A

MINI PROJECT REPORT ON

"MCQ Exam"

SUBMITTED BY
"Atharva Anant Kupale"

UNDER THE GUIDANCE OF
"Prof. Nishant Pachpor"

IN PARTIAL FULFILMENT OF
Award of the Degree of
MASTER OF COMPUTER APPLICATION

(Semester-II)

SUBMITTED TO

SAVITRIBAI PHULE PUNE UNIVERSITY

THROUGH

YASHASWI EDUCATION SOCIETY'S
INTERNATIONAL INSTITUTE OF MANAGEMENT SCIENCE
CHINCHWAD, PUNE
ACADEMIC YEAR 2023-2024

SHIVAJI DATTU MUNDHE

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DECLARATION

I, Atharva Anant Kupale, student of International Institute of Management Science, Chinchwad, Pune, hereby declare that this Mini Project report entitled "MCQ Exam" is a bonafide record of work done by me for the partial fulfilment of the requirement for the degree of **Master of Computer Application** (M.C.A) through Savitribai Phule Pune University.

I, hereby, declare that I have adequately referenced the original sources and this is my original work. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

(Signature)
Atharva Anant Kupale
IIMS, Chinchwad, Pune.

ACKNOWLEDGEMENT

I am deeply indebted towards my project guide Prof. Nishant Pachpor who gave me the opportunity and was instrumental in providing me all the knowledge and insight to do the research. It is their inspiration that has kept me motivated all along my project and the discipline and integrity they had expected from a mini project that made me to learn the real live projects.

I would like to express my earnest gratitude and thanks to Dr. Shivaji Mundhe (Director of IIMS) and my project guide Prof. Nishant Pachpor for providing me all the knowledge and skills, resources, technical support, guidance as required to achieve this Endeavour.

I thank my all faculty members and friends for their support and blessings. The report is the result of contribution of numerous people to mention individually.

I also thank all respondent who have given their value time, views and authentic information for this mini project. I thank each and everybody who has contributed directly or indirectly to the successful completion of this project.

(Signature)

Atharva Anant Kupale

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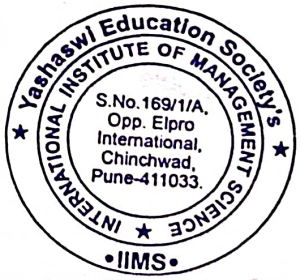

CERTIFICATE

This is to Certify that Mr. Atharva Anant Kupale is a Bonafide student of International Institute of Management Science, Chinchwad, Pune, worked on Mini Project title MCQ Exam and has successfully completed project work in partial fulfillment for award of degree Master of Computer Application (MCA) Sem II of Savitribai Phule Pune University.

This report is the record of Student's own efforts under our supervision and guidelines.

Date:

Prof.Nishant Pachpor	*Dr Ashwini Bralime*	*Dr. Shivaji Mundhe*
Internal Guide	*HOD-MCA*	*Director, IIMS, Chinchwad*

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Introduction

In the landscape of modern education and professional development, the demand for efficient, scalable, and accurate assessment methods is paramount. Multiple Choice Question (MCQ) Exam Software emerges as a pivotal tool in meeting these demands, revolutionizing the traditional examination process by seamlessly integrating technology into assessment practices. This comprehensive introduction delves into the intricacies of MCQ Exam Software, elucidating its features, benefits, and the transformative impact it brings to educational institutions, corporate training programs, and certification bodies.

Briefly introduce the purpose of the project and its significance in the context of MCQ exams. Highlight the importance of efficient assessment methods in education and the role of MCQs in evaluating knowledge and understanding. The project aims to develop an interactive MCQ exam platform for the students. The platform will provide a user-friendly interface for both students and instructors, facilitating efficient assessment and learning of key features.

These exams have emerged as a popular method for assessing student's knowledge, comprehension, and critical thinking abilities. With the proliferation of technology in education, there is a growing demand for innovative solutions to streamline the process of conducting and grading MCQ exams. The project aims to enhance the examination experience for students, providing a comprehensive tool for self-assessment, revision, and academic progress tracking.

About Existing System

In today's educational landscape, digital solutions are revolutionizing the traditional methods of administering and grading exams, particularly multiple-choice question (MCQ) exams. Specialized software systems have transformed the way these exams are conducted, providing a variety of features to enhance efficiency, accuracy, and accessibility in the assessment process for both educators and learners.

One of the most significant features of the MCQ exam systems is the comprehensive question bank functionality. This centralized repository enables educators to store, organize, and categorize a vast array of questions covering various topics and difficulty levels. This abundance of content allows instructors to create customized exams tailored to their curriculum requirements with ease. The categorization of questions allows for easy retrieval and ensures that exams are well-balanced in terms of content coverage.

Moreover, these systems offer unparalleled flexibility in exam creation. Educators can specify parameters such as the number of questions, time limits, and question types, empowering them to design assessments that align with their instructional objectives. Advanced randomization capabilities further enhance the integrity of assessments by shuffling the order of questions and answer choices, mitigating the risk of cheating, and promoting fairness.

Security is another cornerstone of MCQ exam systems, with robust measures in place to safeguard the integrity of assessments. Features such as browser lockdown, IP restrictions, and proctoring functionalities bolster exam security, minimizing opportunities for academic dishonesty. Additionally, real-time monitoring capabilities empower educators to vigilantly oversee exam sessions, ensuring adherence to academic integrity policies.

One of the most significant advantages of MCQ exam systems is the automation of grading processes. By leveraging machine learning algorithms and sophisticated scoring mechanisms, these systems can swiftly and accurately grade exams, freeing educators from the arduous task of manual grading. Instant feedback mechanisms provide students with immediate insights into their performance, fostering a culture of continuous improvement and enabling personalized learning experiences.

Furthermore, MCQ exam systems offer robust analytics and reporting capabilities, empowering educators to glean actionable insights from assessment data. Through customizable reports and visualizations, instructors can identify trends, pinpoint areas of strength and weakness, and tailor their instructional strategies accordingly. This data-driven approach not only enhances teaching efficacy but also facilitates data-informed decision-making at the institutional level.

Limitations of the system

Multiple-choice question (MCQ) tests are widely used in education due to their efficiency and objectivity in assessment. However, they come with several inherent limitations that educators should consider when designing and implementing such tests.

1. Limited Assessment Depth: MCQ tests primarily evaluate students' ability to recall information and apply basic concepts. They often fail to assess higher-order thinking skills such as critical thinking, analysis, synthesis, and evaluation. This limitation restricts the test's ability to gauge a student's comprehensive understanding and problem-solving abilities.

2. Guessing and Partial Knowledge: MCQs allow students to make educated guesses, potentially inflating scores, and masking gaps in knowledge. Even students with partial understanding can sometimes choose the correct answer by eliminating incorrect options, leading to an inaccurate representation of their true proficiency.

3. Narrow Content Coverage: Due to the format's limitations, MCQ tests may not adequately cover the breadth and depth of the curriculum. Complex topics or nuanced concepts that require extended explanations or critical thinking may be oversimplified or omitted altogether, leading to an incomplete assessment of student learning.

4. Difficulty in Assessing Skills and Application: MCQs are primarily suited for assessing declarative knowledge—facts, definitions, and concepts. However, they struggle to evaluate students' ability to apply knowledge in real-world scenarios or demonstrate practical skills. As a result, MCQ tests may not fully capture students' competence in applying learned concepts to solve problems or make decisions.

5. Limited Feedback for Learning: While MCQ tests provide a numeric score or grade, they often lack detailed feedback on students' responses. Without explanations or opportunities for students to justify their answers, it can be challenging for them to understand their mistakes and areas needing improvement. This limitation hinders the test's effectiveness as a formative assessment tool for promoting learning and skill development.

6. Cultural and Linguistic Bias: The wording and structure of MCQs can inadvertently favor students from certain cultural or linguistic backgrounds, leading to biased assessment outcomes. Differences in interpretation or comprehension may unfairly disadvantage some students, undermining the test's validity and reliability.

7. Time-consuming Test Preparation: Crafting high-quality MCQs that effectively assess learning objectives can be time-consuming for educators. Developing plausible distractors (incorrect answer choices) requires careful consideration to ensure they are plausible yet discernibly incorrect, adding to the complexity of test creation.

Need of System

Educational institutions and organizations can benefit from using an online Multiple-Choice Question (MCQ) test system for several reasons:

1. Efficient Test Administration: An online MCQ test system streamlines the process of creating, administering, and grading tests, saving time and resources for educators and administrators. It allows for easy scheduling, distribution, and collection of tests, reducing the administrative burden associated with manual procedures.

2. Standardization and Consistency: An online MCQ test system ensures consistency in test administration and grading, minimizing variations that may arise from manual processes. By adhering to predefined templates and guidelines, the system helps maintain the integrity and fairness of assessments across different instructors, courses, and departments.

3. Enhanced Security: An online MCQ test system can incorporate features such as secure login credentials, randomized question orders, and time limits to mitigate cheating and unauthorized access. By safeguarding the integrity of assessments, the system preserves the credibility and validity of test results.

4. Scalability and Flexibility: An online MCQ test system can accommodate varying numbers of test takers, courses, and assessment formats, adapting to the evolving needs of educational institutions and organizations. It allows for the customization of test parameters, such as question types, difficulty levels, and scoring mechanisms, to align with specific learning objectives and assessment criteria.

5. Data-driven Insights: By capturing and analyzing data on test performance, the system provides valuable insights into student learning outcomes, strengths, and areas needing improvement. Educators can leverage this information to identify trends, assess instructional effectiveness, and tailor interventions to support student success.

6. Accessibility and Convenience: An online MCQ test system offers greater accessibility and convenience for students, allowing them to take tests remotely or on various devices with internet connectivity. This flexibility accommodates diverse learning preferences and circumstances, facilitating equitable access to assessments for all students.

7. Feedback and Learning Opportunities: A well-designed online MCQ test system can provide immediate feedback to students upon completing tests, enabling them to identify mistakes, review correct answers, and learn from their errors. This formative feedback fosters a culture of continuous improvement and self-directed learning among students.

Hardware Specification

- **Processor – Dual Core**
- **Hard Disk** – 512 GB
- **Ram** – 8 GB

Software Specification

- **Operating System-** Windows 10
- **IDE-**Visual Studio
- **Database-** My SQL

Technology used

- **Front-end:** HTML, CSS, Bootstrap, JavaScript
- **Back-end:** Python, Django
- **Database:** MySQL database

Business Objective

Implementing a multiple-choice question (MCQ) exam system in a business environment can help achieve various strategic objectives, and contribute to organizational growth, efficiency, and competitiveness. Below are some of the business objectives that can be accomplished by deploying an MCQ exam system:

1. Employee Training and Development: MCQ exams can be used as a tool for employee training and development initiatives. By creating assessments that cover relevant skills, knowledge, and compliance requirements, organizations can ensure that their workforce remains competent and up-to-date with industry standards and regulations. This objective aligns with the broader goal of enhancing employee performance and productivity.

2. Certification and Compliance: MCQ exams provide a structured and standardized method for assessing employees' proficiency in areas where certification or compliance standards are required. By implementing an MCQ exam system, businesses can streamline the certification process, verify compliance, and mitigate the risks associated with non-compliance, such as regulatory fines or reputational damage.

3. Talent Acquisition and Recruitment: MCQ exams can be utilized as part of the recruitment and selection process to assess candidates' knowledge, skills, and aptitude for a particular role. By administering pre-employment assessments, businesses can identify candidates who possess the necessary competencies and cultural fit, thereby making more informed hiring decisions.

4. Performance Evaluation and Feedback: Within the context of performance management, MCQ exams can serve as a valuable tool for evaluating employees' performance, identifying areas for improvement, and providing constructive feedback. By regularly assessing employees' knowledge and skills through objective measures, businesses can facilitate meaningful performance discussions, set development goals, and support career progression.

5. Quality Assurance and Standardization: Standardizing assessment procedures through an MCQ exam system ensures consistency and reliability in evaluating employees' competencies across different departments, teams, or locations. By adhering to predefined assessment criteria and benchmarks, businesses can uphold quality standards, identify deviations from expected performance levels, and implement corrective measures as necessary.

6. Data-Driven Decision-Making: MCQ exam systems generate valuable data and insights that can inform strategic decision-making at various levels of the organization. By analyzing assessment results, trends, and performance metrics, businesses can identify skills gaps, training needs, and areas of organizational strength.

System Objective

The following outlines the objectives for a written documentation exam software developed for college purposes:

1. Efficiency: The primary objective of the exam software is to streamline the process of conducting multiple-choice question (MCQ) tests within college environments. It aims to reduce administrative overhead and optimize the time required for exam administration, grading, and result dissemination.

2. Accessibility: The software should be accessible to both administrators and students, ensuring ease of use and navigation. It should accommodate individuals with varying levels of technical proficiency, facilitating widespread adoption across college campuses.

3. Scalability: One of the key objectives is to design a system that can scale efficiently to accommodate varying numbers of students and exams. Whether administering tests for a single class or multiple departments simultaneously, the software should remain robust and responsive.

4. Security: Security is paramount in ensuring the integrity of the examination process. The software must implement stringent measures to prevent cheating, unauthorized access to test content, and tampering with results. It should adhere to industry standards and best practices for data security.

5. Flexibility: The system should offer flexibility in terms of test creation, allowing administrators to customize exams according to course requirements and learning objectives. It should support the inclusion of multimedia elements, randomized question banks, and diverse question formats beyond traditional MCQs.

6. Reliability: Reliability is crucial for maintaining trust in the examination process. The software should operate consistently without glitches or downtime, ensuring that exams can be conducted seamlessly without disruptions or delays.

7. Analytics and Reporting: To support data-driven decision-making, the software should provide comprehensive analytics and reporting capabilities. This includes real-time monitoring of exam progress, performance metrics for individual students and cohorts, and detailed insights into question effectiveness.

8. Feedback Mechanism: To promote continuous improvement, the software should incorporate mechanisms for collecting feedback from both administrators and students. This feedback can inform future enhancements to the system and ensure that it remains responsive to the evolving needs of the college community.

Scope of Program

The MCQ test project is a significant endeavor aimed at creating a sophisticated platform for users to practice multiple-choice questions (MCQs) across a variety of subjects. The project's scope includes various components, each contributing to the creation of a comprehensive and user-friendly experience. The core of the project involves developing a robust backend infrastructure to manage an extensive database of MCQs. This includes designing efficient database schemas to store questions, answer choices, explanations, and metadata such as difficulty level, topic, and authorship.

The backend system will also incorporate functionalities such as user authentication, authorization, and session management to ensure secure access to the platform. The project also includes creating a dynamic and responsive frontend interface that enables users to browse, select, and answer questions intuitively. The front end will feature a user-friendly layout with interactive elements such as search filters, pagination, and sorting options to facilitate seamless navigation through the question bank. Furthermore, the interface will incorporate features like timers for timed tests, progress tracking, and scoring mechanisms to provide users with immediate feedback on their performance.

Scalability and performance are crucial considerations within the project's scope, requiring the implementation of optimized database queries, caching mechanisms, and load-balancing techniques to ensure the platform can handle a large volume of concurrent users without compromising speed or reliability. Cloud-based infrastructure may also be leveraged to provide scalability and flexibility in resource allocation. Moreover, the project includes the development of an administrative dashboard to manage various aspects of the platform, including question management, user management, and analytics. The admin panel will enable authorized users to add, edit, or delete questions, as well as monitor user activity, track performance metrics, and generate reports to gain insights into user engagement and learning outcomes.

The project may explore integrating third-party libraries or APIs to enhance functionality. For example, natural language processing (NLP) algorithms could be integrated for question categorization and sentiment analysis, while machine learning models could be employed for adaptive testing to personalize the learning experience based on user performance and preferences. In conclusion, the MCQ test project aims to deliver a comprehensive and user-centric platform for practicing multiple-choice questions, catering to the needs of students, educators, and individuals seeking to improve their knowledge and skills across various subjects. By focusing on scalability, performance, and feature-rich functionality, the project endeavors to provide a valuable resource for learning, assessment, and skill development.

Objective of System

When developing exam software for educational institutions, it is important to establish clear objectives that align with their needs. The following are the main objectives of the exam software:

1. Automated Exam Creation and Management: To simplify the process of creating and managing exams by allowing educators to easily create and customize exam papers, set question patterns, and define rules for different types of exams (e.g., midterms, finals, quizzes).
Benefits: Saves time, reduces administrative workload, and ensures consistency in exam formats.

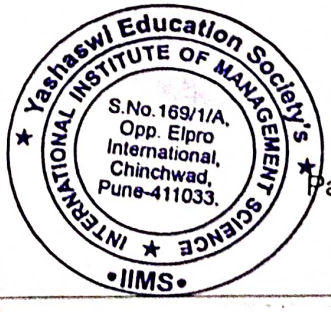
2. Secure and Proctored Testing: To conduct secure online exams while preventing cheating by providing features like randomized question order, timed exams, and remote proctoring.
Benefits: Ensures exam integrity, maintains fairness, and enhances trust in the assessment process.

3. Instant Grading and Feedback: To automate grading and provide immediate feedback to students by evaluating answers automatically and generating instant results.
Benefits: Saves faculty time, helps students identify areas for improvement, and encourages continuous learning.

4. Analytics and Insights: To analyze exam performance data by generating reports on student performance, question difficulty, and overall assessment trends.
Benefits: Informs teaching strategies, curriculum adjustments, and student support initiatives.

5. Cost-Effectiveness: To reduce costs associated with paper-based exams by eliminating the need for physical question papers, answer sheets, and manual grading.
Benefits: Saves resources, minimizes paper waste, and promotes eco-friendly practices.

6. Accessibility and Convenience: To make exams accessible to students from anywhere by allowing students to take tests online, regardless of their location.
Benefits: Accommodates diverse student needs, including remote learners and those with varying schedules.



Features of The New System

Designing a new system for a multiple-choice question (MCQ) project requires careful consideration of various features to ensure that it meets the needs of users and administrators. Here are some essential features that you might want to include:

User Authentication: Implement a secure authentication system that allows students, teachers, and administrators to log in securely.

User Roles: Define different user roles, such as students, teachers, and administrators, with varying levels of access and permissions.

Question Bank Management: Create a repository for storing and managing MCQs. This includes features for adding, editing, categorizing, and deleting questions.

Randomization: Enable the random selection of questions from the question bank to create unique tests for each student.

Test Creation: Allow teachers or administrators to create tests by selecting questions from the question bank. They should be able to define parameters such as the number of questions, time limits, and difficulty levels.

Customization: Provide options for customizing the appearance of tests, including themes, fonts, and branding.

Scoring and Grading: Automatically score and grade tests based on predefined criteria. Allow for manual review and adjustments if necessary.

Instant Feedback: Provide immediate feedback to students after completing a test, including scores, correct answers, and explanations.

Analytics and Reporting: Generate reports and analytics on student performance, including overall scores, performance by category, and trends over time.

Accessibility: Ensure the system is accessible to users with disabilities by following accessibility standards and providing features, such as screen reader compatibility and keyboard navigation.

Security: Implement robust security measures to protect user data, prevent cheating, and ensure the integrity of tests.

Feedback Mechanism: Provide a way for students to give feedback on questions, tests, and the overall system to help improve its quality over time.

System Requirement Specification

Introduction

The use of technology in education has changed the way students are evaluated. Multiple Choice Question (MCQ) exams have become a popular way of measuring students' knowledge and skills across different subjects. The Software Requirements Specification (SRS) for an MCQ Exam System aims to define the specific requirements and features of such a system to ensure that it is effective, user-friendly, and dependable.

The traditional method of written exams presents several challenges such as slow grading, bias, and limited scalability. The integration of technology into the assessment process addresses these issues by providing automatic grading, immediate feedback, and the ability to accommodate many participants. An MCQ exam system, built on a reliable software architecture, offers a comprehensive solution to streamline the examination process, enhance assessment accuracy, and improve overall efficiency.

The way students' knowledge and understanding are evaluated has changed significantly with the shift from traditional pen-and-paper exams to digital formats like Multiple Choice Question (MCQ) exams. This shift has brought about a revolution in the evaluation process. To facilitate efficient, fair, and secure assessments in academic and professional environments, an MCQ Exam System has been designed. The Software Requirements Specification (SRS) outlines the comprehensive features and functionalities of this system.

The purpose of the Software Requirements Specification is to introduce the MCQ Exam System, which aims to transform the assessment process by providing a platform that is easy to use, feature-rich, and scalable for conducting multiple-choice exams. The system has been designed to meet the evolving needs of educational institutions, instructors, and students in today's digital age, by adhering to defined requirements and incorporating best practices in software development.

Functional Requirements

User Roles:

❖ **Proposed System-Module Description:**

The system has the following modules:

- Admin/Faculty Module
- User/Student Module
- User Authentication & Authorization

➢ **Admin Module:**

a) Register/login: Admin can register and log in to their admin account.
b) Admin is the data owner. Has complete access to all modules in the system.
c) Access to User records.
d) Add, delete, and update departments.

- **User Module:**
  a) User can log in to their account.
  b) User can access to their courses.
  c) Select the subjects to give exam.
  d) User can view the score.
  e) user can send queries to the admin.
  f) The user can send feedback about the exam.

- **Inquiry/Feedback Module:**
  a) we can send queries/feedback.

- **User Authentication and Authorization:** For Users authentication and authorization there is login, register mechanism provided which includes encrypted password protection to user account.

Non-functional Requirements

- **Usability:** The system should provide an intuitive interface for both students and instructors. Clear instructions should be available for the users during exam-taking.

- **Performance:** The system should remain responsive even during peak usage and should have minimal latency for exam loading.

- **Security:** The system should have measures in place to prevent unauthorized access and protect student data.

- **Reliability:** The system should remain up and running during exam hours. Additionally, it should have backup and recovery mechanisms in place to ensure data safety.

User Interface Requirements

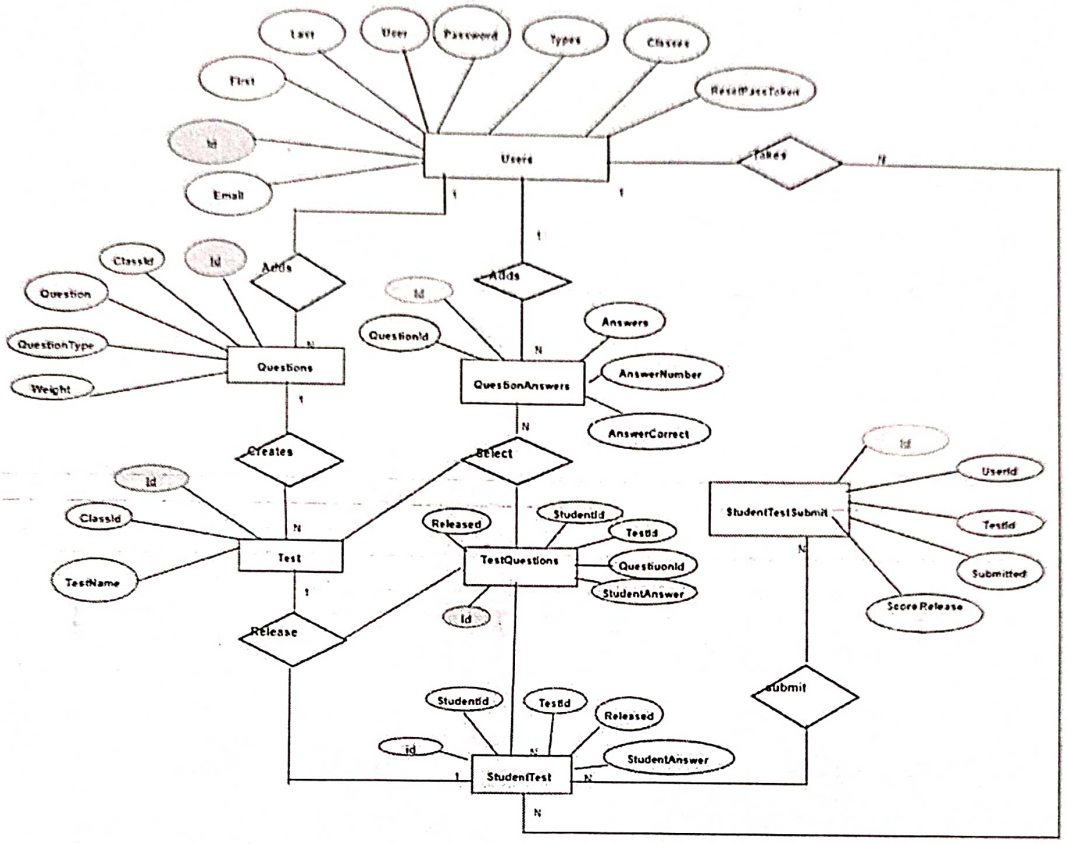
- **Layout and Design:** MCQ Exam should have Admin login, Users login, Course page, feedback form, etc.
- **Navigation:** Users dashboard should be user friendly, it should be easily navigated along with whole system, feedbacks, Queries etc. system should be easily navigated and get info about exam and score card, etc.

Constraints

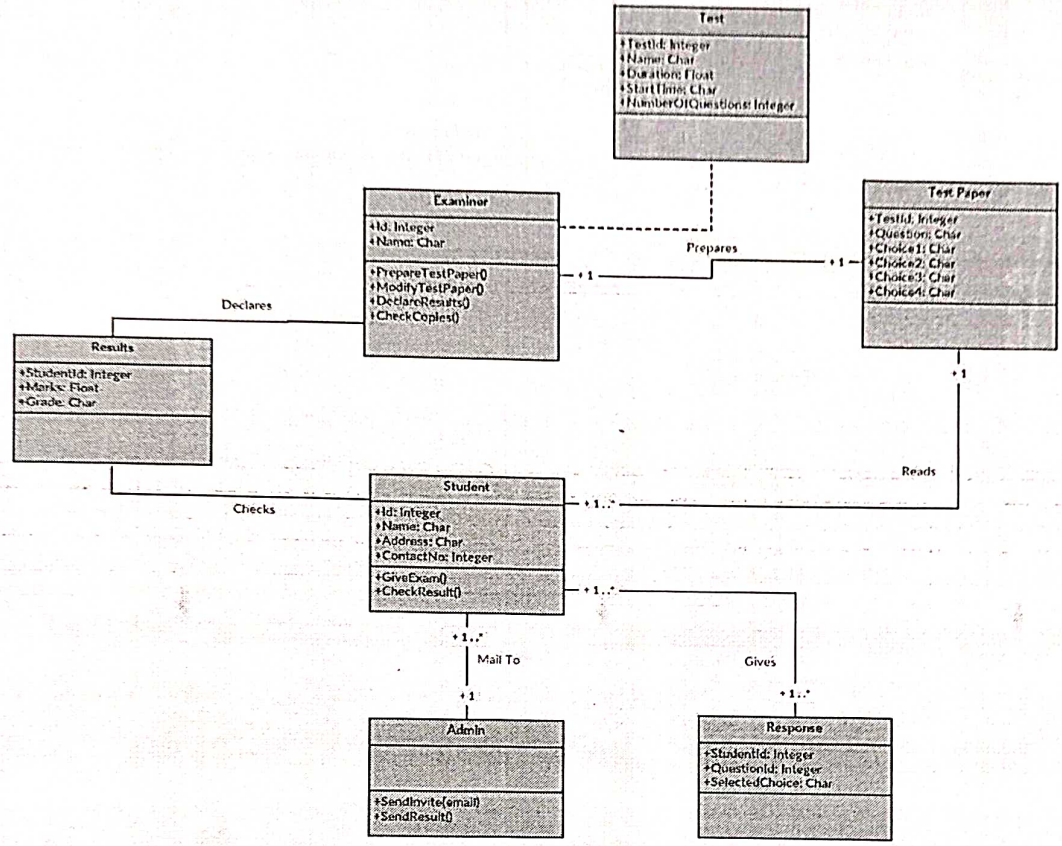
- Compliance with privacy laws and regulations.
- Available development time and resources.

Design

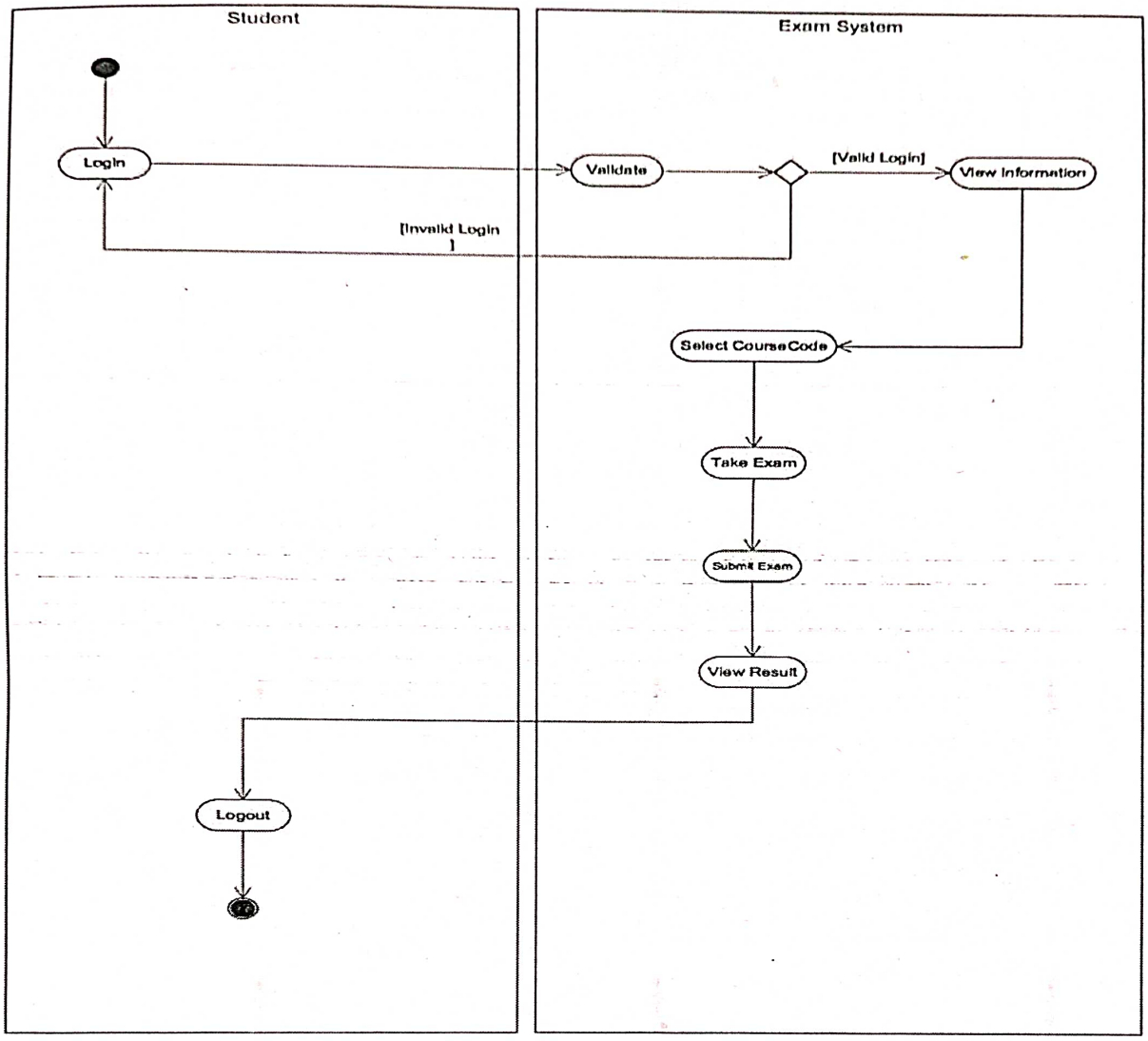
Entity Relationship Diagram



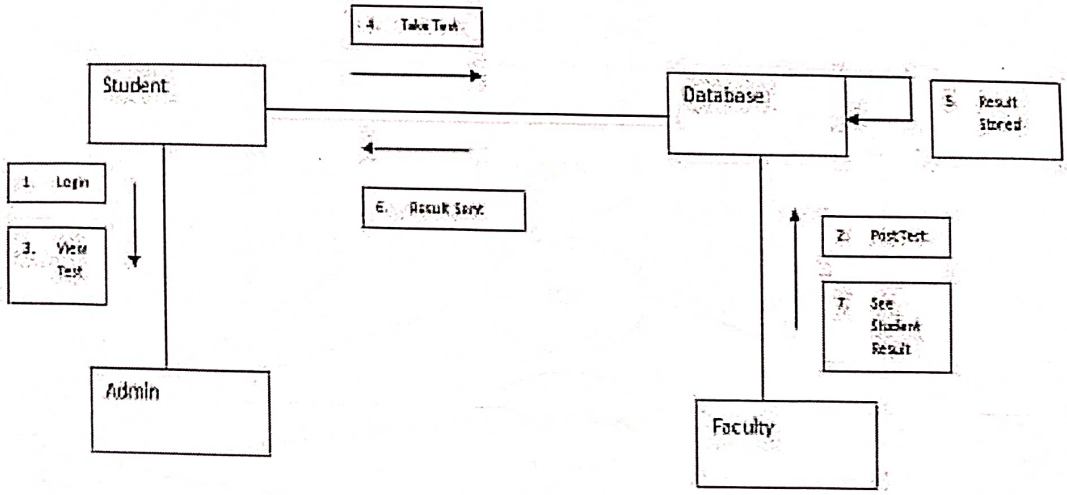
Class Diagram



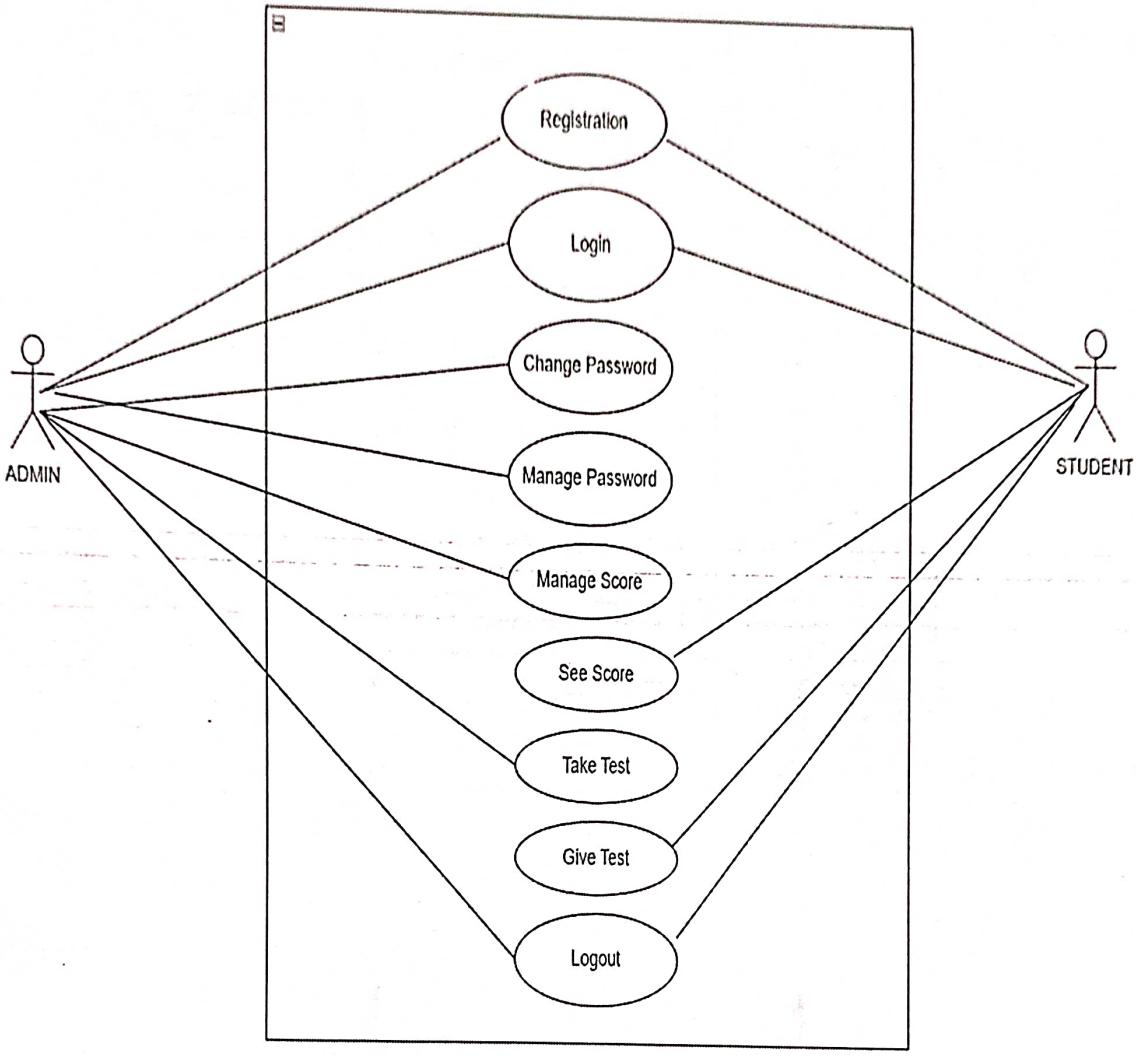
Activity Diagram



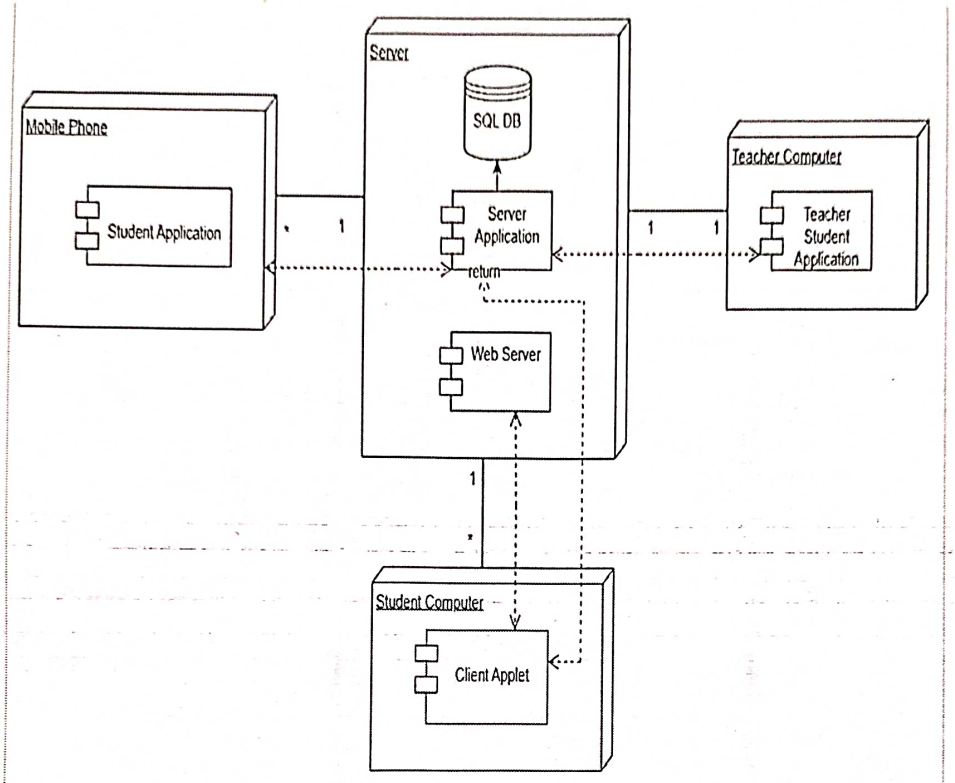
Sequence Diagram



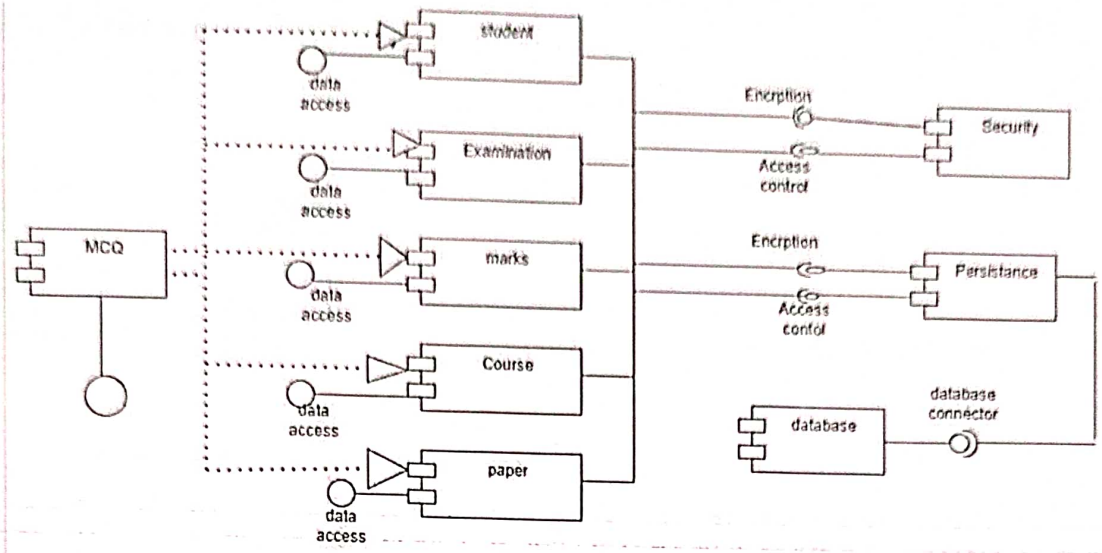
Use Case Diagram



Deployment Diagram

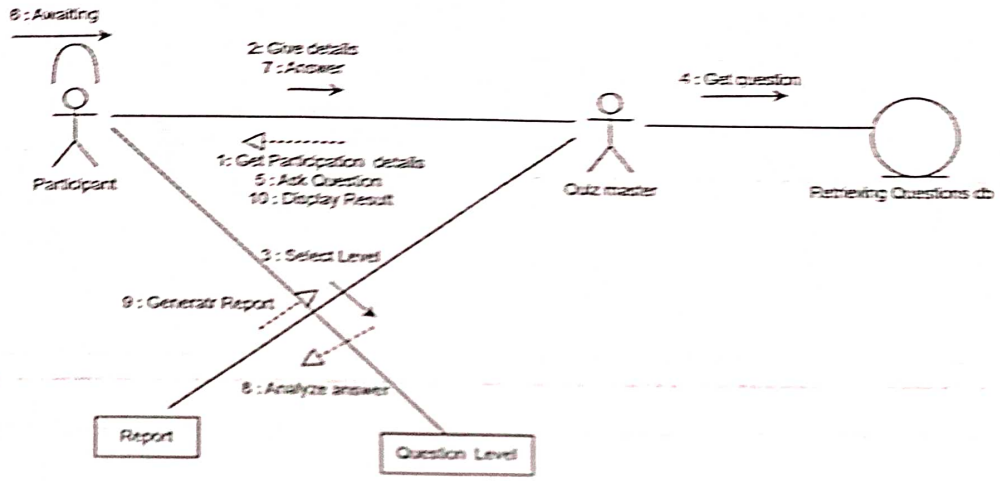


Component Diagram

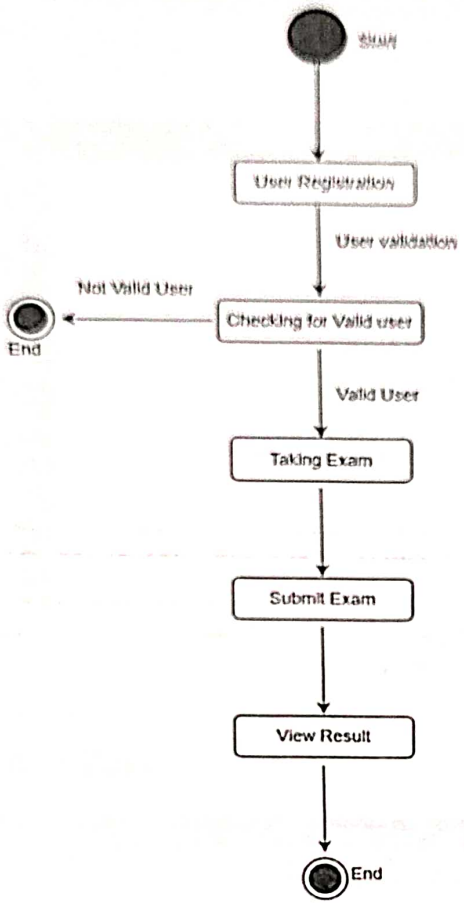


Component Uml Diagram

Collaboration Diagram

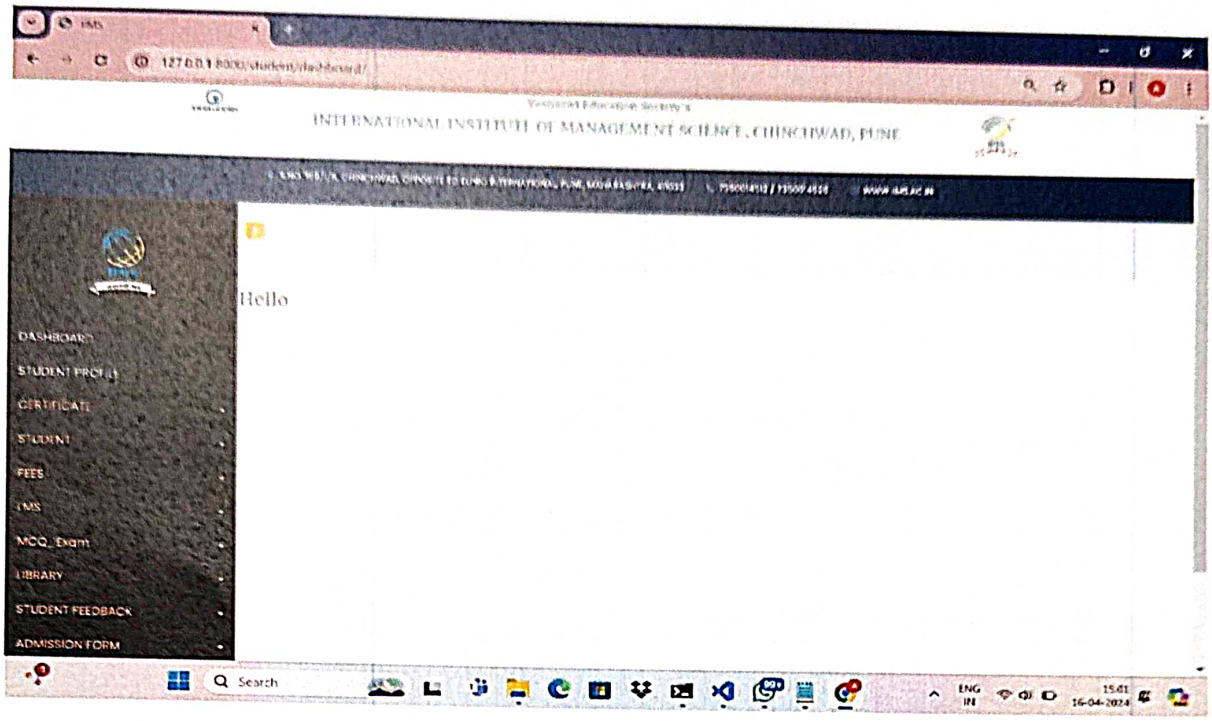


State Chart Diagram

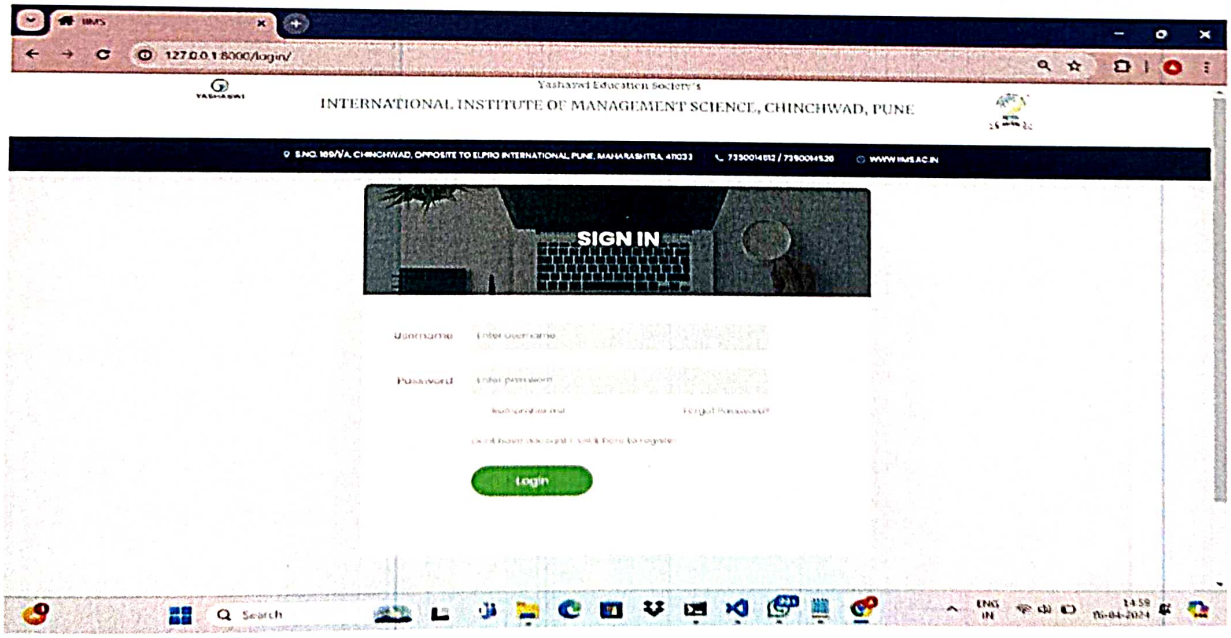


Screen Shots

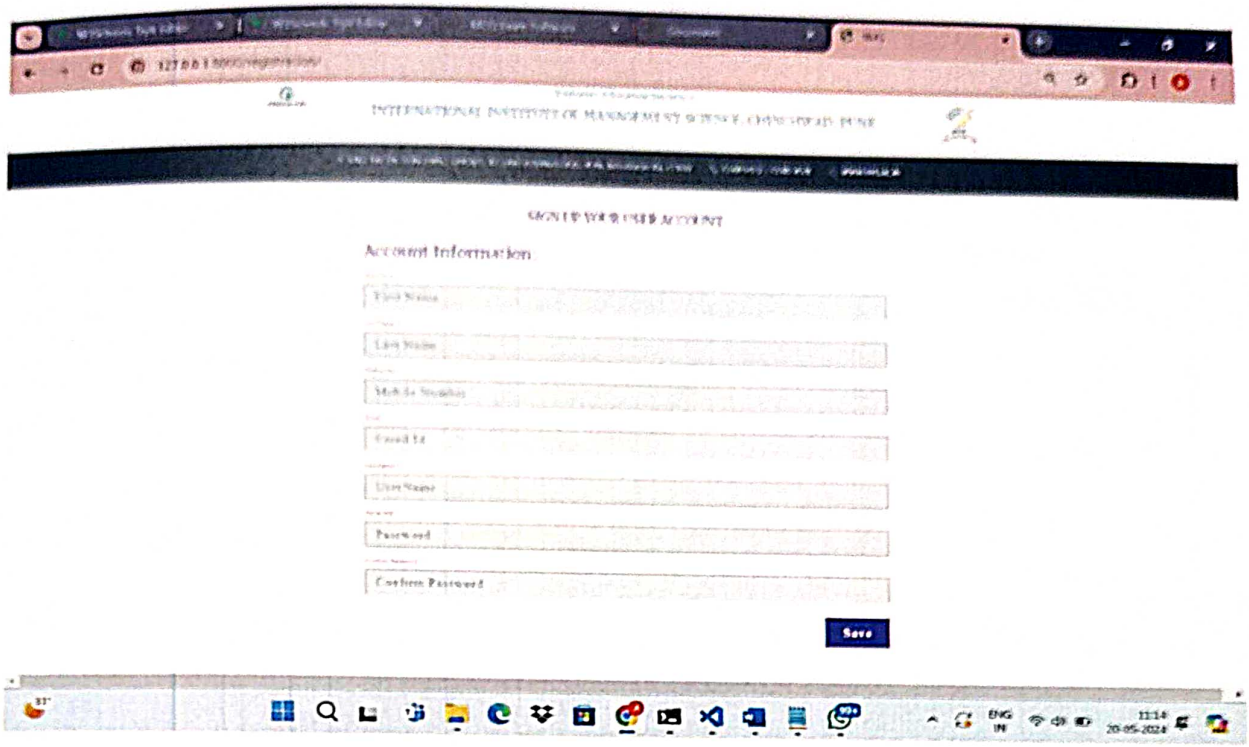
Home page



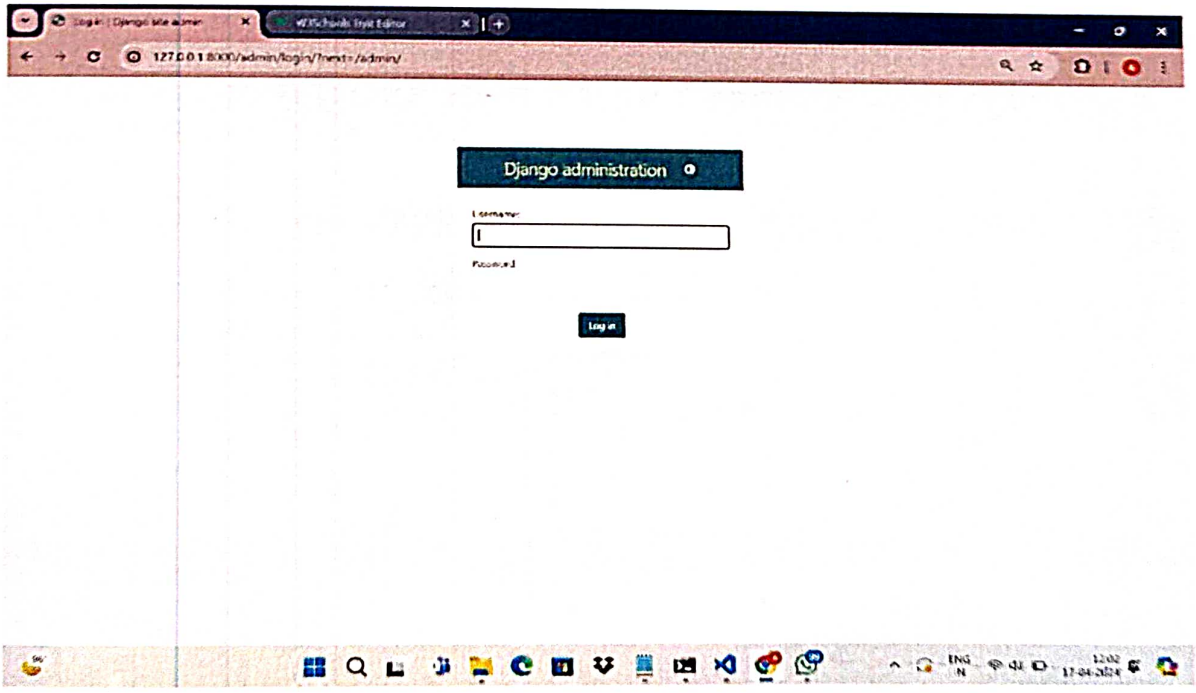
Login/Sign in Page



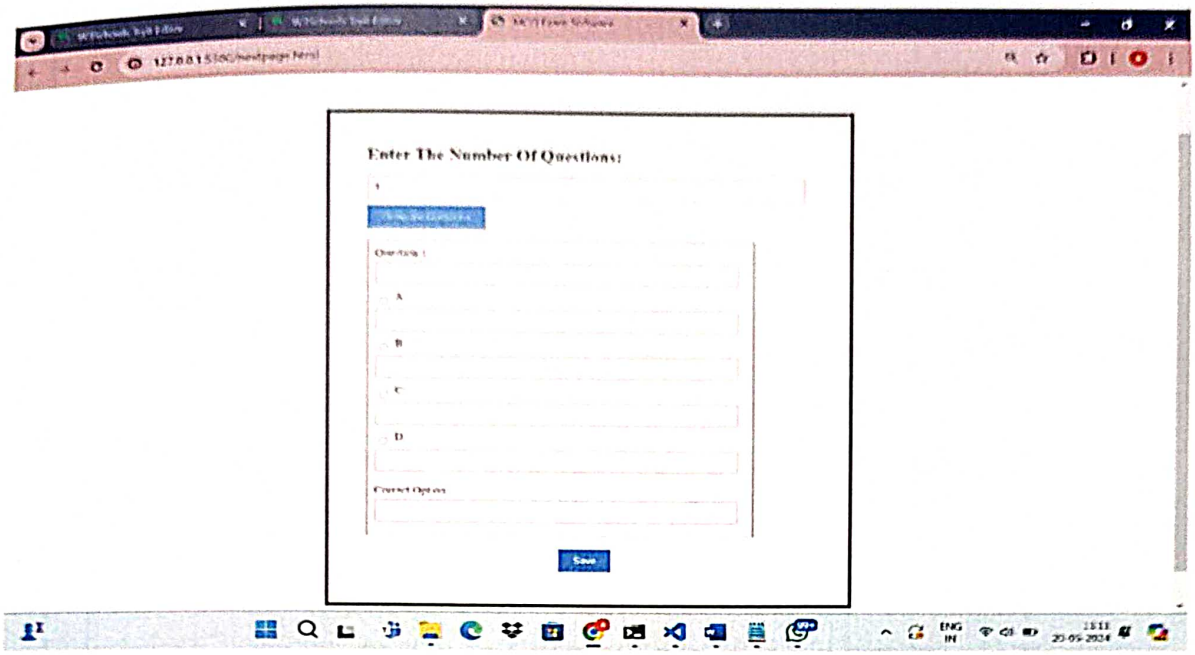
Registration Page



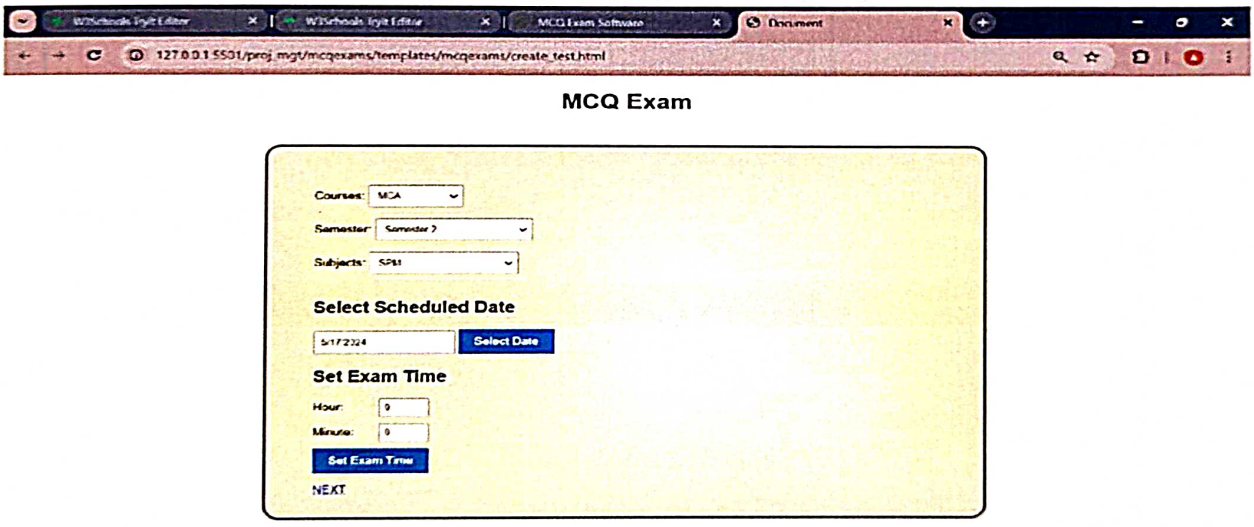
Admin page



Generate Questions Page



Create Test Page



Data dictionary

Admin/Faculty Info:

Field Name	Type	Constraints
FacultyID	INT	Not null
FirstName	Varchar (50)	Not null
LastName	Varchar (50)	Not null
Department	Varchar (100)	Not null
Email	Varchar (100)	Not null
Phone	Varchar (20)	Not null
Address	Varchar (225)	Not null

Batches Info:

Field Name	Type
BatchID	INT
BatchName	VARCHAR (50)
Program	VARCHAR (100)
Department	VARCHAR (100)

Academic Year:

Field Name	Type	Constraints
id	INT	primary key
Academic_year	Varchar (45)	not null

Student Info:

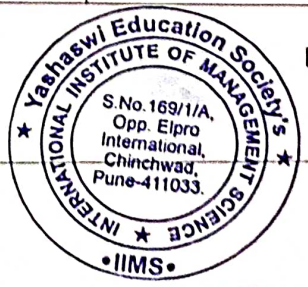
Field Name	Type	Constraints
StudentID	INT	primary key
Username	Varchar (50)	unique
Password	Varchar (25)	Not null
email	Varchar (100)	Not null
FirstName	Varchar (50)	Not null
LastName	Varchar (50)	Not null
DateOfBirth	date	Not null
Address	Varchar (255)	Not null
Department	Varchar (100)	Not null

Subject Details:

Field Name	Type	Constraints
SubjectID	INT	primary key
SubjectCode	Varchar (20)	not null
SubjectName	Varchar (100)	not null
Department	Varchar (100)	not null
Description	text	not null
Credits	INT	not null

Questions:

Field Name	Type	Constraints
idquestions	INT	primary key
question_txt	text	not null
option1	text	not null
option2	text	not null
option3	text	not null
option4	text	not null
correct_answer	INT	not null



Semester Info:

Field Name	Type	Constraints
idsemester	INT	primary key
sem_no	Varchar (45)	not null

Reports

1.Introduction:

Brief overview of the project and its objectives.

2. Project Scope

Define the boundaries and goals of the interior decoration system.

3. Key Features

List the main features that the system will offer.

4. Design and Aesthetics:

Discuss the design principles and aesthetic considerations incorporated.

5. Technological Framework:

Outline the technologies and tools used in developing the system.

6. User Experience

Highlight how the system enhances the user experience in interior decoration.

7. Challenges and Solutions

Identify any challenges faced during the project and the corresponding solution.

Bibliography And References

Website Reference:

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