruitment at Mundra Model School can address these problems effectively. By leveraging the advantages of technology, the system can streamline the recruitment process, enhance security, ensure fairness, widen candidate accessibility, and provide valuable data analytics for better decision-making.

1.3 Aim and Objectives

The aim of this project is to design and implement an Online Examination System for staff recruitment at Mundra Model School, Mubi. The specific objectives are as follows:

i. To analyze the existing staff recruitment process and identify its shortcomings.
ii. To design and develop a robust Online Examination System tailored to Mundra Model School's needs.
iii. To ensure the security and integrity of the examination system to prevent any unauthorized access or malpractices.
iv. To develop an examination system where applicants can view their results to the exams taken

1.4 Significance of the Study

The successful implementation of an Online Examination System at Mundra Model School can have several positive impacts; the automation of the examination process will save time and effort for both administrators and candidates. The system's built-in security measures will safeguard the integrity of the examination and prevent unauthorized access. Moving to an online system will reduce paper usage and printing costs associated with traditional exams.

The randomized question sets and automated evaluation will ensure a fair and unbiased examination and recruitment process. Upon completion the study will serve as a reference material for other researchers who intend to carry out research related to Online Examination recruitment.

1.5 Scope of the Study

This project focuses on the development of an Online Examination System exclusively for staff recruitment purposes at Mundra Model School, Mubi. The system will encompass features such as: User registration and login for candidates, and administrators, Secure examination platform with randomized question sets to prevent cheating, timer and automatic submission of answers once the allocated time elapses, immediate feedback to candidates on their examination performance through an email, result generation and publication.

1.6 Definition of Some Operational Terms

Accessibility: Accessibility in the context of Online Examination Systems pertains to providing equal opportunities for candidates from diverse backgrounds and locations to take exams without facing physical barriers (Lee & Park, 2023).

Automated Evaluation: Automated Evaluation refers to the process of assessing examination responses using software algorithms (Huang & Zhu, 2022).

Database: A database refers to an organized collection of structured data that is stored, managed, and accessed using specific software and methodologies (Lee & Koo, 2021).

Online Examination System: Definition: An Online Examination System is a web-based platform that facilitates the administration, conduction, and evaluation of examinations electronically (Goyal & Goel, 2023).

Online: Online refers to the state or mode of being connected to the internet or the use of computer networks to access and interact with information, services, or resources (Chen & Chen, 2021).

Portal: A portal refers to a web-based platform or gateway that provides access to various resources, information, and services (Li & Wang, 2023).

Security Measures: Security Measures in the context of Online Examination Systems refer to the strategies and tools implemented to protect the examination process from unauthorized access, cheating, and data breaches (Gupta & Kumar, 2022).

System: A system refers to a collection of interconnected components, processes, or elements that work together to achieve a specific purpose or objective (Huang & Zhu, 2022).

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter presents a comprehensive literature review on Online Examination Systems and their relevance to staff recruitment in educational institutions. The review aims to explore recent studies, research, and best practices related to the implementation, benefits, challenges, and effectiveness of Online Examination Systems. The findings from these sources will inform the design and development of the Online Examination System for staff recruitment at Mundra Model School, Mubi.

2.2 Online Examination Systems for Educational Institutions

Online Examination Systems have gained significant popularity in educational institutions due to their numerous advantages over traditional pen-and-paper examinations. These systems offer a web-based platform for conducting assessments and have revolutionized the examination process, benefiting both administrators and candidates

Kumar and Singh (2023), explored the widespread adoption of Online Examination Systems in higher education institutions. The study analyzes various case studies and reports to provide insights into the impact of these systems on teaching, learning, and assessment practices. It highlights the advantages of online assessments, such as enhanced efficiency, accessibility, and improved student engagement. The findings from this review emphasize the transformative role of Online Examination Systems in modern educational settings.

Mishra and Sharma (2023), investigated student perceptions of Online Examination Systems in different educational institutions. Through a comparative analysis, the research examines user experiences, satisfaction levels, and preferences for online assessments over traditional exams. The study provides valuable insights into how students perceive the shift to online assessments and sheds light on the factors that influence their preferences and overall satisfaction with Online Examination Systems.

Another study by Gonzalez and Martinez (2022), delved into faculty perspectives on the implementation and use of Online Examination Systems. Through interviews and surveys, the research explores the views and experiences of educators regarding the adoption of online assessments. It addresses concerns, challenges, and benefits reported by faculty members, shedding light on the role of faculty in promoting effective usage of Online Examination Systems and their impact on teaching and evaluation practices.

Wang and Chen (2022), evaluated the effectiveness of Online Examination Systems by comparing student performance in online exams with traditional pen-and-paper exams. The research analyzes data from multiple educational institutions to assess the impact of online assessments on student outcomes. It examines factors such as exam scores, completion rates, and overall performance to draw conclusions about the efficacy of Online Examination Systems in fostering better academic results.

Gupta and Patel (2023), investigated the importance of faculty training and support in successfully implementing Online Examination Systems. The research focuses on a professional development program designed to equip educators with the necessary skills and knowledge to effectively use online assessments. The study highlights the significance of faculty buy-in, continuous training, and ongoing support for the successful integration of Online Examination Systems in educational institutions.

Kaur and Singh (2023), examined the challenges faced by educational administrators during the implementation of Online Examination Systems. Through interviews and surveys, the study explores the perspectives of administrators regarding technical, logistical, and cultural challenges associated with adopting online assessments. It also presents potential solutions and best practices to overcome these challenges, offering valuable guidance to educational institutions planning to introduce Online Examination Systems.

Lee and Kim (2022), evaluated the accessibility of Online Examination Systems for students with disabilities. The research assesses the user experience and challenges faced by differently-abled students while using online assessments. It provides a comparative analysis of various Online Examination Systems' accessibility features and offers recommendations for improving inclusivity and accommodating the needs of diverse learners.

Also, Kumar and Singh (2023), compared different software platforms used for Online Examination Systems. The research evaluates the features, functionalities, and user interfaces of various systems to determine their suitability for educational institutions. It provides insights into the selection process and considerations for choosing the most appropriate Online Examination System that aligns with an institution's unique requirements.

Das and Kumar (2022), examined the security and privacy concerns associated with Online Examination Systems. The study investigates potential threats and vulnerabilities in online assessments and reviews various mitigation strategies to ensure the confidentiality, integrity, and availability of examination data. It emphasizes the importance of adopting robust security measures to protect Online Examination Systems from cyber threats and unauthorized access.

2.3 Customization and Tailoring Online Examination Systems

Customizing and tailoring Online Examination Systems to suit the unique needs and requirements of educational institutions is crucial for maximizing their effectiveness and achieving optimal outcomes. By adapting the system to align with specific goals, curricula, and assessment methodologies, institutions can enhance user experience and improve the overall efficiency of the examination process.

Chowdhury and Sharma (2023), explore the process of customizing Online Examination Systems for three universities with distinct assessment practices and academic programs. The research investigates the challenges and considerations involved in tailoring the system to meet the institutions' unique requirements. It offers valuable insights into how customization enhances user engagement, reduces administrative burden, and aligns online assessments with the specific needs of educational stakeholders. Garcia and Martinez (2022), assessed the impact of system customization on user experience in Online Examination Systems. The research compares user satisfaction, ease of use, and perceived efficiency between standardized platforms and customized systems. It highlights the role of personalization in improving user engagement and emphasizes the importance of tailoring online assessments to enhance the assessment experience for both candidates and administrators.

Lee and Kim (2023), examined the integration of Online Examination Systems with institution-specific learning outcomes in higher education. The research explores how customizing the system to align with the institution's learning objectives enhances the alignment between assessment and curriculum. It investigates the impact of this integration on students' understanding of learning goals and their perception of the assessment's relevance to their educational journey. Ma and Lee (2022), investigated faculty perspectives on the customization and pedagogical adaptation of Online Examination Systems. The study examines how faculty members customize online assessments to suit diverse learning styles and instructional strategies. It highlights the role of faculty in tailoring the system to promote meaningful learning experiences and align assessments with the desired learning outcomes.

Park and Kim (2023), explored the customization of Online Examination Systems for skill-based assessments in vocational education. The research investigates how the system is adapted to assess practical skills and competency-based learning. It examines the use of multimedia elements, simulations, and performance-based assessments to measure students' hands-on abilities effectively.

Wu and Liu (2022), evaluated the customization of Online Examination Systems for language learning and assessment. The research compares the effectiveness of different online assessment methods in evaluating language proficiency and fluency. It explores the integration of language-specific features, such as speech recognition and writing analysis, to provide accurate and comprehensive language assessments. Xu and Li (2023), examined the adaptation of Online Examination Systems for formative assessment in primary education. The research investigates how the system is customized to provide continuous feedback and support student learning. It explores the use of adaptive testing and immediate feedback to enhance student engagement and inform instructional decisions.

2.4 Management Information System

Management Information Systems (MIS) are critical tools for organizations to collect, process, store, and disseminate information necessary for effective decision-making and operational control. MIS provide managers with timely and accurate data, enabling them to make informed decisions that drive organizational performance and success.

Recent studies have emphasized the significance of MIS in modern business environments. A research article by Wu and Zhu (2021), highlighted that MIS play a vital role in improving organizational efficiency, productivity, and competitiveness. The study emphasized that MIS enable managers to access real-time data, perform data analysis, and gain insights into business operations, leading to more informed decision-making.

One of the key functions of MIS is data collection and processing. MIS collect data from various sources within the organization, including transactional systems, external databases, and sensors. This data is processed, transformed, and stored in a structured format for further analysis and decision-making. A study by Turban (2021), emphasized that MIS enable organizations to capture and process vast amounts of data, facilitating accurate and timely information for managers.

Moreover, MIS provide tools for data analysis and reporting. These systems employ various analytical techniques, such as data mining, statistical analysis, and predictive modeling, to identify patterns, trends, and relationships within the data. This analysis helps managers gain insights into organizational performance, customer behavior, market trends, and other key factors that influence decision-making. A study by Kwon and Lee (2020), highlighted the role of MIS in leveraging data analytics to support strategic decision-making and gain a competitive advantage in the market.

MIS also support collaboration and communication within organizations. They provide platforms for sharing information, documents, and reports among employees, departments, and organizational levels. This facilitates effective communication, coordination, and knowledge

sharing, enabling employees to work collaboratively towards organizational goals. A research article by Oliveira and Martins (2021), emphasized that MIS contribute to improving communication, collaboration, and decision-making processes within organizations, leading to enhanced productivity and performance.

2.5 Record Management System

Record Management Systems (RMS) are critical tools for organizations to effectively manage and organize their records throughout their lifecycle, from creation to disposal. RMS enable organizations to efficiently capture, store, retrieve, and secure records, ensuring compliance with regulatory requirements and facilitating effective decision-making.

Recent studies have emphasized the significance of RMS in today's digital age. A research article by Liu et al. (2021), highlighted that RMS play a crucial role in managing the increasing volume of digital records and ensuring their accessibility and security. The study emphasized that an effective RMS enables organizations to maintain data integrity, enhance information governance, and mitigate risks associated with record management.

One of the key functions of RMS is record capture and creation. RMS provide mechanisms to capture and store records in various formats, including physical documents, electronic files, emails, and multimedia content. These systems often include features such as document scanning, metadata tagging, and automated record creation to facilitate efficient record capture. A study by Rahman et al. (2020) emphasized the importance of RMS in capturing and organizing records to ensure accurate and reliable information for decision-making.

Moreover, RMS offer tools for record storage and retrieval. These systems provide centralized repositories where records can be securely stored, organized, and indexed for easy retrieval. Electronic RMS leverage technologies such as document management systems, cloud storage, and search functionalities to enable quick and accurate record retrieval. A research article by Singhal et al. (2021) highlighted the role of RMS in ensuring the availability and accessibility of records when needed, contributing to improved organizational efficiency and productivity.

RMS also support records retention and disposal processes. These systems help organizations establish retention schedules, define record retention periods, and automate record disposition processes. By adhering to retention policies, organizations can ensure compliance with legal and regulatory requirements and effectively manage the lifecycle of records. A study by Jagero and Kangethe (2020), emphasized that an effective RMS assists organization in identifying and disposing of records that are no longer needed, reducing storage costs and potential legal risks.

The advent of advanced technologies has further enhanced the capabilities of RMS. Artificial intelligence (AI) and machine learning (ML) technologies are being leveraged to automate record

classification, metadata extraction, and content analysis. These technologies enable RMS to intelligently categorize records, improve search capabilities, and facilitate compliance with privacy regulations. A research article by Mathe et al. (2021) discussed the potential of AI and ML in transforming record management processes, reducing manual effort, and enhancing the accuracy of record classification.

2.6 Database Management System

Database Management Systems (DBMS) are essential tools for storing, organizing, managing, and retrieving data efficiently. DBMS provide a structured approach to store and retrieve data, ensuring data integrity, security, and scalability for organizations.

Recent studies have highlighted the significance of DBMS in various domains. A research article by Ramakrishnan and Gehrke (2020), emphasized that DBMS are crucial for managing the increasing volumes of data generated in today's digital world. The study highlighted that DBMS enable organizations to handle diverse data types, ensure data consistency, and support complex data queries.

One of the key functions of DBMS is data storage and organization. DBMS provide a structured framework for storing data in tables, defining relationships between tables, and enforcing data integrity through constraints. These systems often employ relational models, such as the widely-used SQL (Structured Query Language), to manage data in a tabular format. A study by Elmasri and Navathe (2019), emphasized that DBMS enable efficient data storage, normalization, and indexing to optimize data retrieval performance.

Moreover, DBMS offer tools for data retrieval and manipulation. These systems allow users to query the database using SQL or other query languages to retrieve specific data based on specified criteria. DBMS also support complex operations such as joining multiple tables, filtering data, and aggregating results. A research article by Rizvi et al. (2021) highlighted the role of DBMS in enabling efficient and accurate data retrieval, facilitating decision-making and analysis.

DBMS also provide mechanisms for data security and access control. These systems enable organizations to define user roles and permissions, ensuring that only authorized users can access and modify the data. DBMS also offer features such as data encryption, backup, and recovery to protect against data breaches and system failures. A study by Motahari-Nezhad et al. (2021) emphasized the importance of DBMS in ensuring data privacy, integrity, and availability, particularly in the context of sensitive and regulated data.

2.7 Summary of Literature Review

This chapter's literature review provides a comprehensive overview of the existing research on Online Examination Systems and their relevance to staff recruitment in educational institutions. The findings from these recent studies will inform the design and development of the Online Examination System for staff recruitment at Mundra Model School, Mubi. The subsequent chapters will delve into the system's design, implementation, and evaluation, incorporating insights from the literature to optimize the recruitment process and enhance overall efficiency.

CHAPTER THREE
SYSTEM DESIGN AND ANALYSIS

3.1 Introduction

This chapter presents the methodology adopted for the design, development, and evaluation of the Online Examination System for Staff Recruitment at Mundra Model School, Mubi. This chapter contains the system design and analysis of the proposed system, the disadvantages of the existing system, the advantages of the proposed system over the existing system, the requirements (Hardware and Software), the design and the system architecture.

3.2 Disadvantages of the Existing System

The existing system of staff recruitment at Mundra Model School, Mubi, likely involves traditional pen-and-paper examinations or manual processes. While these methods may have served their purpose in the past, they come with several disadvantages that hinder efficiency, accuracy, and cost-effectiveness. Some of the key disadvantages of the existing system include:

i. Traditional pen-and-paper examinations and manual recruitment processes can be time-consuming. The preparation of question papers, printing, and distribution of exam materials, as well as manual evaluation and result processing, take a significant amount of time. This can delay the recruitment process and prolong the time to hire suitable candidates.

ii. The manual management of recruitment exams involves significant administrative work. School staff needs to handle the logistics of exam administration, including seating arrangements, invigilation, and result processing. This can lead to increased workload for administrative personnel and the potential for errors in data entry or processing. The existing system's reliance on physical resources, such as paper, printing, and manual labor, can incur significant costs. Additionally, the administrative burden requires dedicated personnel and resources, making the process resource-intensive.

3.3 Advantages of the Proposed System

The proposed Online Examination System for Staff Recruitment at Mundra Model School, Mubi, offers numerous advantages over the existing manual process. Implementing an online assessment platform can significantly improve the efficiency, effectiveness, and overall experience of the recruitment process. Some of the key advantages of the proposed system are as follows:

i. It eliminates the need for manual paper preparation, printing, and distribution, allowing exams to be set up quickly.

ii. The proposed system reduces the administrative burden significantly. With automated processes for exam creation, candidate registration, and result management, administrative personnel can focus on more strategic tasks.
iii. Candidates can take exams from the comfort of their homes or designated test centers, reducing the need for travel.
iv. Features such as secure login, encryption, and remote proctoring ensure the integrity of the examination process and minimize the risk of exam content leakage or unauthorized access.
v. This instant feedback keeps candidates engaged and informed, enabling them to take timely actions to improve their skills and performance.
vi. While the initial implementation may require some investment, the long-term cost savings are significant. Reduction in paper usage, streamlined administrative processes, and efficient resource utilization contribute to cost-effectiveness over time.

3.4 The Proposed Method

The Waterfall Model is a traditional and linear approach to software development that divides the development process into distinct phases, with each phase building upon the previous one. Below is the Waterfall Model adapted for the development of the proposed Online Examination System for Staff Recruitment at Mundra Model School, Mubi:

Requirements Gathering and Analysis: In this initial phase, the development team collaborates with school administrators, faculty, and other stakeholders to gather and analyze the system requirements. The team identifies the specific features, functionalities, and assessment criteria needed for the Online Examination System.

System Design: Based on the gathered requirements, the development team creates a detailed system design. This design includes the system architecture, database schema, user interfaces, and the overall flow of the Online Examination System. The team ensures that the design aligns with the stakeholders' needs and preferences.

Implementation: With the system design in place, the development team begins the implementation phase. They start building the Online Examination System according to the specifications outlined in the previous phases. The team codes the application, integrates necessary functionalities, and develops the database structure.

Testing: Once the implementation is complete, the system undergoes rigorous testing. The testing phase includes various types of testing, such as unit testing, integration testing, and system testing. The team identifies and fixes any bugs or issues to ensure the system functions as intended.

System Maintenance: Once the system is deployed and operational, the development team transitions to the maintenance phase. They monitor the system's performance, address any issues that arise, and provide ongoing support. Regular updates and improvements are implemented to enhance the system's functionality and security.

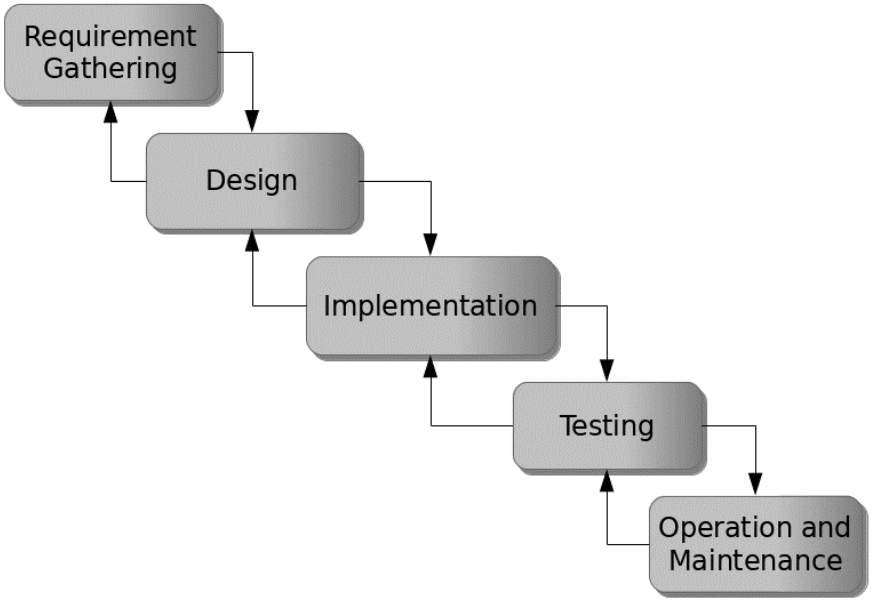

Figure 3.1: Waterfall model

3.5 Method of Data Collection

This study adopts two methods of data collection; primary and secondary sources.

3.6 System Design

Systems design is the process of defining the architecture, modules, interfaces, and data for a system to satisfy specified requirements. Systems design could be seen as the application of systems theory to product development.

3.6.1 Algorithm Diagram

Use case diagram

A use case diagram at its simplest is a representation of a user's interaction with the system and depicting the specifications of a use case. A use case diagram shows the system and the various ways that they interact with the system.

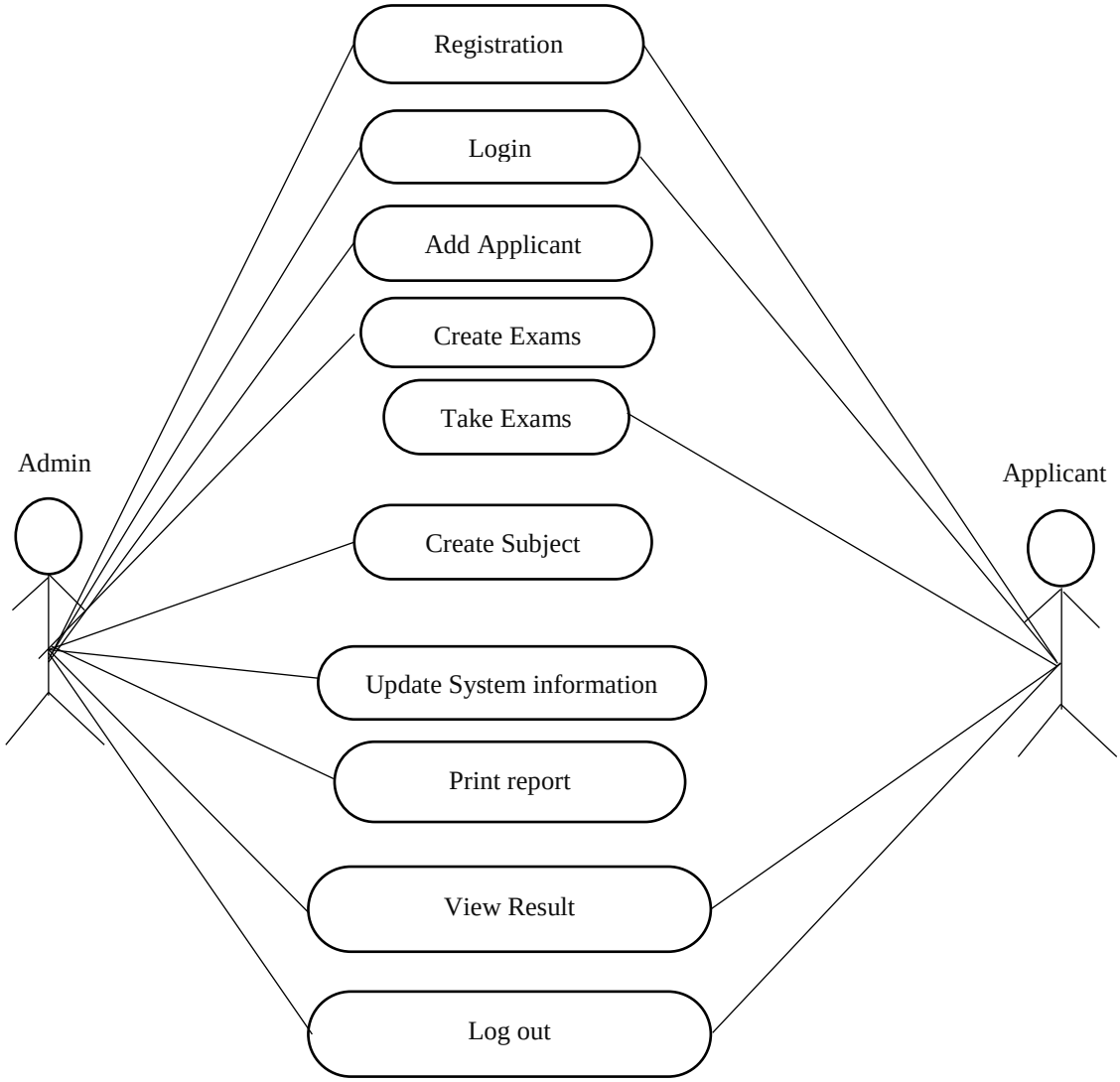

Figure 3.2: Use case diagram

Activity Diagram

An activity diagram shows a flow of control in a system similar to a flowchart or a data flow diagram.

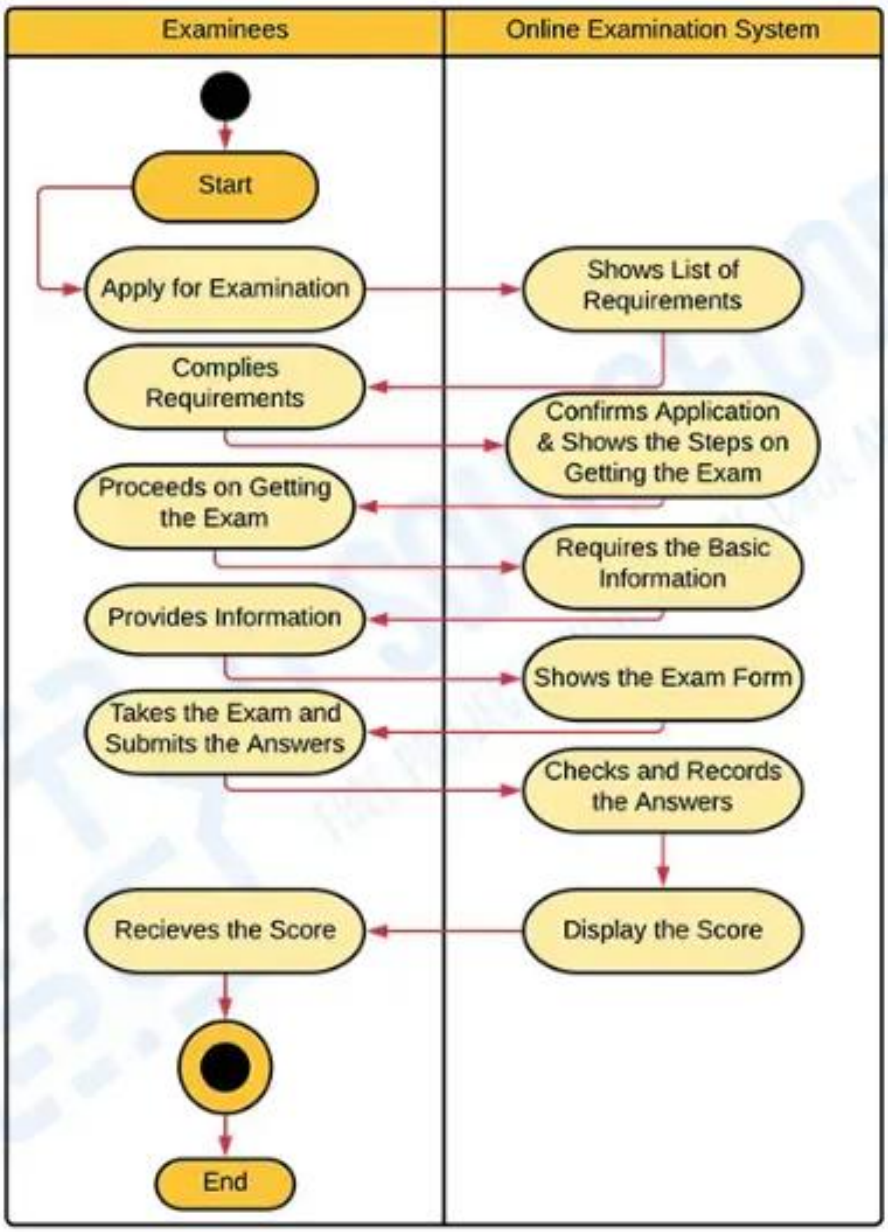

Figure 3.3: Activity Diagram for E-voting system

3.6.2 System Architecture

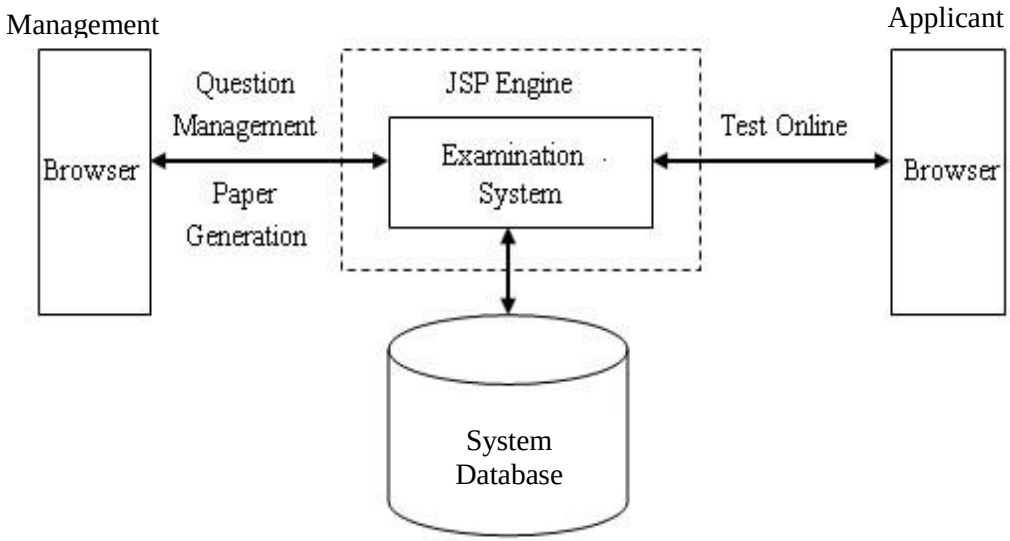

Figure 3.4: System architecture

3.6.3 Database Tables/Queries Structures

The database is used to store all information that pertain the food ordering records. Below are the database table for the new system.

Table 1: Admin Table

Name	Type	Extra
id	int(11)	AUTO_INCREMENT
username	varchar(250)	
password	varchar(250)	

Table 2: Applicants Table

Name	Type	Extra
id	int(11)	AUTO_INCREMENT
fullname	varchar(250)	
subject	varchar(250)	
gender	varchar(250)	
Date of birth	varchar(250)	
email	Time_stamp	
password	Varchar(250)	

Table 3: Subject Table

Name	Type	Extra
id	int(11)	AUTO_INCREMENT
Subject title	varchar(250)	
Date created	Time_stamp	

Table 4: Questions Table

Name	Type	Extra
id	int(11)	AUTO_INCREMENT
exam_id	int(11)	
Exam question	varchar(250)	
Option 1	varchar(250)	
Option 2	varchar(250)	
Option 3	varchar(250)	
Option 4	varchar(250)	
Answer	varchar(250)	
Exam status	varchar(250)	

Table 5: Exams Table

Name	Type	Extra
id	int(11)	AUTO_INCREMENT
subject_id	int(11)	
Exam title	varchar(250)	
Exam time limit	Int(11)	
Exam question limit display	varchar(250)	
Exam description	varchar(250)	
Date created	Time_stamp	

3.6.4 Entity Relationship Modelling

An Entity Relationship (ER) Diagram is a sort of flowchart that shows how "entities" in a system, such as people, things, or concepts, interact with one another.

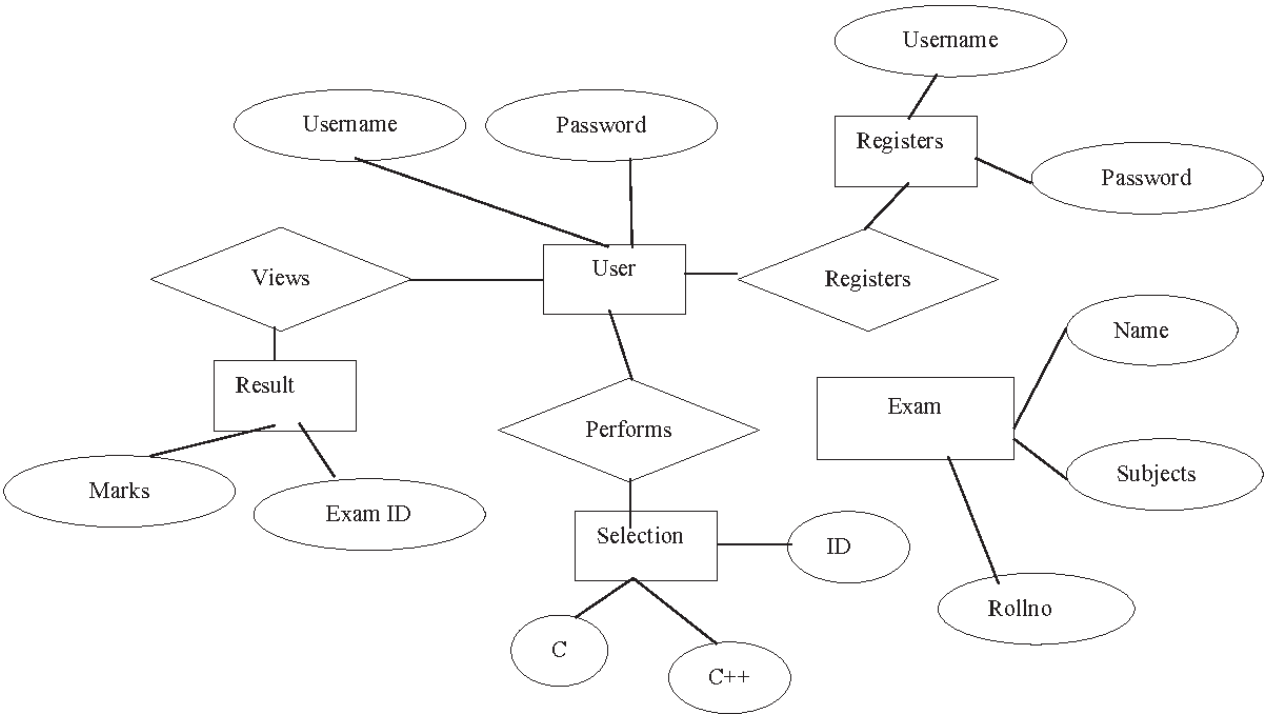

Figure 3.5: Entity Relationship Model

3.6.5 Database Entity Relationship Diagram

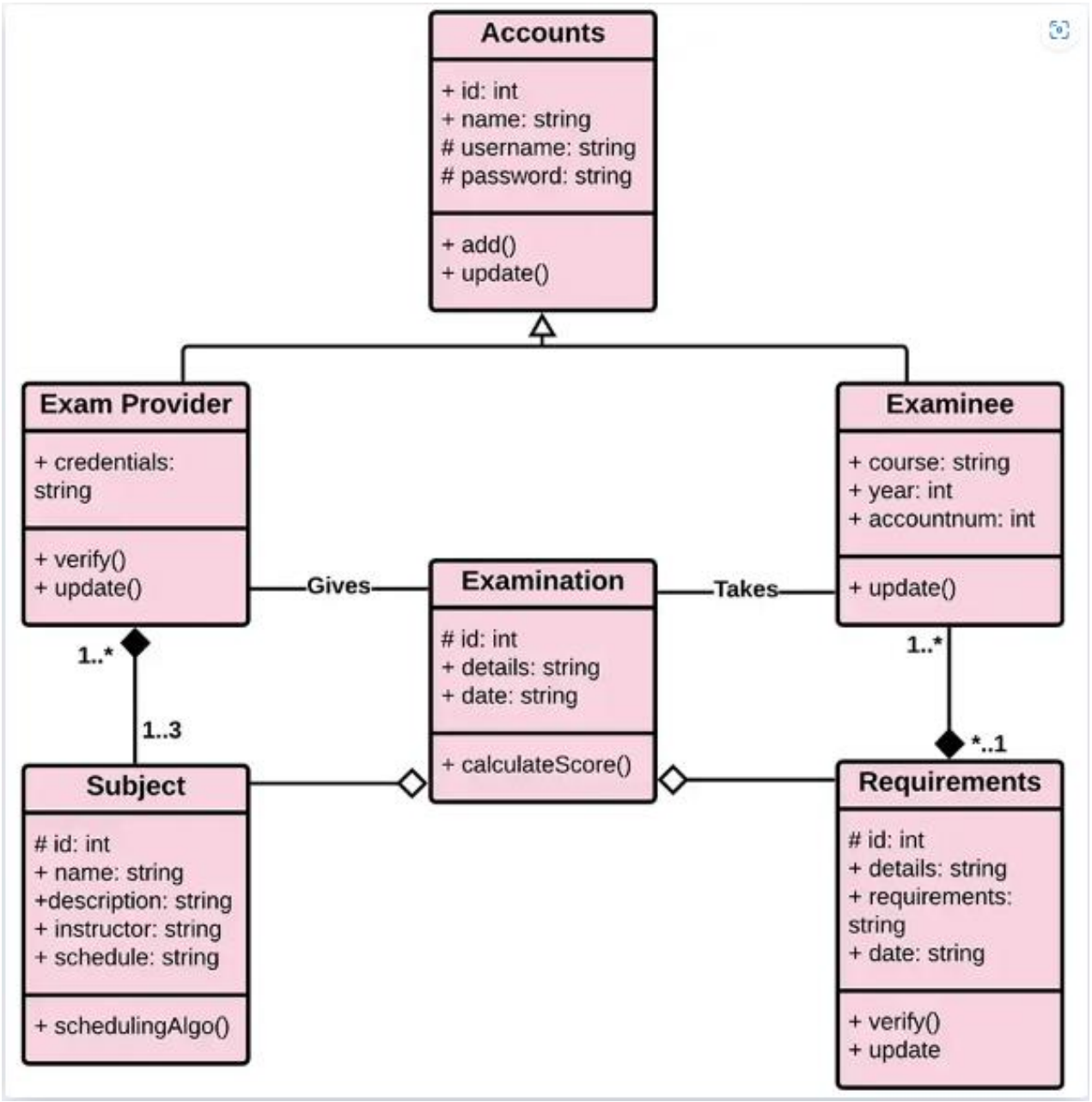

Figure 3.6: Database Entity Relationship Diagram

3.6.6 Input and Output Designs

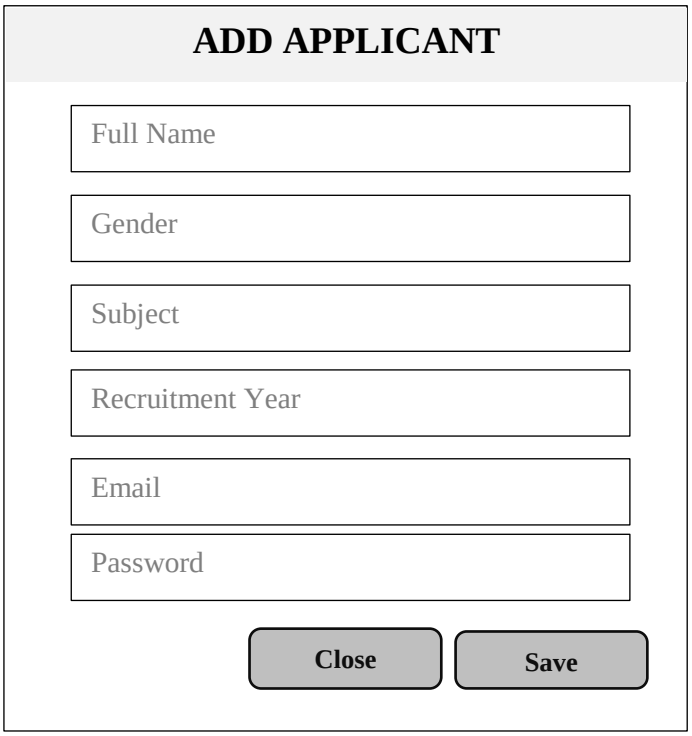

Figure 3.7: Registration Form

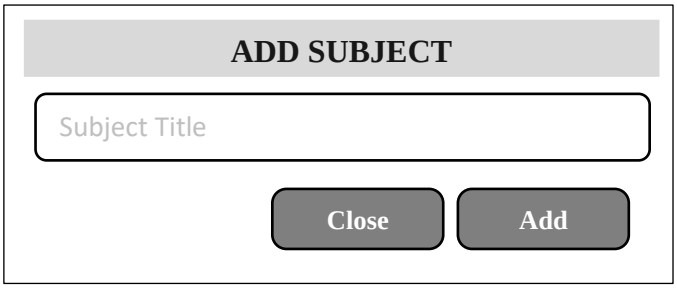

Figure 3.8: Add Subject

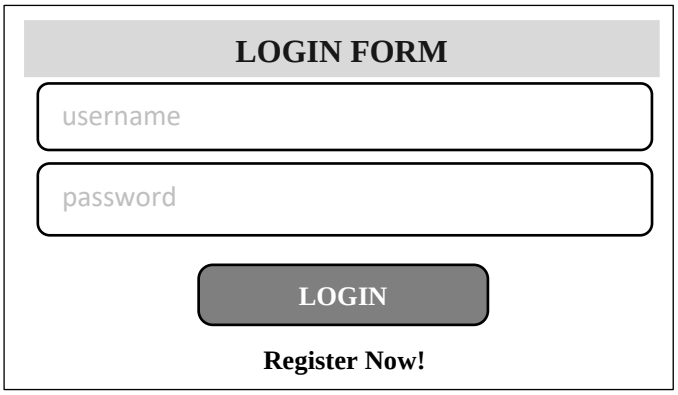

Figure 3.9: Login Form

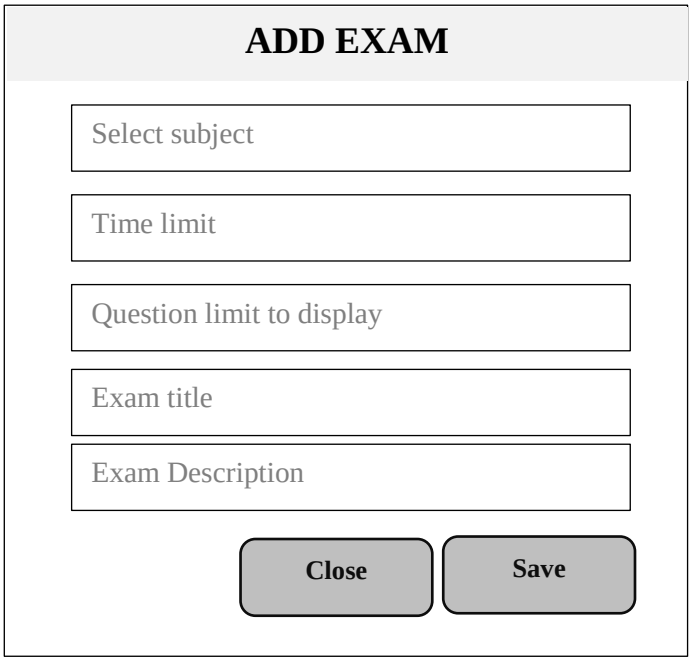

Figure 3.10: Order Form

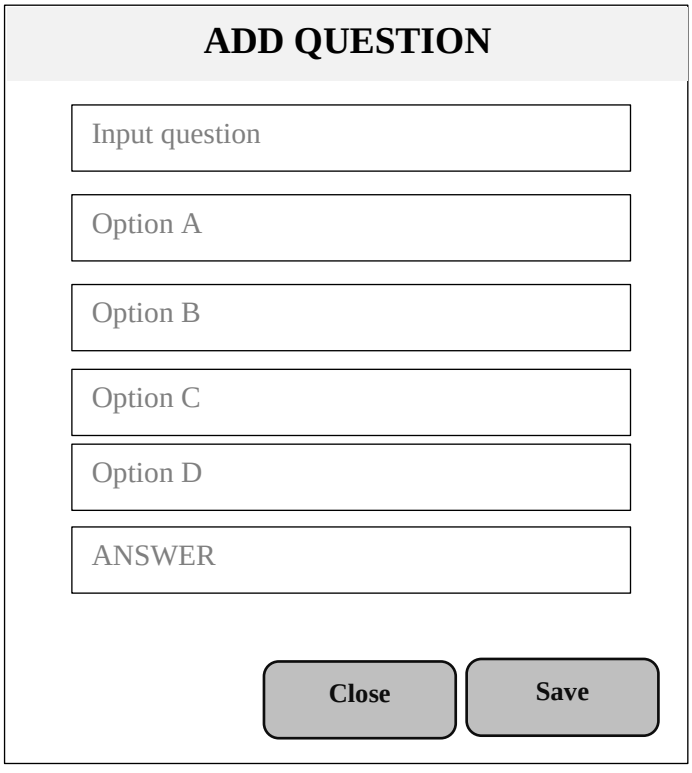

Figure 3.11: Add Question Form

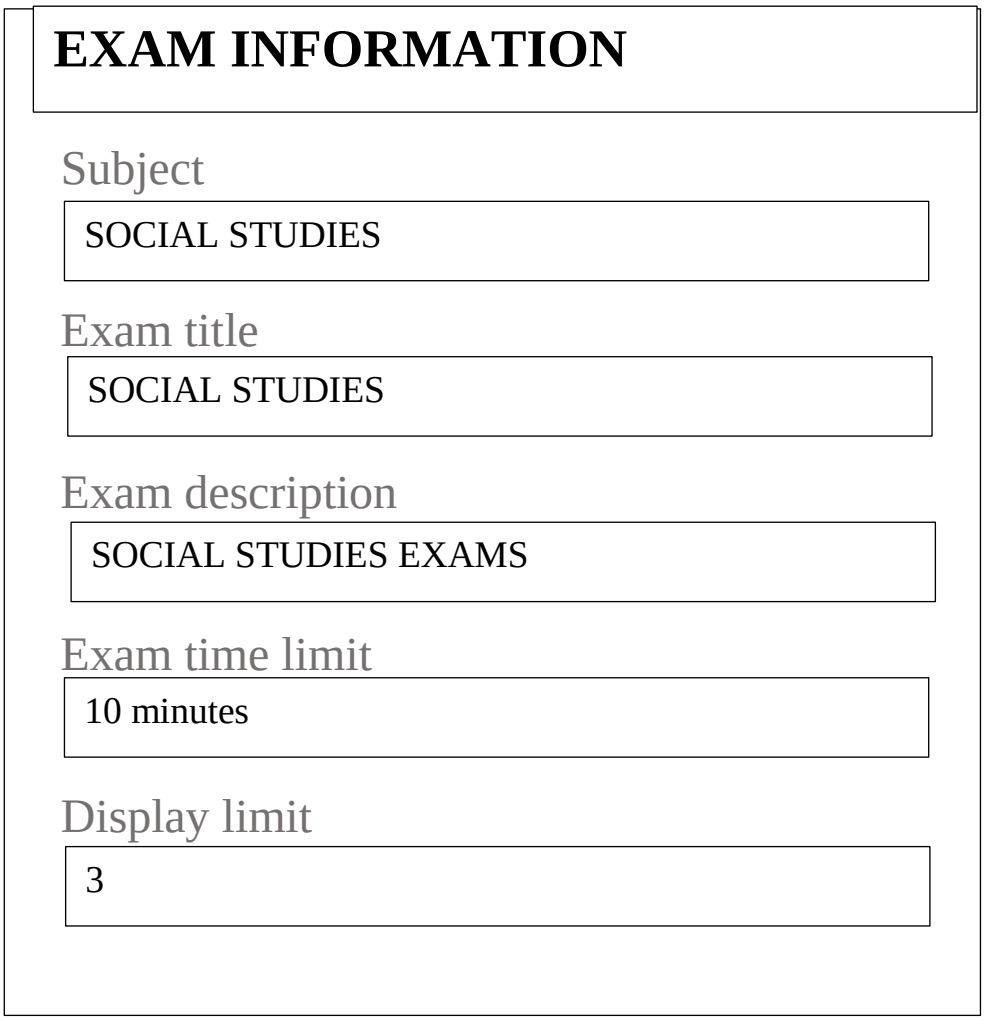

Figure 3.12: Exam Information Output

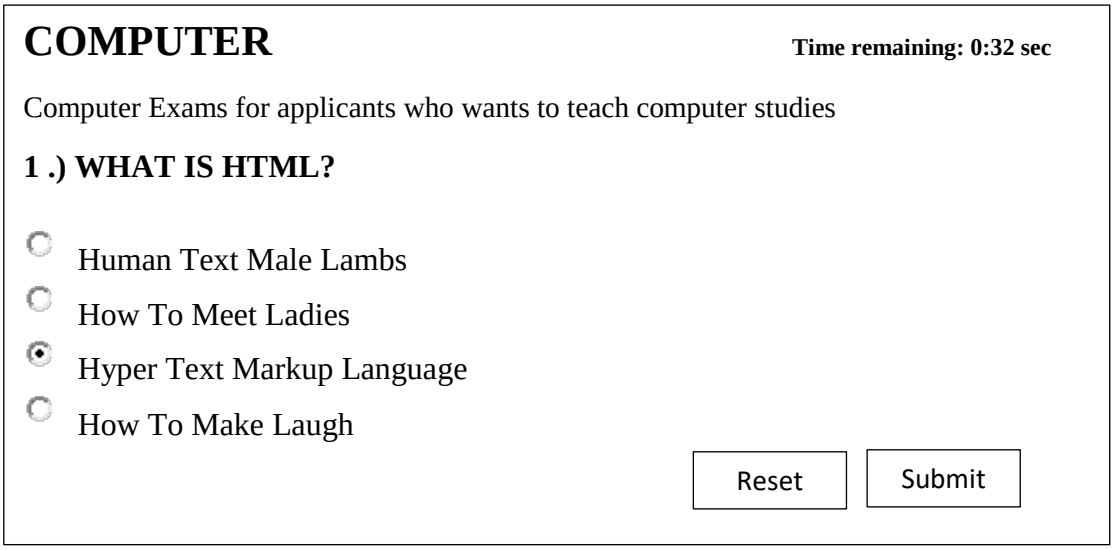

Figure 3.13: Exams Interface

3.7 System Requirements Specification

3.7.1 Hardware Requirements

The software to be design needs the following hardware for an effective operation of the newly designed system.

- **i.** A system running on intel, P(R) duo core with higher processor
- **ii.** The-Random Access Memory (RAM) should be at least 512MB.
- **iii.** At least 20-GB hard disk.
- **iv.** A monitor.

3.7.2 Software Requirements

The software requirements include:

- **i.** A window 7 or higher version of operating system.
- **ii.** XAMP or WAMP for Database
- **iii.** PHP
- **iv.** MySQL
- **v.** Browser

3.7.3 Personnel Requirements

Any computer literate who has a technical knowhow of internet surfing can use the system because it is user friendly.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The new system is designed using PHP and MySQL programming language for easy records inserting and updating. This system will help in managing and easily retrieving of information from the system for management purposes. The new system an Online Examination System for staff recruitment at Mundra Model School, Mubi.

4.2 Results

4.2.1 Login Interface

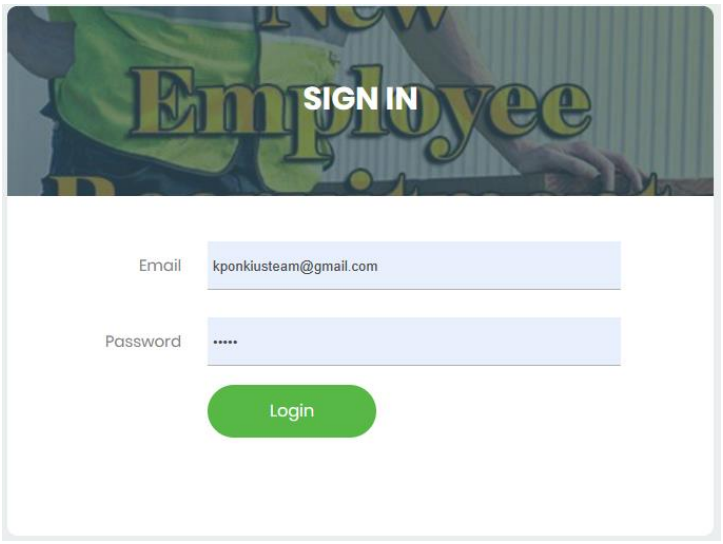

Figure 4.2.1: Login interface

Figure 4.2.1 above shows the system login page interface. The login interface allows the users and Administrator to enter his username and password to get access to the system.

4.2.2 Admin Dashboard

Figure 4.2.2: Admin Dashboard

Figure 4.2.2 above shows the system admin dashboard interface. The dashboard interface shows all the tasks that can be performed by the Administrator such as register an applicant, update records, set exams etc.

4.2.3 Add Applicant Interface

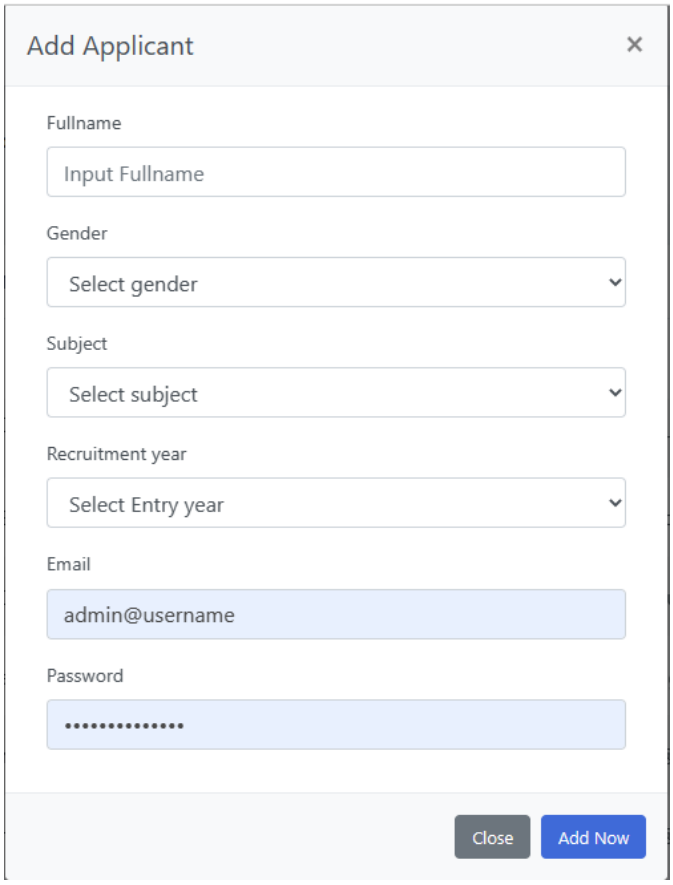

Figure 4.2.3: Add Applicant Interface

Figure 4.2.3 above shows where users/ applicant can be registered or added into the system to gain access into the system using some basic information like the first name, lastname, othername, level, subject etc.

4.2.4 Add Subject Interface

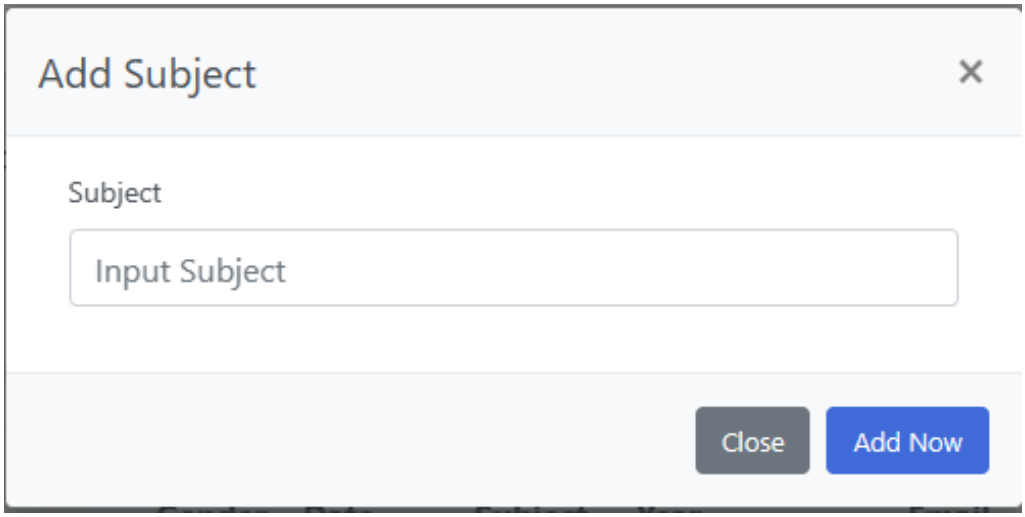

Figure 4.2.4: Add Subject Interface

Figure 4.2.4 is used to add subjects into the online recruitment system by the administrator which will be used to choose a particular subject for an applicant and also for setting exams.

4.2.5 Applicant List

APPLICANT LIST

Fullname	Gender	Exam Date	Subject	Recruitment Year	Email	Password	status	
AKAMSHU GABRIEL EYUAH	male	2023-07-29	COM233	2023/2024	akamshugabriel@gmail.com	1234567	active	Update
ADEBAYO YESUF	male	2023-07-28	COM233	2023/2024	yesufadebayo@gmail.com	Kponkius	active	Update
AKAMSHU GABRIEL	male	2023-07-28	COM233	2023/2024	kponkius@yahoo.com	12345	active	Update
Dave Limasac	female	2019-12-21	BSIT	second year	dave@gmail.com	dave	active	Update

Figure 4.2.5: Applicants List Interface

Figure 4.2.5 above displays all the applicants that have been registered into the online recruitment system.

4.2.6 Add Examination Interface

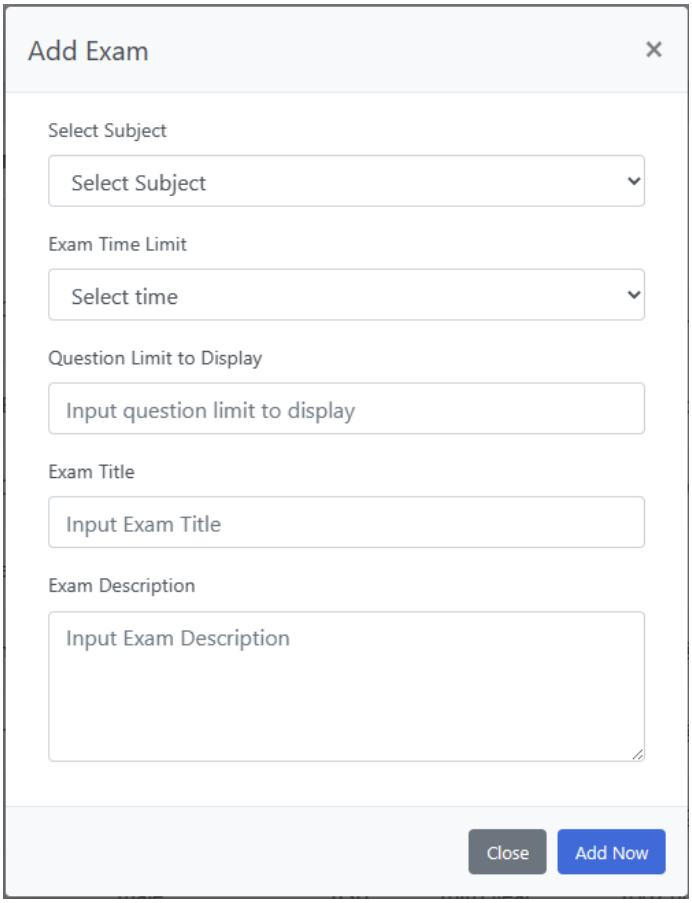

Figure 4.2.6: Add Examination Interface

Figure 4.2.6 above is used to create or add an exam for a particular subject that will be written by the applicants for that subject with a time limit.

4.2.7 Examination List

EXAM LIST

Exam Title	Subject	Description	Time limit	Display limit	Action
COMPUTER	COM233	COMPUTER EXAMS	10	3	Manage Delete
math3	BSCRIM	basic math3	10	3	Manage Delete
math 2	BSCRIM	basic math 2	10	3	Manage Delete
math	BSCRIM	basic math	10	5	Manage Delete
Exam Again	BSIT	again and again	5	0	Manage Delete

Figure 4.2.7: Examination List Interface

Figure 4.2.7 above shows all the exams that have been added to the system with their corresponding subjects, description and time limit.

4.2.8 Applicants Result Interface

APPLICANT RESULT

Fullname	Exam Name	Scores	Ratings
AKAMSHU GABRIEL	COMPUTER	2 / 3	66.666666666667%
ADEBAYO YESUF	COMPUTER	3 / 3	100%
AKAMSHU GABRIEL EYUAH	COMPUTER	1 / 3	33.3333333333333%
Dave Limasac	Another Exam	2 / 5	40%
Rogz Nune	Duerms	1 / 2	50%
Rogz Nune	Duerms	1 / 2	50%

Figure 4.2.8: Applicant Result Interface

Figure 4.2.8 above shows all the results for all the applicants that have written the online recruitment exams with the applicant name, exam name and score for the exam.

4.2.9 Add Questions Interface

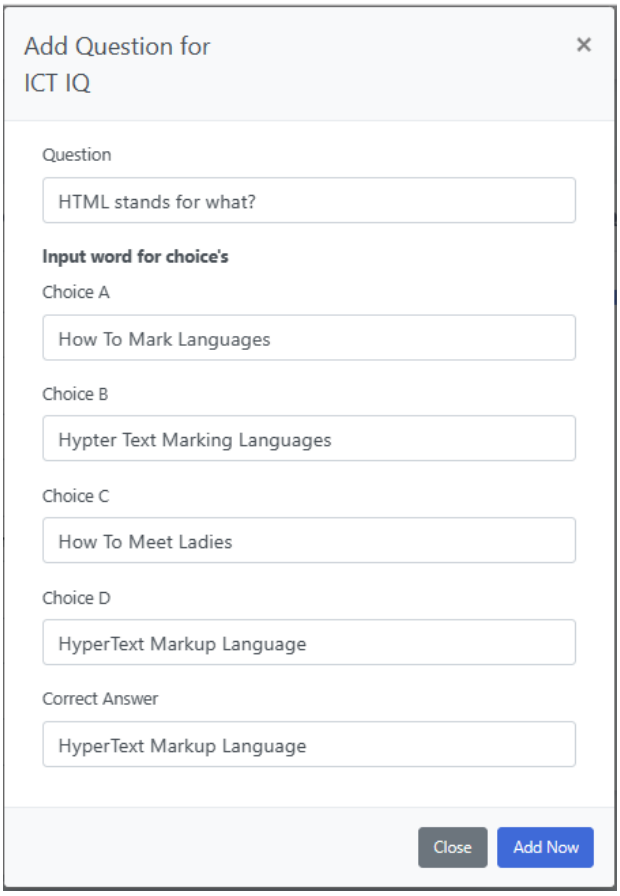

Figure 4.2.9: Add Question Interface

Figure 4.2.9 above shows where an admin can add questions for a particular exam created by inserting the question, the option A-D and the correct option.

4.2.10 Exams Interface

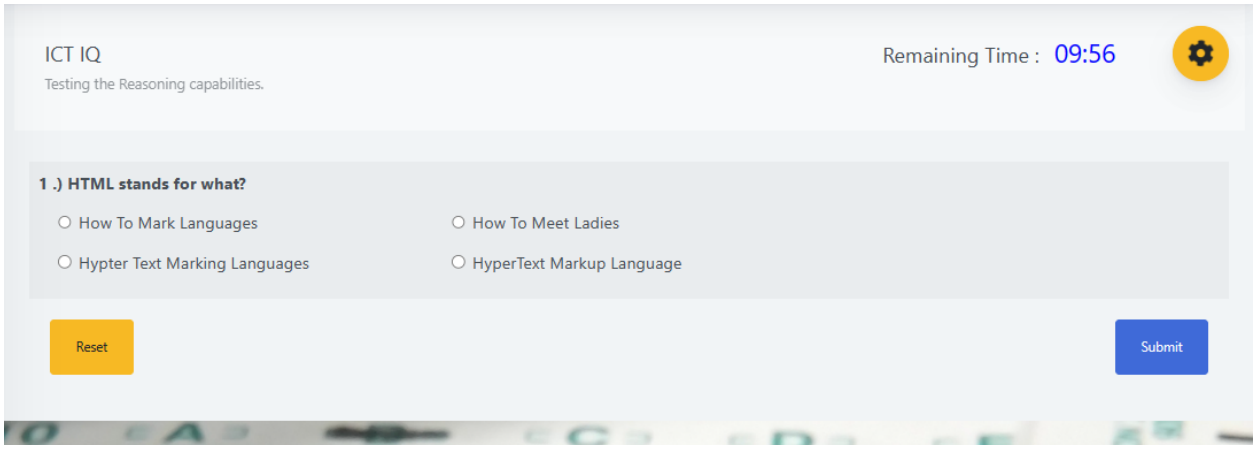

Figure 4.2.10: Exams Interface

Figure 4.2.10 above shows the exams process where the applicant can write the exams for a particular subject by choosing from option A-D and the correct option.

4.3 Discussion

The Login Interface is the entry point for authorized users, such as administrators and staff members, to access the online examination system. They will need to provide their login credentials (username and password) to gain access to the system.

After logging in, administrators are directed to the Admin Dashboard. This is a centralized control panel where administrators can manage and monitor various aspects of the online examination system. It might include features like managing user accounts, viewing statistics, configuring settings, and accessing different interfaces for system management.

Add Applicant interface allows administrators to input and store information about potential applicants who are applying for staff positions at Mundra Model School. It could include fields like personal details, educational background, work experience, and other relevant information.

Add Subject Interface: Here, administrators can add the subjects or topics for which staff recruitment examinations will be conducted. This interface might involve specifying the subject name, description, and any relevant details.

Applicant List section displays a list of all the applicants who have applied for staff positions. It provides administrators with an overview of the applicant pool, and they might be able to sort, filter, and view details of each applicant.

Add Examination section, administrators can create new examinations for the recruitment process. They can set the details of the exam, such as the subject, duration, type of questions, and any other relevant parameters.

Similar to the Applicant List, Examination List section provides an overview of all the ongoing and upcoming examinations. Administrators can manage the scheduling and details of each exam from this interface.

Once examinations are completed, Applicants Result interface allows administrators to view and manage the results of the applicants. They can see individual scores and overall performance, which is crucial for the recruitment process.

In Add Questions Interface, administrators can add questions to the question bank. These questions will be used to create exams. The interface may allow administrators to specify question types (multiple choice, essay, etc.), difficulty levels, and correct answers.

The Exams Interface section is where applicants will take their online exams. It provides a secure environment for candidates to answer the questions based on the subjects they have applied for. The interface includes features like a timer, navigation between questions, and submission options.

4.4 User manual

The following are the necessary steps to take in order to use the system efficiently and effectively.

i. Load the url of the system https://localhost/staffrecuitment/ the welcome page will be displayed.
ii. Click on the **Proceed** button to proceed to the main system.
iii. If you created an account, provide your login details by entering your username and password.
iv. Depending on the login details provided you will be automatically directed to the dashboard.
v. The various task that you can perform on the portal will be displayed on the sidebar of the dashboard.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The development of the Online Examination System for staff recruitment at Mundra Model School, Mubi, marks a significant advancement in the school's recruitment process. The system encompasses a range of interfaces and functionalities, such as the Login Interface, Admin Dashboard, Applicant Management, Examination Creation, and Result Analysis. Through this system, administrators can efficiently manage applicant information, create and oversee examinations, and assess candidates' performance in a streamlined and organized manner. Applicants benefit from a user-friendly platform that enables them to participate in the recruitment process seamlessly. This system has the potential to revolutionize the recruitment procedures at Mundra Model School, optimizing efficiency and accuracy.

5.2 Conclusion

In conclusion, the implementation of the Online Examination System brings forth a modern and efficient solution for staff recruitment at Mundra Model School, Mubi. The various interfaces, such as applicant management, examination creation, and result analysis, collectively contribute to a comprehensive and integrated recruitment process. By digitizing and automating these processes, the system enhances accuracy, reduces manual efforts, and provides both administrators and applicants with a convenient and effective means of engagement. The successful deployment of this system demonstrates its potential to revolutionize the way staff recruitment is conducted, improving overall efficiency and ensuring the selection of the most suitable candidates.

5.3 Recommendations

While the Online Examination System offers substantial benefits, there are some recommendations to consider for further enhancement. First, continuous monitoring and updates are essential to ensure the system's security against potential cyber threats. Additionally, user feedback should be actively sought and incorporated to improve the user experience. Regular training sessions for administrators and applicants can help maximize the system's potential and minimize any operational challenges. Moreover, integrating features for remote proctoring and plagiarism detection could further enhance the credibility and integrity of the examination process.

5.4 Contribution to Knowledge

The development and deployment of the Online Examination System for staff recruitment at Mundra Model School, Mubi, contribute to the existing knowledge in the fields of education technology and recruitment processes. By providing a detailed case study of the implementation

and utilization of such a system, this project contributes practical insights into how online platforms can be effectively leveraged to streamline recruitment procedures while maintaining the quality and reliability of candidate assessment.

5.5 Area for Further Work

While the current system provides a robust framework for online examinations, there are several areas that warrant further exploration. One such area is the integration of advanced AI-driven technologies for automated question generation, adaptive testing, and sentiment analysis during remote proctoring. Additionally, expanding the system to accommodate video interviews or interactive assessment methods could provide a more holistic evaluation of candidates' skills and qualifications. Exploring ways to integrate the system with other HR management tools and databases would also create a seamless end-to-end recruitment process. These potential enhancements offer ample opportunities for further research and development in the realm of online examination systems for educational institutions.

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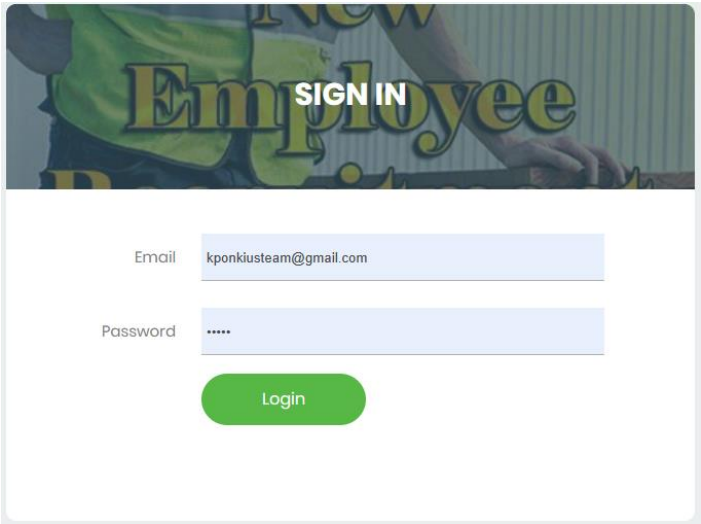
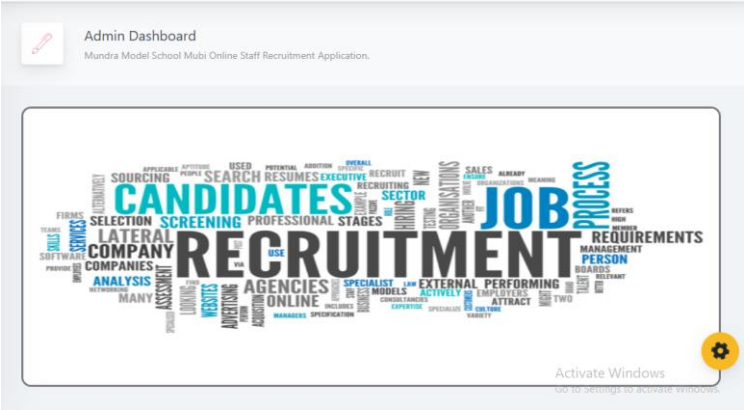
APPENDIX A

Login Interface



Admin Dashboard

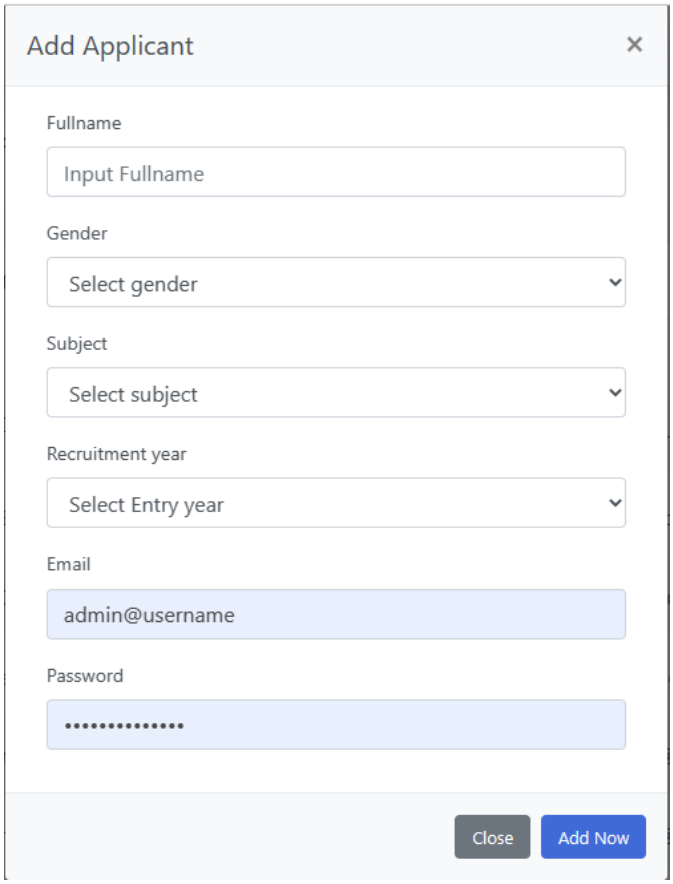


Applicant List

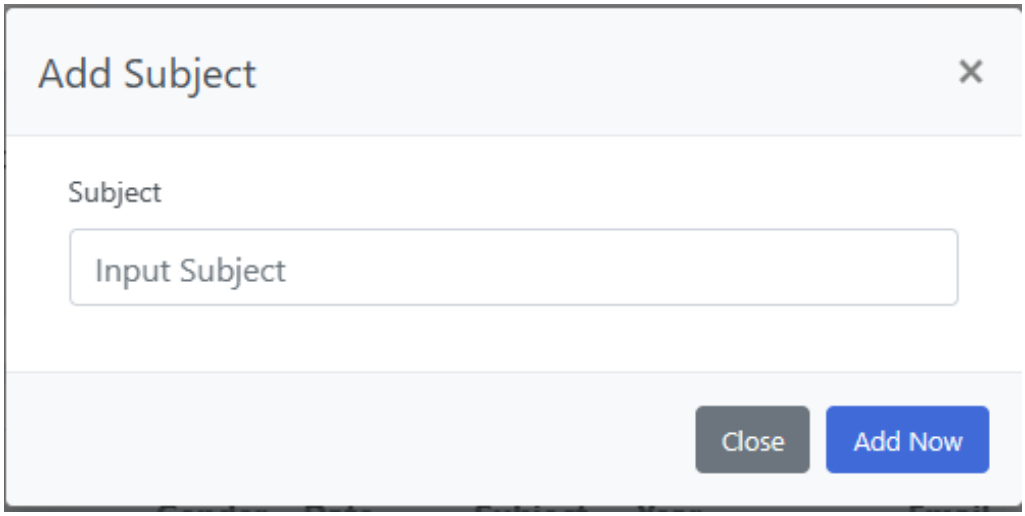
APPLICANT LIST

Fullname	Gender	Exam Date	Subject	Recruitment Year	Email	Password	status	
AKAMSHU GABRIEL EYUAH	male	2023-07-29	COM233	2023/2024	akamshugabriel@gmail.com	1234567	active	Update
ADEBAYO YESUF	male	2023-07-28	COM233	2023/2024	yesufadebayo@gmail.com	Kponkius	active	Update
AKAMSHU GABRIEL	male	2023-07-28	COM233	2023/2024	kponkius@yahoo.com	12345	active	Update
Dave Limasac	female	2019-12-21	BSIT	second year	dave@gmail.com	dave	active	Update

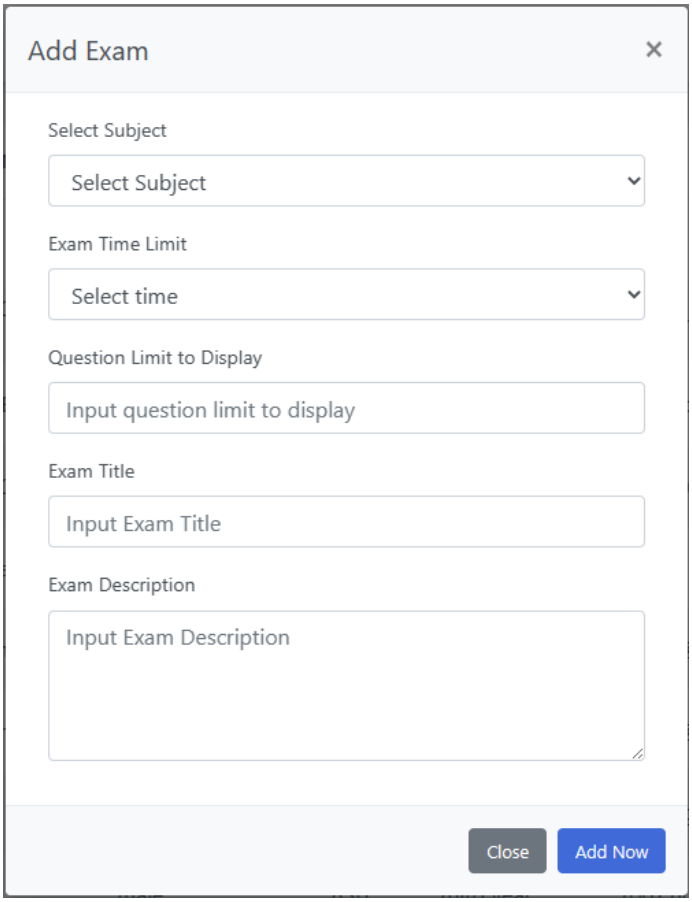
Add Applicant Interface



Add Subject Interface



Add Examination Interface



Examination List

EXAM LIST

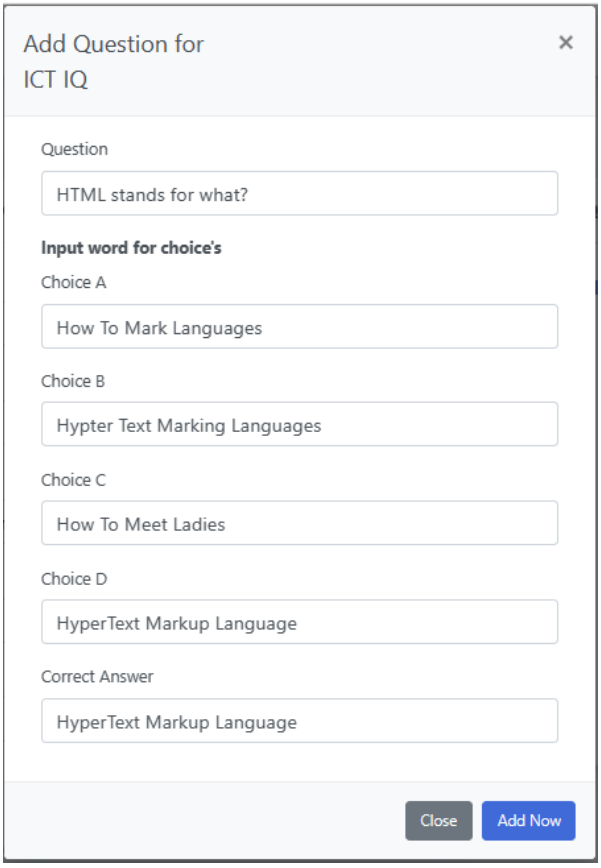
Exam Title	Subject	Description	Time limit	Display limit	Action
COMPUTER	COM233	COMPUTER EXAMS	10	3	Manage Delete
math3	BSCRIM	basic math3	10	3	Manage Delete
math 2	BSCRIM	basic math 2	10	3	Manage Delete
math	BSCRIM	basic math	10	5	Manage Delete
Exam Again	BSIT	again and again	5	0	Manage Delete

Applicants Result Interface

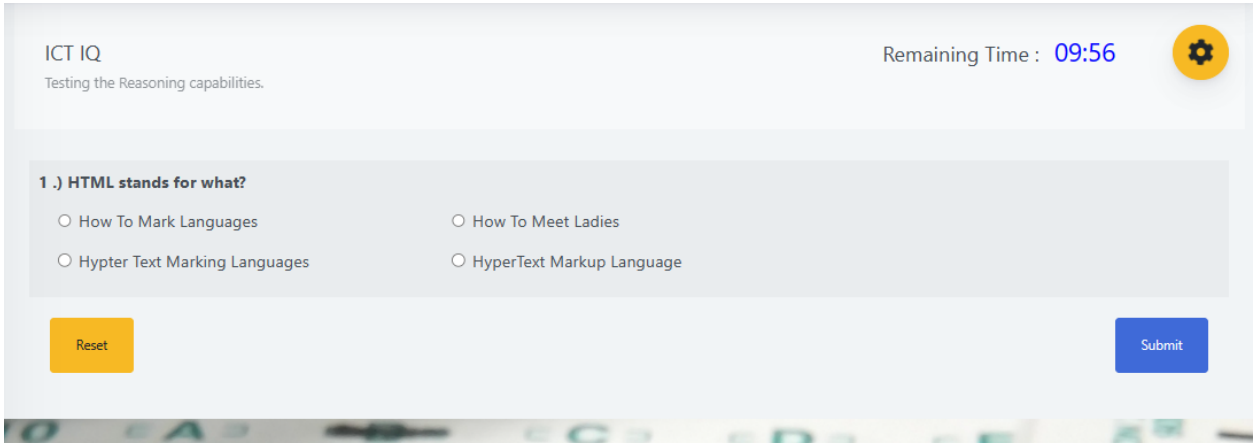
APPLICANT RESULT

Fullname	Exam Name	Scores	Ratings
AKAMSHU GABRIEL	COMPUTER	2 / 3	66.666666666667%
ADEBAYO YESUF	COMPUTER	3 / 3	100%
AKAMSHU GABRIEL EYUAH	COMPUTER	1 / 3	33.3333333333333%
Dave Limasac	Another Exam	2 / 5	40%
Rogz Nune	Duerms	1 / 2	50%
Rogz Nune	Duerms	1 / 2	50%

Add Questions Interface



Exams Interface



APPENDIX B

PROGRAM CODE

```
<link rel="stylesheet" type="text/css" href="css/mycss.css">
<div class="app-main__outer">
        <div class="app-main__inner">
            <div class="app-page-title">
                <div class="page-title-wrapper">
                    <div class="page-title-heading">
                        <div>APPLICANT RESULT</div>
                    </div>
                </div>
            </div>

            <div class="col-md-12">
                <div class="main-card mb-3 card">
                    <div class="card-header">Applicant Result
                    </div>
                    <div class="table-responsive">
                        <table class="align-middle mb-0 table table-borderless
table-striped table-hover" id="tableList">
                            <thead>
                            <tr>
                                <th>Fullname</th>
                                <th>Exam Name</th>
                                <th>Scores</th>
                                <th>Ratings</th>
                                <th width="10%"></th>
                            </tr>
                            </thead>
                            <tbody>
                              <?php
                                $selExmne = $conn->query("SELECT * FROM
examinee_tbl et INNER JOIN exam_attempt ea ON et.exmne_id = ea.exmne_id ORDER BY
ea.examat_id DESC ");
                                if($selExmne->rowCount() > 0)
                                {
                                    while ($selExmneRow = $selExmne-
>fetch(PDO::FETCH_ASSOC)) { ?>
                                        <tr>
                                           <td><?php echo
$selExmneRow['exmne_fullname']; ?></td>
                                           <td>
                                             <?php
                                                $eid = $selExmneRow['exmne_id'];
                                                $selExName = $conn->query("SELECT
* FROM exam_tbl et INNER JOIN exam_attempt ea ON et.ex_id=ea.exam_id
WHERE  ea.exmne_id='$eid' ")->fetch(PDO::FETCH_ASSOC);
                                                $exam_id = $selExName['ex_id'];
                                                echo $selExName['ex_title'];
                                              ?>
                                           </td>
                                           <td>
                                                   <?php
                                                   $selScore = $conn-
>query("SELECT * FROM exam_question_tbl eqt INNER JOIN exam_answers ea ON
eqt.eqt_id = ea.quest_id AND eqt.exam_answer = ea.exans_answer  WHERE
ea.axmne_id='$eid' AND ea.exam_id='$exam_id' AND ea.exans_status='new' ");
```

```
                                                    ?>
                                                <span>
                                                    <?php echo $selScore-
>rowCount(); ?>
                                                    <?php
                                                        $over  =
$selExName['ex_questlimit_display'];
                                                     ?>
                                                </span> / <?php echo $over; ?>
                                            </td>
                                            <td>
                                               <?php
                                                    $selScore = $conn-
>query("SELECT * FROM exam_question_tbl eqt INNER JOIN exam_answers ea ON
eqt.eqt_id = ea.quest_id AND eqt.exam_answer = ea.exans_answer  WHERE
ea.axmne_id='$eid' AND ea.exam_id='$exam_id' AND ea.exans_status='new' ");
                                                ?>
                                                <span>
                                                    <?php
                                                        $score = $selScore-
>rowCount();
                                                        $ans = $score / $over *
100;
                                                        echo "$ans";
                                                        echo "%";

                                                     ?>
                                                </span>
                                            </td>
                                            <td>
                                               <!-- <a rel="facebox"
href="facebox_modal/updateExaminee.php?id=<//?php echo $selExmneRow['exmne_id'];
?>" class="btn btn-sm btn-primary">Print Result</a>-->

                                            </td>
                                        </tr>
                                    <?php }
                                }
                                else
                                { ?>
                                    <tr>
                                      <td colspan="2">
                                        <h3 class="p-3">No Subject Found</h3>
                                      </td>
                                    </tr>
                                <?php }
                               ?>
                            </tbody>
                        </table>
                    </div>
                </div>
            </div>


</div>


<div class="app-main__outer">
```

```
        <div class="app-main__inner">
            <div class="app-page-title">
                <div class="page-title-wrapper">
                    <div class="page-title-heading">
                        <div>MANAGE EXAM</div>
                    </div>
                </div>
            </div>

            <div class="col-md-12">
                <div class="main-card mb-3 card">
                    <div class="card-header">EXAM List
                    </div>
                    <div class="table-responsive">
                        <table class="align-middle mb-0 table table-borderless
table-striped table-hover" id="tableList">
                            <thead>
                            <tr>
                                <th class="text-left pl-4">Exam Title</th>
                                <th class="text-left ">Subject</th>
                                <th class="text-left ">Description</th>
                                <th class="text-left ">Time limit</th>
                                <th class="text-left ">Display limit</th>
                                <th class="text-center" width="20%">Action</th>
                            </tr>
                            </thead>
                            <tbody>
                              <?php
                                $selExam = $conn->query("SELECT * FROM exam_tbl
ORDER BY ex_id DESC ");
                                if($selExam->rowCount() > 0)
                                {
                                    while ($selExamRow = $selExam-
>fetch(PDO::FETCH_ASSOC)) { ?>
                                        <tr>
                                            <td class="pl-4"><?php echo
$selExamRow['ex_title']; ?></td>
                                            <td>
                                                <?php
                                                    $courseId
=  $selExamRow['cou_id'];
                                                    $selCourse = $conn-
>query("SELECT * FROM course_tbl WHERE cou_id='$courseId' ");
                                                    while ($selCourseRow =
$selCourse->fetch(PDO::FETCH_ASSOC)) {
                                                        echo
$selCourseRow['cou_name'];
                                                    }
                                                ?>
                                            </td>
                                            <td><?php echo
$selExamRow['ex_description']; ?></td>
                                            <td><?php echo
$selExamRow['ex_time_limit']; ?></td>
                                            <td><?php echo
$selExamRow['ex_questlimit_display']; ?></td>
                                            <td class="text-center">
```

```
                                            <a href="manage-exam.php?id=<?php
echo $selExamRow['ex_id']; ?>" type="button" class="btn btn-primary btn-
sm">Manage</a>
                                            <button type="button"
id="deleteExam" data-id='<?php echo $selExamRow['ex_id']; ?>'  class="btn btn-
danger btn-sm">Delete</button>
                                        </td>
                                    </tr>

                                    <?php }
                                }
                                else
                                { ?>
                                    <tr>
                                      <td colspan="5">
                                        <h3 class="p-3">No Exam Found</h3>
                                      </td>
                                    </tr>
                                <?php }
                                ?>
                            </tbody>
                        </table>
                    </div>
                </div>
            </div>


</div>
```