E-Learning Based on Cloud Computing

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Abstract:
In the present day scenario of the education system it is very difficult for the education institutes/colleges to provide quality education to the students. The number of increasing infrastructure & facilities are still not making much progress due to the centralized approach but with the use of information technology the problems faced by the students and the educational institutes can be solved. Internet now a days is accessible from maximum telecommunication devices like desktops, laptops, tablets, mobiles, Music players, I-Pad, I-Pods etc making it more distributed compare to any centralized entity. Cloud computing is widely used in many fields due to its more advantages the services provided by the cloud computing can add good impact to educational institutes by reducing the cost of infrastructure compared to present working system. E-learning is also becoming very popular and powerful trend, which is also broad. E-learning systems usually require many hardware and software resources. There are many educational institutions that cannot afford such investments, and cloud computing is the best solution, especially in the universities where the use of computers are more intensive and what can be done to increase the benefits of common applications for students and teachers.

Keywords: Information and Communications Technology, E-Learning, Computer Based Training, Internet-Based Training, Web-Based Training and Cloud Computing.

I.INTRODUCTION

Education or Learning is an important component of life and No human beings are able to survive properly without education. Now a days, there are lots of paradigms for getting knowledge or learn something. One of the most promising paradigms for education is e-learning. E-learning is commonly referred to the intentional use of networked information and communications technology (ICT) in teaching and learning. Some other terms are also used to describe this mode of teaching and learning including online learning, virtual learning, distributed learning, network and web-based learning. The growth of e-learning is directly related to the increasing access to ICT, as well as its decreasing cost. The capacity of ICT to support multimedia resource-based learning and teaching is also relevant to the growing interest in e-learning.

1.1 E-learning

E-learning includes all forms of electronically supported learning and teaching. The information and communication systems, whether networked learning or not, serve as specific media to implement the learning process. This often involves both out-of-classroom and in-classroom educational experiences via technology, even as advances continue in regard to devices and curriculum. Abbreviations like CBT (Computer Based Training), IBT (Internet-Based Training) or WBT (Web-Based Training) have been used as synonyms to e-learning. E-learning is the computer and network-enabled transfer of skills and knowledge. E-learning applications and processes include Web-based learning, computer-based learning, virtual education opportunities and digital collaboration. Content is delivered via the Internet, audio or video tape, satellite TV, and CD-ROM. It can be self-paced or instructor-led and includes media in the form of text, image, animation, streaming video and audio. It is commonly thought that new technologies can make a big difference in education.

1.2 Cloud Computing

Cloud Computing is a technology that uses the internet and central remote servers to maintain data and applications. Cloud computing allows consumers and businesses to use applications without installation and access their personal files at any computer with internet access. This technology allows for much more efficient computing by centralizing data storage, processing and bandwidth. Cloud computing is the use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet). The name comes from the use of a cloud-shaped symbol as an abstraction for the complex infrastructure it contains in system diagrams. Cloud computing entrusts remote services with a user's data, software and computation [4].

II. LITERATURE SURVEY

S.K.Nayak and Dr. Kalyankar.N.V described childhood education in rural india, 21 century is the century of hi tech. It compromised with IT, ICT, BT & Nano technology traditional learning faced many problems but in now days internet plays important role in E- learning cloud based e-learning no limitation on area and time due to their characteristics share any time anywhere[3].

 D.kashi Vishwanath et.al. described feasible E-learning using cloud.It is promising pathway of education system providing many services like SaaS(Software as a service), PaaS (platform as a service), IaaS (Infrastructure as a service). E-learning cloud computing business model facilate three things. cloud provided building ,maintain the cloud and cloud user can access this cloud on demand using E-learning cloud[6]. Aashita jain and Sonal chawla described terms of cloud computing and E-learning using cloud network. cloud computing technology is use for designing E-learning technique. This paper can describe cloud base E-learning

model like abstract model and cloud computing architecture. As compare to traditional learning cloud computing will essentially allow for delivery of learning resources anytime anywhere [7].

Sudhir kumar Sharma et.al. Described cloud computing benefits for distance education. smart user can uses smart phones to access study materials any where any time on their smart phones. Many educational institution uses cloud computing environment due to cost saving, scalability, time shifting, this paper showing benefits of cloud computing in education as well as challenges of cloud computing. Cloud computing provide many E-learning base solution for student like pay by subscription based on usage, take online course, online discussion of courses, permit student to work from multiple places, no need to backing up everything to thumb drive and transferring it from one device to another[2]. By referring these papers we came to know some disadvantages of traditional E-Learning like storage and cost problem which will be overcome in proposed system. We also came to know that Cloud has most important benefits like security and on demand access which lead to the development of proposed system.

III. PROPOSED SYSTEM

The architecture of the proposed system is shown in figure 3.1.The architecture diagram shows the overall flow of the proposed E-Learning System. There will be admin and user. Admin can dump the data in web application and manages, controls all the activities of the application. The user has to register in the web application ad fetch, view data which was added by admin. The web application is hosted in the cloud server. Adding and fetching information by admin and user is done by using Mysql.
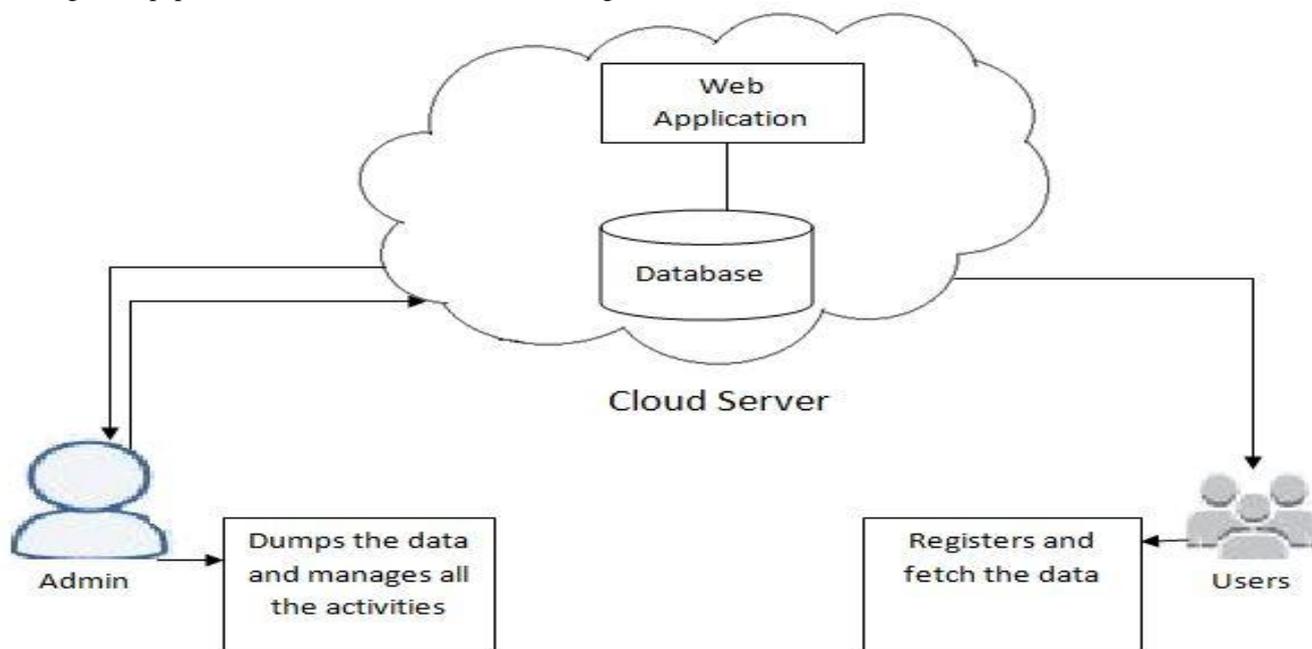

Figure.1. Architecture Diagram

Objective of the project:

E-Learning is essential in current trend and combining E-Learning with Cloud computing gives more benefits.

Cloud computing deliver services autonomously based on demand and provides sufficient network access, data resource environment and flexibility by keeping this point in view, implementation of system will be done.

IV. DESIGN

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

4.1 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 systems.
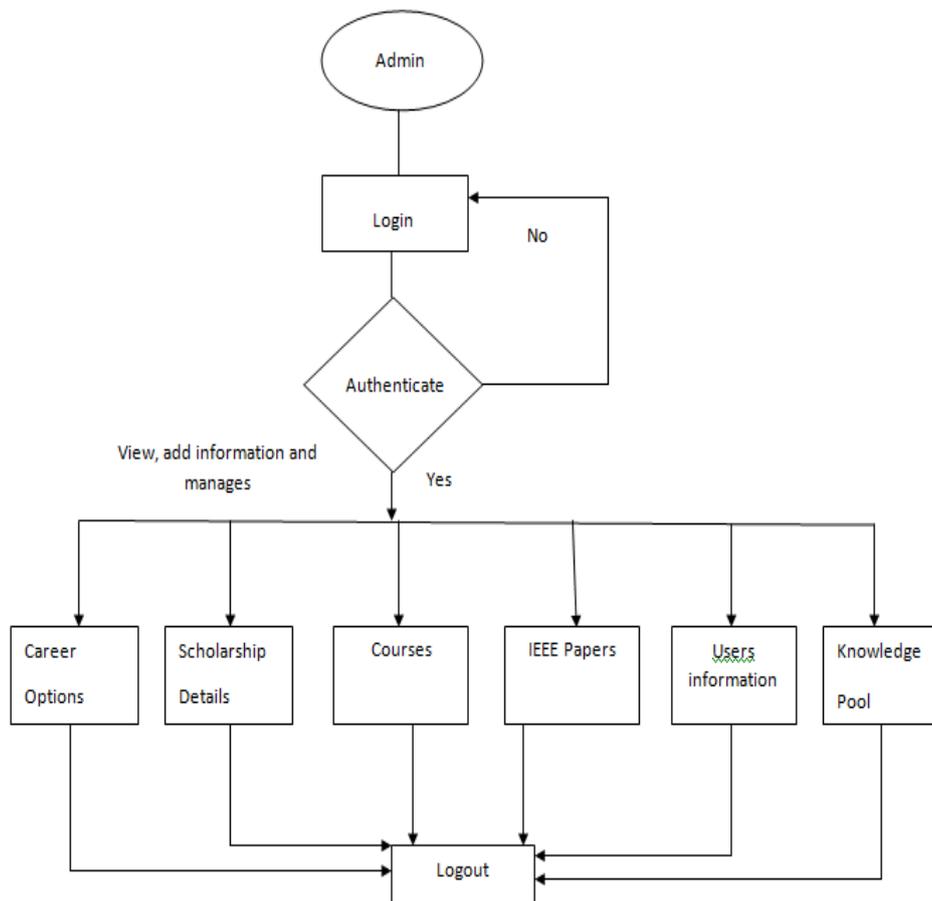
Admin Login:

The figure 4.1 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 puc 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.

Figure.1. Flowchart for Admin login

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.
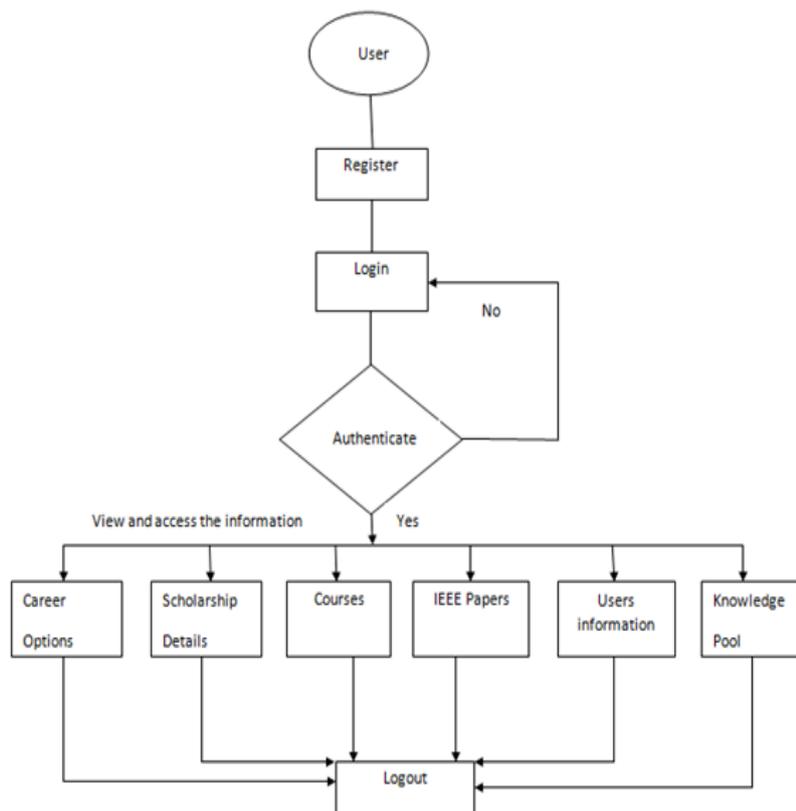
Figure.2. Flowchart for User login

User can access career related information like what are the courses one can do after puc 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.

4.2 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.
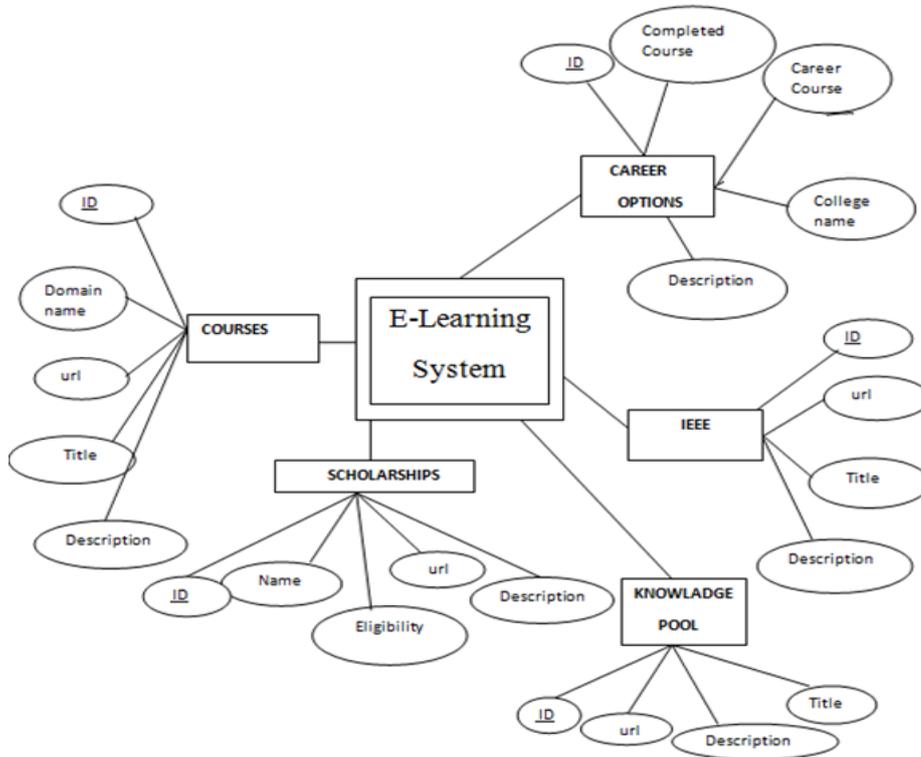

Figure.3. Entity Relationship Diagram

V. IMPLEMENTATION

Implementation deals with the tools used for front end design and techniques used for back end connections. Eclipse is the tool on which the web application is developed. The other tools used are Mysql and JDK. We are using the programming languages HTML and Java. The programming techniques used are Angular JS and Bootstrap. AngularJS (commonly referred to as "Angular.js" or "AngularJS 1.X") is a JavaScript-based open-source front-end web application framework mainly maintained by Google and by a community of individuals and corporations to address many of the challenges encountered in developing single-page applications. The AngularJS framework works by first reading the HTML page, which has embedded into it additional custom tag attributes. Bootstrap is a free and open-source front-end web framework for designing websites and web applications. It contains HTML- and CSS-based design templates for typography, forms, buttons, navigation and other interface components, as well as optional JavaScript extensions. Unlike many web frameworks, it concerns itself with front-end development only. The tables are created once in Mysql command prompt. Connection between front ends to backend is done by Hybernet. Hybernet is open source Java Framework. It's primary feature is mapping from Java classes to database tables. By using the above concepts we implemented web application through three steps:

Step 1: Development of Web Application using html, css and Java.

Step 2: Creating tables in Mysql command line prompt.

Step3: Hosting the Application in cloud and Running in browser.
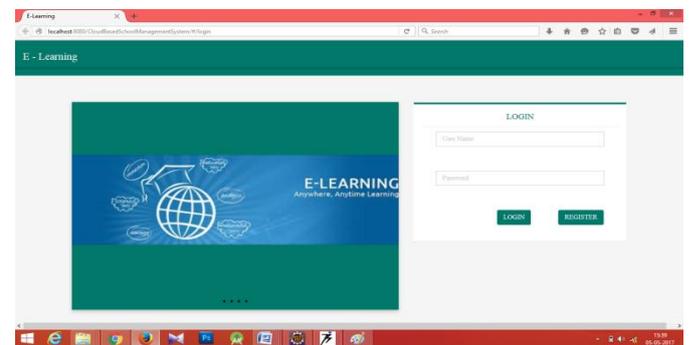
VI. OUTCOMES FROM PROPOSED SYSTEM

Figure.4. Login Page

Figure 6.1 show the user or the admin login page, next figure 6.2 shows the user registration form through which the user should get registered. Once the user gets registered he can come to the login page with authenticated user name and password he can login to the cloud and he can get benefits of the cloud. In figure 6.3 we can see the different services provided in the cloud.
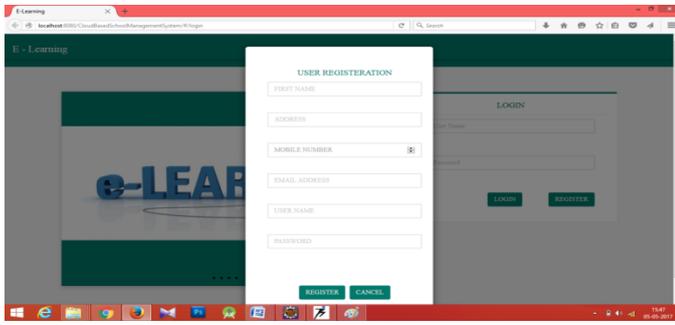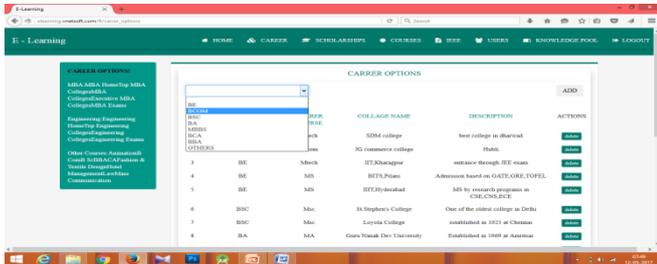
Figure.5. Register form

Figure 6.3: Different options provided in application

Figure 6.4: User Login

The "CAREER OPTIONS" module includes following options

- Completed Course
- Career Course
- College Name
- Description

Completed Course includes some courses like BE, Bcom, BBA and others. User need to choose any of the course which he completed so that he can get the Career Courses, College Name for that career course and Description of the college.

The "SCHOLARSHIPS" module includes following options

- Name
- Eligibility
- Url
- Description

In scholarships module admin provides different Scholarship Name, Eligibility for that scholarship, Url link for the scholarship, by clicking on the link he can directly go that website and Description about particular scholarship. User can search the particular scholarship.

The "COURSES" module includes following options

- Domain Name
- Video
- Title
- Description

In courses module there is a Domain Name like programming, networking, electronics etc. Based on domain names related Videos and Title of the videos are provided. The Description is provided for the video.

The "IEEE" module includes following options

- Title
- Description
- Download link

In this module some IEEE papers are provided by admin. Title contains the domains like image processing, cloud computing, data mining, android etc. Description gives the title of the paper. There is a Download link for downloading the particular paper.

The "KNOWLEDGE POOL" module includes following options

- Title
- Description
- Download link

In knowledge pool, Title contains the aptitude papers and competitive exams question papers. Here Admin add those papers. Description contains the question paper names. User can access those by using Download link. User is unable to modify the content.

VII. CONCLUSION

Cloud based E-Learning is new generation of traditional E-Learning. Cloud computing supports the ability to dynamically allocate computing and storage resources required for E-Learning. Cloud computing has emerged as an appropriate platform to migrate from E-Learning system. Therefore, this system allows the exchange of educational content and integrate different methods for learning and teaching in the context of supply. Also to reduce costs and maintenance training curriculum will also help. E-Learning application based on cloud computing is created by means of cloud computing's mass data storage, high-speed computing capabilities, as well as its ideal allocation and the sharing mode of resources. As the cloud computing technologies become increasingly widespread, e-learning will certainly used in a new era of cloud computing. Cloud computing has recently emerged as a compelling paradigm for managing and delivering services over the internet. The rise of cloud computing is rapidly changing landscape of Information technology and ultimately turning to the long-held promise of utility computing into a reality. Cloud computing can help communities and nations, can transform education. An entire world of knowledge can now be made available to teachers and students through cloud based services that can be accessed anytime, anywhere, from any device. By helping countries worldwide, lowering the cost and simplifying the delivery of educational services, cloud computing enables students across the globe to acquire the 21st-century skills and training they need to compete and succeed in the global information society. Present economic situation will force different educational institutions and organizations to consider adopting a cloud solution. Universities have begun to adhere to this initiative and there are proofs that indicate significant decreasing of expenses due to the implementation of cloud solutions. The aim of our work was to identify an architecture which will be using Cloud Computing within higher education.

VIII. REFERENCES

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