

# **A Project Report**

on

## **Cloud Based E-learning Platform using Python**

*Submitted in partial fulfillment of the  
requirement for the award of the degree of*

# **Bachelor of Technology in Computer Science and Engineering**



(Established under Galgotias University Uttar Pradesh Act No. 14 of 2011)

**Under The Supervision of**

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**DECEMBER - 2021**



**SCHOOL OF COMPUTING SCIENCE AND  
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**CANDIDATE'S DECLARATION**

I/We hereby certify that the work which is being presented in the thesis/project/dissertation, entitled “**Cloud Based E-learning Platform using Python**” in partial fulfillment of the requirements for the award of the **BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE AND ENGINEERING** submitted in the **School of Computing Science and Engineering** of Galgotias University, Greater Noida, is an original work carried out during the period of **JULY-2021 to DECEMBER-2021**, under the supervision of **Dr. T. Poongodi, Professor, Department of Computer Science and Engineering** of School of Computing Science and Engineering , Galgotias University, Greater Noida

The matter presented in the thesis/project/dissertation has not been submitted by me/us for the award of any other degree of this or any other places.

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This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

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**CERTIFICATE**

The Final Thesis/Project/ Dissertation Viva-Voce examination of **18SCSE1010579 - KUSHAGRA GUPTA, 18SCSE1050001 - MOHD AZHAN TARIQ** has been held on \_\_\_\_\_ and his/her work is recommended for the award of **BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE AND ENGINEERING.**

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**Signature of Supervisor(s)**

**Signature of Project Coordinator**

**Signature of Dean**

Date:

Place:

## **Acknowledgement**

Before getting into the thickest of the things, we would like to thank the personalities who were part of our project in numerous ways, those who gave us outstanding support for the completion of this project. During the work we faced lots of difficulties due to lack of our knowledge and experience but these peoples help us to get over all the difficulties.

We would like to thank Dr. T. Poongodi ma'am for his guidance and governance, because of which our team was able to learn the minute aspects of a project work.

We would also like to thank Dr. Munish Sabharwal sir (Dean School of Computer Science and Engineering, Galgotias University) and our project coordinators for their continuous help and monitoring during the project work.

At last, we would like to thank our family members and friends for keeping us motivated and inspired to face and win all the challenges throughout the project.

## **Abstract**

The purpose of Online E-Learning Portal is to automate the existing manual system by the help of computerized equipment and full-fledged computer software, fulfilling their requirements, so that their valuable data/information can be stored for a longer period with easy accessing and manipulation of the same. The required software and hardware are easily available and easy to work with.

Online E-Learning Portal, as described above, can lead to error free, secure, reliable and fast management system. It can assist the user to concentrate on their other activities rather to concentrate on the record keeping. Thus, it will help organization in better utilization of resources. The organization can maintain computerized records without redundant entries. That means that one need not be distracted by information that is not relevant, while being able to reach the information.

The aim is to automate its existing manual system by the help of computerized equipment and full-fledged computer software, fulfilling their requirements, so that their valuable data/information can be stored for a longer period with easy accessing and manipulation of the same. Basically, the project describes how to manage for good performance and better services for the clients.

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## Acronyms

B.Tech.	Bachelor of Technology
M.Tech.	Master of Technology
BCA	Bachelor of Computer Applications
MCA	Master of Computer Applications
B.Sc. (CS)	Bachelor of Science in Computer Science
M.Sc. (CS)	Master of Science in Computer Science
SCSE	School of Computing Science and Engineering

## **CHAPTER-1 Introduction**

The "Online E-Learning Portal" has been developed to override the problems prevailing in the practicing manual system. This software is supported to eliminate and, in some cases, reduce the hardships faced by this existing system. Moreover, this system is designed for the particular need of the company to carry out operations in a smooth and effective manner.

The application is reduced as much as possible to avoid errors while entering the data. It also provides error message while entering invalid data. No formal knowledge is needed for the user to use this system. Thus, by this all it proves it is user-friendly. Online E-Learning Portal, as described above, can lead to error free, secure, reliable and fast management system. It can assist the user to concentrate on their other activities rather to concentrate on the record keeping. Thus, it will help organization in better utilization of resources.

Every organization, whether big or small, has challenges to overcome and managing the information of Student, Tutor, Results, Tutorial, Question. Every Online E-Learning Portal has different Tutor needs; therefore, we design exclusive employee management systems that are adapted to your managerial requirements. This is designed to assist in strategic planning, and will help you ensure that your organization is equipped with the right level of information and details for your future goals. Also, for those busy executive who are always on the go, our systems come with remote access features, which will allow you to manage your workforce anytime, at all times. These systems will ultimately allow you to better manage resources.

# 1.1 Problem Formulation

The old manual system was suffering from a series of drawbacks. Since whole of the system was to be maintained with hands the process of keeping, maintaining and retrieving the information was very tedious and lengthy. The records were never used to be in a systematic order. there used to be lots of difficulties in associating any particular transaction with a particular context. If any information was to be found it was required to go through the different registers, documents there would never exist anything like report generation. There would always be unnecessary consumption of time while entering records and retrieving records. One more problem was that it was very difficult to find errors while entering the records. Once the records were entered it was very difficult to update these records.

The reason behind it is that there is lot of information to be maintained and have to be kept in mind while running the business. For this reason, we have provided features Present system is partially automated (computerized), actually existing system is quite laborious as one has to enter same information at three different places.

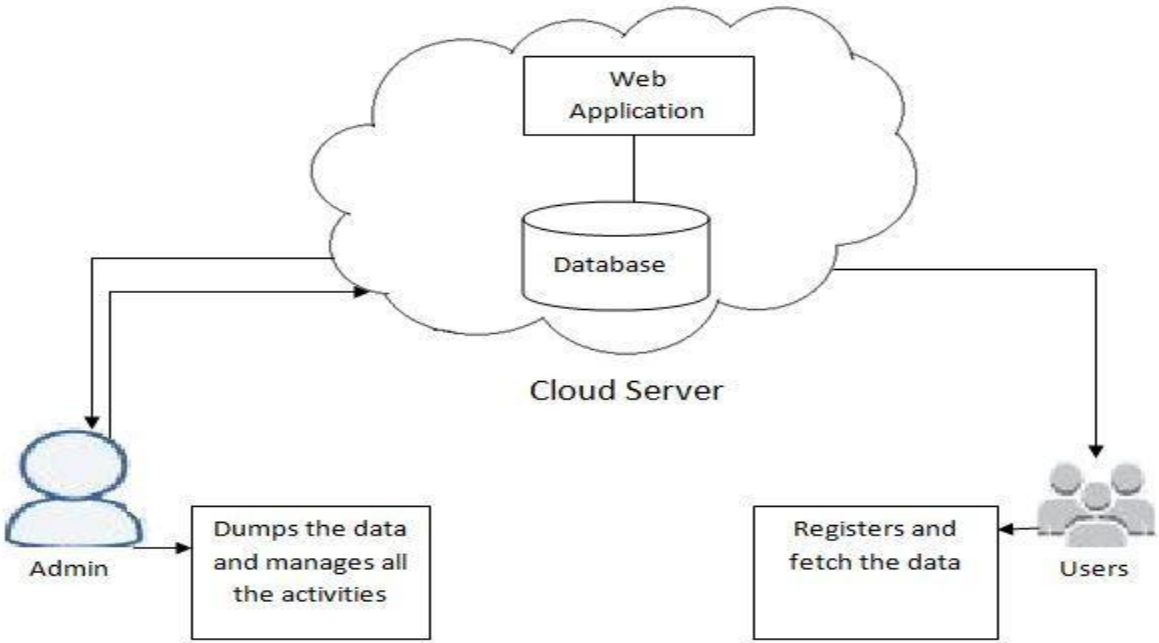


Fig. 1: Architecture Design

### 1.1.1 Tool and Technology Used

<b>Name of component</b>	<b>Specification</b>
<b>Operating System</b>	Windows 98, Windows XP, Windows7, Linux
<b>Language</b>	Python Runtime Environment
<b>Database</b>	MySQL Server
<b>Browser</b>	Any of Mozilla, Opera, Chrome etc
<b>Web Server</b>	Django
<b>Software Development Kit</b>	Django and Visual Studio Code
<b>Scripting Language Enable</b>	Python
<b>Database JDBC Driver</b>	MySQL Connector
<b>Cloud Server</b>	AWS, EC2 with Ubuntu

**Table 1: Software Requirements**

<b>Name of component</b>	<b>Specification</b>
<b>Processor</b>	Pentium III 630MHz
<b>RAM</b>	128 MB
<b>Hard disk</b>	20 GB
<b>Monitor</b>	15" color monitor
<b>Keyboard</b>	122 keys

**Table 2: Hardware Requirements**

## **1.2 Software Requirement Specification**

The Software Requirements Specification is produced at the culmination of the analysis task. The function and performance allocated to software as part of system engineering are refined by establishing a complete information description, a detailed functional and behavioral description, an indication of performance requirements and design constraints, appropriate validation criteria, and other data pertinent to requirements.

### **The proposed system has the following requirements:**

- System needs store information about new entry of Tutor.
- System needs to help the internal staff to keep information of Student and find them as per various queries.
- System needs to maintain quantity record.
- System needs to keep the record of Topics.
- System needs to update and delete the record.
- System also needs a search area.
- It also needs a security system to prevent data.

### **1.2.1 Identification of need**

The old manual system was suffering from a series of drawbacks. Since whole of the system was to be maintained with hands the process of keeping, maintaining and retrieving the information was very tedious and lengthy. The records were never used to be in a systematic order. there used to be lots of difficulties in associating any particular transaction with a particular context. If any information was to be found it was required to go through the different registers, documents there would never exist anything like report generation. There would always be unnecessary consumption of time while entering records and retrieving records. One more problem was that it was very difficult to find errors while entering the records. Once the records were entered it was very difficult to update these records.

The reason behind it is that there is lot of information to be maintained and have to be kept in mind while running the business. For this reason, we have provided features Present system is partially automated (computerized), actually existing system is quite laborious as one has to enter same information at three different places.

### **Following points should be well considered:**

- Documents and reports that must be provided by the new system: there can also be few reports, which can help management in decision-making and cost controlling, but since these reports do not get required attention, such kind of reports and information were also identified and given required attention.
- Details of the information needed for each document and report.
- The required frequency and distribution for each document.
- Probable sources of information for each document and report.
- With the implementation of computerized system, the task of keeping records in an organized manner will be solved. The greatest of all is the retrieval of information, which will be at the click of the mouse. So, the proposed system helps in saving the time in different operations and making information flow easy giving valuable reports.

### **1.3 Scope of the project Online E-Learning Portal**

It may help collecting perfect management in details. In a very short time, the collection will be obvious, simple and sensible. It will help a person to know the management of passed year perfectly and vividly. It also helps in current all works relative to Online E-Learning Portal. It will be also reduced the cost of collecting the management & collection procedure will go on smoothly.

Our project aims at Business process automation, i.e., we have tried to computerize various processes of Online E-Learning Portal.

- In computer system the person has to fill the various forms & number of copies of the forms can be easily generated at a time.
- In computer system, it is not necessary to create the manifest but we can directly print it, which saves our time.
- To assist the staff in capturing the effort spent on their respective working areas.
- To utilize resources in an efficient manner by increasing their productivity through automation.
- The system generates types of information that can be used for various purposes.
- It satisfies the user requirement
- Be easy to understand by the user and operator

- Be easy to operate
- Have a good user interface
- Be expandable
- Delivered on schedule within the budget.

### **Reports of Online E-Learning Portal:**

- It generates the report on Tutor, Student, Tutorial
- Provide filter reports on Topics, Results, Question
- You can easily export PDF for the Tutor, Tutorial, Results
- Application also provides excel export for Student, Topics, Question
- You can also export the report into csv format for Tutor, Student, Question

### **1.3.1 Modules of Online E-Learning Portal:**

- Tutor Management Module: Used for managing the Tutor details.
- Question Module: Used for managing the details of Question
- Tutorial Module: Used for managing the details of Tutorial
- Student Management Module: Used for managing the information and details of the student.
- Topics Module: Used for managing the Topics details
- Results Module: Used for managing the Results information
- Login Module: Used for managing the login details
- Users Module: Used for managing the users of the system

### **Input Data and Validation of Project on Online E-Learning Portal**

- All the fields such as Tutor, Topics, Question are validated and does not take invalid values
- Each form for Tutor, Student, Tutorial cannot accept blank value fields
- Avoiding errors in data
- Controlling amount of input
- Integration of all the modules/forms in the system.
- Preparation of the test cases.



- Preparation of the possible test data with all the validation checks.
- Actual testing done manually.
- Recording of all the reproduced errors.
- Modifications done for the errors found during testing.
- Prepared the test result scripts after rectification of the errors.
- Functionality of the entire module/forms.
- Validations for user input.
- Checking of the Coding standards to be maintained during coding.
- Testing the module with all the possible test data.
- Testing of the functionality involving all type of calculations etc.
- Commenting standard in the source files.

### **1.3.2 Features of the project Online E-Learning Portal**

- Product and Component based
- Creating & Changing Issues at ease
- Query Issue List to any depth
- Reporting & Charting in more comprehensive way
- User Accounts to control the access and maintain security
- Simple Status & Resolutions
- Multi-level Priorities & Severities.
- Targets & Milestones for guiding the programmers
- Attachments & Additional Comments for more information
- Robust database back-end
- Various level of reports available with a lot of filter criteria's
- It contains better storage capacity.
- Accuracy in work.
- Easy & fast retrieval of information.
- Well-designed reports.
- Decrease the load of the person involve in existing manual system.
- Access of any information individually.
- Work becomes very speedy.

## **CHAPTER-2 Literature Survey/Project Design**

Professor Kalyankar and Professor Nayak The 21st century is a century of high-tech education in rural India, according to N.V., a professor of education in rural India. Cloud-based e-learning has no geographical or time limitations because of its characteristics, making it ideal for students who want to learn at their own pace and from any location.

According to D.kashi Vishwanath and others, cloud-based E-learning is possible. Many services, such as SaaS (Software as a service), PaaS (Platform as a service), and IAaaS (Iterative Asset Management) are offered as part of the educational system's promising path (Infrastructure as a service). Three things are possible with an e-learning cloud computing business model. E-learning cloud provides the building, maintenance, and access to the cloud for cloud users. When describing cloud computing and e-learning, Aashita Jain and Sonal Chawla used the cloud network. E-learning techniques are developed using cloud computing technology. In this paper, cloud computing architecture and an abstract model of cloud-based E-learning are described. Cloud computing, compared to traditional learning, will allow for the delivery of learning resources at any time and from any location.

Sushil Kumar Sharma and others Described the advantages of cloud computing for online education. The smart user can access study materials on their smart phones at any time and from any location. To save money and time, many educational institutions have turned to cloud computing, and this paper provides an overview of both the positives and negatives of cloud computing in education. Cloud computing offers a wide range of E-learning solutions for students, including pay-as-you-use subscriptions, online courses, online discussion forums, and the ability to work from multiple locations without the need for a thumb drive. We learned about some of the drawbacks of traditional E-Learning, such as storage and cost issues, by referring to these papers. Also, we learned that the Cloud offers many important advantages, such as security and access on demand. This information prompted the development of our proposed system.

The old manual system was suffering from a series of drawbacks. Since whole of the system was to be maintained with hands the process of keeping, maintaining and retrieving the information was very tedious and lengthy. The records were never used to be in a systematic order. there used to be lots of difficulties in associating any particular transaction with a particular context. If any information was to be found it was required to go through the different registers, documents there would never exist anything like report generation. There would always be unnecessary

consumption of time while entering records and retrieving records. One more problem was that it was very difficult to find errors while entering the records. Once the records were entered it was very difficult to update these records.

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## **2.1 Feasibility Study:**

After doing the project Online E-Learning Portal, study and analyzing all the existing or required functionalities of the system, the next task is to do the feasibility study for the project. All projects are feasible - given unlimited resources and infinite time.

Feasibility study includes consideration of all the possible ways to provide a solution to the given problem. The proposed solution should satisfy all the user requirements and should be flexible enough so that future changes can be easily done based on the future upcoming requirements.

### **2.1.1 Economical Feasibility**

This is a very important aspect to be considered while developing a project. We decided the technology based on minimum possible cost factor.

- All hardware and software cost has to be borne by the organization.
- Overall, we have estimated that the benefits the organization is going to receive from the proposed system will surely overcome the initial costs and the later on running cost for system.

### **2.1.2 Technical Feasibility**

This included the study of function, performance and constraints that may affect the ability to achieve an acceptable system. For this feasibility study, we studied complete functionality to be provided in the system, as described in the System Requirement Specification (SRS), and checked if everything was possible using different type of frontend and backend planforms.

### **2.1.3 Operational Feasibility**

No doubt the proposed system is fully GUI based that is very user friendly and all inputs to be taken all self-explanatory even to a layman. Besides, a proper training has been conducted to let know the essence of the system to the users so that they feel comfortable with new system. As far our study is concerned the clients are comfortable and happy as the system has cut down their loads and doing.

## **2.2 System Design of Online E-Learning Portal**

In this phase, a logical system is built which fulfils the given requirements. Design phase of software development deals with transforming the client's requirements into a logically working system. Normally, design is performed in the following in the following two steps:

### **1. Primary Design Phase:**

In this phase, the system is designed at block level. The blocks are created on the basis of analysis done in the problem identification phase. Different blocks are created for different functions emphasis is put on minimizing the information flow between blocks. Thus, all activities which require more interaction are kept in one block.

### **2. Secondary Design Phase:**

In the secondary phase the detailed design of every block is performed.

**The general tasks involved in the design process are the following:**

1. Design various blocks for overall system processes.
2. Design smaller, compact and workable modules in each block.
3. Design various database structures.
4. Specify details of programs to achieve desired functionality.
5. Design the form of inputs, and outputs of the system.
6. Perform documentation of the design.
7. System reviews.

**User Interface Design**

User Interface Design is concerned with the dialogue between a user and the computer. It is concerned with everything from starting the system or logging into the system to the eventually presentation of desired inputs and outputs. The overall flow of screens and messages is called a dialogue.

**The following steps are various guidelines for User Interface Design:**

1. The system user should always be aware of what to do next.
2. The screen should be formatted so that various types of information, instructions and messages always appear in the same general display area.
3. Message, instructions or information should be displayed long enough to allow the system user to read them.
4. Use display attributes sparingly.
5. Default values for fields and answers to be entered by the user should be specified.
6. A user should not be allowed to proceed without correcting an error.

The system user should never get an operating system message or fatal error.

### **2.2.1 Preliminary Product Description:**

The first step in the system development life cycle is the preliminary investigation to determine the feasibility of the system. The purpose of the preliminary investigation is to evaluate project requests. It is not a design study nor does it include the collection of details to describe the business system in all respect. Rather, it is the collecting of information that helps committee members to evaluate the merits of the project request and make an informed judgment about the feasibility of the proposed project.

**Analysts working on the preliminary investigation should accomplish the following objectives:**

- Clarify and understand the project request
- Determine the size of the project.
- Assess costs and benefits of alternative approaches.
- Determine the technical and operational feasibility of alternative approaches.
- Report the findings to management, with recommendations outlining the acceptance or rejection of the proposal.

#### **Benefit to Organization**

The organization will obviously be able to gain benefits such as savings in operating cost, reduction in paperwork, better utilization of human resources and more presentable image increasing goodwill.

#### **The Initial Cost**

The initial cost of setting up the system will include the cost of hardware software (OS, add-on software, utilities) & labour (setup & maintenance). The same has to bear by the organization.

#### **Running Cost**

Besides, the initial cost the long term cost will include the running cost for the system including the AMC, stationary charges, cost for human resources, cost for update/renewal of various related software.

## **Need for Training**

The users along with the administrator need to be trained at the time of implementation of the system for smooth running of the system. The client will provide the training site.

We talked to the management people who were managing the financial issues of the center, the staff who were keeping the records in lots of registers and the reporting manager regarding their existing system, their requirements and their expectations from the new proposed system. Then, we did the system study of the entire system based on their requirements and the additional features they wanted to incorporate in this system.

Reliable, accurate and secure data was also considered to be a complex task without this proposed system. Because there was no such record for keeping track of all the activities, which was done by the Online E-Learning Portal on the daily basis.

The new system proposed and then developed by me will ease the task of the organization in consideration. It will be helpful in generating the required reports by the staff, which will help them to track their progress and services.

Thus, it will ease the task of Management to a great extent as all the major activities to be performed, are computerized through this system.

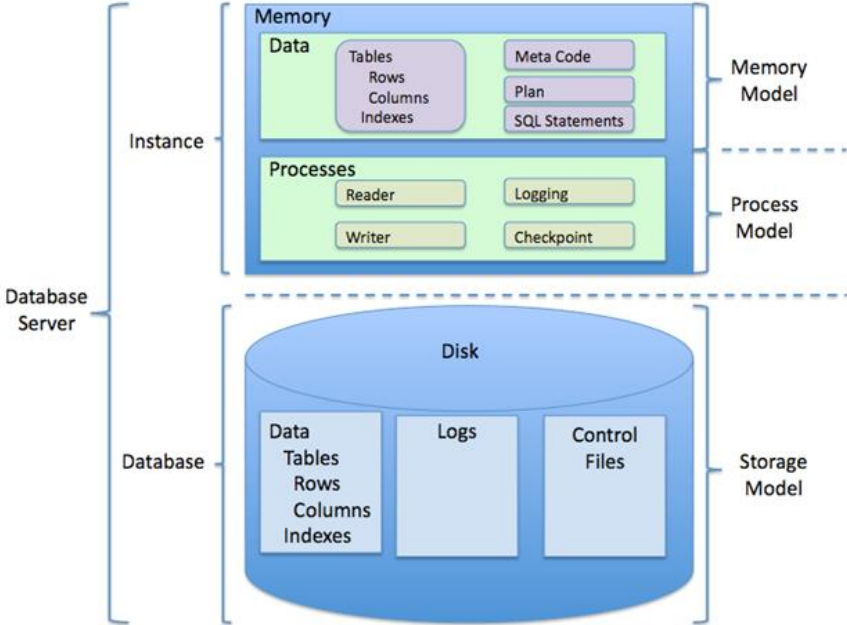
## **2.2.2 Project Category**

Relational Database Management System (RDBMS) : This is an RDBMS based project which is currently using MySQL for all the transaction statements. MySQL is an opensource RDBMS System.

### **Brief Introduction about RDBSM :**

A relational database management system (RDBMS) is a database management system (DBMS) that is based on the relational model as invented by E. F. Codd, of IBM's San Jose Research Laboratory. Many popular databases currently in use are based on the relational database model.

RDBMSs have become a predominant choice for the storage of information in new databases used for financial records, manufacturing and logistical information, personnel data, and much more since the 1980s. Relational databases have often replaced legacy hierarchical databases and network databases because they are easier to understand and use. However, relational databases have been challenged by object databases, which were introduced in an attempt to address the object-relational impedance mismatch in relational database, and XML databases.



**Fig. 2: RDBMS Diagram**



## **CHAPTER-3 Functionality/Working of Project**

The main objective of the Project on Online E-Learning Portal is to manage the details of Tutor, Student, Topics, Results, Question. It manages all the information about Tutor, Tutorial, Question, Tutor. The project is totally built at administrative end and thus only the administrator is guaranteed the access. The purpose of the project is to build an application program to reduce the manual work for managing the Tutor, Student, Tutorial, Topics. It tracks all the details about the Topics, Results, Question.

### **3.1 Functionalities provided by Online E-Learning Portal are as follows:**

- Provides the searching facilities based on various factors. Such as Tutor, Topics, Results, Question
- Online E-Learning Portal also manage the Tutorial details online for Results details, Question details, Tutor.
- It tracks all the information of Student, Tutorial, Results etc
- Manage the information of Student
- Shows the information and description of the Tutor, Topics
- To increase efficiency of managing the Tutor, Student
- It deals with monitoring the information and transactions of Results.
- Manage the information of Tutor
- Editing, adding and updating of Records is improved which results in proper resource management of Tutor data.
- Manage the information of Results
- Integration of all records of Question.

### **3.2 Design**

Design includes the initially required diagrams such as flowcharts, ER diagram to develop the system.

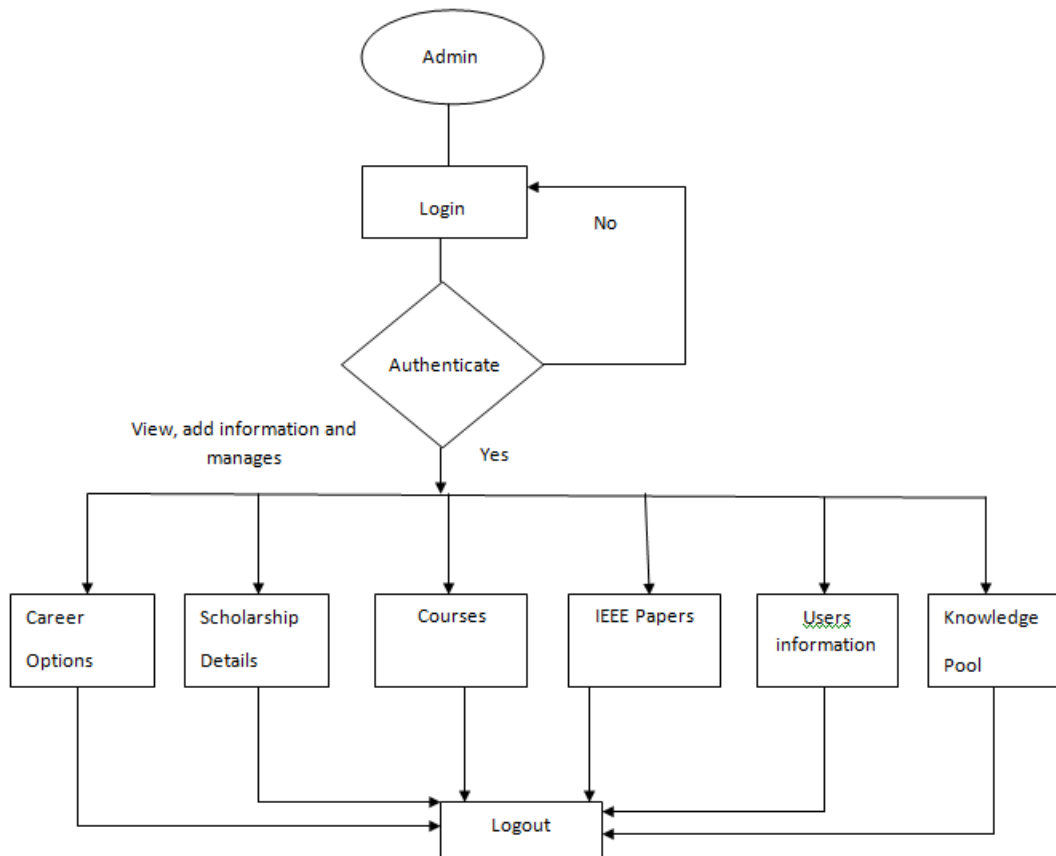
#### **3.2.1 Flow Chart**

A flowchart is a graphic representation of a logic sequence, work or manufacturing process, organization chart, or similar formalized structure. The flowchart is a means to visually present the flow of data through an information processing system.

### 3.2.1.1 Admin Login:

The figure below shows the flowchart for admin login. The admin has to login with username and password that is unique for him. After authenticating the username and password is it is wrong, he has to login again with appropriate username and password. If it is correct, he can manage the web application. Admin can add career related information like what are the courses one can do after pucc and degree. The related colleges information and eligibility for that career option. He can add the all the government and private scholarships the student can get. The scholarship name, eligibility criteria for that scholarship and the URL link are provided.

He can add the courses related to different engineering domain such as programming, networking. The courses information is provided along the course description and the useful YouTube link.

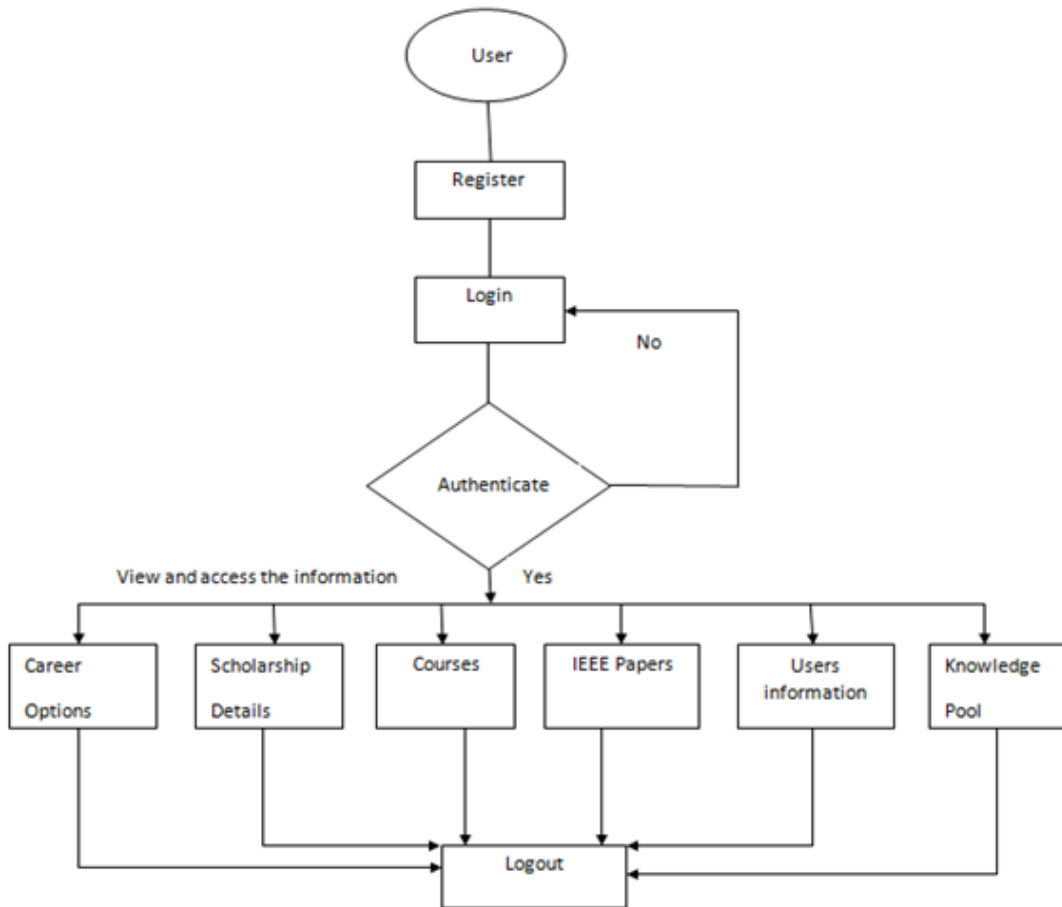


**Fig. 3: Flow Chart – Admin Login**

### 3.2.1.2 User Login:

The figure 4.2 shows the flowchart for user login. The user has to register with some required details in the web application where the username and password are provided to each user and after the user has to login with that username and password. After authenticating the username and

password is it is wrong, he has to login again with appropriate username and password. If it is correct, he can access the contents from web application.



**Fig. 4: Flow Chart – User Login**

User can access career related information like what are the courses one can do after pucc and degree. The related colleges information and eligibility for that career option. He can view the all the government and private scholarships. Get the scholarship name, eligibility criteria for that scholarship and apply for the scholarship through the URL link provided. He can know the courses related to different engineering domain such as programming, networking. Access course description and go for the provided YouTube link for more information. He can download the different IEEE papers through the URL link given for that paper.

### 3.2.2 ER Diagram

An entity relationship model, also called an entity relationship (ER) diagram is a graphical entity is a representation of entities and their relationships to each other, typically used in computing in regard to the organization of data within database or information systems. An entity is piece of

data-an object or concept about which data is stored.ER diagram looks very much like a flowchart. It is the specialized symbols, and the meanings of those symbols, that make it unique.

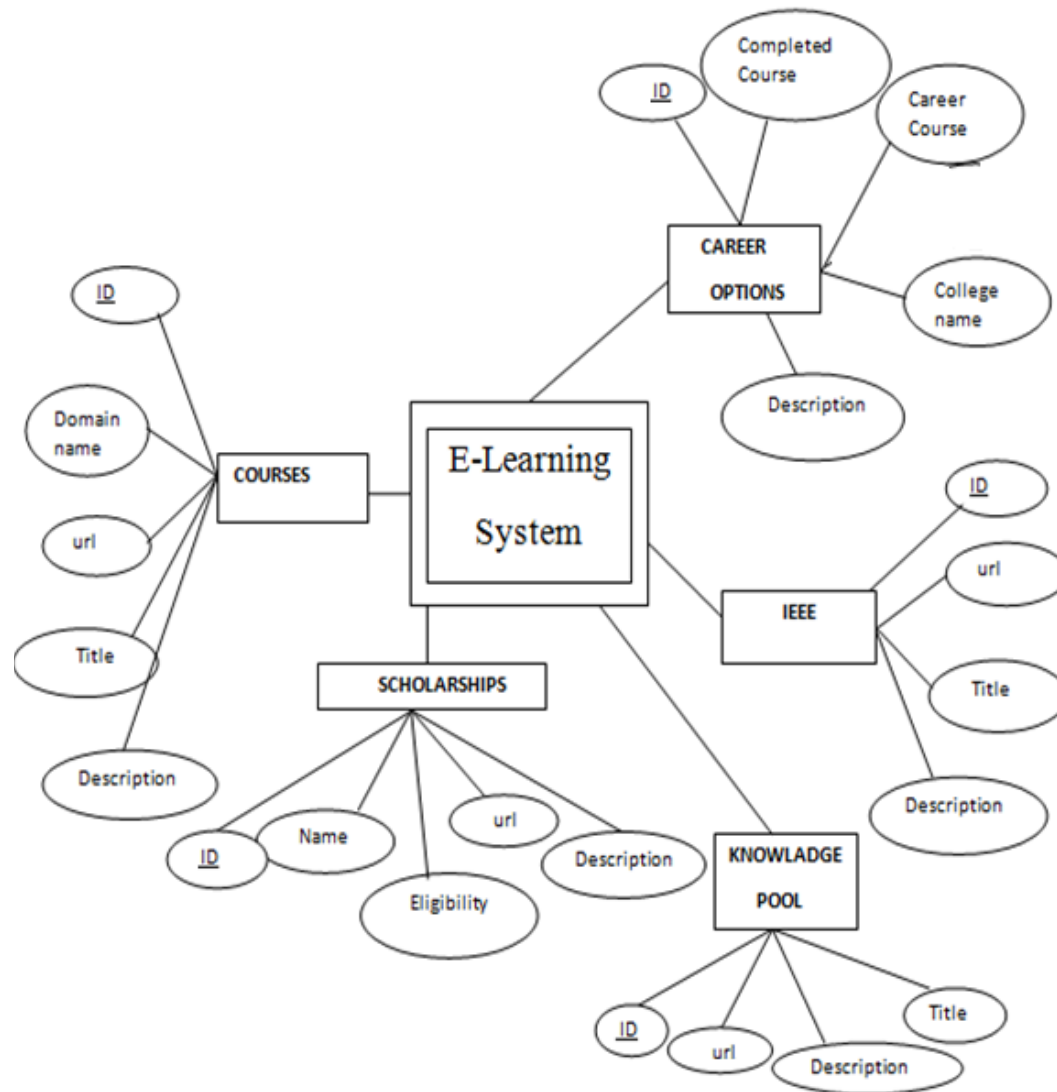


Fig. 5: ER Diagram

**Features of the project Online E-Learning Portal:**

- Product and Component based
- Creating & Changing Issues at ease
- Query Issue List to any depth
- Reporting & Charting in more comprehensive way
- User Accounts to control the access and maintain security
- Simple Status & Resolutions

- Multi-level Priorities & Severities.
- Targets & Milestones for guiding the programmers
- Attachments & Additional Comments for more information
- Robust database back-end
- Various level of reports available with a lot of filter criteria's
- It contains better storage capacity.
- Accuracy in work.
- Easy & fast retrieval of information.
- Well-designed reports.
- Decrease the load of the person involve in existing manual system.
- Access of any information individually.
- Work becomes very speedy.
- Easy to update information

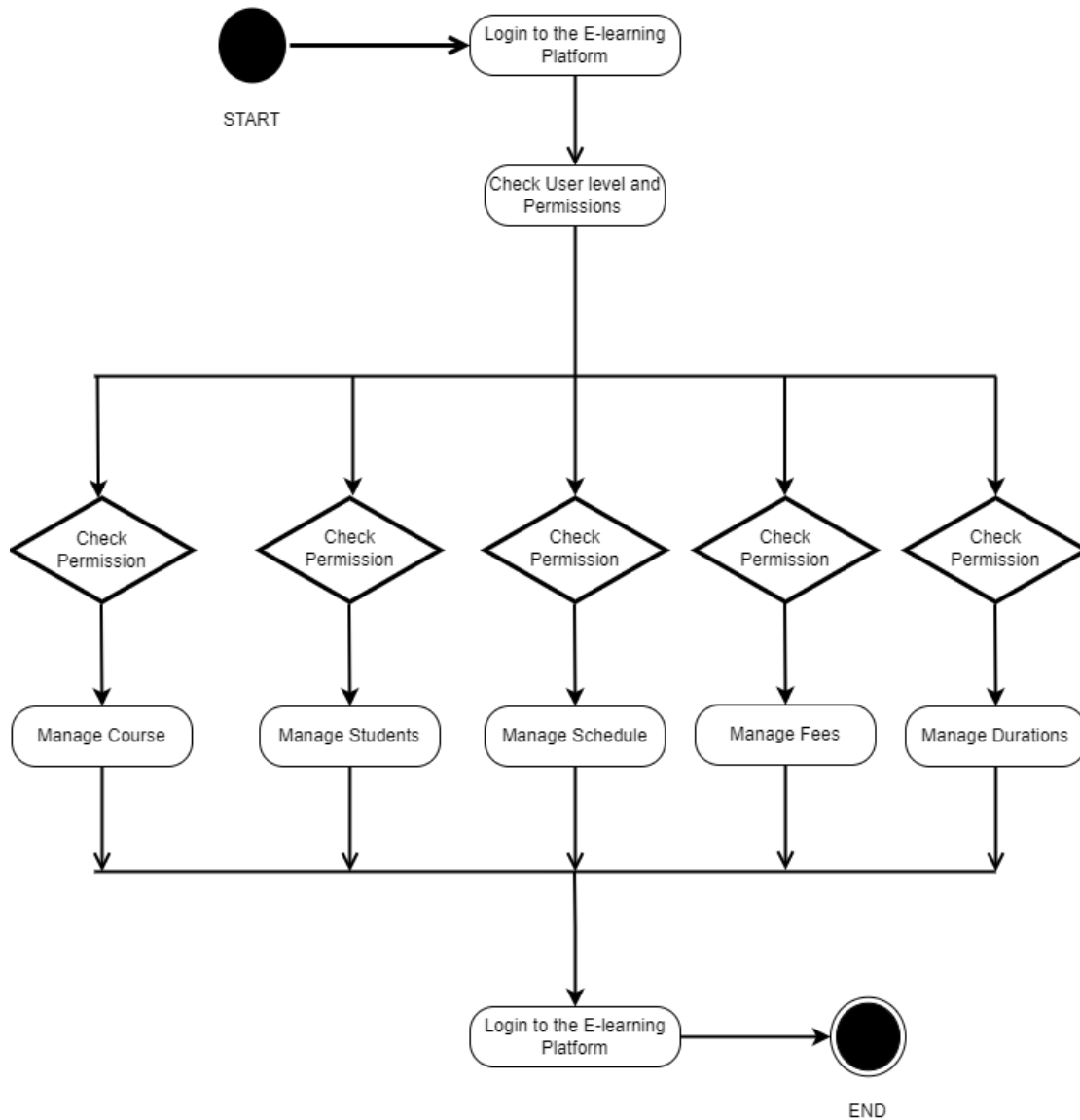
### **3.2.3 Activity Diagram**

This is the Activity UML diagram which shows the flows between the activity of Course, Durations, Training, Schedules, Students. The main activity involved in this UML Activity Diagram of E-Learning Management System are as follows:

- Course Activity
- Durations Activity
- Training Activity
- Schedules Activity
- Students Activity

#### **Features Of the Activity UML Diagram**

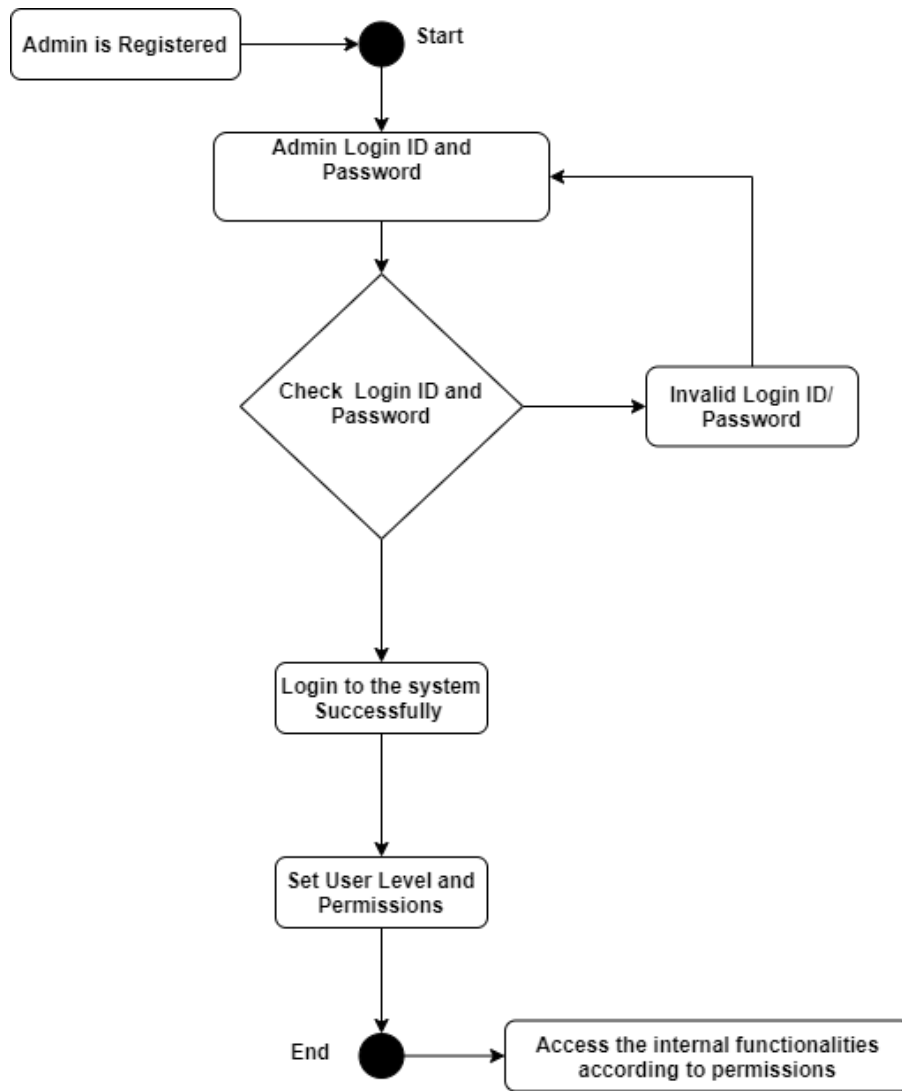
- Admin User can search Course, view description of a selected Course, add Course, update Course and delete Course.
- It shows the activity flow of editing, adding and updating of Durations
- User will be able to search and generate report of Training, Schedules, Students. All objects such as (Course, Durations, Students) are interlinked
- It shows the full description and flow of Course, Schedules, Students, Training, Durations



**Fig. 6: Activity Diagram**

## Login Activity Diagram

This is the **Login Activity Diagram**, which shows the flows of Login Activity, where admin will be able to login using their username and password. After login user can manage all the operations on Training, Course, Durations, Students, Schedules. All the pages such as Durations, Students, Schedules are secure and user can access these pages after login. The diagram below helps demonstrate how the login page works in a E-Learning Management System. The various objects in the Students, Training, Course, Durations, and Schedules page—interact over the course of the Activity, and user will not be able to access this page without verifying their identity.



**Fig. 7: Login Activity Diagram**

### 3.2.4 Class Diagram

E-Learning Management System Class Diagram describes the structure of a E-Learning Management System classes, their attributes, operations (or methods), and the relationships among objects. The main classes of the E-Learning Management System are Course, Students, Shedules, Fees, Durations, Training.

### **Classes of E-Learning Management System Class Diagram:**

- **Course Class:** Manage all the operations of Course
- **Students Class:** Manage all the operations of Students
- **Schedules Class:** Manage all the operations of Schedules
- **Fees Class:** Manage all the operations of Fees
- **Durations Class:** Manage all the operations of Durations
- **Training Class:** Manage all the operations of Training

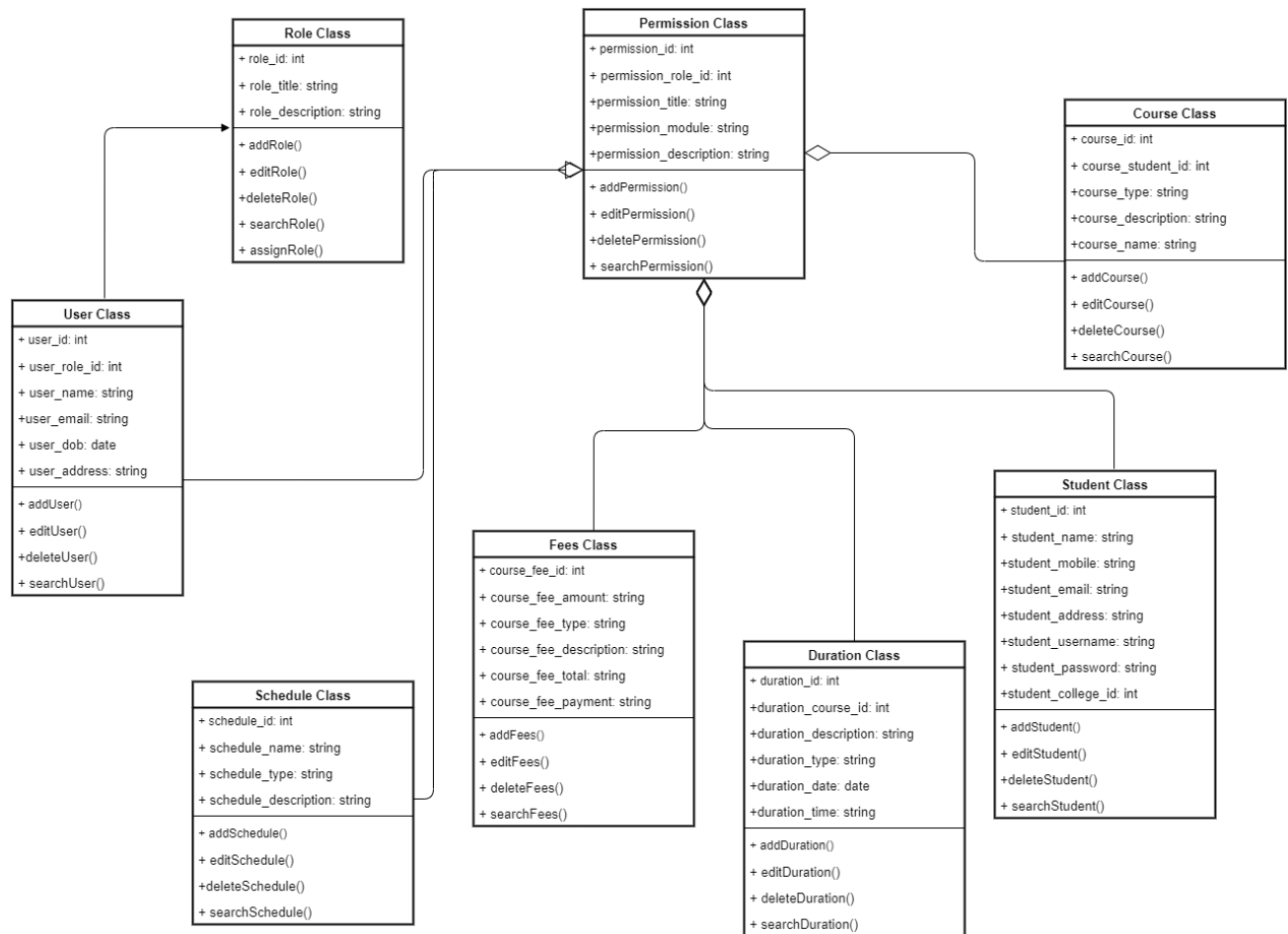
### **Classes and their attributes:**

- **Course Attributes:** course\_id, course\_student\_id, course\_registration, course\_name, course\_type, course\_year, course\_description
- **Students Attributes:** student\_id, student\_college\_id, student\_name, student\_mobile, student\_email, student\_username, student\_password, student\_address
- **Shedules Attributes:** schedule\_id, schedule\_name, schedule\_type, schedule\_description
- **Fees Attributes:** course\_fee\_id, course\_fee\_course\_id, course\_fee\_amount, course\_fee\_total, course\_fee\_payment, course\_fee\_type, course\_fee\_description
- **Durations Attributes:** duration\_id, duration\_course\_id, duration\_time, duration\_date, duration\_type, duration\_description
- **Training Attributes:** training\_id, training\_student\_id, training\_registration, training\_name, training\_type, training\_year, training\_description

### **Classes and their methods:**

- **Course Methods :** addCourse(), editCourse(), deleteCourse(), updateCourse(), saveCourse(), searchCourse()
- **Students Methods :** addStudents(), editStudents(), deleteStudents(), updateStudents(), saveStudents(), searchStudents()
- **Shedules Methods :** addShedules(), editShedules(), deleteShedules(), updateShedules(), saveShedules(), searchShedules()
- **Fees Methods :** addFees(), editFees(), deleteFees(), updateFees(), saveFees(), searchFees()
- **Durations Methods :** addDurations(), editDurations(), deleteDurations(), updateDurations(), saveDurations(), searchDurations()
- **Training Methods :** addTraining(), editTraining(), deleteTraining(), updateTraining(), saveTraining(), searchTraining()





**Fig. 8: Class Diagram**

### 3.2.5 Dataflow Diagram

E-learning Management System Data flow diagram is often used as a preliminary step to create an overview of the E-learning without going into great detail, which can later be elaborated. It normally consists of overall application dataflow and processes of the E-learning process. It contains all of the user flow and their entities such as all the flow of Student, Activity Log, Assignment, Files, Teacher, Subject, Teacher. All of the below diagrams have been used for the visualization of data processing and structured design of the E-learning process and working flow.

#### 3.2.5.1 Zero Level Data Flow Diagram (0 Level DFD):

This is the Zero Level DFD of E-learning Management System, where we have elaborated the high-level process of E-learning. It's a basic overview of the whole E-learning Management System or process being analyzed or modeled. It's designed to be an at-a-glance view of Teacher, Subject and Teacher showing the system as a single high-level process, with its relationship to

external entities of Student, Activity Log and Assignment. It should be easily understood by a wide audience, including Student, Assignment and Teacher In zero level DFD of E-learning Management System, we have described the high-level flow of the E-learning system.

### High Level Entities and process:

- Managing all the Student
- Managing all the Activity Log
- Managing all the Assignment
- Managing all the Files
- Managing all the Teacher
- Managing all the Subject
- Managing all the Teacher

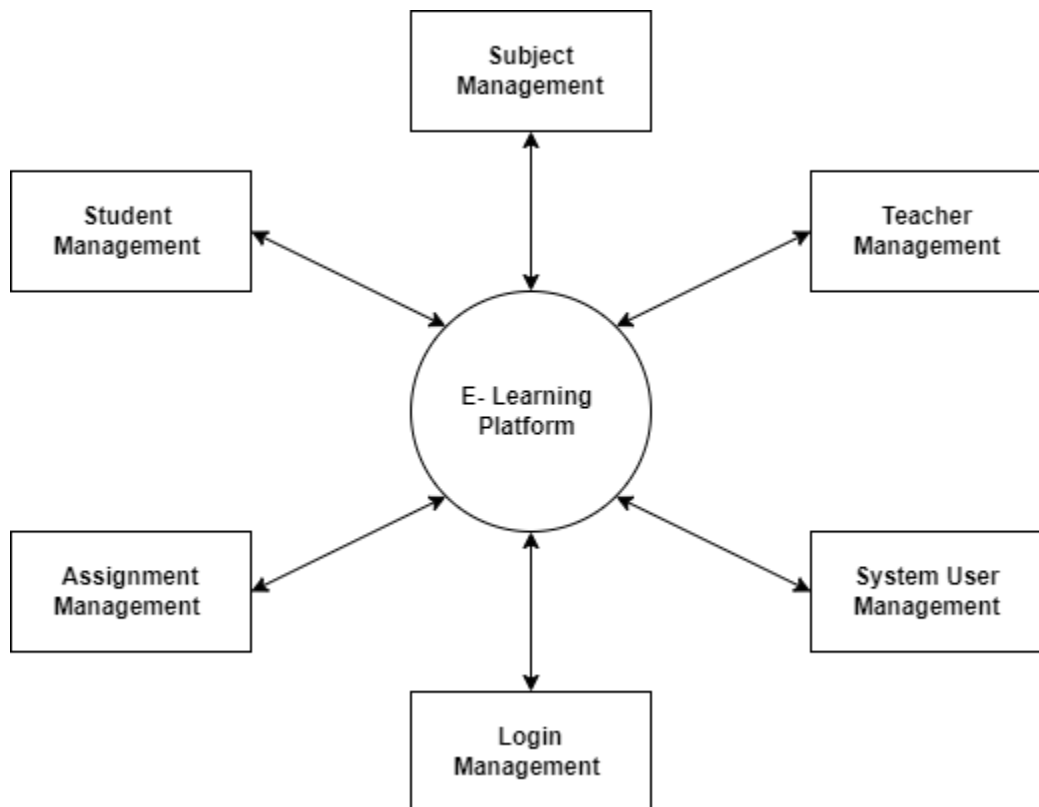


Fig. 9: Zero level DFD

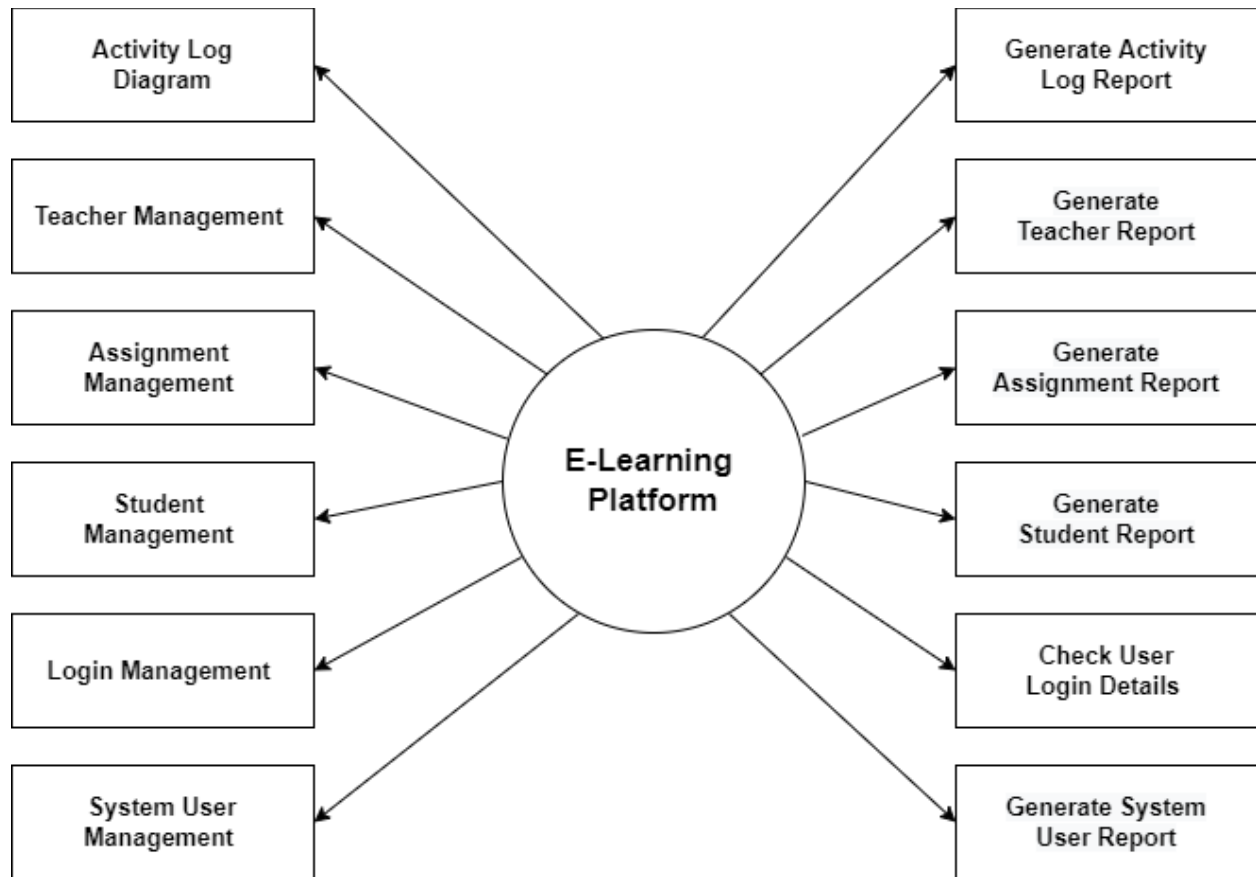
### 3.2.5.2 First Level Data Flow Diagram (1st Level DFD):

First Level DFD (1st Level) of E-learning Management System shows how the system is divided into sub-systems (processes), each of which deals with one or more of the data flows to or from an external agent, and which together provide all of the functionality of the E-learning Management

System as a whole. It also identifies internal data stores of Teacher, Subject, Teacher, Files, Assignment that must be present in order for the E-learning system to do its job, and shows the flow of data between the various parts of Student, Assignment, Subject, Teacher, Teacher of the system. DFD Level 1 provides a more detailed breakout of pieces of the 1st level DFD. You will highlight the main functionalities of E-learning.

**Main entities and output of First Level DFD (1st Level DFD):**

- Processing Student records and generate report of all Student
- Processing Activity Log records and generate report of all Activity Log
- Processing Assignment records and generate report of all Assignment
- Processing Files records and generate report of all Files
- Processing Teacher records and generate report of all Teacher
- Processing Subject records and generate report of all Subject
- Processing Teacher records and generate report of all Teacher



**Fig. 10: First level DFD**

### 3.2.5.3 Second Level Data Flow Diagram (2nd Level DFD):

DFD Level 2 then goes one step deeper into parts of Level 1 of E-learning. It may require more functionalities of E-learning to reach the necessary level of detail about the E-learning functioning. First Level DFD (1st Level) of E-learning Management System shows how the system is divided into sub-systems (processes). The 2nd Level DFD contains more details of Teacher, Subject, Teacher, Files, Assignment, Activity Log, Student.

#### Low level functionalities:

- Admin logs in to the system and manage all the functionalities of E-learning Management System
- Admin can add, edit, delete and view the records of Student, Assignment, Teacher, Teacher
- Admin can manage all the details of Activity Log, Files, Subject
- Admin can also generate reports of Student, Activity Log, Assignment, Files, Teacher, Subject
- Admin can search the details of Activity Log, Teacher, Subject
- Admin can apply different level of filters on report of Student, Files, Teacher
- Admin can track the detailed information of Activity Log, Assignment, Files, Teacher

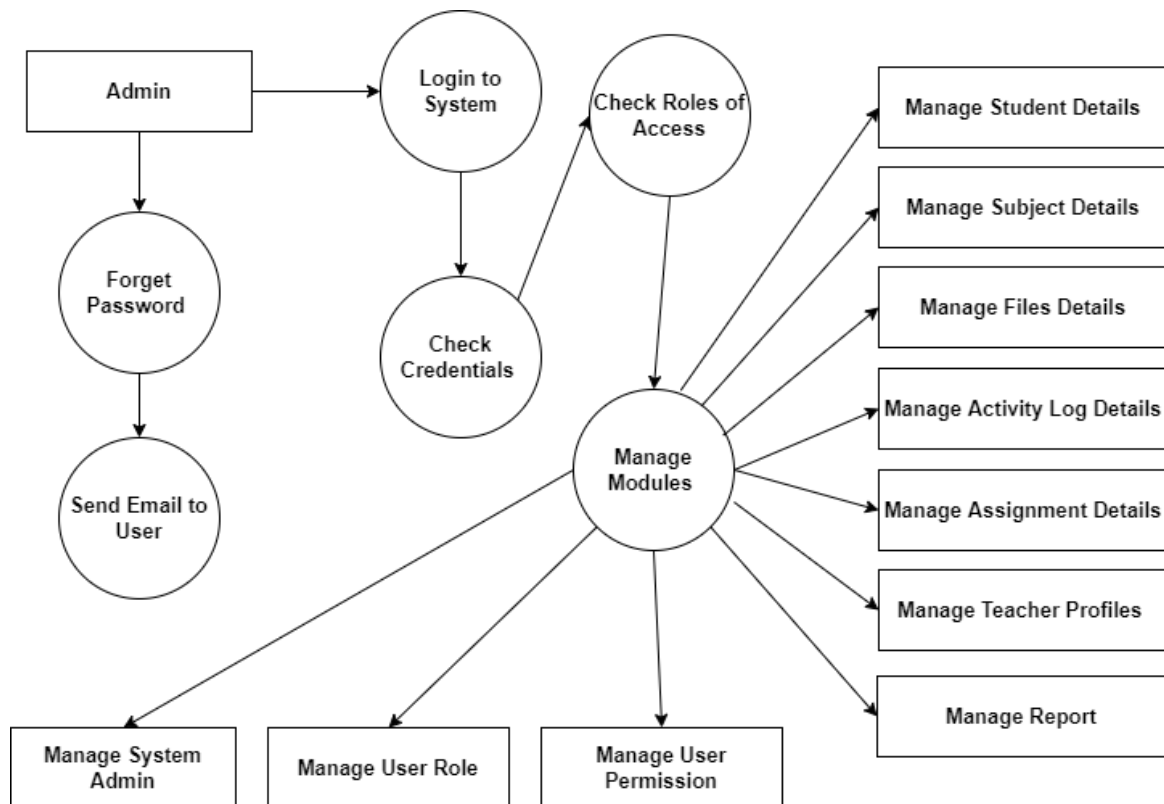


Fig. 11: Second level DFD

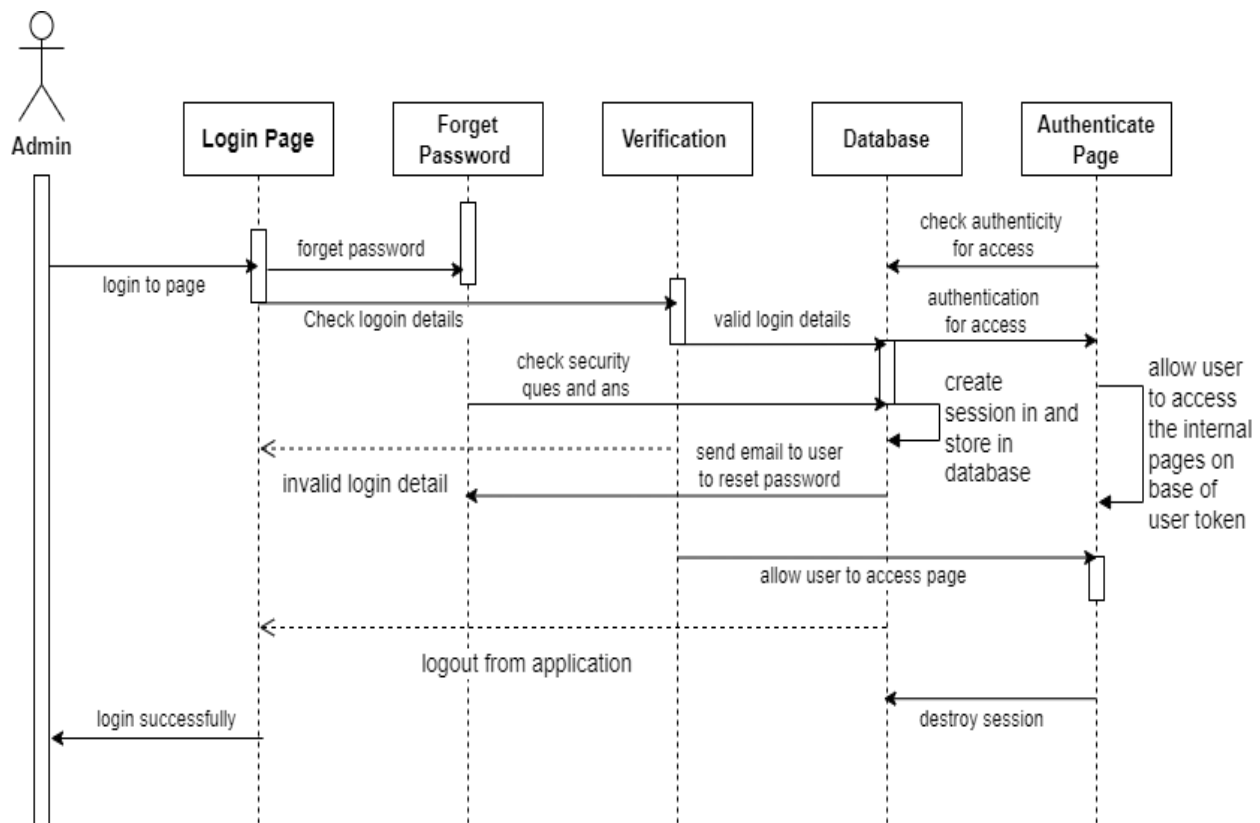
### 3.2.6 Sequence Diagram

This is the **UML sequence diagram** which shows the interaction between the objects of Training, Fees, Durations, Subject, Students. The instance of class objects involved in this UML Sequence Diagram of E-Learning Management System are as follows:

- Training Object
- Fees Object
- Durations Object
- Subject Object
- Students Object

### Login Sequence Diagram Of E-Learning Management System:

This is the **Login Sequence Diagram**, where admin will be able to login in their account using their credentials. After login user can manage all the operations on Durations, Training, Fees, Students, Subject. All the pages such as Fees, Students, Subject are secure and user can access these pages after login. The diagram below helps demonstrate how the login page works in a E-Learning Management System. The various objects in the Students, Durations, Training, Fees, and Subject page-interact over the course of the sequence, and user will not be able to access this page without verifying their identity.



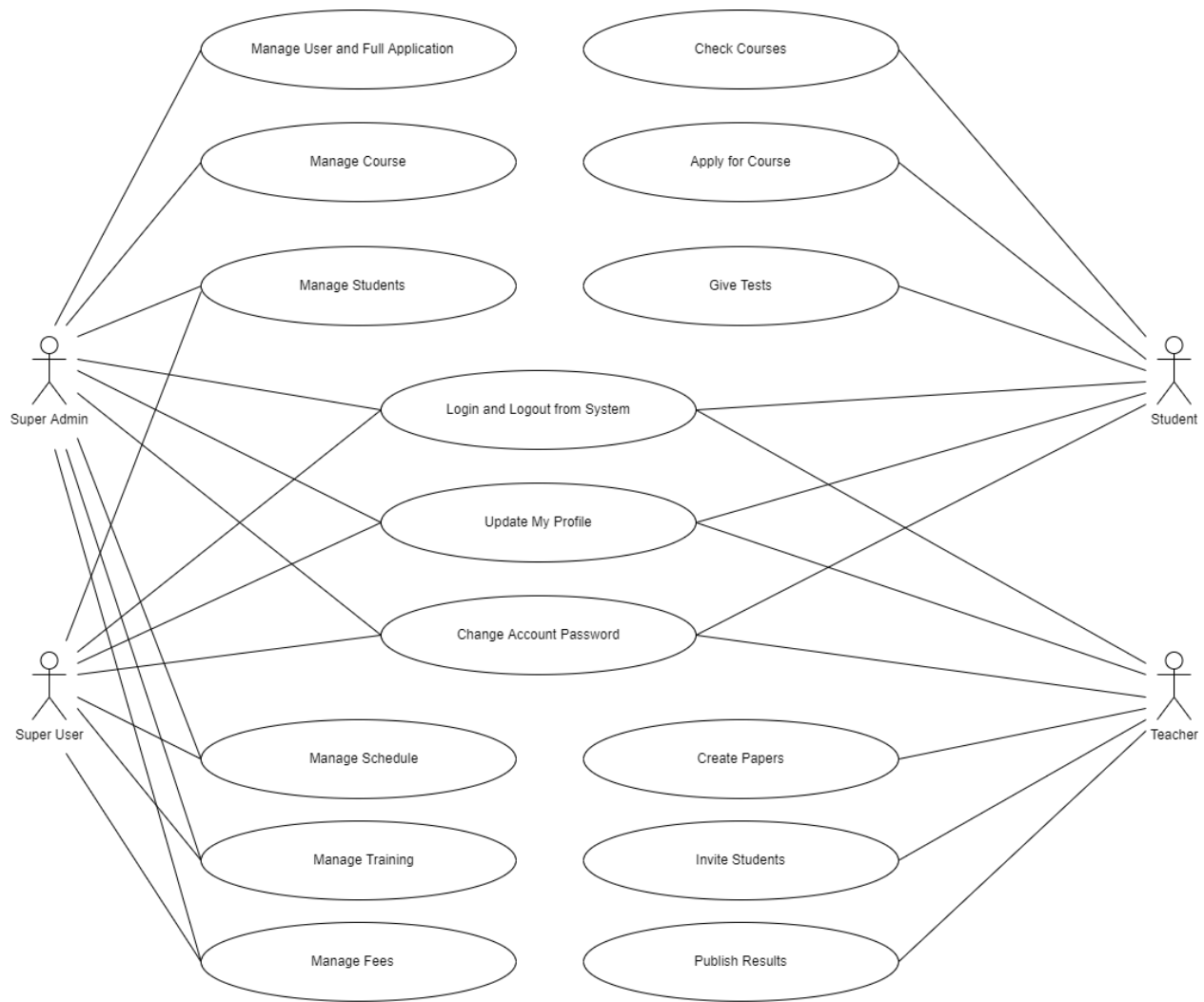
**Fig. 12: Sequence Diagram**

### 3.2.7 Use Case Diagram

This Use Case Diagram is a graphic depiction of the interactions among the elements of E-Learning Management System. It represents the methodology used in system analysis to identify, clarify, and organize system requirements of E-Learning Management System. The main actors of E-Learning Management System in this Use Case Diagram are: Super Admin, System User, Teacher, Student, who perform the different type of use cases such as Manage Course, Manage Students, Manage Schedules, Manage Fees, Manage Durations, Manage Training, Manage Subject, Manage Users and Full E-Learning Management System Operations. Major elements of the UML use case diagram of E-Learning Management System are shown on the picture below.

#### **The relationships between and among the actors and the use cases:**

- **Super Admin Entity:** Use cases of Super Admin are Manage Course, Manage Students, Manage Schedules, Manage Fees, Manage Durations, Manage Training, Manage Subject, Manage Users and Full E-Learning Management System Operations
- **System User Entity:** Use cases of System User are Manage Course, Manage Students, Manage Schedules, Manage Fees, Manage Durations, Manage Training, Manage Subject
- **Teacher Entity:** Use cases of Teacher are Create Courses, Invite Students, Create Papers, Check Results, Publish Results
- **Student Entity:** Use cases of Student are Check Courses, Apply for Course, Give Tests, View Results



**Fig. 13: Use Case Diagram**

### 3.3 Cost estimation of the project

Software cost comprises a small percentage of overall computer-based system cost. There are a number of factors, which are considered, that can affect the ultimate cost of the software such as - human, technical, Hardware and Software availability etc.

The main point that was considered during the cost estimation of **project** was its sizing. In spite of complete software sizing, function point and approximate lines of code were also used to "size" each element of the Software and their costing.

The cost estimation done by me for **Project** also depend upon the baseline metrics collected from

past projects and these were used in conjunction with estimation variables to develop cost and effort projections.

We have basically estimated this project mainly on two bases -

**1) Effort Estimation** - This refers to the total man-hours required for the development of the project. It even includes the time required for doing documentation and user manual.

**2) Hardware Required Estimation** - This includes the cost of the PCs and the hardware cost required for development of this project.



## CHAPTER-4 Implementation and Testing

### 4.1 Implementation Methodology:

Model View Controller or MVC as it is popularly called, is a software design pattern for developing web applications. A Model View Controller pattern is made up of the following three parts:

- **Model** - The lowest level of the pattern which is responsible for maintaining data.
- **View** - This is responsible for displaying all or a portion of the data to the user.
- **Controller** - Software Code that controls the interactions between the Model and View.

MVC is popular as it isolates the application logic from the user interface layer and supports separation of concerns. Here the Controller receives all requests for the application and then works with the Model to prepare any data needed by the View. The View then uses the data prepared by the Controller to generate a final presentable response. The MVC abstraction can be graphically represented as follows.

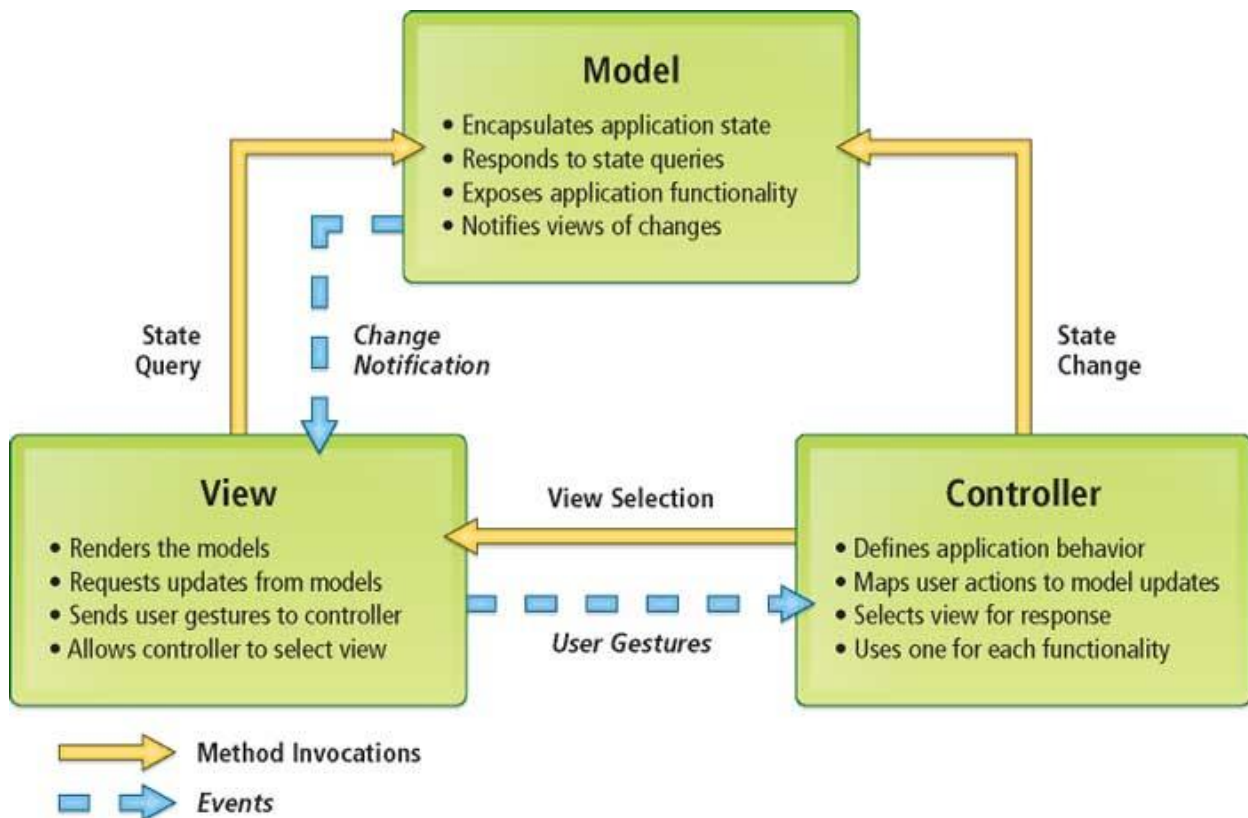


Fig. 6: MVC (Model View Controller Flow) Diagram

## **4.2 Security Testing of the Project**

Testing is vital for the success of any software. no system design is ever perfect. Testing is also carried in two phases. first phase is during the software engineering that is during the module creation. second phase is after the completion of software. this is system testing which verifies that the whole set of programs hanged together.

### **4.2.1 White Box Testing:**

In this technique, the close examination of the logical parts through the software are tested by cases that exercise species sets of conditions or loops. all logical parts of the software checked once. errors that can be corrected using this technique are typographical errors, logical expressions which should be executed once may be getting executed more than once and error resulting by using wrong controls and loops. When the box testing tests all the independent part within a module a logical decision on their true and the false side are exercised, all loops and bounds within their operational bounds were exercised and internal data structure to ensure their validity were exercised once.

### **4.2.2 Black Box Testing:**

This method enables the software engineer to device sets of input techniques that fully exercise all functional requirements for a program. black box testing tests the input, the output and the external data. it checks whether the input data is correct and whether we are getting the desired output.

### **4.2.3 Alpha Testing:**

Acceptance testing is also sometimes called alpha testing. Be spoke systems are developed for a single customer. The alpha testing proceeds until the system developer and the customer agree that the provided system is an acceptable implementation of the system requirements.

### **4.2.4 Beta Testing:**

On the other hand, when a system isto be marked as a software product, another process called beta testing is often conducted. During beta testing, a system is delivered among a number of potential users who agree to use it. The customers then report problems to the developers. This

provides the product for real use and detects errors which may not have been anticipated by the system developers.

#### **4.2.5 Unit Testing:**

Each module is considered independently. it focuses on each unit of software as implemented in the source code. it is white box testing.

#### **4.2.6 Integration Testing:**

Integration testing aims at constructing the program structure while at the same constructing tests to uncover errors associated with interfacing the modules. modules are integrated by using the top down approach.

#### **4.2.7 Validation Testing:**

Validation testing was performed to ensure that all the functional and performance requirements are met.

#### **4.2.8 System Testing:**

It is executing programs to check logical changes made in it with intention of finding errors. a system is tested for online response, volume of transaction, recovery from failure etc. System testing is done to ensure that the system satisfies all the user requirements.

### **4.3 Implementation and Software Specification Testings**

#### **Detailed Design of Implementation**

This phase of the systems development life cycle refines hardware and software specifications, establishes programming plans, trains users and implements extensive testing procedures, to evaluate design and operating specifications and/or provide the basis for further modification.

### **Technical Design**

This activity builds upon specifications produced during new system design, adding detailed technical specifications and documentation.

### **Test Specifications and Planning**

This activity prepares detailed test specifications for individual modules and programs, job streams, subsystems, and for the system as a whole.

### **Programming and Testing**

This activity encompasses actual development, writing, and testing of program units or modules.

### **User Training**

This activity encompasses writing user procedure manuals, preparation of user training materials, conducting training programs, and testing procedures.

### **Acceptance Test**

A final procedural review to demonstrate a system and secure user approval before a system becomes operational.

### **Installation Phase**

In this phase the new Computerized system is installed, the conversion to new procedures is fully implemented, and the potential of the new system is explored.

### **System Installation**

The process of starting the actual use of a system and training user personnel in its operation.

### **Review Phase**

This phase evaluates the successes and failures during a systems development project, and to measure the results of a new Computerized Transystem in terms of benefits and savings projected at the start of the project.

### **Development Recap**

A review of a project immediately after completion to find successes and potential problems in future work.

### **Post-Implementation Review**

A review, conducted after a new system has been in operation for some time, to evaluate actual system performance against original expectations and projections for cost-benefit improvements. Also identifies maintenance projects to enhance or improve the system.

### **THE STEPS IN THE SOFTWARE TESTING**

The steps involved during Unit testing are as follows:

- a. Preparation of the test cases.
- b. Preparation of the possible test data with all the validation checks.
- c. Complete code review of the module.
- d. Actual testing done manually.
- e. Modifications done for the errors found during testing.
- f. Prepared the test result scripts.

### **The unit testing done included the testing of the following items:**

1. Functionality of the entire module/forms.
2. Validations for user input.
3. Checking of the Coding standards to be maintained during coding.
4. Testing the module with all the possible test data.
5. Testing of the functionality involving all type of calculations etc.
6. Commenting standard in the source files.

After completing the Unit testing of all the modules, the whole system is integrated with all its dependencies in that module. While System Integration, We integrated the modules one by one and tested the system at each step. This helped in reduction of errors at the time of the system testing.

### **The steps involved during System testing are as follows:**

- Integration of all the modules/forms in the system.

- Preparation of the test cases.
- Preparation of the possible test data with all the validation checks.
- Actual testing done manually.
- Recording of all the reproduced errors.
- Modifications done for the errors found during testing.
- Prepared the test result scripts after rectification of the errors.

**The System Testing done included the testing of the following items:**

1. Functionality of the entire system as a whole.
2. User Interface of the system.
3. Testing the dependent modules together with all the possible test data scripts.
4. Verification and Validation testing.
5. Testing the reports with all its functionality.

After the completion of system testing, the next following phase was the Acceptance Testing. Clients at their end did this and accepted the system with appreciation. Thus, we reached the final phase of the project delivery.

# CHAPTER-5 Results

## Sample Outputs

[Home](#)   [About](#)   [Student Login](#)   [Tutor Login](#)   [Contact Us](#)

### ONLINE E-LEARNING PORTAL

A complete solution for managing e-learning

[Read more](#)

# RNIN

Realtime Learning

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### WELCOME TO ONLINE E-LEARNING PORTAL

**Student Management System**

Online quizzes are a popular form of entertainment for web surfers. Online quizzes are generally free to play.

**Tutor Management System**

And for entertainment purposes only though some online quiz websites offer prizes. Websites feature online quizzes on many subjects.

**Courses Management System**

One popular type of online quiz is a personality quiz or relationship quiz which is similar to what can be found in many women's or teen magazines.

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### ABOUT ONLINE E-LEARNING PORTAL

Online quizzes are a popular form of entertainment for web surfers. Online quizzes are generally free to play and for entertainment purposes only though some online quiz websites offer prizes. Websites feature online quizzes on many subjects. One popular type of online quiz is a personality quiz or relationship quiz which is similar to what can be found in many women's or teen magazines. Websites hosting quizzes include Quizilla, FunTrivia, OkCupid, Sporcle, and Quizlet. Most online quizzes are to be taken lightly. The results do not often reflect the true personality or relationship. They are also rarely psychometrically valid. However, they may occasion reflection on the subject of the quiz and provide a springboard for a person to explore his or her emotions, beliefs, or actions.

---

#### CONTACT INFO

- 📍 Address: No.XXXXXX street
- 📍 Mars city, Country
- 📞 Mobile : (123) 456-7890
- 📞 Phone : (123) 456-7890
- ✉️ Email :

#### MODULES

- > Question Module
- > User Module
- > Tutor Module
- > Login Module
- > Quiz Module

#### PROJECT LINKS

- > Home
- > About Us
- > Contact
- > Login
- > Email Us

#### ABOUT PROJECT

Most online quizzes are to be taken lightly. The results do not often reflect the true personality or relationship. They are also rarely psychometrically valid. However, they may occasion reflection on the subject of the quiz and provide a springboard for a person to explore his or her emotions, beliefs, or actions.

© Copyright Online E-Learning Portal System.

## Home Page Screen

## ABOUT



Donec luctus ullamcorper nulla

### About Online E-Learning Portal

Online quizzes are a popular form of entertainment for web surfers. Online quizzes are generally free to play and for entertainment purposes only though some online quiz websites offer prizes. Websites feature online quizzes on many subjects. One popular type of online quiz is a personality quiz or relationship quiz which is similar to what can be found in many women's or teen magazines. Websites hosting quizzes include Quizilla, FunTrivia, OkCupid, Sporcle, and Quizlet.

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eExams fall into the category of eAssessment, where students demonstrate academic achievement using computers. Within this broad spectrum, eExams form a distinct use of technology where a 'bring your own device' (BYOD) computer is started up (booted) from a USB flash drive. Because each computer is booted from a USB flash drive, every candidate uses the same full operating system and application programs, irrespective of those installed on the internal hard drive. eExams optionally include networking connections, but these are usually restricted or eliminated to prevent collusion. Unlike most online quiz tools, the eExam is not restricted to a web-page, but makes the whole candidate computer available for the assessment. eExams are seen as having potential for curriculum transformation by changing the nature of assessment to fully incorporate computer technology. Autosave is a common feature of eExams, with intervals from 10 seconds to every 2 minutes. Some emerging models have been released into the public domain, and others are proprietary commercial material (with costs).

#### CONTACT INFO

- Address: No.XXXXXX street
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- Email :

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## LOGIN

### LOGIN TO YOUR ACCOUNT

SIGN IN

#### CONTACT INFO

- 📍 Address: No.XXXXXX street
- 📍 Mars city, Country
- 📱 Mobile : (123) 456-7890
- ☎ Phone : (123) 456-7890
- ✉ Email :

#### MODULES

- > Question Module
- > User Module
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- > Login Module
- > Quiz Module

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## **CHAPTER-6 Conclusion and Future Scope**

### **5.1 Conclusion**

Our project is only a humble venture to satisfy the needs to manage their project work. Several user-friendly coding has also adopted. This package shall prove to be a powerful package in satisfying all the requirements of the school. The objective of software planning is to provide a frame work that enables the manger to make reasonable estimates made within a limited time frame at the beginning of the software project and should be updated regularly as the project progresses.

#### **At the end it is concluded that we have made effort on following points...**

- A description of the background and context of the project and its relation to work already done in the area.
- Made statement of the aims and objectives of the project.
- The description of Purpose, Scope, and applicability.
- We define the problem on which we are working in the project.
- We describe the requirement Specifications of the system and the actions that can be done on these things.
- We understand the problem domain and produce a model of the system, which describes operations that can be performed on the system.
- We included features and operations in detail, including screen layouts.
- We designed user interface and security issues related to system.
- Finally, the system is implemented and tested according to test cases.

### **5.2 Future Scope of the Project:**

In a nutshell, it can be summarized that the future scope of the project circles around maintaining information regarding:

- We can add printer in future.
- We can give more advance software for Online E-Learning Portal including more facilities
- We will host the platform on online servers to make it accessible worldwide
- Integrate multiple load balancers to distribute the loads of the system

- Create the master and slave database structure to reduce the overload of the database queries
- Implement the backup mechanism for taking backup of codebase and database on regular basis on different servers

The above-mentioned points are the enhancements which can be done to increase the applicability and usage of this project. Here we can maintain the records of Tutor and Student. Also, as it can be seen that now-a-days the players are versatile, i.e. so there is a scope for introducing a method to maintain the Online E-Learning Portal. Enhancements can be done to maintain all the Tutor, Student, Topics, Results, Question.

We have left all the options open so that if there is any other future requirement in the system by the user for the enhancement of the system then it is possible to implement them. In the last we would like to thanks all the persons involved in the development of the system directly or indirectly. We hope that the project will serve its purpose for which it is develop there by underlining success of process.

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