System Architecture.

As we know in today’s traditional learning system there are various infrastructure challenges that the student faced while searching their study material online by referring various websites. our team had to find practical solutions in order to solve these infrastructural challenges. This is why we propose a design for a technology e-learning environment that we find useful for the student.

In recommended system we make a use of amazon S3 cloud for storage purpose along with SQL database which stores Student and instructor personal information (Name, Course, Login id, password) etc. The e-learning cloud is unique cloud technology that allows for all the software and hardware components for developing the e-learning environment in a futuristic manner. By utilizing the cloud characteristics of virtualization, the educational materials can be made available to students, teachers and researchers.

The basic e-learning is new to education, utilizing IT resources. On the other hand, cloud-based e-learning provides a unique opportunity to students, faculty and researcher in any academic environment because of the benefits provided by the cloud infrastructure.

Infrastructural design is mainly divided into two subset of design one is front-end and other one is back-end design.

1. Front-end design features:

Front-end of the infrastructure is represented by two gateways – Teacher and Student. Each portal will serve to pre-defined group of people for their corresponding tasks and needs. The main goal of Teacher portal is to upload required study material on cloud. Some of the features include review of tests and course work, scores of assignments and also functionality to lock/unlock courses. Another important feature will be that teachers can monitor the steps that the students performed while there were working on a particular assignment. For example, which commands they entered to install and configure MySQL and Apache server. In the classic e- learning model, teachers assign teaching tasks, conduct regular lectures, or train students’ skills. The students attend the online autonomous learning act and cooperative learning sessions, or accomplish teachers’ assignments. But in this proposed architecture teachers also answer students’ questions and offer essential teaching to major and difficult points.

Before accessing the system, it must essential for both student and teacher to provide their login details to system and all the information will be synchronized with a database in the Back-end. We use HTML, CSS, and JavaScript to design Front-end of the system.

II) Back-End Design features:

Back-End Design mainly contains cloud and MYSQL database for storing the data. The database will rely on the open source MySQL. We make use it to store information about Student’s ID, first and last name, the current semester, courses which the student has assigned in their curriculum, also the score points from his exercises and grade for the corresponding course where as cloud stores study material for the students uploaded by teachers or instructor. The most common and widely adopted cloud computing services are Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a **Service** (SaaS) out of these our team takes advantage of Software as a **Service** (SaaS) in the system.

III)Software as a **Service** (SaaS):

Software as a service (SaaS) is a software distribution model in which a third- party provider hosts applications and makes them available to customers over the Internet. SaaS is closely related to the application service provider on demand computing software delivery models.

IV)Control flow of the system Architecture:

1.Student Module:

1)Student login: Students details like name, address, course, username, password.

->Information is stored in MYSQL database.

2)Select file: he/she select the required file for view/download.

->Enter Access Key: For verification and Security purpose (without access

Key one should not allow to download the file)

->File Decryption using Advanced Encryption Standards (AES).

3)View/download file from cloud.

4)Logout

In this proposed system we classify the study material based on the student departments. So it is necessary to classify the data, KNN that is K Nearest Neighbor does this.

2.Teacher module

1) Teacher login: Teacher details like name, address, department, username, password.

->Information is stored in MYSQL database.

2)upload file on cloud.

->Digital Signature Using Elliptical Curve Cryptography (ECC).

->File Encryption Using Advanced Encryption Standards (AES).

3)Logout.

IV) Expected Benefit from The Architecture:

The intended advantages derived from the proposed architecture are as follows:

1. Powerful computing and storage capacity: Cloud based E-learning architecture locates the computing and data in a large number of distributed computers, the sea of clouds in the tens of thousands of computers to provide powerful computing power and huge data storage space, puts the “cloud” as a service available to students via the Internet.
2. High availability: Through the integration of mass storage and high-performance computing power, this system can provide a higher quality of service
3. The major advantage of the proposal is that it aims at providing easy access to costly software running on high performance processors to rural students at institutions which lack considerable facilities.
4. d Visualization: Visualization is the most important characteristics of this type of architecture. team affords different simple and component charts (Graph, line chart, pie chart) for data visualization which helps student to digest there result analysis graph, understanding huge data in easily and well-organized manner. Simply to say it take less time to understand and summarize the data.

System Is also beneficial for the teachers, they can interact with students, prepare online courses and also examine students. On this spot we will assure that our system is dominant to overcome various learning issues and the algorithm used in this system is one of the factors which build that.