CONNECT
(E-learning Based Learning Management System)

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ABSTRACT

Connect is an E-learning based learning management system or LMS. E-learning has revolutionized the system of gaining education and learning methodology. In the modern world, Digital form of technologies have been emerging very rapidly and the mobile phones give the access of internet to each and everyone to connect with the external world which opens the doors of new opportunities for E-learning to develop. The LMS is learning portal that gives the power to connect the students with the faculty without having any problems that are persist in the manual system viz traditional classroom learning system. Main purpose of Connect is connecting the education together and refining the problems that are lied in the traditional classrooms system.

Keywords : E-Learning, Education, Online Learning Management System, Online Education

1.   Introduction

In the pandemic situation of Covid-19 virus, the whole world is forced to used to digital systems and technologies. Now the current needs of the entire world is totally dependent on the digital systems and technologies. In this technological era, E-learning is also develop at a very high pace and managing education system through digital ways become a need of every institution and school. So Connect is developed to promote the E-learning. It is an E- learning based learning management system or LMS. The main reason behind the development of Connect is to automate the existing classroom system with the help of full-fledged digital computerized software.

Every institution, whether is large or small, having many challenges in pendamic situation to overcome and manage the different kinds of information about their students therefore connect is designed and developed to manage the information about the students and faculties.

2.   Study Of Existing LMS

The study of the existing LMS system with expose us with different kinds of drawbacks of the LMSs. the whole 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 student's grades with a particular context. 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.

2.   Features of Connect

2.1 Basic Features

*   Beautiful and Attractive Dashboard
*   Responsive and user friendly UI

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2.2 Advanced Features

- Login and Register through Face Recognition / Email and Password
- Chat System
- Assignment and Quizzes Page
- Event Request Page
- E-library
- Time-table
- Internships and Jobs Recommendation
- Performance Analysis

3. Purpose of the Connect

Connect is a full-fledged automated e-learning based learning management system which has a aim to automate the existing manual system viz.

Classrooms based learning management system. It is error free, secure, reliable and fast that is necessary to implementation of new ways of digital learning. It also helps a little to improve the health of environment because in the manual learning system paper is used heavily so it reduce the use of paper.
It can also give assistance to the user of Connect to focus on the other activities rather than concentrate on keeping records. Thus Connect has a clear objective to promote the e- learning methodology in the organization and schools so that it can save time and cost.
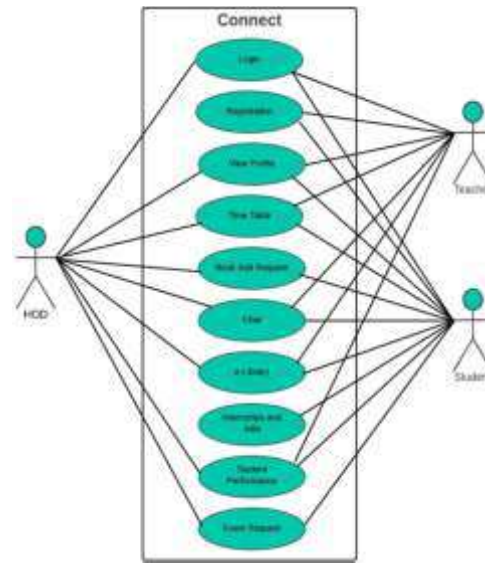
4. Plan for Connect

As connect is an e-learning based LMS so there are many three entities present that are play a very important role in the education system. The three common entities of Education systems are:

- Students
- Teacher or Faculty
- Admin or HOD

4.1 Building Use Case Diagram

Designing use case or instance diagram of a proposed system is an great way to understand and gather the requirements, get an idea for the outside view of proposed system. It is generally used to showcase a set of actions or activities performed by a system to get a specific purpose.
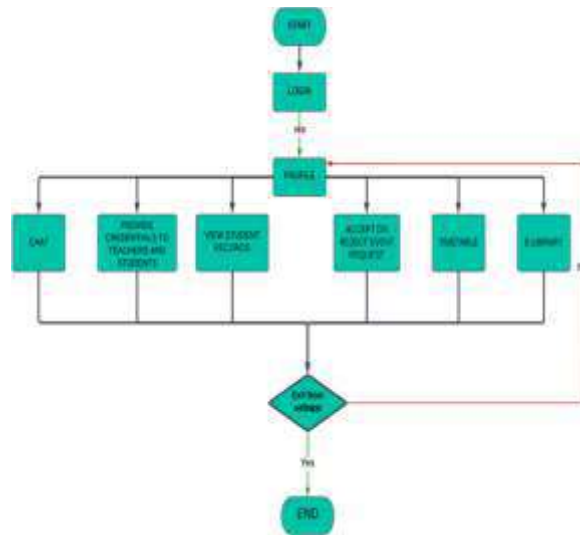

The use case diagram of Connect is shown the different use cases of all the three actors.
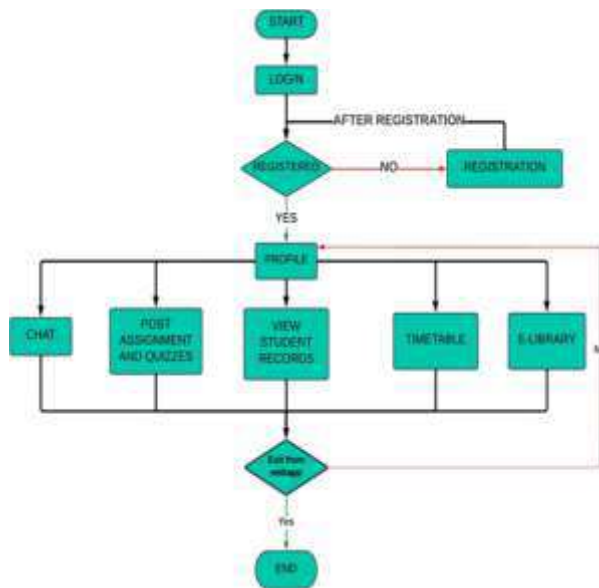
4.2 Designing Flowchart for Entities

Designing flowcharts is an effective way that is widely used for studying, planning and understanding the flow of the system process. Because the flowchart show the process of a system that's why it is also known as Process charts.
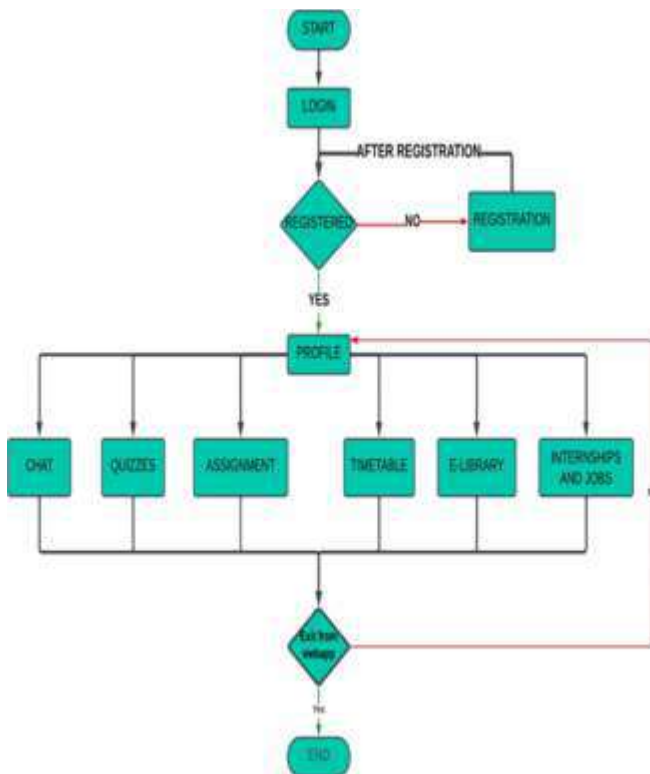The flowcharts of each entities of the Connect are as follow:

4.2.1 Flowchart for ADMIN or HOD

4.2.2 Flowchart for Teacher

4.2.3 Flowchart for Student

5. Development Tools

Development of Connect is divide into three key phases that are as follows:-

5.1 Frontend Development

Frontend development of Connect includes the development of user interface through which user will be able to interact with our platform and all the functionalities that our platform provide is also going to be accessed by the users with the help of this user interface.

Technologies that are used for Frontend development are:-

- HTML5
- CSS3
- JavaScript
- React.js
- Tailwind CSS

5.2 Backend Development

Backend Development of Connect includes the development main logic/functionalities of our platform in form of APIs(Application Programming Interface). Backend tends to display behind the frontend working and it also assists to make our platform functional and add more functionality later on. Backend is the key through which our platform can easily be connected with the Database to make the functionalities functional.

Technologies that are used for Backend development are:-
- Node.js with Express.js
- Python with Flask and Django
- Open CV for Face Recognition

5.3 Database Management

Databases are the key technology for proper working of any e-learning LMS platform. Databases are the storerooms for all the data. Our platform is used databases to store data mainly specifies the user's data and metadata about the data stored.

Our platform, Connect is utilizing a **No-SQL** database viz. **MongoDB**, it helps to store the data

without having any fixed schema and stores the information in the JSON-like documents viz.

Collections. It can also be defined as a document based database it is used to built scalable and flexible platforms.

6. Modules

Connect mainly consist of our kinds of modules. these modules have been developed specifically in terms of different types of users for our project. Different modules of connect are:
- Common Modules
- Student Modules
- Teacher Modules
- HOD/Admin Modules

6.1 Common Modules

These modules contain all those functionalities that will be common to all the user types (Student, Teacher, Admin) and these functionalities are as follows:-

6.1.1 Login Functionality

As the name suggest, this functionality is to login the user into our platform through some credentials which were given to them on the time of registration and user can also login using Face Recognition.

6.1.2 Register Functionality

This allows different users to register on our platform, user be student, Teacher or admin. This functionality will be common to all the user type as they have to register first for accessing the services of our platform.

6.1.3 Profile Page Functionality

This is also one of the common functionality of our platform that allows the users to view their profile. Profile simply contains the basic details of that user specified by that user during the registration time and also the details provided by the user later on will also be listed on the profile section.

6.2 Student Modules

These modules contains all the functionalities which will be accessible by the student user type of our platform. These functionalities are listed as follows:-

6.2.1 Access of Timetable

Student are the heart of the education system, so Connect provide the access of Timetable to the

students so that they can easily schedule their day and make their day productive. Timetable will help the students to access their timetable which will show all their schedules classes and the lecturers with their details.

6.2.2 Communication Feature

Communication is the core component to organize any organization. So this will help the students to communicate with their fellow mates, seniors, teachers and other college entities which are registered on our platform, through this they will be able to easily discuss any important topics with anyone they want and resolve their queries with the teachers.

6.2.3 Assignments and Quizzes

With this function, Students will able to view and submit their response to the particular assignments/quizzes which will be provided by the their respective subject teachers and they will also be able to view their grades obtained on our platform and thus will not require to depend on the offline system of submitting assignments and Quizzes.

6.2.4 E-library

E-learning is totally depends on e-books so in Connect we are providing an E-library so that students may be able to access the books in the e-library and they can also add books from their end if it is approved by the admin and thus e-library will act as the online source of the notes and books to the students.

6.2.5 Jobs and Internships

The ultimate goal of education system is to get the best jobs and internships. With this function, students will be able to view the jobs and internships as per the interests they have in particular skillset.

These jobs and internships will be real and the students can apply them if they are interested in those jobs/internships. This feature will also show the trending jobs in the market so that students would know about the trending technologies in the market.

6.2.6 Organizing Events Requests

Organizing event is and tedious task and to get the permission to organizing an event is also very tedious so our platform providing a structured way to the students to get the permission or approval for organizing an event. With this feature, a lot of time will be saved in getting approval for the event by the students.

6.2.6 Performance Measure and Result

This feature assists the students to improve their performance. Performance of students will be measured by their attendance and their marks with the help of this measure teachers will also be able to measure the student performance easily without involving in the hectic paper methodology and Students will be able to view their university results through our platform. This feature will show students their marksheet of AKTU Website.

6.3 Teacher Modules

These modules contains all the functionalities which will be accessible by the Teacher user type of our platform. These functionalities are listed as follows:-

6.3.1 Access of Timetable

This function will help the teachers to access their timetable which will show their scheduled lectures.

6.3.2 Communication Feature

Communication functionality will help the teachers to communicate with their students, other teachers and other college entities which are registered on the platform, through this they will be able to easily discuss on any important issue or subject they want to discuss.

6.3.3 Assignments and Quizzes

With this feature, Teachers will be able to post the assignment they want to assign to the students via our platform and teachers can also provide them grades on our platform only.

6.2.4 E-library

Teachers will be able to access the books in the e-library through our website and they can also add books from their end if approved by the admin and thus e-library will act as the online source of the notes and books to all the college entities.

6.4 HOD/Admin Modules

Admin is the super user type of the organization so it has many manageable functionality. These modules contain all the functionalities that are accessible by the admin user type of our platform. These functionalities are listed as follows:-

6.4.1 Handle Registration Process

Admin will be have to register itself and admin will also validate all the users registrations that are going to be registered on the platform whether they are student or teachers, once admin will validate then only they will be completely registered on the platform and then can use the functionalities of our platform.

6.4.2 Time-Table

Admin will be able to access the time-table and see their upcoming lectures and admin can also edit the timetable i.e. to change the time of classes, to change the subject allotment to the professors and etc.

6.4.3 Communication Feature

Admin will also able to communicate with all the students and teachers through our platform and can discuss on any particular subject he/she wants.

6.4.4 E-library

Admin will also be able to access the e-library and all the notes and books and admin will also approve the request made by the students and teachers for adding some notes/books into the e-library.

6.4.5 Events Request Approval

Admin will be responsible for approving the event request send by the normal users, admin can thoroughly examine the event request before approving the event.

7. Conclusion

As we have studied existing E-learning based LMS, we have found many glitches in those system such as bad user interface, less user interaction and many more. So Connect is free from all these glitches and Connect have also provided further functionalities which were not present in the previous E-learning based LMS, thus Connect is the one-stop solution for online learning purposes.

8.   References

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