

# **Online Examination System**

## **OES**

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*to*

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*by*

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# **Abstract**

In the fast changing world of educational technologies, an innovation like “Online Examination System” creates an interface between students, faculty members, and administration. It automates most of the work in the examination cycle including setting questions, conducting exams, automatic grading, and result checking. The system reduces the manual processes involved which is prone to many mistakes thus enhancing efficiency. It enables better management of question banks, student data, exam calendars, and analytics hence offered at a click. This creates a scenario where questions of accessibility, dependability, and efficiency merge.

An important component of the “Online Examination System” is its security architecture. It prevents users from accessing other users’ information while also protecting sensitive data as well as monitoring the examination which upholds examination integrity. Security aspects of Online Examination System such as access control and activity logging fosters trust among users while allowing them to use resources protected from unwanted access.

Rapid access to information is made possible due to powerful Database Management System (DBMS), more so when accessed over a reliable and multi-user environment which allows efficient data management, enhanced structural organization, automated data integrity and security, as well as ensuring dependability and rapid access to data. Best practices in software engineering together with modern database technologies ensure optimum performance with utmost scalability and robustness.

## **ACM Taxonomy**

### **[Security and Privacy]:**

- Secure Authentication and Authorization
- Activity Logging and Auditing

### **[Information Systems]:**

- Online Information Services
- Educational Management Systems

### **[Software and Its Engineering]:**

- Software Maintenance and Management
- Software Verification and Validation
- Software Testing and Debugging

### **[Data Management Systems]:**

- Database Management System (DBMS)
- Transaction Management
- Data Integrity and Consistency

### **Sustainable Development Goal (SDG):**

- [SDG]: Quality Education

# Table of Contents

<b>Abstract.....</b>	<b>2</b>
<b>Table of Contents .....</b>	<b>4</b>
<b>List of Tables .....</b>	<b>4</b>
<b>List of Figures.....</b>	<b>5</b>
<b>1. Introduction .....</b>	<b>6</b>
<b>2. Literature Survey / Background.....</b>	<b>9</b>
<b>3. Problem Statement.....</b>	<b>11</b>
<b>4. Database Design.....</b>	<b>13</b>
<b>5. Methodology .....</b>	<b>18</b>
<b>6. Results .....</b>	<b>21</b>
<b>7. Conclusion and Future Work .....</b>	<b>42</b>
<b>Reference .....</b>	<b>44</b>

## List of Tables

- **College** ( college\_id, name, address );
- **Venue** ( venue\_id, name, capacity );
- **Admin** ( admin\_id, name, email, password, contact );
- **Faculty** ( faculty\_id, name, email, password, contact, college\_id );
- **Student** ( student\_id, reg\_no, name, email, password, contact, college\_id );
- **Exam** ( exam\_id, title, subject, description, total\_marks, duration, start\_time, end\_time, created\_by );
- **Question** ( question\_id, exam\_id, question\_text, question\_type, marks, option\_a, option\_b, option\_c, option\_d, correct\_answer );
- **Answer** ( answer\_id, student\_id, exam\_id, question\_id, answer\_text, marks\_obtained );
- **System\_Logs** ( log\_id, user\_id, user\_type, activity, ip\_address, created\_at );
- **Exam\_Attempt** (attempt\_id, student\_id, exam\_id, start\_time, end\_time, status, total\_score);
- **Exam\_Availability** (availability\_id, exam\_id, student\_group, available\_from, available\_until);

# List of Figures

- Figure 1: Three Tier**
- Figure 2: ER Diagram**
- Figure 3: Schema Diagram**
- Figure 4: Block Diagram**
- Figure 5: Home Page / Landing Page**
- Figure 6: Login Page**
- Figure 7: Register Page**
- Figure 8: Admin Dashboard**
- Figure 9: Manage Faculty**
- Figure 10: Manage Students**
- Figure 11: Manage Colleges**
- Figure 12: Manage Venues**
- Figure 13: Manage Exams**
- Figure 14: View Exam Details**
- Figure 15: View Exam Results**
- Figure 16: View Attempt Details**
- Figure 17: System Logs**
- Figure 18: Admin Profile Page**
- Figure 19: Faculty Dashboard**
- Figure 20: Create Exam**
- Figure 21: Add questions**
- Figure 22: Manage Exams**
- Figure 23: View Results for Faculty**
- Figure 24: Edit Exam**
- Figure 25: Profile Page of Faculty**
- Figure 26: Student Dashboard**
- Figure 27: Available Exams**
- Figure 28: Completed Exams**
- Figure 29: Take Exam**
- Figure 30: View Exam Result for Student**
- Figure 31: Student Profile**

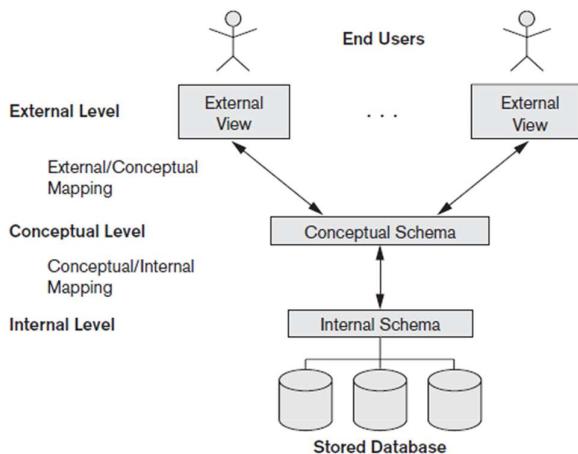
# Chapter 1

## Introduction

In recent times, educational institutions have increasingly adopted technology for the administration and conduct of examinations. Unlike previous setups like paper-based examination setting, protracted evaluations, and human error, the Online Examination System system focuses on solving these problems. This system uses one platform where two processes (interaction and management) of the examination are integrated; consequently, students, faculty, and administrators greatly benefit from the new framework.

Specific control features permit student specific registrational ID regardless of the characteristics of the addressed exam and the student to be created in one step. With sign in control features, students can register for the exam, browse the list of available exams, answer the questions and even check their scores. Professors can manage question banks, set and review performance while supervisors can manage the entire exam process from user account management to system operations and control services. Everyone has unobstructed access where all issued are exam accuracy within time, fairness, efficiency and scoring become of paramount importance

### 1.1 Three-tier architecture



**Figure 1: Three Tier**

1. External Level (User View): This is the highest level of data abstraction that describes part of the database that is relevant to a particular user. It provides a way for the end users to access the data without having any knowledge of the underlying implementation.
2. Conceptual Level (Logical Level): This is the next level down and describes what data is stored in the database and the relationships among the data. This level contains the logical structure of the entire database as seen by the DBMS manager. It shields the database users from the details of the physical level.
3. Internal Level (Physical Level): This is the lowest level of data abstraction and describes how the data is actually stored in the database. It deals with the physical storage of the data on the storage medium like hard disk, SSD, etc. This level is concerned with indexes, hashing, data access paths, and physical data storage.

These three levels of abstraction ensure that users can interact with a database without needing to know the complexities of how data is stored, while also allowing the database to evolve without impacting user interactions.

## **1.2 Effective Innovations of the Online Examination System**

### **String Security Features:**

The system ensures academic data is secured by incorporating high level security technologies such as CSRF tokens to avert unwanted actions as well as input validation to prevent SQL injections. The system mitigates security challenges by safeguarding critical data and information, thereby ensuring users cannot work without trust. All activities are logged making audit trails complete for system usage whenever required.

### **Smart Exam Administration and Grading:**

The system incorporates smart technology in automating question paper setting to include all types of questions and varied difficulty levels. Objective questions are graded automatically and freely while subjective questions can be reviewed by the faculty at their convenience. There is less manual work because of automation which also improves standardization and objectivity in grading.

### **User-Friendly Interface:**

The system offers a graphical user interface that is quite easy to use, therefore all students, faculty, and administrative personnel can use the system effortlessly. Students can register, sit for their examinations and check their results at the click of a button. Certain Exams and Question Banks can be managed by the faculty in an orderly fashion and everyone gets access to the latest information through instant updates.

### **Real-Time Tracking and Reporting:**

Students can monitor how far they are in their examinations and see their results immediately after completing them. Faculty and administrators can view the performance analytics of individual students and entire cohorts in real-time, enabling timely interventions and informed decision-making.

# Chapter 2

## Literature Survey / Background

The education industry has undergone a spectacular digital transformation in the past couple of years, driven by the needs for scalable, efficient, and secure testing solutions. Traditional paper-based tests are being replaced by online exam systems (OES) that offer automation, instant result processing, and flexibility in managing a huge number of students and different question types. The shift is driven by the exploding demand for distance learning, instant feedback, and automated administrative tasks.

Online Examination Systems are web applications designed to automate the end-to-end process of conducting exams. They facilitate the development of exams, question banks, scheduling, student registration, exam delivery, answer evaluation, and result publication. The final objectives of an OES are to provide a centralized, easy-to-use platform for students, teachers, and administrators, ensuring secure, accurate, and fair assessment experiences.

Trending commercial testing software such as Moodle, Blackboard, and ExamSoft provide sophisticated online exam solutions for randomizing questions, grading automatically, and analyzing. These solutions, however, tend to be complex and resource-intensive and are therefore suited to larger institutions or professional projects. Therefore, it is standard practice for the majority of educational institutions and developers to utilize open-source technologies such as PHP, MySQL, HTML, CSS, and JavaScript in creating proprietary OES platforms.

On the database side, relational database management systems such as MySQL are utilized widely for managing and storing exam data since they maintain transactions, data integrity, and complex query capability. Basic schema includes user (student, instructor, administrators), exam, questions, answer options, attempt records, results records, and log records having powerful data linkage and audit facility.

The user interface of an OES is generally developed with HTML, CSS, and JavaScript, utilizing frameworks such as Bootstrap for responsive design and user experience. JavaScript is utilized for countdowns, form validation, and loading dynamic content, while AJAX is utilized to implement smooth, real-time interactions without full page reloads.

A well-designed OES architecture is one that modularizes modules for different roles of users:

- **Admin Module:** System configurations, user and exam administration, analytics, and activity logs.
- **Faculty Module:** Question and exam development, scheduling, and result analysis.
- **Student Module:** Exam dashboard, test-taking interface, result display, and profile administration.

Security is a top priority, the best practices being password hashing, session management, prepared SQL statements to prevent injection, and input validation. Additional features such as preventing browser navigation during exams and auto-submission on timeout further increase the integrity of the assessment process.

Briefly, the Online Examination System developed here is modeled to reflect real-world requirements for electronic exams, with a focus on modularity, data integrity, usability, and secure operation. It provides a realistic, scalable solution for schools to manage and administer exams efficiently in the electronic age.

# **Chapter 3**

## **Problem Statement**

The methods of examination used in schools are very different nowadays compared to the past. Modern institutions are moving towards automation because of the frequent and sophisticated primary, intermediate and secondary school examinations. The traditional approach is ineffective due to the dependence on the manual method of question paper generation, answer evaluation, and result declaration processes. Assisting faculty and administrators with additional workloads often leads to understaffing, which is time-consuming for the students to receive results, lose their academic standing, and causes a void in the mark's reliability.

The unique feature of the Online Examination System is that it is a single, integrated solution that covers each aspect of the examination process. The online examination system operates through automation that encompasses everything from question bank organization, exam reservation security, grading, and result processing. This allows for the elimination of human errors and accelerates the processes all while being more convenient to students, faculty, and administrators.

As stated earlier, the traditional way of examinations is being transformed into centralized digital platforms which explains the need of an Online Examination System on the market. Modern colleges and universities are expanding their student bases and examination frequency increases the need for a centralized platform. The Online Examination System bridges faculty students and administrators on a single platform to seamlessly schedule, manage, and supervise the tests. The system guarantees safety during the examination, and precision of the examination results.

## **Problem Solving**

- Simplified Examination Workflows:**

This encompasses the entire process of question paper setting, registration of students, marking of pupils, scheduling of the exam date, and publication of results to a singular platform that is user-friendly. This avoids having to deal with multiple tools or manual processes.

- Protection and Fairness while Conducting the Exam:**

Protection of sensitive information follows fair policies of conducting the exam using: user verification, limited area access, activity logging, and other such examining security utilities. Consistency and transparency have also been achieved through automation of grading and instantaneous result circulation.

- Integrated features of the System, enhanced performance analysis and improved accessible results for Students:**

Obtaining unique IDs for exam participation enables registrar's workshop to view results using the internet which, alongside performance analytics, enhances their performance. The faculty are empowered to maintain question banks, schedule exams, oversee grading, and the rest of the moderation is done using monitoring and reporting tools.

- Efficient Control Panels for Usage and Provision of Advanced Registers for Faculty and Administrators:**

Faculty and administrators are provided with intuitive control panels that allow seamless management of exams, real-time monitoring of student progress, access to advanced attendance and performance registers, and the ability to generate comprehensive reports for academic evaluation and record-keeping.

# Chapter 4

## Database Design

### ER Diagram

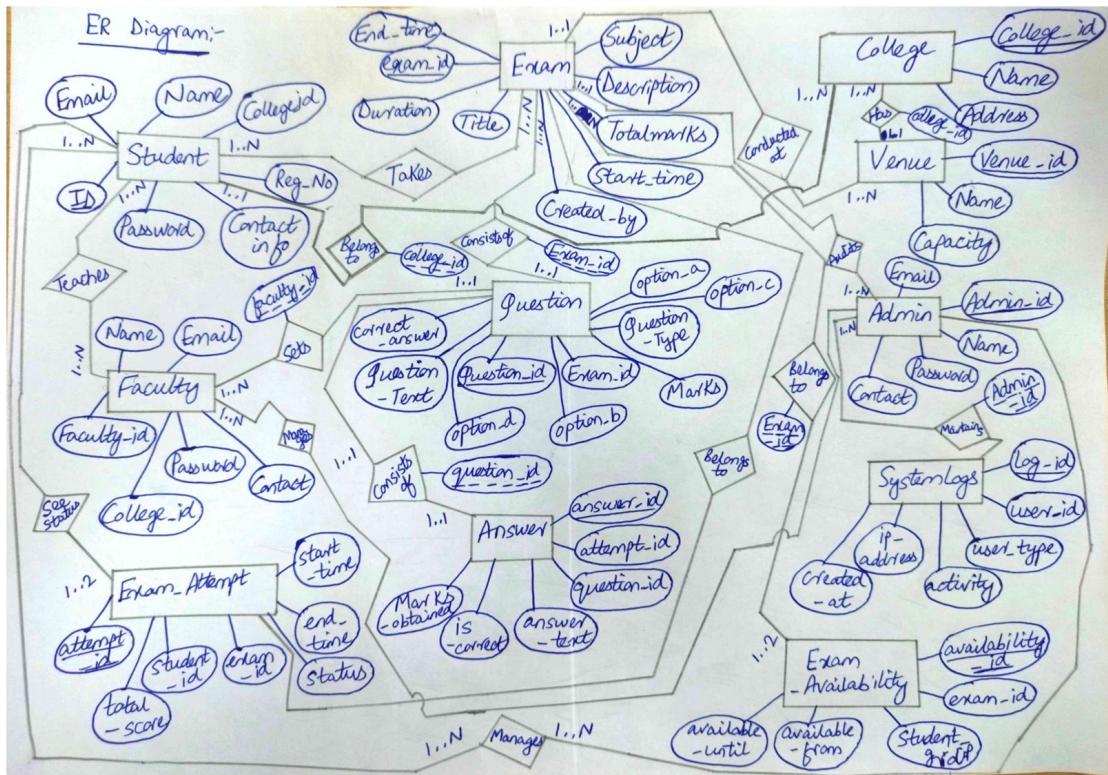


Figure 2: ER Diagram

### Reduced Schema

**Student**(ID, Email, Name, Reg\_No, Password, Contact\_info, College\_id)

Primary Key: ID

Foreign Key: College\_id references College

**Faculty**(faculty\_id, Email, Name, Password, Contact\_info, College\_id)

Primary Key: faculty\_id

Foreign Key: College\_id references College

**College**(College\_id, Name, Address, Email, Contact)  
Primary Key: College\_id

**Venue**(Venue\_id, Name, Capacity, College\_id)  
Primary Key: Venue\_id  
Foreign Key: College\_id references College

**Admin**(Admin\_id, Name, Email, Password, Contact)  
Primary Key: Admin\_id

**Exam**(Exam\_id, Title, Duration, Subject, Description, Total\_marks, Start\_time, End\_time, Created\_by)  
Primary Key: Exam\_id  
Foreign Key: Created\_by references Faculty

**Question**(Question\_id, Question\_text, Question\_type, Correct\_answer, Option\_a, Option\_b, Option\_c, Option\_d, Marks, Exam\_id)  
Primary Key: Question\_id  
Foreign Key: Exam\_id references Exam

**Answer**(Answer\_id, Question\_id, Attempt\_id, Answer\_text, Is\_correct, Obtained\_marks)  
Primary Key: Answer\_id  
Foreign Keys: Question\_id references Question, Attempt\_id references Exam\_Attempt

**Exam\_Attempt**(Attempt\_id, Student\_id, Exam\_id, Start\_time, End\_time, Status, Final\_score)  
Primary Key: Attempt\_id  
Foreign Keys: Student\_id references Student, Exam\_id references Exam

**System\_Logs**(Log\_id, User\_id, Created\_at, IP\_address, User\_type, Activity)  
Primary Key: Log\_id  
Foreign Key: User\_id (generic reference to a user)

**Exam\_Availability**(Availability\_id, Exam\_id, Available\_from, Available\_until, Student\_group)  
Primary Key: Availability\_id  
Foreign Key: Exam\_id references Exam

### Schema Diagram

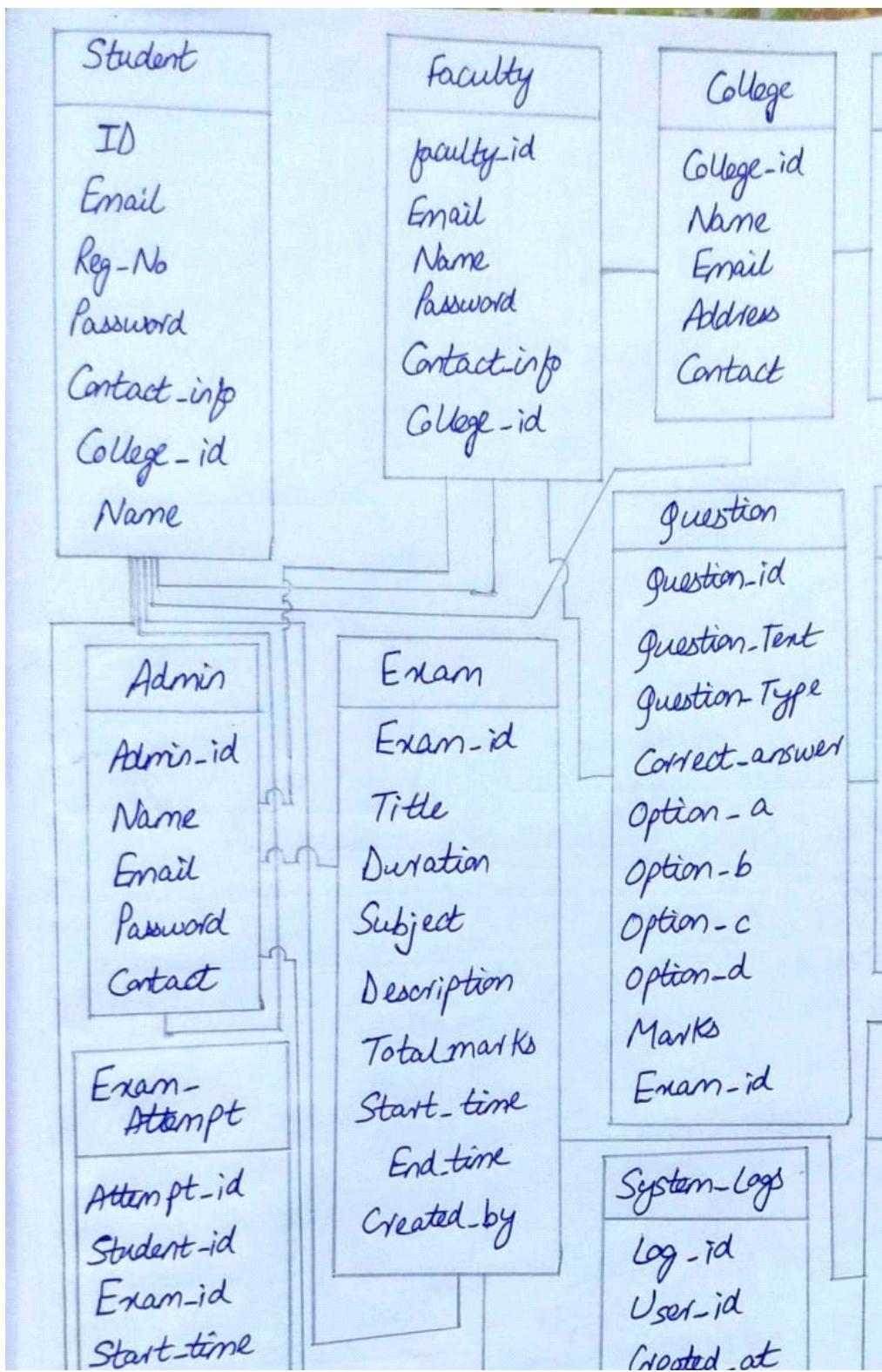


Figure 3: Schema Diagram

## Normalisation

Database for Online Examination Management System has been designed in a way that can handle students, faculty, exams, questions, answers, and respective entities in an efficient way. Normalization is a method of trying to reduce redundancy, maintain data integrity, and enhance database performance. The current paper addresses the normalization process performed in order to achieve 1NF, 2NF, 3NF, and BCNF utilizing the reduced schema.

## Unnormalized Form (UNF)

Entities and Functional Dependencies:

1. Student:
  - o  $\text{Student\_ID} \rightarrow \{\text{Reg\_No, Name, Email, Password, Contact, College\_ID}\}$
2. Faculty:
  - o  $\text{Faculty\_ID} \rightarrow \{\text{Name, Email, Password, Contact, College\_ID}\}$
3. College:
  - o  $\text{College\_ID} \rightarrow \{\text{Name, Address, Email, Contact}\}$
4. Venue:
  - o  $\text{Venue\_ID} \rightarrow \{\text{Name, Capacity, College\_ID}\}$
5. Exam:
  - o  $\text{Exam\_ID} \rightarrow \{\text{Title, Duration, Subject, Description, Total\_marks, Start\_time, End\_time, Created\_by (Faculty\_ID), Venue\_ID}\}$
6. Question:
  - o  $\text{Question\_ID} \rightarrow \{\text{Question\_text, Question\_type, Correct\_answer, Option\_A, Option\_B, Option\_C, Option\_D, Marks, Exam\_ID}\}$
7. Answer:
  - o  $\text{Answer\_ID} \rightarrow \{\text{Question\_ID, Attempt\_ID, Answer\_text, Is\_correct, Obtained\_marks}\}$
8. Exam\_Attempt:
  - o  $\text{Attempt\_ID} \rightarrow \{\text{Student\_ID, Exam\_ID, Start\_time, End\_time, Status, Final\_score}\}$
9. Exam\_Availability:
  - o  $\text{Availability\_ID} \rightarrow \{\text{Exam\_ID, Available\_from, Available\_until, Student\_Group}\}$
10. System\_Logs:
  - o  $\text{Log\_ID} \rightarrow \{\text{User\_ID, User\_Type, Activity, IP\_Address, Created\_At}\}$
11. Admin:
  - o  $\text{Admin\_ID} \rightarrow \{\text{Name, Email, Password, Contact}\}$

## First Normal Form (1NF)

Transformation Actions:

Ensure atomicity by decomposing repeating groups into individual tables.

Assign primary keys to uniquely distinguish records.

Normalized Tables:

1. Student ( $\text{Student\_ID}$ ,  $\text{Reg\_No}$ ,  $\text{Name}$ ,  $\text{Email}$ ,  $\text{Password}$ ,  $\text{Contact}$ ,  $\text{College\_ID}$ )
2. Faculty ( $\text{Faculty\_ID}$ ,  $\text{Name}$ ,  $\text{Email}$ ,  $\text{Password}$ ,  $\text{Contact}$ ,  $\text{College\_ID}$ )
3. College ( $\text{College\_ID}$ ,  $\text{Name}$ ,  $\text{Address}$ )
4. Venue ( $\text{Venue\_ID}$ ,  $\text{Name}$ ,  $\text{Capacity}$ )
5. Exam ( $\text{Exam\_ID}$ ,  $\text{Title}$ ,  $\text{Duration}$ ,  $\text{Subject}$ ,  $\text{Description}$ ,  $\text{Total\_marks}$ ,  $\text{Start\_time}$ ,  $\text{End\_time}$ ,  $\text{Created\_by}$ ,  $\text{Venue\_ID}$ )
6. Question ( $\text{Question\_ID}$ ,  $\text{Question\_text}$ ,  $\text{Question\_type}$ ,  $\text{Correct\_answer}$ ,  $\text{Option\_A}$ ,  $\text{Option\_B}$ ,  $\text{Option\_C}$ ,  $\text{Option\_D}$ ,  $\text{Marks}$ ,  $\text{Exam\_ID}$ )

7. Answer (Answer\_ID, Question\_ID, Attempt\_ID, Answer\_text, Is\_correct, Obtained\_marks)
8. Exam\_Attempt (Attempt\_ID, Student\_ID, Exam\_ID, Start\_time, End\_time, Status, Final\_score)
9. Exam\_Availability (Availability\_ID, Exam\_ID, Available\_from, Available\_until, Student\_Group)
10. System\_Logs (Log\_ID, User\_ID, User\_Type, Activity, IP\_Address, Created\_At)
11. Admin (Admin\_ID, Name, Email, Password, Contact)

## **Second Normal Form (2NF)**

Transformation Actions:

Remove partial dependencies by making all non-key attributes dependent on the entire primary key.

Changes:

As Answer has a composite key (Answer\_ID, Question\_ID, Attempt\_ID), relocate dependent attributes to a new table.

Ensure relationships between Exam and Venue are properly defined.

Updated Tables:

1. Answer (Answer\_ID, Attempt\_ID, Answer\_text, Is\_correct, Obtained\_marks)
2. Question\_Answer (Question\_ID, Answer\_ID) (New table to establish relationship Questions and Answers)

## **Third Normal Form (3NF)**

Transformation Actions:

Eliminate transitive dependencies by having non-key attributes dependent on the primary key alone.

Changes:

Separate email from Student, Faculty, and Admin to prevent transitive dependency.

Updated Tables:

1. Student\_Email (Student\_ID, Email)
2. Faculty\_Email (Faculty\_ID, Email)
3. Admin\_Email (Admin\_ID, Email)

## **Boyce-Codd Normal Form (BCNF)**

Transformation Actions:

Ensure each determinant is a candidate key.

Changes:

If Reg\_No is a unique identifier for students, we have a distinct table for registration numbers.

Updated Tables:

1. Student\_Reg (Reg\_No, Student\_ID)

## **Conclusion**

The updated normalization process guarantees that:

1. The database schema is optimized without redundancy.
2. Functional dependencies are properly translated to the schema.
3. Data anomalies (insertion, update, deletion) are minimized.

This schema offers efficient storage and ensures data integrity while permitting easy retrieval and updates.

# Chapter 5

## Methodology

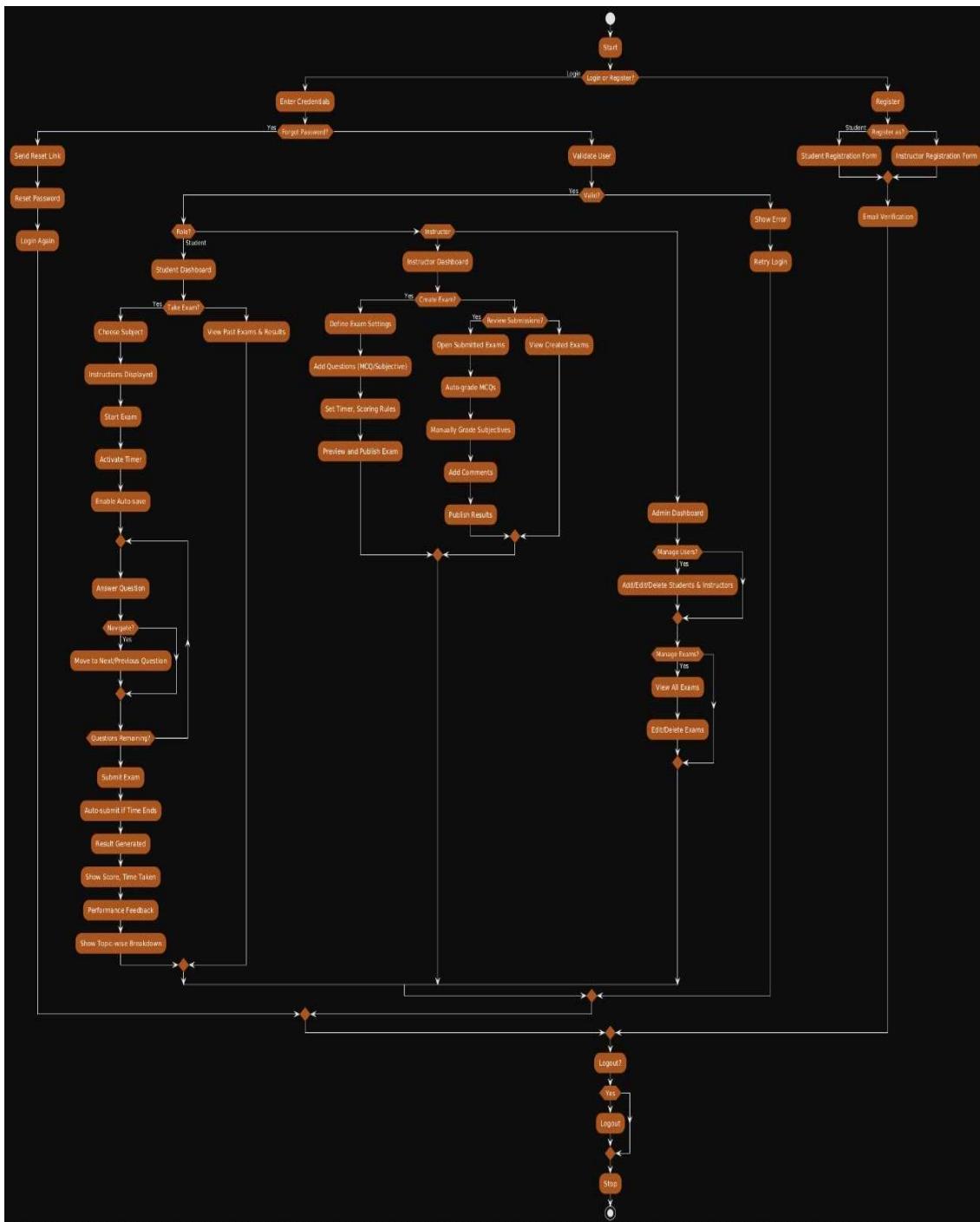


Figure 4: Block Diagram

## **Implementation Strategy for the Online Examination System**

The purpose of Online Examination System is to build a virtual examination hall that is secure, comfortable, and flexible to fit diverse user requirements. Deliberate planning through extensive stakeholder consultations (students, faculty, and admins) and a careful design phase are essential to develop a platform that would maintain the integrity of the examination process, while being convenient for the users. Just like a detailed plan is needed before building something, an implementation strategy helps match what users want with what the technology can actually do.

The major phases in the entire rollout process are as follows:

### **Requirements Gathering**

The initial stakeholder consultations reveal critical insights regarding what users expect from the system. The students worry about access and equity vs. the faculty, who care about ease of preparing question papers and the marking of exams vs. efficiency and security in the eyes of administrators. These are the insights that in the end define the structure and functionality of the system.

### **System Design**

Involves the preparation of detailed architectural diagrams, database schemas, and workflow models. The choice of technology, in particular programming language, development framework, and reliable DBMS, is paramount. The decision pointer here revolves around system scalability, performance, security, and maintainability to support greater user expectations in the future.

### **User Management**

The strong user management mechanism forms the heart of the system. A role-based access control scheme is clearly defining the authority of all students, instructors, and administrators. Privacy and exam integrity are maintained through secure login, session management, and boundaries of permission that ensure users can only see information and features relevant to their assigned roles.

### **Exam Creation, Conduct, and Evaluation**

Particular emphases are laid on the exam lifecycle-how an exam is arranged, secured for conduct without interference, and then assessed almost entirely by way of automation. This empowers examiners to create a question bank and set conditions for exam conduct. Students would access the exam according to variations, such as randomization of question sequence to deter malpractice. Marking is expedited and made easy with the computer-assisted marking of objective questions as well as aids for subjective questions.

### **User Interface Design**

Both instructors and students deserve an intuitive, smooth, and responsive interface. Accordingly, the system prioritizes simplicity, clarity of visual signals, and reduction of distractions during exams. Extensive usability testing rounds ensure that the platform meets user requirements and enables seamless experience entry on any device.

## **Testing and Quality Assurance**

In-depth testing assures that the system is robust and stable. Unit testing tests an individual module. Integration testing verifies the seamless operation of different components together. User acceptance testing (UAT) verifies the platform for actual user requirements. Performance and security testing prove the system's stability against heavy loads and security against common cyber threats.

## **Conclusion**

Successful implementation of the Online Examination System requires an integrated process that entails stakeholder analysis, proper system design, good development, thorough testing, proper deployment, training, and live support. If well implemented, the system can drastically change examination management for the better: making it safer, more efficient, more accessible, and more reliable to all.

# **Chapter 6**

## **Results**

### **Brief Results of the App:**

#### **1. Enhanced Efficiency:**

The Online Examination System (OES) has automated the whole life cycle of an exam, ranging from exam development and timetabling to result release. This has significantly reduced administrative workload and facilitated faster processing of exams, registrations, and marking by students and faculties.

#### **2. Enhanced Accessibility:**

By providing a web-based interface, the OES releases exams, results, and administration functions to faculties and students anywhere, anytime, to enable flexible test and e-learning timetabling.

#### **3. Improved Accuracy and Integrity:**

Automated marking of answers (for multiple-choice questions) avoids the use of human grading and result calculation error, and secure session management and authentication ensure exam and user data integrity.

#### **4. Easy User Experience**

Friendly and intuitive design, easy-to-use interfaces, and responsive layouts deliver a wonderful experience to students, faculties, and admin. Live timers, instant feedback, and trouble-free results create excitement and joy.

#### **5. Clear and Timely Communication:**

Real-time notifications, result dashboards, and activity reports enhance transparency among teachers, administrators, and students, keeping all the concerned parties updated about exam schedules, results, and system announcements.

#### **6. Scalability and Dependability**

Built to be PHP and MySQL-oriented, the OES can scale to large numbers of users and tests without compromise on performance. The design modularity makes it easy to add new features or scale up for support of large institutions.

## 7. Data-Driven Insights:

The system comes with analysis dashboards and detailed logs so that administrators and instructors can monitor student performance, test-taking, and use of the system to enable data-driven decisions and continuous improvement.

Implementation of the Online Examination System has provided with improved efficiency, accessibility, accuracy, user satisfaction, transparency, scalability, and useful insights makes it a priceless resource in today's educational assessment and management.

## Screenshots of Web Pages:

The screenshot shows the homepage of the Online Examination System. At the top, there is a blue header bar with the text "Online Exam System" and icons for a graduation cap and user profile. On the right side of the header are "Login" and "Register" buttons. Below the header, the main title "Welcome to the Online Examination System" is displayed in large, bold letters, followed by a subtitle "A comprehensive platform for creating, managing, and taking online exams." A horizontal line separates this from the rest of the content. Below the line, a message states "This system provides a seamless experience for administrators, faculty, and students." There are two buttons: "Login" (blue) and "Register" (dark grey). The page then features three main user roles with icons and descriptions: "Admin" (user icon), "Faculty" (teacher icon), and "Student" (graduation cap icon). Each role has a brief description: Admin manages the entire system, Faculty creates and manages exams, and Student takes exams and checks results. Below these sections is a "Features" section with a blue header. It lists several key features: Multiple choice, true/false, and descriptive questions; Automatic grading for objective questions; Timed examinations with auto-submit; Detailed result analysis; Secure authentication system; and Mobile-friendly interface. At the bottom of the page, a dark footer bar contains the text "Online Examination System" on the left and "Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta" on the right.

**Figure 5: Home Page / Landing Page**

The screenshot shows the login page of the 'Online Exam System'. At the top, there is a blue header bar with the system name and navigation links for 'Login' and 'Register'. Below the header is a large white form box with a blue header titled 'Login'. The form contains fields for 'Email Address' and 'Password', both with placeholder text indicating they determine user role. A 'Login' button is at the bottom, and a link to 'Register here' is at the very bottom.

Online Exam System

Login Register

→ Login

Email Address

Your email domain will determine your role in the system.

Password

Login

Don't have an account? [Register here](#)

Online Examination System Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta

**Figure 6: Login Page**

The screenshot shows the register page of the 'Online Exam System'. It has a similar blue header bar with the system name and navigation links for 'Login' and 'Register'. The main content is a registration form with a blue header titled 'Register'. It includes fields for 'Full Name' and 'Email Address', both with placeholder text about email domains determining roles. There are also fields for 'Password' and 'Confirm Password', 'Contact Number', and a dropdown menu for 'College' with an option to 'Select College'. A 'Register' button is at the bottom, and a link to 'Login here' is at the very bottom.

Online Exam System

Login Register

👤 Register

Full Name

Email Address

Your email domain will determine your role in the system.

Password

Confirm Password

Contact Number

College

Select College

Register

Already have an account? [Login here](#)

Online Examination System Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta

**Figure 7: Register Page**

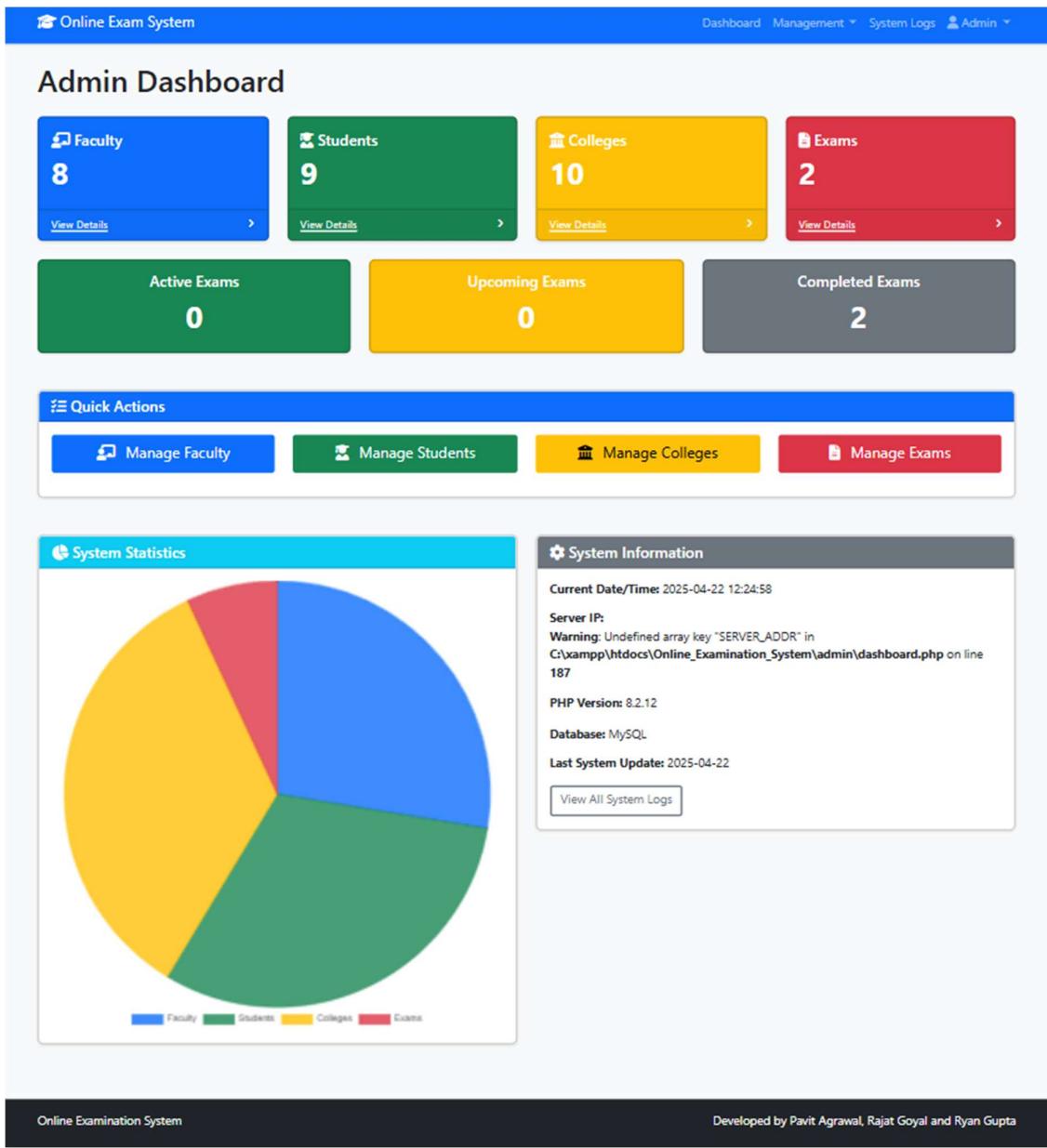


Figure 8: Admin Dashboard

## Manage Faculty

[+ Add Faculty](#)

ID	Name	Email	Contact	College	Actions
1	Akshay KC	akshay@faculty.examportal.com	2345678935	Mumbai University	
6	Dr. Arjun Nair	arjun.nair@faculty.examportal.com	9876543217	Osmania University	
8	Dr. Suresh Reddy	suresh.reddy@faculty.examportal.com	9876543213	Punjab University	
4	Dr. Vikram Singh	vikram.singh@faculty.examportal.com	9876543215	IIT Madras	
5	Prof. Ananya Desai	ananya.desai@faculty.examportal.com	9876543216	Amity University	
7	Prof. Divya Malhotra	divya.malhotra@faculty.examportal.com	9876543218	Jadavpur University	
3	Prof. Meera Iyer	meera.iyer@faculty.examportal.com	9876543214	Bangalore University	
2	Prof. Ramesh Dubey	ramesh@faculty.examportal.com	3487982785	Manipal Academy of Higher Education	

**Figure 9: Manage Faculty**

## Manage Students

[+ Add Student](#)

ID	Reg. No.	Name	Email	Contact	College	Actions
11	S2023001	Aarav Gupta	aarav.gupta@student.examportal.com	9876543219	Delhi University	
4	S2023004	Adwait Joshi	adwait.joshi@student.examportal.com	9876543222	IIT Madras	
5	S2023005	Anaya Reddy	anaya.reddy@student.examportal.com	9876543223	Amity University	
13	230953414	badmos	badmos@student.examportal.com	2456674315	IIT Madras	
12	S2023002	Ishaan Mehta	ishaan.mehta@student.examportal.com	9876543220	Mumbai University	
1	230953406	Pavit Agrawal	pavit@student.examportal.com	1234567893	Manipal Academy of Higher Education	
2	230953362	Rajat Goyal	rajat@student.examportal.com	6489776948	Punjab University	
6	S2023006	Vihaan Sharma	vihaan.sharma@student.examportal.com	9876543224	Delhi University	
3	S2023003	Zara Khan	zara.khan@student.examportal.com	9876543221	Bangalore University	

**Figure 10: Manage Students**

## Manage Colleges

[+ Add College](#)

ID	Name	Address	Students	Faculty	Actions
5	Amity University	Sector 125, Noida-201313, Uttar Pradesh, India	1	1	
3	Bangalore University	Jnana Bharathi Campus, Bengaluru-560056, Karnataka, India	1	1	
1	Delhi University	North Campus, Delhi-110007, India	2	0	
4	IIT Madras	Sardar Patel Road, Chennai-600036, Tamil Nadu, India	2	1	
7	Jadavpur University	188, Raja S.C. Mallick Road, Kolkata-700032, West Bengal, India	0	1	
9	Manipal Academy of Higher Education	Madhav Nagar, Manipal-576104, Karnataka, India	1	1	
2	Mumbai University	M.G. Road, Fort, Mumbai-400032, Maharashtra, India	1	1	
6	Osmania University	Amberpet, Hyderabad-500007, Telangana, India	0	1	
8	Punjab University	Sector 14, Chandigarh-160014, Punjab, India	1	1	
10	Savitribai Phule Pune University	Ganeshkhind, Pune-411007, Maharashtra, India	0	0	

Figure 11: Manage Colleges

## Manage Venues

[+ Add Venue](#)

ID	Name	Capacity	Exams	Actions
4	Arts Faculty Hall	180 seats	2	
5	Commerce Building Room 101	120 seats	2	
8	Computer Science Lab	90 seats	2	
3	Engineering Department Lab	100 seats	2	
6	Library Conference Room	80 seats	2	
1	Main Examination Hall	200 seats	2	
9	Mathematics Department Hall	110 seats	2	
7	Medical College Auditorium	250 seats	2	
2	Science Block Auditorium	150 seats	2	
10	Virtual Examination Center	500 seats	2	

Figure 12: Manage Venues

## Exam Management

[← Back to Dashboard](#)

Total Exams

2

Active

0

Upcoming

0

Completed

2

### Filter Exams

Status

All Exams

Faculty

All Faculty

[Apply Filters](#)[Reset](#)

### All Exams

ID	Title	Subject	Faculty	Questions	Duration	Start Time	End Time	Attempts	Status	Actions
2	DBMS Test 2	DBMS	Prof. Ramesh Dubey	10	10 mins	Apr 22, 2025 03:00 AM	Apr 22, 2025 03:10 AM	1 attempts	Completed	 
1	DBMS Test	DBMS	Prof. Ramesh Dubey	10	10 mins	Apr 22, 2025 02:10 AM	Apr 22, 2025 02:20 AM	No attempts	Completed	 

**Figure 13: Manage Exams**

Online Exam System
Dashboard Management System Logs Admin

## Exam Details

[← Back to Exams](#)
[View Results](#)

**Exam Overview**

**DBMS Test 2**

DBMS

Test of mixed question important.

**Exam Settings**

Total Marks	50
Duration	10 minutes
Questions	10
Total Attempts	1
Completed Attempts	1

**Schedule Information**

Status: Completed

Start Time: Apr 22, 2025 03:00 AM

End Time: Apr 22, 2025 03:10 AM

**Faculty Information**

Created By: Prof. Ramesh Dubey

Email: ramesh@faculty.examportal.com

Contact: 3487982785

College: Manipal Academy of Higher Education

**Exam Availability**

Student Group	Available From	Available Until
All Students	Apr 22, 2025 03:00 AM	Apr 22, 2025 03:10 AM

**Exam Questions**

Question 1: What is a primary key? How is it different from a unique key and a foreign key? Provide examples.	<span style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">5.00 marks</span> ▾
Question 2: Explain the concept of indexing in DBMS. How does it improve performance, and what are the types of ...	<span style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">5.00 marks</span> ▾
Question 3: Describe the three levels of data abstraction in DBMS: physical, logical, and view level.	<span style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">5.00 marks</span> ▾
Question 4: What is a deadlock in DBMS? Explain how it occurs and techniques to prevent or recover from deadlock...	<span style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">5.00 marks</span> ▾
Question 5: Compare and contrast the different types of joins in SQL: INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL...	<span style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">5.00 marks</span> ▾
Question 6: Every foreign key must reference a primary key in another table.	<span style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">5.00 marks</span> ▾
Question 7: Denormalization is a process used to improve query performance by introducing redundancy.	<span style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">5.00 marks</span> ▾
Question 8: The SELECT statement in SQL is used to modify data in a table.	<span style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">5.00 marks</span> ▾
Question 9: Which of the following is used to enforce referential integrity in a relational database?	<span style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">5.00 marks</span> ▾
Question 10: Which command is used to delete all rows from a table without logging the individual row deletions?	<span style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">5.00 marks</span> ▾

**Recent Attempts**

Student	Reg. No.	Start Time	End Time	Status	Score	Percentage	Action
Pavit Agrawal	230953406	Apr 22, 2025 03:06 AM	Apr 22, 2025 03:09 AM	Completed	25.00 / 50	50.0%	<span style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">View</span>

Online Examination System
Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta

**Figure 14: View Exam Details**

**Online Exam System**

Dashboard Management System Logs Admin

### Exam Results: DBMS Test 2

Back to Exam View Exam Details

#### Exam Overview

Title: DBMS Test 2 Total Marks: 50  
 Subject: DBMS Duration: 10 minutes  
 Faculty: Prof. Ramesh Dubey (ramesh@examportal.com) Start Time: Apr 22, 2025 01:00 AM  
 College: Manipal Academy of Higher Education End Time: Apr 22, 2025 01:10 AM

Total Attempts <b>1</b> Completed: 1	Average Score <b>50.0%</b> High: 50.0%   Low: 50.0%	Pass Rate <b>100.0%</b> Passed: 1   Failed: 0	Completion Rate <b>100.0%</b> In Progress: 0
--	---	---	--

#### Score Distribution

Student Score Distribution

College	Attempts	Avg. Score	Pass Rate
Manipal Academy of Higher Education	1	50.0%	100.0%

#### College-wise Performance

#### Question Analysis

#	Question	Type	Max Marks	Attempts	Correct	Success Rate	Avg. Marks
1	What is a primary key? How is it different from a unique key and a foreign key? Provide examples.	Descriptive	5.00	1	0	0.00%	0.00 / 5.00
2	Explain the concept of indexing in DBMS. How does it improve performance, and what are the types of ...	Descriptive	5.00	1	0	0.00%	0.00 / 5.00
3	Describe the three levels of data abstraction in DBMS: physical, logical, and view level.	Descriptive	5.00	1	0	0.00%	0.00 / 5.00
4	What is a deadlock in DBMS? Explain how it occurs and techniques to prevent or recover from deadlock.	Descriptive	5.00	1	0	0.00%	0.00 / 5.00
5	Compare and contrast the different types of joins in SQL: INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL...	Descriptive	5.00	1	0	0.00%	0.00 / 5.00
6	Every foreign key must reference a primary key in another table.	True False	5.00	1	1	100.00%	5.00 / 5.00
7	Denormalization is a process used to improve query performance by introducing redundancy.	True False	5.00	1	1	100.00%	5.00 / 5.00
8	The SELECT statement in SQL is used to modify data in a table.	True False	5.00	1	1	100.00%	5.00 / 5.00
9	Which of the following is used to enforce referential integrity in a relational database?	Multiple choice	5.00	1	1	100.00%	5.00 / 5.00
10	Which command is used to delete all rows from a table without logging the individual row deletions?	Multiple choice	5.00	1	1	100.00%	5.00 / 5.00

#### Student Attempts

Student	Reg. No.	College	Start Time	End Time	Status	Score	Percentage	Result	Action
Pavit Agrawal	210933406	Manipal Academy of Higher Education	Apr 22, 2025 01:00 AM	Apr 22, 2025 01:09 AM	Completed	25.00 / 50	50.00%	Pass	<a href="#">View</a>

Export to CSV

Online Examination System Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta

Figure 15: View Exam Results

Online Exam System
Dashboard
Management
System Logs
Admin

## Attempt Details

[← Back to Exam Results](#)

Student & Exam Info	
<b>Student:</b> Pavit Agrawal (230953406)	<b>Exam:</b> DBMS Test 2
<b>Email:</b> pavit@student.examportal.com	<b>Subject:</b> DBMS
<b>College:</b> Manipal Academy of Higher Education	<b>Faculty:</b> Prof. Ramesh Dubey
<b>Attempt Start:</b> Apr 22, 2025 03:00 AM	<b>Attempt End:</b> Apr 22, 2025 03:10 AM
<b>Total Score:</b> 25.00 / 50	<b>Status:</b> <span style="background-color: #00A090; color: white; padding: 2px 5px; border-radius: 5px;">Completed</span>
	<b>Percentage:</b> 50.0%
	<b>Result:</b> <span style="background-color: #00A090; color: white; padding: 2px 5px; border-radius: 5px;">Pass</span>

Answers & Grading						
#	Question	Type	Student Answer	Correct Answer	Marks	Result
1	What is a primary key? How is it different from a unique key and a foreign key? Provide examples.	Descriptive	Priary key is primary.	N/A	0.00 / 5.00	Pending
2	Explain the concept of indexing in DBMS. How does it improve performance, and what are the types of indexing?	Descriptive	indexing is the process of making index.	N/A	0.00 / 5.00	Pending
3	Describe the three levels of data abstraction in DBMS: physical, logical, and view level.	Descriptive	Physical is physically strong. Logical is mentally strong. View has a sharp sight.	N/A	0.00 / 5.00	Pending
4	What is a deadlock in DBMS? Explain how it occurs and techniques to prevent or recover from deadlock.	Descriptive	Deadlock is the condition when the lock is dead.	N/A	0.00 / 5.00	Pending
5	Compare and contrast the different types of joins in SQL: INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL OUTER JOIN with examples.	Descriptive	Join is veery good in nature and has multiple naatures. These are its natures.	N/A	0.00 / 5.00	Pending
6	Every foreign key must reference a primary key in another table.	True false	True	True	5.00 / 5.00	Correct
7	Denormalization is a process used to improve query performance by introducing redundancy.	True false	True	True	5.00 / 5.00	Correct
8	The SELECT statement in SQL is used to modify data in a table.	True false	False	False	5.00 / 5.00	Correct
9	Which of the following is used to enforce referential integrity in a relational database?	Multiple choice	B. Foreign key	B. Foreign key	5.00 / 5.00	Correct
10	Which command is used to delete all rows from a table without logging the individual row deletions?	Multiple choice	C. TRUNCATE	C. TRUNCATE	5.00 / 5.00	Correct

Online Examination System
Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta

**Figure 16: View Attempt Details**

Online Exam System

Dashboard Management System Logs Admin

## System Logs

[Back to Dashboard](#)

### Filter Logs

Start Date 23-03-2025	End Date 22-04-2025	User Type All Types	Activity
<a href="#">Apply Filters</a>		<a href="#">Reset</a>	<a href="#">Clear All Logs</a>

### Activity Logs

7 Records Found

ID	Timestamp	User	Type	Activity	IP Address
122	Apr 22, 2025 12:45:31 PM	Admin (ID: 1)	Admin	User logged in	:1
121	Apr 22, 2025 12:45:21 PM	Akshay KC (ID: 1)	Faculty	User logged out	:1
120	Apr 22, 2025 12:45:16 PM	Akshay KC (ID: 1)	Faculty	User logged in	:1
119	Apr 22, 2025 12:45:05 PM	Pavit Agrawal (ID: 1)	Student	User logged out	:1
118	Apr 22, 2025 12:45:00 PM	Pavit Agrawal (ID: 1)	Student	User logged in	:1
117	Apr 22, 2025 12:44:58 PM	Admin (ID: 1)	Admin	User logged out	:1
116	Apr 22, 2025 12:44:38 PM	Admin (ID: 1)	Admin	Cleared all system logs	:1

[Export to CSV](#) [Export to PDF](#)

### User Type Distribution

User Type	Percentage
Admin	~45%
Faculty	~30%
Students	~20%
Other	~5%

### Activity Timeline

Date	Number of Activities
2025-04-22	1
2025-04-22	2
2025-04-22	3
2025-04-22	4
2025-04-22	5
2025-04-22	6
2025-04-22	7
2025-04-23	1

Online Examination System Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta

Figure 17: System Logs

## My Profile

### Profile Information

Full Name	Admin
Email Address	admin@admin.examportal.com
Contact Number	5904895840

Update Profile

### Account Information

Admin ID: 1  
Account Created: N/A  
Last Updated: N/A  
Account Status: **Active**

### System Statistics

Faculty Members	8
Students	9
Colleges	10
Venues	10

View Dashboard

### Recent Activity

Apr 22, 2025 12:45 PM
User logged in
Apr 22, 2025 12:44 PM
User logged out
Apr 22, 2025 12:44 PM
Cleared all system logs

View All Logs

### Quick Links

- [Dashboard](#)
- [Manage Faculty](#)
- [Manage Students](#)
- [Manage Colleges](#)
- [Logout](#)

Figure 18: Admin Profile Page

**Faculty Dashboard**

**Profile Information**

Name: Prof. Ramesh Dubey  
Email: ramesh@faculty.examportal.com  
Contact: 3487982785  
College: Manipal Academy of Higher Education

**Total Exams** 2 **Active Exams** 0 **Completed Exams** 2

**Recent Exams**

Title	Subject	Start Time	End Time	Status	Actions
DBMS Test 2	DBMS	Apr 22, 2025 03:00 AM	Apr 22, 2025 03:10 AM	Completed	
DBMS Test	DBMS	Apr 22, 2025 02:10 AM	Apr 22, 2025 02:20 AM	Completed	

**Quick Actions**

**Create New Exam** **Manage Exams** **View Results**

Online Examination System Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta

**Figure 19: Faculty Dashboard**

**Create New Exam** [Back to Exams](#)

Exam Title  Subject   
Description   
Total Marks  Duration (minutes)   
Start Time  dd-mm-yyyy --::-- End Time  dd-mm-yyyy --::--

**Create Exam**

Online Examination System Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta

**Figure 20: Create Exam**

Online Exam System

Dashboard Exams Prof. Ramesh Dubey

## Add Questions to Exam

[Back to Exams](#)

**Exam Details:**

Title: DBMS Test 3

Subject: DBMS

Total Marks: 50

**Add New Question**

Question Text

Question Type

Multiple Choice

Marks

Option A

Option B

Option C

Option D

Correct Answer

Option A

**Questions (0)**

No questions added yet.

Online Examination System Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta

**Figure 21: Add questions**

## Manage Exams

[Create New Exam](#)

Total Exams

3

Active

0

Upcoming

1

Completed

2

[All Exams](#) [Active](#) [Upcoming](#) [Completed](#)

Title	Subject	Questions	Total Marks	Duration	Start Time	End Time	Attempts	Status	Actions
DBMS Test 3	DBMS	5	50	10 mins	Apr 22, 2025 08:10 PM	Apr 22, 2025 08:20 PM	No attempts	Upcoming	
DBMS Test 2	DBMS	10	50	10 mins	Apr 22, 2025 03:00 AM	Apr 22, 2025 03:10 AM	1 attempts	Completed	
DBMS Test	DBMS	10	50	10 mins	Apr 22, 2025 02:10 AM	Apr 22, 2025 02:20 AM	No attempts	Completed	

## Exam Management Tips

## Creating Effective Exams

- Include a mix of question types (multiple choice, true/false, descriptive)
- Set appropriate time limits based on the number and complexity of questions
- Provide clear instructions for each section
- Distribute marks according to question difficulty

## Exam Security

- Set availability windows carefully to control access
- Use randomized questions when possible
- Monitor unusual patterns in student responses
- Keep exam details confidential until release

Figure 22: Manage Exams

Online Exam System

Dashboard Exams - Prof. Ravneet Dholay -

### Exam Results: DBMS Test 2

[← Back to Exams](#)

#### Select Exam

DBMS Test 2 (DBMS)

Total Attempts: 1 Completed: 1

Average Score: 50.0% High: 50.0% | Low: 50.0%

Pass Rate: 100.0% Passed: 1 | Failed: 0

Exam Details: Subject: DBMS Total Marks: 50 Duration: 10 mins

#### Student Attempts

Export to CSV

Student Name	Reg. No.	College	Start Time	End Time	Status	Score	Percentage	Result	Actions
Pavit Agrawal	210953406	Mangal Academy of Higher Education	Apr 22, 2025 03:06 AM	Apr 22, 2025 03:09 AM	Completed	25.00 / 50	50%	Pass	<a href="#">View</a>

#### Question Analysis

#	Question	Type	Max Marks	Attempts	Correct	Success Rate	Avg. Marks
1	What is a primary key? How is it different from a unique key and a foreign key? Provide examples.	Descriptive	5.00	1	0	0.00%	0.0 / 5.0
2	Explain the concept of indexing in DBMS. How does it improve performance, and what are the types of ...	Descriptive	5.00	1	0	0.00%	0.0 / 5.0
3	Describe the three levels of data abstraction in DBMS: physical, logical, and view level.	Descriptive	5.00	1	0	0.00%	0.0 / 5.0
4	What is a deadlock in DBMS? Explain how it occurs and techniques to prevent or recover from deadlock...	Descriptive	5.00	1	0	0.00%	0.0 / 5.0
5	Compare and contrast the different types of joins in SQL: INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL...	Descriptive	5.00	1	0	0.00%	0.0 / 5.0
6	Every foreign key must reference a primary key in another table.	True/false	5.00	1	1	100.00%	5.0 / 5.0
7	Denormalization is a process used to improve query performance by introducing redundancy.	True/false	5.00	1	1	100.00%	5.0 / 5.0
8	The SELECT statement in SQL is used to modify data in a table.	True/false	5.00	1	1	100.00%	5.0 / 5.0
9	Which of the following is used to enforce referential integrity in a relational database?	Multiple choice	5.00	1	1	100.00%	5.0 / 5.0
10	Which command is used to delete all rows from a table without logging the individual row deletions?	Multiple choice	5.00	1	1	100.00%	5.0 / 5.0

#### Score Distribution

Bar chart showing the distribution of scores. The Y-axis is 'Number of Students' and the X-axis is 'Score Range (%)'. A single bar is shown at 41-50.

#### Pass/Fail Ratio

Circular chart showing the pass/fail ratio. Legend: Pass (Green), Fail (Red). The chart is almost entirely green, indicating a high pass rate.

Online Examination System Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta

Figure 23: View Results for Faculty

**Edit Exam**

Title: DBMS Test 3

Subject: DBMS

Description: Very Important and compulsory to attend.

Total Marks: 50

Duration (minutes): 10

Start Time: 22-04-2025 20:10

End Time: 22-04-2025 20:20

**Update Exam** **Cancel**

**Figure 24: Edit Exam**

**Online Examination System**

**My Profile**

**Profile Information**

- Full Name: Prof. Ramesh Dubey
- Email Address: ramesh@faculty.examportal.com
- Contact Number: 3487982785
- College: Manipal Academy of Higher Education

**Update Profile**

**Change Password**

- Current Password
- New Password
- Confirm New Password

>Password must be at least 8 characters long.

**Change Password**

**Account Information**

- Faculty ID: 2
- Account Created: N/A
- Last Updated: N/A
- Account Status: **Active**

**Activity Statistics**

- Total Exams Created: 3
- Total Questions Created: 25
- Student Exam Attempts: 1

**View All Exams**

**Quick Links**

- Dashboard
- Create New Exam
- View Exam Results
- Logout

**Online Examination System**

**Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta**

**Figure 25: Profile Page of Faculty**

The screenshot shows the Student Dashboard of the Online Exam System. At the top, there's a blue header bar with the system logo and navigation links: Dashboard, Available Exams, My Results, and a user profile for Pavit Agrawal. The main content area has two main sections: 'Profile Information' on the left and 'Available Exams' and 'Recent Exam Results' on the right.

**Profile Information:**

- Name: Pavit Agrawal
- Registration No: 230953406
- Email: pavit@student.examportal.com
- Contact: 1234567893
- College: Manipal Academy of Higher Education

**Available Exams:**

No exams available at the moment.

**Recent Exam Results:**

Exam	Date	Status	Score	Percentage	Action
DBMS Test 2	Apr 22, 2025 03:06 AM	Completed	25.00 / 50	50.00%	<a href="#">View Details</a>

[View All Results](#)

At the bottom, there's a footer bar with the text "Online Examination System" and "Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta".

Figure 26: Student Dashboard

The screenshot shows the Available Exams page of the Online Exam System. At the top, there's a blue header bar with the system logo and navigation links: Dashboard, Available Exams, My Results, and a user profile for Pavit Agrawal. The main content area is titled "Available Exams" and contains two tabs: "Available Exams" (selected) and "Completed Exams". A message indicates that no exams are currently available for the user.

No exams are currently available for you.

At the bottom, there's a footer bar with the text "Online Examination System" and "Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta".

Figure 27: Available Exams

The screenshot shows the Completed Exams page of the Online Exam System. At the top, there's a blue header bar with the system logo and navigation links: Dashboard, Available Exams, My Results, and a user profile for Pavit Agrawal. The main content area is titled "Available Exams" and contains two tabs: "Available Exams" (selected) and "Completed Exams". A single completed exam entry is listed in a table.

Exam Title	Subject	Attempt Date	Score	Percentage	Status	Action
DBMS Test 2	DBMS	Apr 22, 2025 03:06 AM	25.00 / 50	50.0%	Completed	<a href="#">View Result</a>

C:\xampp\htdocs\Online\_Examination\_System\student\available\_exams.php on line 207  
" class="btn btn-sm btn-info">> [View Result](#)

At the bottom, there's a footer bar with the text "Online Examination System" and "Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta".

Figure 28: Completed Exams

Online Exam System

Dashboard Available Exams My Results Pavit Agrawal

DBMS Test 3

Subject: DBMS Duration: 10 minutes  
Faculty: Prof. Ramesh Dubey Total Marks: 50

Please read all questions carefully before answering. Once submitted, you cannot change your answers.

**Question 1 (10.00 marks)**

What is DBMS?

A. Subject  
 B. Person  
 C. Teacher  
 D. None of These

**Question 2 (10.00 marks)**

What is Table?

A. Chair  
 B. Wooden  
 C. Data type  
 D. Both B and C

**Question 3 (10.00 marks)**

What is Chair?

A. Wooden  
 B. Seat  
 C. Comfortable  
 D. All of the above

**Question 4 (10.00 marks)**

Peacock is the national bird.

True  
 False

**Question 5 (10.00 marks)**

Lion is the national animal.

True  
 False

 Submit Exam

Online Examination System Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta

Figure 29: Take Exam

Online Exam System

Dashboard Available Exams My Results Pair Approved

## Exam Result

[Back to Results](#)

Result Summary	
Exam: DBMS Test 2	Score: 25.00 / 50
Subject: DBMS	Percentage: 50.00%
Date Taken: Apr 22, 2025 01:04 AM	Result: <span style="background-color: green; color: white; padding: 2px;">Passed</span>
Status: <span style="background-color: green; color: white; padding: 2px;">Completed</span>	

Total Questions  
10
Correct Answers  
5
Incorrect Answers  
5

**Detailed Answers**

**Question 1** 0.00 marks

Question: What is a primary key? How is it different from a unique key and a foreign key? Provide examples.

Your Answer: Primary key is primary.

Marks Obtained: 0.00 / 1.00

**Question 2** 0.00 marks

Question: Explain the concept of indexing in DBMS. How does it improve performance, and what are the types of indexing?

Your Answer: Indexing is the process of making index.

Marks Obtained: 0.00 / 1.00

**Question 3** 0.00 marks

Question: Describe the three levels of data abstraction in DBMS: physical, logical, and view level.

Your Answer: Physical is physically strong, logical is mentally strong. View has a sharp sight.

Marks Obtained: 0.00 / 1.00

**Question 4** 0.00 marks

Question: What is a deadlock in DBMS? Explain how it occurs and techniques to prevent or recover from deadlock.

Your Answer: Deadlock is the condition when the lock is dead.

Marks Obtained: 0.00 / 1.00

**Question 5** 0.00 marks

Question: Compare and contrast the different types of joins in SQL: INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL OUTER JOIN with examples.

Your Answer: Join is very good in nature and has multiple manners. These are its nature.

Marks Obtained: 0.00 / 1.00

**Question 6** 0.00 marks

Question: Every foreign key must reference a primary key in another table.

Your Answer: True

Correct Answer: True

Marks Obtained: 5.00 / 5.00

**Question 7** 0.00 marks

Question: Denormalization is a process used to improve query performance by introducing redundancy.

Your Answer: True

Correct Answer: True

Marks Obtained: 5.00 / 5.00

**Question 8** 0.00 marks

Question: The SELECT statement in SQL is used to modify data in a table.

Your Answer: False

Correct Answer: False

Marks Obtained: 5.00 / 5.00

**Question 9** 0.00 marks

Question: Which of the following is used to enforce referential integrity in a relational database?

Your Answer: 3

Correct Answer: 3

Marks Obtained: 5.00 / 5.00

**Question 10** 0.00 marks

Question: Which command is used to delete all rows from a table without logging the individual row deletion?

Your Answer: C

Correct Answer: C

Figure 30: View Exam Result for Student

Online Exam System

Dashboard Available Exams My Results Pavit Agrawal

## My Profile

**Profile Information**

Registration Number	230953406 Registration number cannot be changed.
Full Name	Pavit Agrawal
Email Address	pavit@student.examportal.com
Contact Number	1234567893
College	Manipal Academy of Higher Education

**Change Password**

Current Password	
New Password	Password must be at least 8 characters long.
Confirm New Password	

**Account Information**

Student ID: 1
Registration No: 230953406
College: Manipal Academy of Higher Education
Account Created: N/A
Last Updated: N/A
Account Status: Active

**Exam Statistics**

Exams Taken	5
Exams Passed	5
Pass Rate	100%
Average Score	85%

**Quick Links**

- Dashboard
- Available Exams
- Exam Results
- Logout

Online Examination System

Developed by Pavit Agrawal, Rajat Goyal and Ryan Gupta

Figure 31: Student Profile

# **CHAPTER 7**

## **Conclusion and Future Works**

The construction of Online Examination System has indisputably transformed the manner in which institutions of academic learning conduct, manage and administer examinations. Technology processes the examination in a more efficient, accurate and accessible manner. It has changed from traditional automatic practices. With the implementation of self-grading examination, instant result declaration, automated generation of exam papers, and sealing online grading of examinations, a great deal of faculty stress is lessened, which gratefully makes things easier for students.

It comprises the orderly arranged question bank of the system, measurable scoring of the test taken from any location around the world, real-time access to the results and unparalleled interfacing. Control of alteration protecting crucial information as to with aid in maintaining the credibility of the examinations has restricted sabotaging access free increase leveraged bun guard trimmed the quad boosted security priorities. Strengthened the user experiences that odd polish redesign of the document counters to enable easier navigation to the tutors, students, and administrators improves that becomes the trusted Online Examination System.

### **Future Scope**

#### **1. Mobile Application:**

In future, plans include developing a mobile app version of the system to make it more flexible and accessible. Students and teachers would have more freedom to attend exams, register, and check results right from their smartphones or tablets.

## **2. Better Analytics and Reporting:**

With the addition of better data visualization reporting tools, spotting trends and identifying underspecified areas will be made easier. Advanced analytics will also help teachers and school administrators gain a better understanding of student performance and effectiveness concerning examinations.

## **3. AI-Based Proctoring:**

With remote supervision or during mass examination sessions, it particularly becomes challenging to uphold a standard of discipline. Cheating can easily be done if there are no adequate supervisory controls. To solve this problem, AI-based tools for proctoring students remotely using face recognition and behavior tracking will be designed and implemented.

## **4. Integration with LMS:**

Combining current Learning Management Systems (LMS) with the Online Examination System will integrate all academic activities into a single coherent unit, thereby enriching academic culture and improving management of course work, assignments and examinations.

## **5. Smarter Exam Scheduling:**

The system could make better use of resources and further alleviate scheduling issues by automating exam scheduling through the use of historical data and student participation trends with predictive analytics.

By focusing on these future enhancements, the Online Examination System aims to keep evolving and meet the changing needs of students and educators, ensuring it remains a valuable tool in the academic world.

# References

- [1] Silberschatz, A., Korth, H. F., & Sudarshan, S. (2019). Database System Concepts. McGraw-Hill Education.
- [2] Clar, N. (2019). SQL for Beginners: Learn SQL using MySQL and Database Design. Independently published.
- [3] Ghiani, G., Laporte, G., & Musmanno, R. (2013). Introduction to Logistics Systems Management. John Wiley & Sons.
- [4] Christopher, M. (2016). Logistics and Supply Chain Management. Pearson Education Limited.
- [5] Grinberg, M. (2018). Flask Web Development: Developing Web Applications with Python. O'Reilly Media.
- [6] Duckett, J. (2011). HTML and CSS: Design and Build Websites. Wiley.
- [7] "Flask Documentation." Flask. [Online]. Available: <https://flask.palletsprojects.com/en/2.1.x/>. [Accessed: Apr. 21, 2024].
- [8] "Mozilla Developer Network (MDN) Web Docs." MDN Web Docs. [Online]. Available: <https://developer.mozilla.org/en-US/docs/Web>. [Accessed: Apr. 21, 2024].