Tribhuvan University

Faculty of Humanities and Social Science

"ONLINE EXAMINATION SYSTEM"

A PROJECT REPORT

Submitted to

Department of Computer Application

Butwal Kalika Campus

In partial fulfillment of the requirements for the Bachelors in Computer Application

Submitted by

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25th Bhadra, 2078

Tribhuvan University

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Supervisor's Certificate

This is to certify that this report embodies the original work done by Jayanti Shrestha and Ganesh Gaha entitled "**ONLINE EXAMINATION SYSTEM**" in partial fulfilment of the requirements for the degree of Bachelor in Computer Application for the final evaluation.

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LETTER OF APPROVAL

This is to certify that this project prepared by **Jayanti Shrestha and Ganesh Gaha** entitled **"Online Examination System"** in partial fulfillment of the requirements for the degree of BCA in Computer Science and Information Technology has been well studied. In our opinion it is satisfactory in the scope and quality as a project for the required degree.

…….	…….
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STUDENT'S DECLARATION

We hereby declare that project report entitled "**ONLINE EXAMINATION SYSTEM**" submitted in the partial fulfillment of the requirement for Bachelor's degree of Bachelor in Computer Application of Tribhuvan University, is our original work and not submitted for the award of any other degree, diploma, fellowship, or any other similar title or prize.

……..… ……

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ABSTRACT

Online Examination System is used for conducting an online objective test, the test will be customized such that system will have automated checking of answers based on the user interaction. This project helps the faculties to create their test based on the subject and for students, we make an online assessment facility. This also helps the instruction to perform online quizzes, test papers such that the academic performance of the students can be increased and can take the feedback from both students and parents.

The online examination system is most important for the current pandemic situation. Exam System is very useful for prepare multiple-choice questions for an exam, save the time that will take to check the paper, and prepare mark sheets. It will help the Institute to the testing of students and develop their skills. But the disadvantage of this system, it takes a lot of time when you prepare the exam for the first time for usage. And we need several computers for the same number of students.

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ABBREVIATIONS

OES	Online Examination System
CSS	Cascading Style Sheets
PHP	Hypertext Preprocessor
HTML	Hypertext Markup Language
SRS	Software Requirement Specification
DFD	Data Flow Diagram
ER	Entity Relationship

Chapter 1: Introduction

1.1 Introduction

Today, Online Examination System is considered a fast-developing examination method because of its accuracy and speed. It is also needed less manpower to handle the examination. Almost all organizations today, are managing their exams by online examination system since it reduces student's time in examinations. Organizations can also easily monitor the progress of the student that they give through an examination.

As a result of this, the result is calculated in less time. It also helps to diminish the need for paper. Online examination project in PHP is very useful to learn it, according to today's requirement. Compared to the traditional examination mode, the online examination has many incomparable superiority. Multiple steps, such as the organizing and printing of papers before the examination, the distributing and collecting of papers during the examination, the marking and arranging after the examinations, are reduced to one or two steps. Students on line examinations achieve non-paper and automatic examinations, lighten the heavy burden of organizing and marking during examinations, and greatly improve the fairness and justice of examinations, make the examination to be scientific and normalized[1]. The OES helps the educational institutions to monitor their students and keep eyes on their progress. The best use of this system in Scholastic Institute and training centers because it helps in managing the exams and get the results easily and efficiently. Until today the preparing for exams and preparing the results was performed manually, this required more time to complete.

1.2 Problem Statement

Since the traditional have many drawbacks such as time-consuming, Difficulty of analyzing the test manually, More observers are required to take exam of many students, Results are not accurate since calculations are done manually, The chance of losing exam's result is higher in current systems, Checking of the result is time-consuming since it is done manually, Limitation of no of student can give examination at a time. with the development of information technology and use it in an orderly and properly helps to overcome the existing error in the manual system. The online examination system saves the exam information in a database, and this makes it an easier way to give exam teachers can add their exam rules, and students can give exams in an automated system.

1.3 Objectives

Online examination is becoming more popular in this digital century. The major objective of our project is to develop an online examination system for students whereby exams/tests can be created. It is most important for the current pandemic situation. Exam System is very useful for prepare multiple-choice questions for an exam and saves the time that will take to check the paper. Some of the specific objectives of the Online Examination System are listed below:–

- Automatically checked answers
- Prevents cheatings
- Time management

1.4 Scope

Scope of this project is very broad in terms of other manually taking exams. Few of them are:-

- This can be used in educational institutions as well as in corporate world.
- Can be used anywhere any time as it is a web based application.

1.5 Limitations

This system has some limitation. The system need Internet for its performance.

The limitations of this system are:

a. Infrastructural Barriers
b. Difficulty in Grading Long-answer Type
c. Transitioning to Open-Book Exams

1.6 Report Organization

This report is divided into 6 chapters. Each chapter is further divided into different headings.

The preliminary section contains the overall information about the project. This section includes abstract, table of contents, list of figures and abbreviations.

Chapter 1 gives introduction about Online Examination System. The problem definition, objectives, scopes and limitation of this system are discussed.

Chapter 2 contains literature review section where the research works done in the field of the system are discussed in brief.

Chapter 3 discusses in detail about the design of the system. It provide information about the existing system, data collection methods, analysis part, feasibility study and system configuration.

Chapter 4 gives information about overall system architecture, class diagram, use case diagram, sequence diagram and database diagram .

Chapter 5 gives information about the system development models and tools used.

Chapter 6 includes the future scope of the project and necessary recommendations along with conclusion.

Chapter 2: Background Study and Literature Review

2.1 Background

Online learning or E-learning is fast gaining ground as an accepted and used learning paradigm. More and more school institutions are implementing web sites providing functionality for performing E-learning and examinations over the web. It is reasonable to say that the process of learning on the web is becoming commonplace.

The major objective of this project is to develop an online examination system for students whereby exams/tests can be created and conducted online so as to ensure that E-learning students need not travel for long distances so as to sit for their examinations.

2.2 Literature Review

E-learning and Online Examination systems applications support the interaction between different parties participating in the learning platform via the network, as well as the management of the data involved in the process. Computerized systems have been increasing in education nowadays. Information Technology plays a very important role in education. Computers have made dramatic changes in the learning system. Information technology enables education institutions to save space and time, and allow the delivery of education services with easiness, anywhere, and anytime. With computer software, we can be able to have access to huge databases of information. This gives fundamental change to the education system. Computers are a powerful tool used in all aspects of our studies. We use multimedia technologies to convey ideas, build projects. Information technology provides systems that allow students to perform many tasks in an automatic way and not manually.[2] Students can take exam using computerized system; they don't need paper-based exam. They save time and money when using computer system in their studies.[3]

Chapter 3: System Analysis and Design

3.1 System Analysis

It is a process of collecting and interpreting facts, identifying the problems, and decomposition of a system into its components. System analysis is conducted for the purpose of studying a system or its parts in order to identify its objectives. It is a problem-solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose.

3.1.1 Requirement Identifications

Study of Existing System

Computerized and online systems have been increasing in every aspect of education. Information Technology plays a very important role in nowadays education. Computers and the internet have made dramatic changes in the education system. An online examination is the conducting of an examination or test online to measure a student's academic performance. Traditionally, these evaluations were conducted orally or through written tests using pen and paper. Students gathered in an examination hall or room where a question paper was handed to students and students had to write answers within the allotted period. These questions were not seen previously to ensure a fair evaluation of all students. Students then turn in their answer sheets and after some time, evaluators share student scores[3].

With an online examination, all these traditional elements continue to persist, however, the mode of test-taking has changed – instead of a physical examination hall, students instead log into an online examination system through which they access the question paper and share their answers. Evaluation and the publication of results also happen within this system. It is an application that is designed and developed for students and lecturers. The system helps students to take examinations. It helps also lecturers to upload the questions and answers in the database and they can see the students who fail or pass the exam.

3.1.1.1 Functional Requirements

It specifies the services that the system should provide, how the system should react to particular inputs and how the system should behave in particular situations. In somecases, the functional requirements may also explicitly state what the system should not do.Functional requirements may involve calculations, technical details, data manipulations and processing and other specific functionality that define which a system is supposed to accomplish.

Registration

The system user i.e. students and first of all must create an account to the site. The registration form is coded using php, html and validated using php and JavaScript. The user will be needed to provide his/her studentuser name which will be used as the core identification to the site. The user too will be needed to choose his/her own password which be enabling him/her to log into the site. The user too should provide the name of his/her location/city, email address and contacts. After registration, the user will be required to login to the system. Thus, the user will now be able to log into the site since his/her account has been activated.

The Test conductor however can only be created by the administrator to ensure that students or other guests can't add themselves unnecessarily.

Login

Users will be required to login by providing their user names and their passwords too. If the user names correspond to the correct password provided by the user, the user will be authenticated to the main site from where he can view different things according to the type of user they are.

Administrator Functionalities

The administrator has choice to delete users from the system depending on their justification for instance if a user is misusing the site.

3.1.1.2 Non Functional Requirements

In developing this system, iterative approach was used where the core functions were first included then tested the system to see its functionality. While designing this system, the following parameters where taken into consideration:

1) Performance

All details are stored in a mySQL database which is fast, efficient and perfect. The site on the front end runs on HTML and css while on the back end, it is supported by JavaScript, mySQL database and php. Thus, the user has been limited to the interface only, but not how the system works at the background.

2) Availability

The system has not been created in a static manner but it is dynamic. It therefore provides an easy extensibility in the future according to changing technologies.

3) Security

Security has been enhanced by providing a different platform for administrators and users/applicants. Admin has been granted many privileges than a normal user. A student can only take a test and view results but can't delete them. An admin on the other hand adds users, tests and views users, added tests and can deletes users form the site and delete tests. These are operations which have been limited to the admin only.

4) Maintainability

The system has been designed in a way that the components can be changed. This makes it easy to maintain and use.

5) Accessibility and Usage

For any site to be good, it has to be user friendly .The site is made from an interface that is friendly to the user, which abstracts most of the background operations and only provides the important operations to the user. Too, any over 18 years old person can use the site freely because it provides easy terms and navigation. The user is directed to what he/she needs easily without searching for it and too, the menus are optimized to meet users' needs.

3.1.2 Feasibility Analysis

The feasibility analysis assists to analyze whether the software meet required requirements, can be implemented using the current technology and within specified budget and schedule. It guides the project team in determining whether to proceed with the project and it identifies the important risks associated with the project that must be managed if the project is approved.

3.1.2.1 Technical Feasibility

Technical feasibility centers on the existing manual system of the test management process and to what extent it can support the system. According to feasibility analysis procedure the technical feasibility of the system is analyzed and the technical requirements such as software facilities, procedure, inputs are identified. It is also one of the important phases of the system development activities. The system offers greater levels of user friendliness combined with greater processing speed. Therefore, the cost of maintenance can be reduced. Since, processing speed is very high and the work is reduced in the maintenance point of view management convince that the project is operationally feasible.

3.1.2.2 Operational Feasibility

The project is operationally feasible as there is no need for users to have good knowledge of computers before using it. The user can learn and use the system with easiness; he/she just needs to read the manual or tutorial from the developers.

3.1.2.3 Economical Feasibility

Economic analysis is most frequently used for evaluation of the effectiveness of the system. More commonly knows as cost/benefit analysis the procedure is to determine the benefit and saving that are expected from a system and compare them with costs, decisions is made to design and implement the system. This part of feasibility study gives the top management the economic justification for the new system. This is an important input to the management the management, because very often the top management does not like to get confounded by the various technicalities that bound to be associated with a project of this kind. A simple economic analysis that gives the actual comparison of costs and benefits is much more meaningful in such cases. In the system, the organization is most satisfied by economic feasibility. Because, if the organization implements this system, it need not require any additional hardware resources as well as it will be saving lot of time.

3.1.3 Data Modeling (ER Diagram)

Data modeling is the process of creating a data model for the data to be stored in a database. This data model is a conceptual representation of Data objects, the associations between different data objects, and the rules. An ER diagram, also known as ER model, is a graphical representation of entities and their relationships to each other. Typically used in computing in regard to the organization of data within database or information system. The basic components of an ER diagram are entities, attributes and relationship between and among those entities[3].

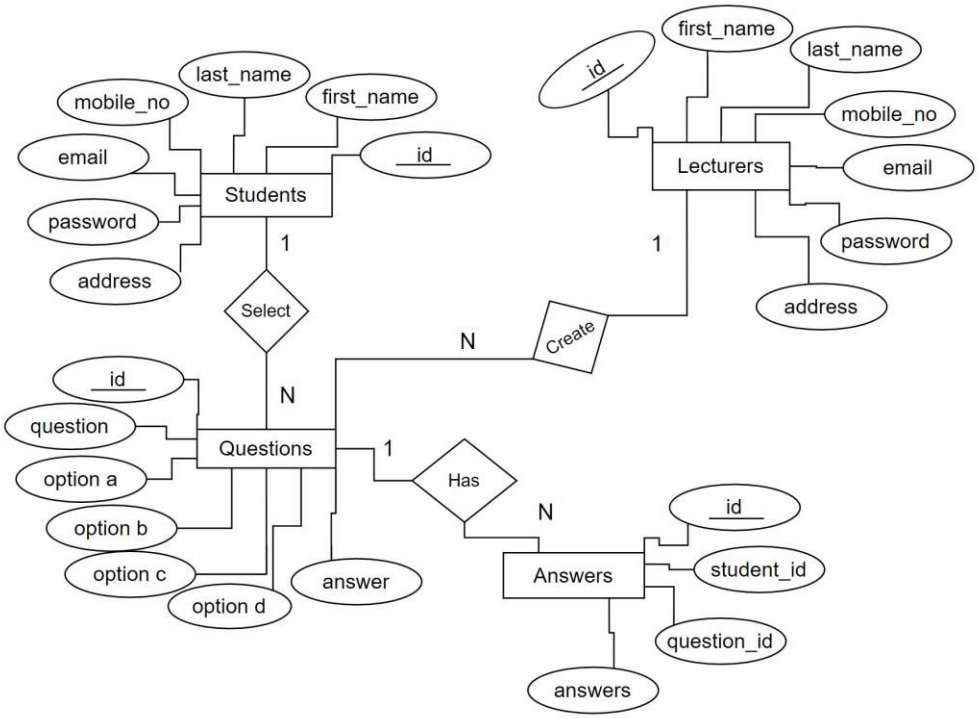

Figure 1 Entity Relationship System

3.1.4 Process Modelling (DFD)

Process Modelling graphically represents the functions, or processes, which capture, manipulate, store, and distribute data between a system and its environment and between componentsof asystem. A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination.

3.1.4.1 Level 0 DFD

DFD Level 0 is also called a Context Diagram. It's a basic overview of the whole system or process being analyzed or modeled. It's designed to be an at-a-glance view, showing the system as a single high-level process, with its relationship to external entities.

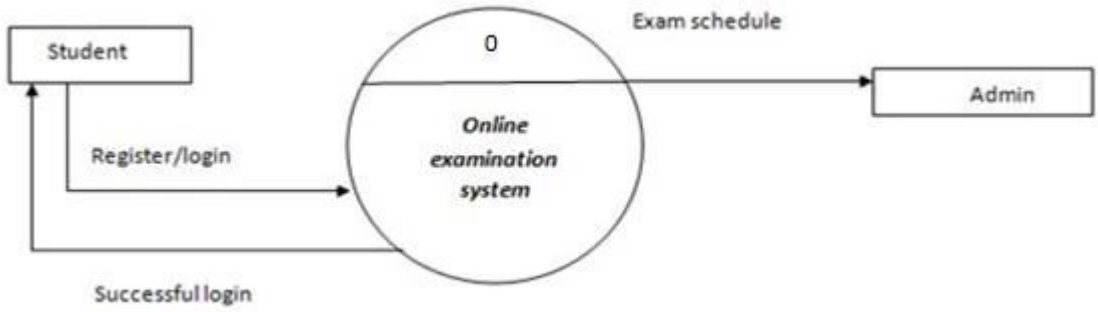

Figure 2 Context Diagram Of Online Examination System

3.1.4.2 Level 1 DFD

Level one level DFD's aim to give an overview of the full system. It looked at the system in more detail. Major processes are broken down into sub-processes. Level 1 DFD's also identifies data stores that are used by the major processes.

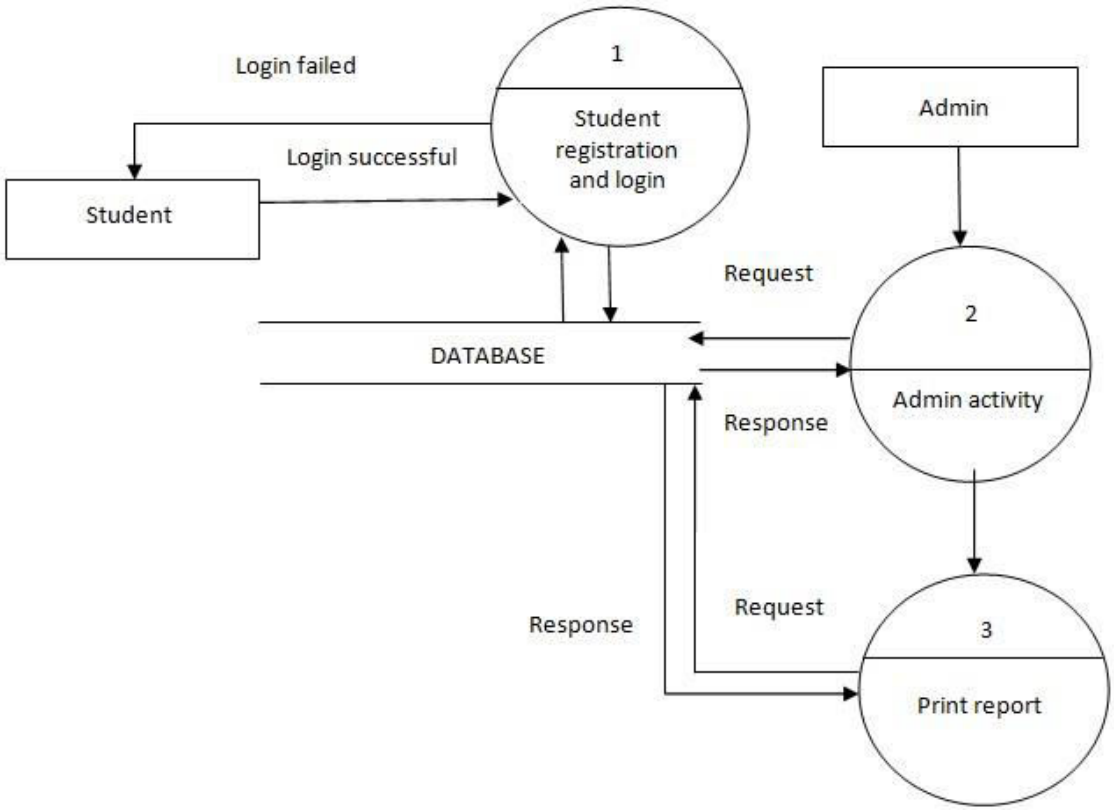

Figure 3 Level-1 Daigram Of Online Examination System

3.1.4.3 Level 2 DFD

2-level DFD goes one step deeper into parts of 1-level DFD. It can be used to plan or record the specific/necessary detail about the system's functioning.

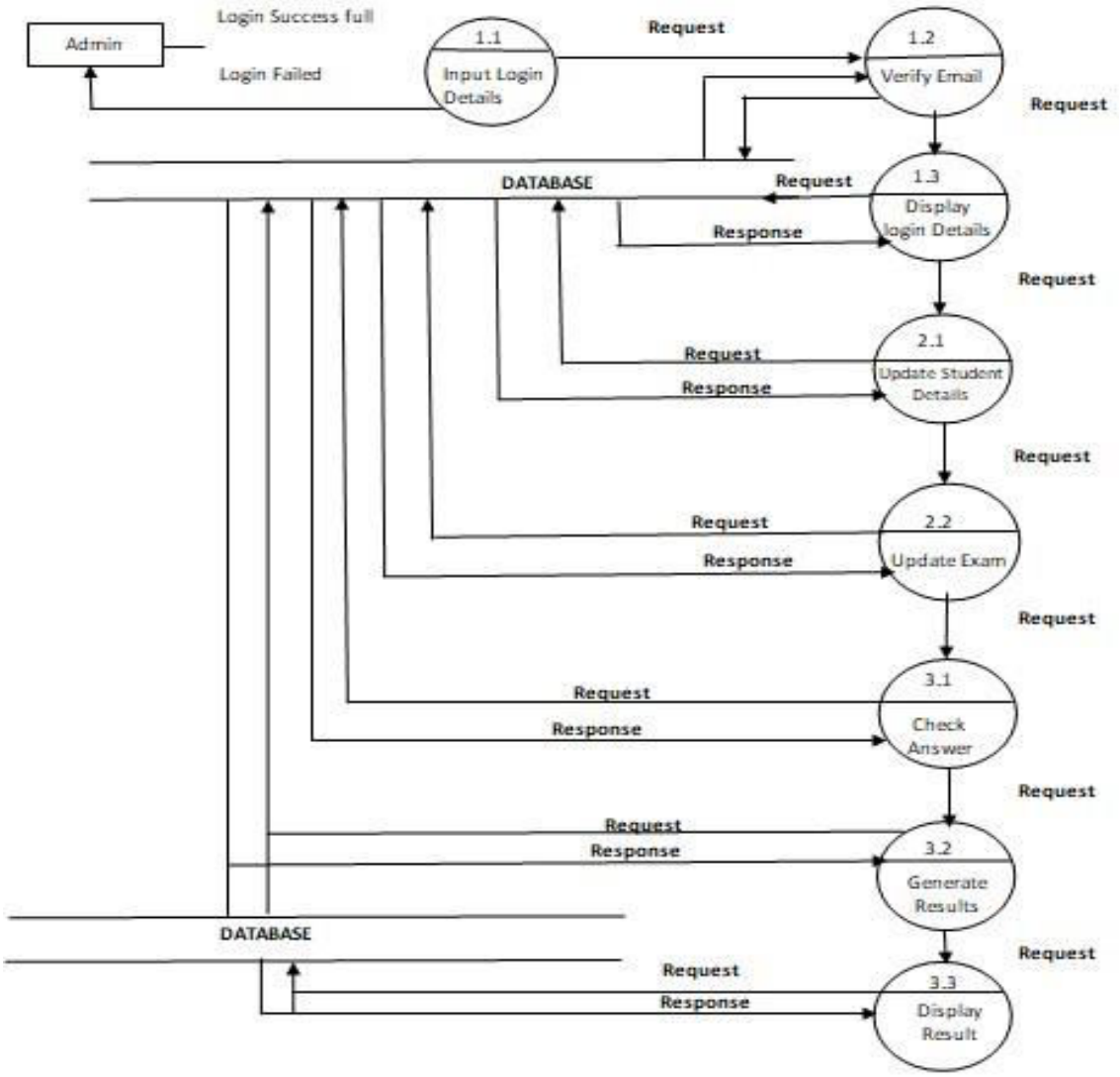

Figure 4 Level-2 Daigram Of Online Examination System

3.2 System Design

System design is the process of designing the elements of a system such as the architecture, modules and components.It is the phase where the SRS document is converted into a format that can be implemented and decides how the system will operate. It is the process of defining, developing and designing system that satisfies the specific

needs and requirement. The purpose of the system design process is to provide sufficient detailed data and information about the system and its system elements to enable the implementation consistent with architectural entities as defined in models and views of the system architecture.

3.2.1 Database Schema Design

The database is used for the purpose of handling information as an integrated whole. It is defined as a collection of interrelated data stored with less or no redundancy to serve many users quickly and effectively. We should design a database to see how data should be organized around user requirements. The objective of the database is to make information access, easy quick, inexpensive and flexible for other users. During database design the following objectives are concerned:

- Controlled Redundancy
- Data independence
- Accurate and integrating
- More information at low cost
- Recovery from failure
- Privacy and security
- Performance

Student schema

	id	first_name	last_name	mobile_no	email	address	password
Edit Copy Delete	10	Sudip	Poudel	9876543210	sudippoudel@gmail.com	kalikanagvar	password
Edit Copy Delete	27	ganesh	gaha	9802671887	info@ganeshgaha.com.np	kalikanagar	password
Edit Copy Delete	19	Krishna	Chapagain	4561237890	krishna@gmail.com	Devinagar 12	qwerty123
Edit Copy Delete	17	Hari	Kunwar	9812345678	hari@gmail.com	Devinagar	password
Edit Copy Delete	25	ganesh	gaha	980011002200	ssssss@gmail	Devinagar	ssd
Edit Copy Delete	9	Rahul	thapa	9801234567	rahulthapa@gmail.com	Devadaha Rupandehi	password
Edit Copy Delete	13	Yugal	Rana	9801111111	yugalrana77@gmail.com	butwal-11,kalikanagar	123456

Lecturer schema

	id	first_name	last_name	email	mobile_no	password
Edit Copy Delete	1	Ganesh	Gaha	iamganeshgaha@gmail.com	9867143432	password
Edit Copy Delete	3	Ganesh	Gaha	whitwshadow@gmail.com	9802671887	password

Question schema

	id	question	option_a	option_b	option_c	option_d	correct_ans
Edit Copy Delete	18	The problem solving process begins with	classification of the situation	isolation of the cause	establishment of alternatives	identification of the difficulty	D
Edit Copy Delete	19	What is the full form of WWW?	World Wide web	world wide web	Wide World Web	World Wide Web	D
Edit Copy Delete	8	Who is the first prime minister of Nepal?	Janga bahadur Rana	Bhimsen Thapa	KP Oli	BP Koirala	B
Edit Copy Delete	15	What is the full form of HTML?	Hypertext markup Language	Hypertext Markup Language	Hypertext markup Language	Hypertext markup Language	B
Edit Copy Delete	16	Which looping is the entry-controlled loop?	for loop	while loop	do while loop	none of the above	B
Edit Copy Delete	5	What is the full form of BCA?	bachelore in computer application	bachelor in arts of computer application	cba	BCA	A

Answer schema

	id	student_id	question_id	answer
Edit Copy Delete	1	1	5	B
Edit Copy Delete	2	1	6	A
Edit Copy Delete	3	1	8	B
Edit Copy Delete	4	1	12	A

3.2.2 Interface Design (UI Interface / Interface Structure Diagrams)

User interface design is the process designers use to build interfaces in software or computerized devices, focusing on looks or style. Designers aim to create interfaces which users find easy to use and pleasurable.

Chapter 4: Implementation and Testing

4.1 Implementation

4.1.1 Tools Used (CASE tools, Programming languages, Database platforms

4.1.1.1 Use Case Diagram

The unified modeling language used is the use case diagram. A use case is a set of scenarios that describes an interaction between a user and a system. A use case diagram displays the relationship between actors and use cases. The two main components of a use case diagram are use cases and actors. The actors in our system are students and lecturers. The use case diagram is designed in the following figure.

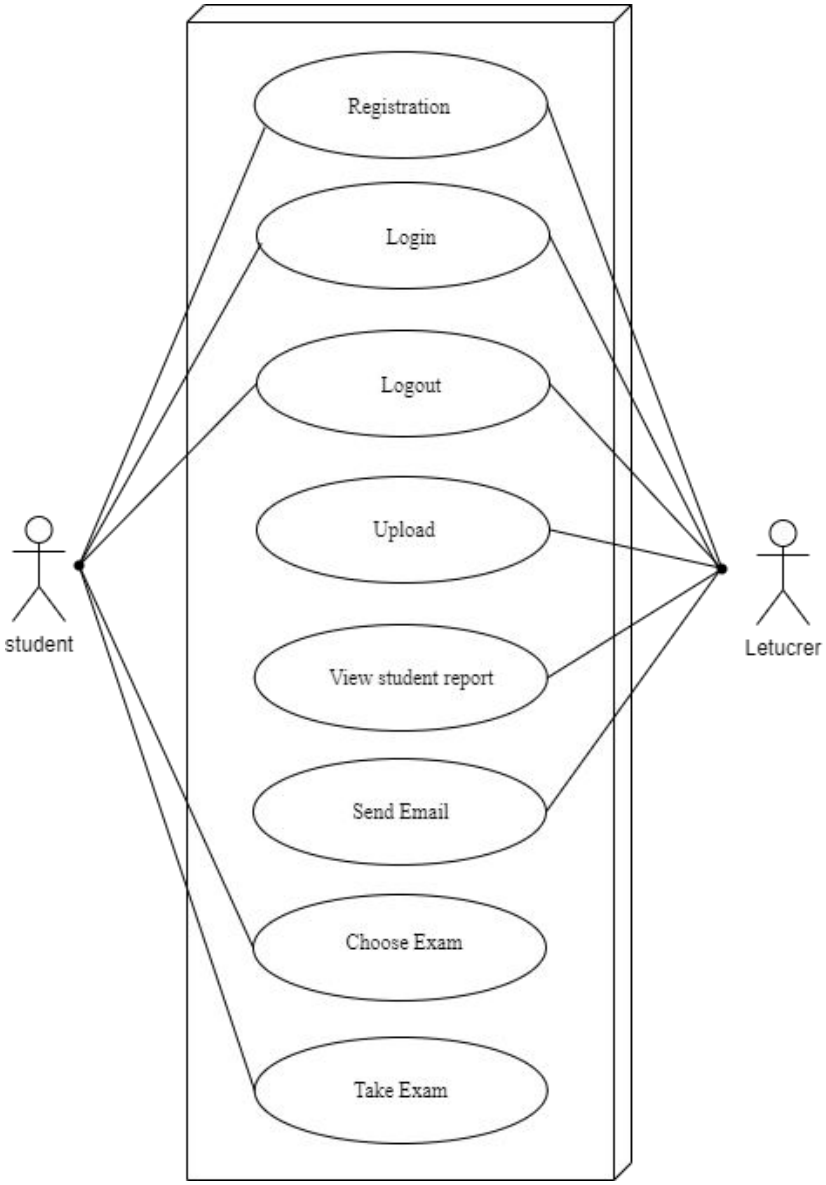

Figure 5 Use Case Diagram

4.1.1.2 Programming Tools Used

In developing the system, different programming languages were used namely: Javascript, HTML, CSS and php. The above languages were used to develop the codes of the system where php was used as the main scripting language, CSS was used to design the outlook of the system, HTML was used to design the inputs of the system while JavaScript was used for validating the system. On the database part, mySQL was used which is efficient to use.

4.1.2 Implementation Details of Modules

The entire project mainly consists of 2 modules which are:

4.1.2.1 Admin

This module can manage various things which are listed below:

i. Sign up and login
ii. Add, remove, view and update questions and answers
iii. Logout

4.1.2.2 Student

This module can handle various things which are listed below:

i. Sign up and login
ii. Take exam
iii. Get results
iv. Logout

4.2 Testing

Testing is the process carried out on software to detect the difference between its behavior and the desired behavior as stipulated by the requirements specifications. Testing is advantageous in several ways. Firstly, the defects found helps in the process of making the software reliable. Secondly, even if the defects found are not corrected, testing gives an idea as to how reliable the software is. Thirdly, over time, the records of defects found reveals the most common type of defects, which can be used for developing appropriate preventive measures such as training, proper design and reviewing.

4.2.1 Test Cases for Unit Testing

Unit testing tests a unit of code (module or program) after coding of that unit is tested. Integration testing tests whether the various program that makes up a system, interface with each other as desired, fit together and whether the interface between the programs is correct. System testing ensures that the system meets its stated design specifications. This test is done to determine the working of the individual modules. The ONLINE EXAMINATION SYSTEM includes the various modules that are tested at the development processes.

Table 1 Admin Table

S.No.	Field name	Data Type	Description
1.	User name	Text	Store user name for checking correct username
2.	Password	Text	Store password corresponding to username
3.	User Type	Text	User Type Administrator or User

Table 2 Student Table

S.No.	Field name	Data Type	Description
1.	Student ID	Number	This is the roll no of the student
2.	Student Name	Text	This is the name of student

Table 3 Test Cases For Integration Testing

Test no.	Test case	Expected result	Actual result	Pass/fail
1	Test if after registration the user can have login successful	After registering the user must have log in successful.	The user signs up and the login is successful.	Pass
2	Test if after editing the information the change is reflected in the database	The change must be reflected in the database.	The new information is saved in the database.	Pass

4.2.2 Test Cases for System Testing

System testing is used to check the overall interaction of components. It involves the load, performance, reliability and security testing. It tests a completely integrated system. It also checks the logic changes made in it with the intension of finding error. This process helps in validating the system by testing the system as a whole that covers each module of the application, database specification and underlying configuration. The **ONLINE EXAMINATION SYSTEM** is tested by using this technique to make it more reliable.

Chapter 5: Conclusion and Future Recommendations

5.1 Lesson Learnt / Outcome

1) This online examination system is to effectively evaluate the student thoroughly through a totally automated system that not only reduce the required time but also obtain fast and accurate results.

2) It is secure with a proper mechanism to store results and also provides time management. It maintains the confidentiality of exams, so there's no room for malpractices. All the questions are generated from the database, which is similar to a safety locker that is accessible only by authorized personnel.

5.2 Conclusion

The Online test System is developed using Java and sql fully meets the objectives of the system for which it has been developed. The system has reached a steady state where all bugs have been eliminated. The system is operated at a high level of efficiency and all the teachers and user associated with the system understands its advantage. The system solves the problem. It was intended to solve as requirement specification.

5.3 Recommendations

Since the system is dynamic, further enhancements can be incorporated into the system. First,an sms server which enable students to get real time notifications of results.Also, a mail server to enable users register with the correct valid emails so that when they register, a link can be send to their emails so that they mail click it to activate their registration.This will also enable users to receive updates from the site and any other subscriptions.

Appendices

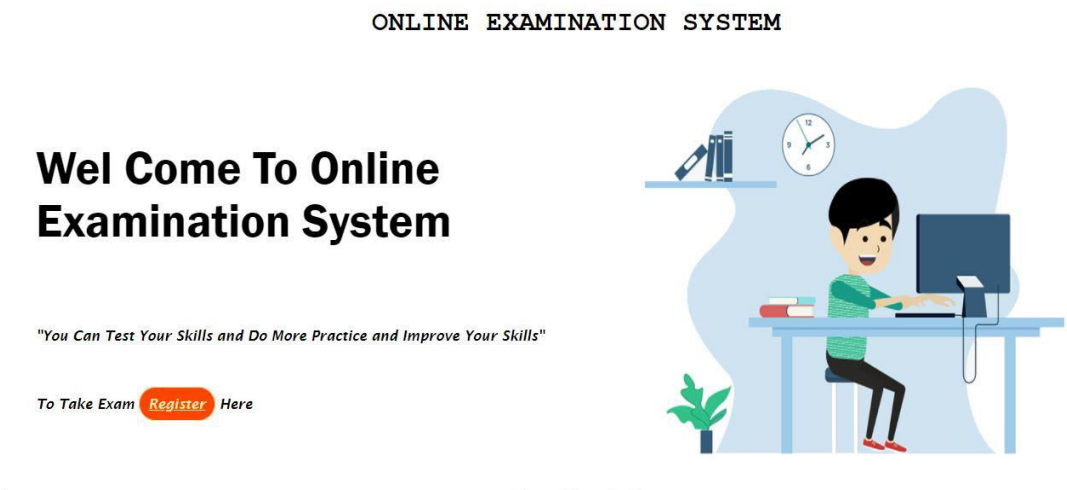

Figure 6 Front page

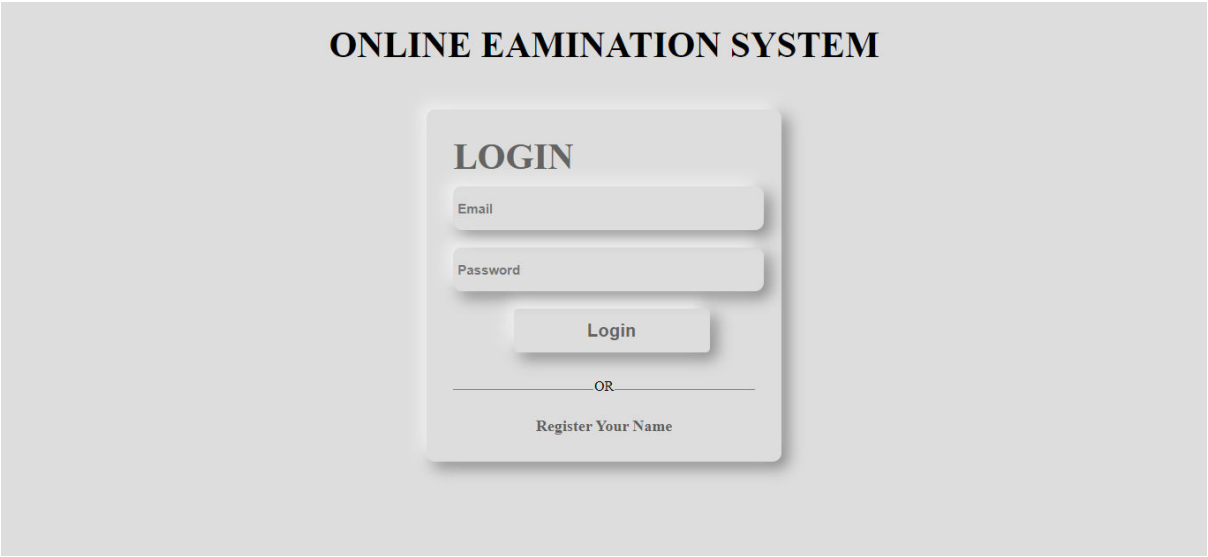

Figure 7 Login page

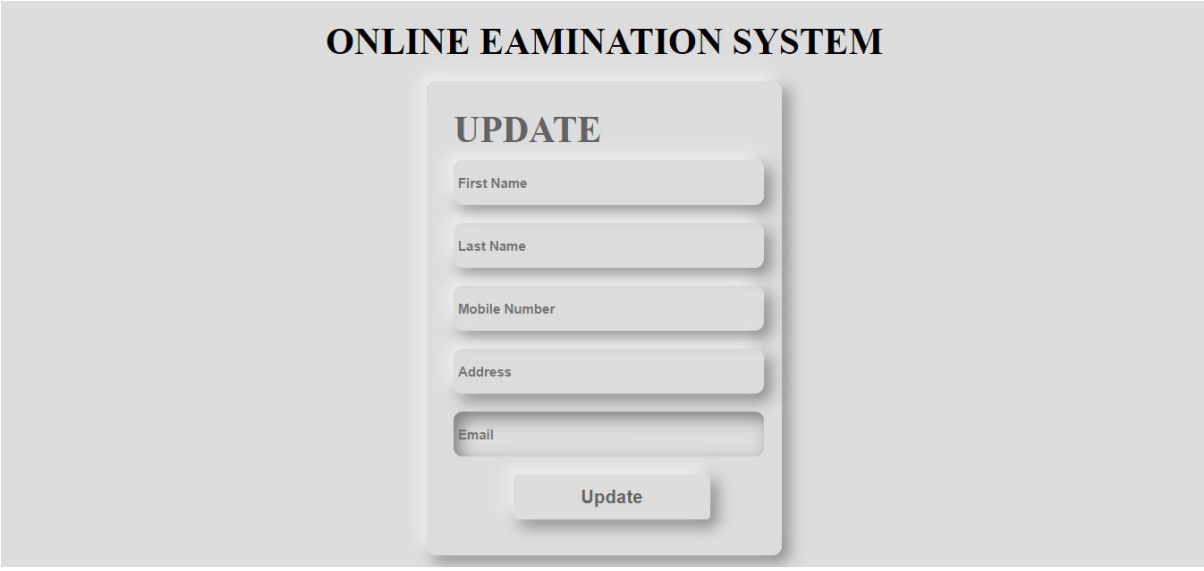

Figure 8 Updating the details of students/lecturers/admins

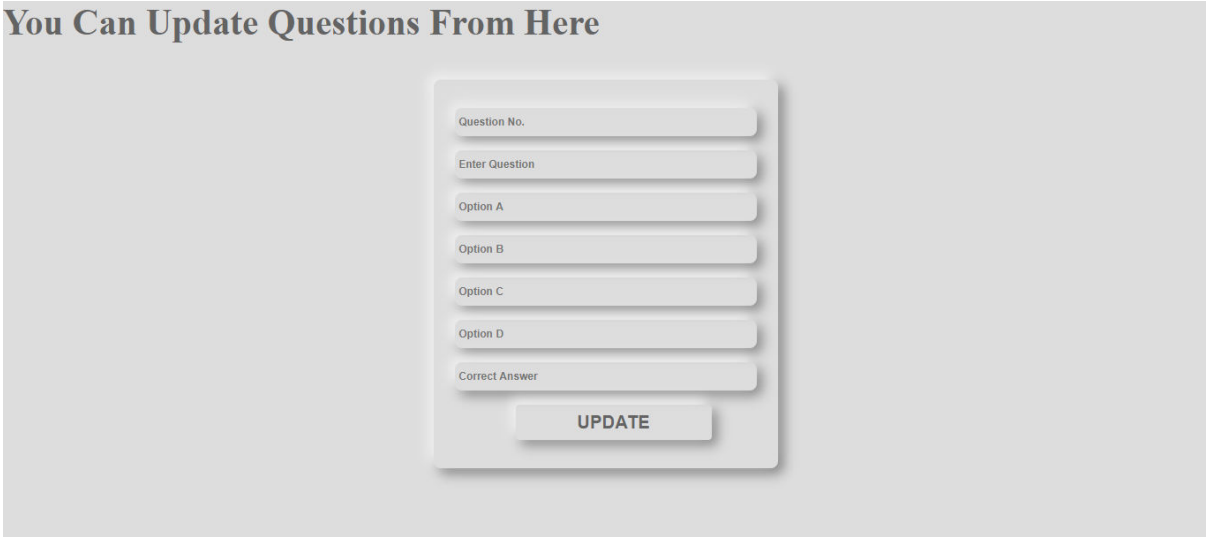

Figure 9 Update Questions

Figure 10 Results Page

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