WEB ACCESSIBILITY OF EDUCATIONAL INFORMATION IN COLLEGE AND PROVIDING COMMUNICATION BETWEEN STUDENTS

Submitted in partial fulfillment of the

requirements for the award of

Bachelor of Engineering degree in Computer Science and Engineering

By

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SCHOOL OF COMPUTING

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)
Accredited with Grade "A" by NAAC | 12B Status
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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **SAMBA SIVA RAO K(39110425) and ASHOK VARMA J(39110418)** who carried out the Project Phase-2 entitled **"WEB ACCESSIBILITY OF EDUCATIONAL INFORMATION IN COLLEGE AND PROVIDING COMMUNICATION BETWEEN STUDENTS"** under my supervision from Jan 2023 to April 2023.

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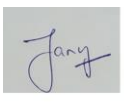

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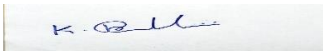
DECLARATION

I, **SAMBA SIVA RAO KADAVAKOLLU (Reg.No- 39110425),** hereby declare that the Project Phase-2 Report entitled "**WEB ACCESSIBILITY OF EDUCATIONAL INFORMATION IN COLLEGE AND PROVIDING COMMUNICATION BETWEEN THE STUDENTS"** done by me under the guidance of **Dr. A. C. SANTHA SHEELA, M.E.,Ph.D.,** is submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree in **Computer Science and Engineering**.

DATE: 20.4.2023



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ABSTRACT

Online learning continues to expand at educational institutions around the globe. Educators must better understand how interaction with online course content impacts student engagement and learning. Advances in technology amplify the imperative to gain further insights into how delivery of course materials can enhance and support the learning process. This study investigates student patterns of access to instructional resources provided in an asynchronous online digital literacy. In this study we mainly focus on private chat with students and faculties based on their requirements. An admin posts the question and he collects the information from the students and faculties votes Based on their vote's admin take the action for the organization. For this project we use an EC2 instance to create a virtual private machine where we can deploy our code. Technology has been affecting education for a long time. Websites occupy a significant place and web-based learning is an important example. The Internet today plays several critical roles in education such as online classes.

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CHAPTER 1

INTRODUCTION

Student-to-student interaction is a vital part of any course experience. In a classroom setting, this interaction happens naturally, as students listen to each other's comments, ask each other questions, and build rapport through frequent contact. Instructors can also foster student-to-student interaction in an online setting, but it may require building formal and informal interaction opportunities in your course design. Designing for a high level of student-to-student interaction online is so important that university accrediting bodies, like the Middle States Commission on Higher Education, require evidence of it in online course and program design. Student-to-student interaction is vital to building community in an online environment, which supports productive and satisfying learning, and helps students develop problem-solving and critical thinking skills. In one study, students who had high levels of interaction with other students reported high levels of satisfaction and learning. Students in an online course with a high level of interaction achieved higher performance than students in the same online course with only a moderate level of interaction. The basic principles of interaction in online education are rooted in Moore's definition of the three types of interaction: learner-content, learner-instructor, and learner-learner interaction. To support learner-learner (or student-to-student) interaction online, course design must address these elements. Interaction has an impact on student achievement and satisfaction, as reflected by test performance, grades, and student satisfaction. To achieve a high level of student-to-student interaction in an online course, students must have many opportunities to build rapport. Interaction between students is essential in every learning environment. In a classroom context, this kind of connection occurs organically as students take turns talking, engage in discussion, and generally spend a lot of time in close proximity to one another. In an online classroom, instructors may encourage student collaboration by including official and informal discussion forums into their course design. University accrediting organizations like the Central States Higher Education Commission demand proof of it in education platform and program design, highlighting the need of designing for a high degree of student-to-student contact online.

CHAPTER 2

LITERATURE SURVEY

This problem statement has been extensively studied over the past 5 years by researchers and automotive companies in a bid to create a solution, and all their solutions vary from analyzing various patterns of destructive habits to analyzing communication between the students and faculty members. Web accessibility promotes inclusive education, especially the initiative proposed by UNESCO, Education for All (EFA), a global commitment to provide quality basic education to all children, youth and adults [2]. Access for all is considered to be a primary condition. Information and Communication Technologies accessibility, inclusive society, and digital gap are terms considered in the global efforts to decrease segregation of information technology accessibility among individuals with disabilities. Accessibility enables the general public, and especially those with disabilities, to access a product or service. Web accessibility refers to the ease with which people can perceive, understand, navigate and interact with the web [1]. This article presents a deep analysis of web accessibility policies defined by the recommendation of the Web Content Accessibility Guidelines 2.0.The assessment of the web accessibility policies was completed to verify the level of compliance of the selected universities with accessibility guidelines. Nowadays, organizations that operate websites are putting special attention on web accessibility policies, including policies that are relevant to the area of web security issues such as privacy of personal data, and accessibility for the disabled; proper implementation of these policies should be considered which represents a practical challenge for operators of websites, therefore it is a big challenge for future research [6]. Some laws have been specifically created to mandate universities institutions to have websites available and accessible for students with disabilities (e.g., the Americans with Disabilities Act) [18]. Web accessibility policies establish a roadmap for universities to provide a general guide and action plan for staff members that serve as website developers within an organization [7]. There are some former accessibility policy studies carried out in South Korea including mobile accessibility and media accessibility for building an inclusive

society [3]. Regarding the article related with the accessibility of websites from Turkish universities [22], the results from assessing the level of accessibility to the examined web sites, show that a large number of websites have accessibility problems. The study suggests that it would be a good practice to adopt the principle of simple web design, using open source and management systems of free content. The study [12] is about a longitudinal evaluation of accessibility in higher education websites; which indicates that there are practical implications such as studies that can lead to improved guidelines, policies, and overall awareness of web accessibility for persons with disabilities. The article “Evaluation of the web accessibility of higher education websites” [13] describes a study to assess the accessibility of the contents concerning the websites of 20 universities from all around the world. The accessibility assessment was carried out to verify compliance with the WCAG 2.0 published by the World Wide Web Consortium (W3C). In the results, the majority of the tested websites do not achieve an acceptable level of compliance. Regarding related works, the study [14] describes the websites of prestigious universities worldwide that accomplished few accessibility guidelines; therefore, their pages are hardly accessible. Another research [15] confirms that there are also studies of web accessibility for higher education sites and studies of government sites in South America. In this case, the results indicate that the websites do not provide adequate levels of accessibility. A study of quality in government websites [16] also explores the webmaster’s perception and explanation of website quality. Despite the concept of advances in communication, there are surprisingly only a few studies on how webmasters perceive, experience and explain website quality or design issues. Studies on government websites [17], mobile websites of various countries and the experience of users while browsing suggest that the websites should be designed for all types of mobile devices and operating systems. These sites must be accessible to all, regardless of their abilities, according to WCAG 2.0. The research [20] evaluates accessibility of 25 Malaysian ministries websites using automated tools such as WAVE and Achecker. Both tools are designed to objectively evaluate web accessibility in conformance with WCAG 2.0 and United States Rehabilitation Act 1973 (Section 508).

The goal of this project is to create a Java application that can be used by instructors, TAs, and students in a classroom setting, regardless of the device they are using. A dedicated Web server, a regular Web server, a mail, and basic databases are all part of a TSI software. All messages are sent and received via the HTTP protocol. The TSI server may be accessed by both instructors and students using standard Web browsers. Students may access their own information (grades and comments), access course materials, submit files, and interact with the teacher and TAs. The teacher and TAs may submit an Excel table with student information, communicate with students one-on-one through e-mail, and more. Two years of TSI usage prove that it is an effective method for enhancing student teacher dialogue in conventional classroom settings.

A Research Synthesis of Undergraduate and Graduate Students Use of Digital Lms Publication of the Asian Organization of Independent Universities & Colleges. One of the most important aspects of web-based teaching learning that contributes to the development and upkeep of sustained classroom community is the level of interactions between students and information online. The learner and the material engage in an internal conversation of reflective thinking known as interaction. Activities inside the education system often serve as catalysts and supports for interaction, with an emphasis on the way a learner engages with the subject matter. This study compares and contrasts the online LMS interactions of undergraduate and graduate level students. Information first from LMS logging & action data was collected and analysed using a methodology designed to probe how students at Wawasn University engage with digital material. Learners' patterns and actions in response to the courses' online materials are then examined to draw conclusions. Online forum conversations and exchanges between instructors and students are transcribed and analyzed further by looking into their dimensions, depths, and categories. A crucial part of any university degree is the opportunity for students and teachers to engage in informal settings beyond the lecture. Which is lacking in today's classrooms. One's maturation as a whole is hampered as a result. Connecting the two is what this LMS is all about. Thanks to this, teachers and students may communicate whenever and wherever they choose. Recent studies have demonstrated a significant decline in

communication between students and teachers over the last decade. As a result, pupils' development as a whole has been stunted. UCUES and NSB research in the United States indicated that higher quality student-faculty contact led to greater student growth in all aspects of technology, not only success in school. The goal of this research was to uncover students' extracurricular interactions with teachers and to ascertain students' perceptions of what constitutes high-quality contact. Moreover, this research aimed to understand how students and teachers communicate with one another outside of formal classroom settings. With this information in hand, institutions will be better able to facilitate extracurricular activities that bring together academics and students for both formal and informal discussions. The research strategy used in this study was based on the principles of naturalistic inquiry. All of the pupils who were questioned had met with teachers in a setting other than a classroom. There were six main categories of student-faculty interaction that emerged: degree programme activities; symposium or student exchange travel; casual college interactions; interaction focused on careers and graduate school; going to visit teaching staff in one‘s office spaces; and school grounds clubs and sports in general. The research is to determine the diaries of the work on the preservice teachers in the terms of web-based technology with in the context of amount of teaching during their teaching in web-based technology and to maintain the things to be done successfully. The websites have been created to examine the students and teachers to be done. They participants are visible to the amount of people to be done are entered to the meeting. There are more than three activities to be done on the basis of the research findings.

2.1 INFERENCES FROM LITERATURE SURVEY:

In this existing system students cannot communicate privately to the faculties and cannot clarify their doubts. Faculties also have a problem to collect the information from every student and it's very hard to keep safe. It takes a lot of time to clarify every person’s doubt in the classroom and also takes a lot of time to collect information from every student. In this existing system keep fear in them and also they feel it very difficult to express their doubts in the classroom and their doubts won’t be clarified if the teachers don’t give time for students to get explained their doubts in the form of giving or keeping study hours to explain their doubts there are many disadvantages in the existing system. The current system requires a lot of time and effort due to the manual nature of the interaction between teachers and students.

Cons –
- Difficulty in interacting with a large number of pupils.
- It is difficult to gather data from teachers and students
- Private conversation is impossible. - Additional time is required.

In the proposed system by using the latest python technology, we build an application for easy communication and it is also helpful to communicate in private manner with those who have authorized from admin. It takes very less time to collect information from students and is also very safe. Everyone can send their details and also if anyone has doubts in the classroom they can communicate or interact privately to the faculty and get clarified them in every time when they have. Several technological options exist to facilitate communication between online course participants. Instructors should encourage student collaboration by using tools that are both relevant to course objectives and within students' technical capabilities. Teachers who connect with their students on a personal level are better able to foster an atmosphere conducive to learning and satisfy the students' emotional, social, and intellectual requirements. As a people-focused career, teaching requires a lot of time spent interacting with students one-on-one. A productive relationship between the instructor and the student is essential for the development of knowledge. Teaching and learning that succeeds is among these

variables. Tolerance, compassion, love, closeness, confidence, esteem, caring, and collaboration are all hallmarks of a for well relationship. It takes work on the part of both the instructor and the student for a good connection to develop, but the teacher has a special duty in this regard. As well as working to initiate good teacher-student connections, a teacher who is pragmatic in depiction, recognition, knowledge, closeness, expectation, respect, caring, and collaboration with his or her pupils enhances the possibility of creating strong, long-lasting relationships. There are a number of reasons why communication between teachers and their students is crucial. The ability to adapt to university life, succeed academically, and get along with classmates are all greatly impacted by the interactions between teachers and their students. Teachers who felt safe talking to their students about anything said that their pupils were less inclined to skip class, were more capable and supportive of one another, and were actively engaged in their own learning. Communication between educators and their students influences both student development and classroom administration. According to progressive viewpoint, when teachers and students form a strong bond, it promotes the student's intellectual, social, and emotional maturity, as well as their overall psychological health and also maintains the good communication between the students and the teachers.

Pros –

-Less time is needed for conversation

-User-friendly.

2,2 OPEN PROBLEMS IN EXISTING SYSTEM:

According to progressive viewpoint, when In the existing method communication between students and faculties is done by manual process and also if admin wants to communicate with students and faculties it takes more time. In this system students and faculties are not interacted very much because they can't express doubts and get clarified. In this existing system students cannot communicate privately to the faculties and cannot clarify their doubts. It takes lot of time to express their doubts because there is no private chart option in the existing system and it takes lot of time to collect the information about themselves and not eco-friendly. Faculties also have a problem to collect the information from every student and it's very hard to keep safe. It takes a lot of time to clarify every person's doubt in the classroom and also takes a lot of time to collect information from every student. Each learner may benefit greatly from using the suggested approach to have meaningful conversations with teachers and enhance their ability to communicate. It is helpful for students to increase their ability. The goal of this initiative was to facilitate open lines of interaction between students, faculty, and administration at the university level. If a student is away from class today, this application may assist him or her understand what occurred in class and have their questions answered.

Disadvantages:

Difficult to communicate with many students.

Private communication is not possible.

Difficult to collect the information from students and faculties.

It takes more time.

CHAPTER 3

REQUIREMENT ANALYSIS

3.1 FEASIBILITY STUDIES/RISK ANALYSIS OF THE PROJECT:

A feasibility study is a detailed analysis that considers all of the critical aspects of a proposed project in order to determine the likelihood of it succeeding. Although feasibility studies can help project managers determine the risk and return of pursuing a plan of action, several steps should be considered before moving forward.

Understanding a Feasibility Study

A feasibility study is an assessment of the practicality of a proposed plan or project. A feasibility study analyzes the viability of a project to determine whether the project or venture is likely to succeed. The study is also designed to identify potential issues and problems that could arise while pursuing the project.

TECHNICAL FEASIBILITY

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands on the available technical resources. This will lead to high demands being placed on the client. The developed system must have a modest requirement, as only minimal or null changes are required for implementing this system.

SOCIAL FEASIBILITY

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it.

3.2 SOFTWARE REQUIREMENTS SPECIFICATION DOCUMENT:

HARDWARE SPECIFICATION:

- Processor - I3/Intel Processor
- Hard Disk -160GB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA
- RAM - 4Gb

SOFTWARE SPECIFICATION:

- Operating System : Windows 7/8/10
- Server side Script : Python, HTML, MYSQL,CSS,Bootstrap
- IDE : PyCharm
- Libraries Used : PANDAS, Flask, Smtplib
- Technology : Python 3.6+
- Platform : Amazon web services.
- Database : RDS

3.3 SYSTEM USE CASE :

A use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis.

Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases.

Use-case diagrams describe the high-level functions and scope of a system. These diagrams also identify the interactions between the system and its actors. The use cases and actors in use-case diagrams describe what the system does and how the actors use it, but not how the system operates internally.

The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted.

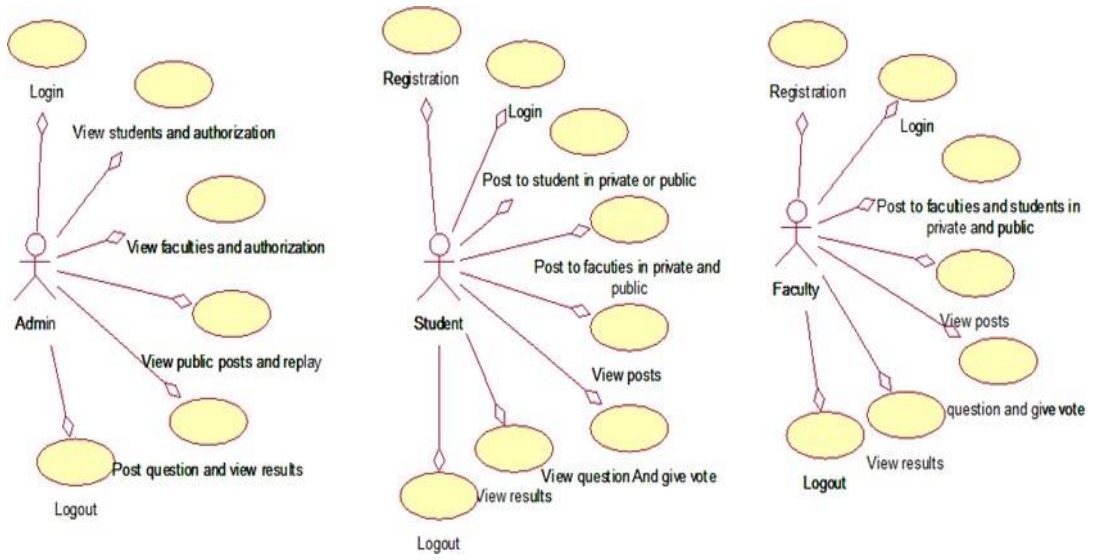


Fig 1: Use Case Diagram

CHAPTER 4

DESCRIPTION OF PROPOSED SYSTEM

A number of technologies can support student-to-student interaction in online courses. To promote student-to student interaction, instructors must select the technologies appropriate for the course goals and that students can use effectively. Teachers who have positive interaction with their students create classroom environments more helpful to learning and meet students' developmental, emotional and educational needs. Teaching is a people profession that demands a large amount of time being dedicated to personal interaction. Positive teacher-student interaction has a very crucial role for effective teaching and learning to take place. There are many important factors including productive Teaching and learning. Positive teacher-student interaction can be defined by shared acceptance, understanding, affection, intimacy, trust, respect, care and cooperation. The Teacher Student relationship depends to a very large extent upon effort from both parties although the teacher plays a key role and in fact, the responsibility, to initiate positive interaction. The teacher who is practical in representation, recognition, understanding, intimacy, expectation, respect, care and cooperation towards his or her students not only works at initiating positive teacher-student relationships, but also increases the likelihood of building strong relationships that will endure over time. Teacher-student interaction is important for many reasons. Teacher student interaction is highly influence a student's skill to change to University, to do well at University, and to relate to peers Teachers who had positive and secure relationships with students reported that their students were less likely to stay away from school, appeared more independent, more supportive, and busy in learning. Teacher-student Interaction has an impact on classroom management and affects learning and growth. According to developmental perspective, the establishment of a positive teacher-student relationship aids a student's cognitive, social and emotional.

4,1 SELECTED METHODOLOGY OR PROCESS MODEL

RDS stands for (Relational database storage):

It simplifies the setup, management, and scaling of a relational database on the cloud. It offers scalable capacity at a low cost while automating time-consuming administrative activities including hardware provisioning, database setup, patching, and backups. It allows you to concentrate on your applications, ensuring that they have the high performance, high availability, security, and compatibility that they require. Because Amazon RDS handles many of a relational database's troublesome and time-consuming management tasks. You acquire everything when you buy a server: CPU, RAM, storage, and IOPS. These are separated using Amazon RDS so that they can be scaled independently. If necessary, you may effectively allocate more CPU, less IOPS, or more storage. Backups, software patching, automatic failure detection, and recovery are all managed by Amazon RDS. To provide a managed service experience. Amazon RDS does not provide shell access to DB instances. It also prevents access to system functions and tables that require advanced rights. You can configure backups to happen instantly when you need them, or you can manually create a backup snapshot. A database can be restored using these backups. The Amazon RDS technique of data recovery is dependable and efficient. You can achieve high availability by having a primary instance and a synchronous secondary instance that you can fail over to when difficulties arise. In MariaDB, Microsoft SQL Server, MySQL, Oracle, and PostgreSQL, read replicas can be used to improve read scaling. In addition to the security in your database package, you can utilize AWS Identity and Access Management (IAM) to define users and permissions to securely manage who can access your RDS databases. You can also protect your databases by deploying them in a virtual private cloud.

IAM (Identity Access Management):

It takes a lot of time to clarify every person’s doubt in the classroom and also takes a lot of time to collect information from every student. Applications must use AWS credentials to sign API requests. As a result, if you're an application developer, you'll need a strategy for monitoring the progress of your EC2 credentials. For

example, you can securely distribute your AWS credentials across instances, allowing the apps executing on those instances to use your credentials to sign requests while keeping your credentials safe from other users.

It is indeed difficult and challenging to find the most effective credentials to each instance, especially those created on your behalf by AWS, such as Spot Instances or instances in Auto Scaling groups. We created IAM roles so that your applications may make secure API queries from your instances without you having to manage the security credentials they use. Instead of generating and disseminating your AWS credentials, you can use IAM roles to delegate authorization to conduct API requests. Make an IAM role for yourself. Define which AWS accounts or services are allowed to take on the role. After adopting the role, define which API operations and resources the application can use. When launching your instance, specify the role, or attach the role to an existing instance. Allow the program to retrieve and utilize a set of temporary credentials. IAM roles, for example, can be used to grant rights to applications running on your instances that require access to an Amazon S3 bucket. By establishing a policy in JSON format, you can specify permissions for IAM roles. These policies are similar to the ones you make for IAM users. When you alter a role, it is reflected in all occurrences. Assign least privilege IAM policies to IAM roles to restrict access to the precise API calls the application requires. A single IAM role can be assigned to a single instance, however the same role can be assigned to several instances. We can see the roles of IAM for more information on establishing the IAM roles in the User guide in AWS.

SECURITY GROUPS:

By acting as a virtual firewall, a security group controls incoming and outgoing traffic for your EC2 instances. Inbound rules regulate traffic entering your instance, whereas outbound rules regulate traffic exiting it. When launching an instance, you can define one or more security groups. Amazon EC2 uses the default security group if no security group is specified. Rules can be applied to each security group to allow traffic to and from its linked instances. The rules of a security group can be altered at any time. New and revised rules are automatically applied to all instances linked to the security group. Amazon EC2 evaluates all of the rules from

all of the security groups associated with the instance when deciding whether or not to allow traffic to reach it. When you deploy an instance in that VPC, you must mention a security group that has been defined for that VPC. After an instance has been launched, you can change the security groups. Security groups are linked to network interfaces. When the security groups of an instance are modified, the security groups associated with the principal network interface are altered as well (eth0).Although you can use the default security group for your instances, you might want to create your own groups to reflect the different roles that instances play in your system. By default, new security groups start with only an outbound rule that allows all traffic to leave the instances. You must add rules to enable any inbound traffic or to restrict the outbound traffic. A security group can be used only in the VPC for which it is created You can create a new security group by creating a copy of an existing one. When you copy a security group, the copy is created with the same inbound and outbound rules as the original security group. If the original security group is in a VPC, the copy is created in the same VPC unless you specify a different one. The copy receives a new unique security group ID and you must give it a name. You can also add a description. You can't copy a security group from one Region to another Region.

EC2 INSTANCE (Elastic Compute Cloud):

An Amazon EC2 instance is a virtual server in Amazon's Elastic Compute Cloud (EC2) for running applications on the Amazon Web Services (AWS) infrastructure. AWS is a comprehensive, evolving cloud computing platform; EC2 is a service that enables business subscribers to run application programs in the computing environment. It can serve as a practically unlimited set of virtual machines (VMs).Amazon provides various types of instances with different configurations of CPU, memory, storage and networking resources to suit user needs. Each type is available in various sizes to address specific workload requirements. Instances are created from Amazon Machine Images (AMI). The machine images are like templates. They are configured with an operating system (OS) and other software, which determine the user's operating environment. Users can select an AMI provided by AWS, the user community or through the AWS Marketplace. Users also can create their own AMIs and share them. Amazon Elastic Compute Cloud (Amazon EC2) offers the broadest and deepest compute platform, with over 500

instances and choice of the latest processor, storage, networking, operating system, and purchase model. To help you best match the needs of your workload. We are the first major cloud provider that supports Intel, AMD, and Arm processors, the only cloud with on-demand EC2 Mac instances, and the only cloud with 400 Gbps Ethernet networking. We offer the best price performance for machine learning training, as well as the lowest cost per inference instances in the cloud. More SAP, high performance computing (HPC), ML, and Windows workloads run on AWS than any other cloud. Amazon EC2 delivers secure, reliable, high-performance, and cost-effective compute infrastructure to meet demanding business needs. Access the on-demand infrastructure and capacity you need to run HPC applications faster and cost-effectively.

EC2 INSTANCE TYPES:

Instance types are grouped into families based on target application profiles. These groups include the following

General purpose:

A general-purpose instance is a VM that is designed to handle a variety of workloads. General purpose instances are optimized to have a high number of CPU cores, on-demand storage and memory. Some common use cases for general purpose instances include web server hosting and software development and testing. General Purpose Instances. General purpose instances provide a balance of compute, memory, and networking resources, and can be used for a variety of workloads. These instances provide an ideal cloud infrastructure, offering a balance of compute, memory, and networking resources for a broad range of applications that are deployed in the cloud.

Compute optimized:

Compute optimized instances are used to run big data applications that require large amounts of processing power and memory on the AWS cloud. These instances are designed and optimized for running computational and data-intensive applications that require fast network performance, extensive availability and high input/output (I/O) operations per second (IOPS).

Examples of types of applications include scientific and financial modeling and simulation, machine learning, enterprise data warehousing and business intelligence. Compute Optimized instances are ideal for compute bound applications that benefit from high performance processors. Instances belonging to this family are well suited for batch processing workloads, media transcoding, high performance web servers, high performance computing (HPC), scientific modeling, dedicated gaming servers and ad server engines, machine learning inference and other compute intensive applications.

Graphics processing unit (GPU):

These instances provide a way to run graphics-intensive applications faster than with the standard EC2 instances. Systems that rely on GPUs include gaming and design work For example, Linux distributions often take advantage of GPUs for rendering graphical user interfaces, improving compression speeds and speeding up database queries.

Memory optimized: Memory optimized instances use a high-speed, solid-state drive to provide ultra-fast access to data and deliver high performance. These instances are ideal for applications that require more memory and less CPU power, including open source databases, real-time big data analytics and in-memory caches.

Memory-intensive workloads, such as SAP, SQL, and NoSQL databases; distributed web scale in-memory caches, such as Memcached and Redis; in-memory databases and real-time big data analytics, such as Hadoop and Spark clusters; and other enterprise applications

Storage optimized: Storage optimized instances are ideal for applications that require high I/O performance, such as NoSQL databases that store and retrieve data in real time. They're also well suited for memory-intensive applications such as data processing, data warehousing, analytics workloads and log processing. Storage optimized instances are designed for workloads that require high, sequential read and write access to very large data sets on local storage.

They are optimized to deliver tens of thousands of low-latency, random I/O

operations per second (IOPS) to applications. These instances maximize the number of transactions processed per second (TPS) for I/O intensive and business-critical workloads which have medium size data sets and can benefit from high compute performance and high network throughput such as relational databases (MySQL, MariaDB, and PostgreSQL), and NoSQL databases (Key DB, Scylla DB, and Cassandra). They are also an ideal fit for workloads that require very fast access to medium size data sets on local storage such as search engines and data analytics workloads.

Micro: A micro instance is meant for applications with low throughput. The micro instance type can serve as a small database server, as a platform for software testing or as a web server that does not require high transaction rates.

4,2 ARCHITECTURE / OVERALL DESIGN OF PROPOSED SYSTEM:

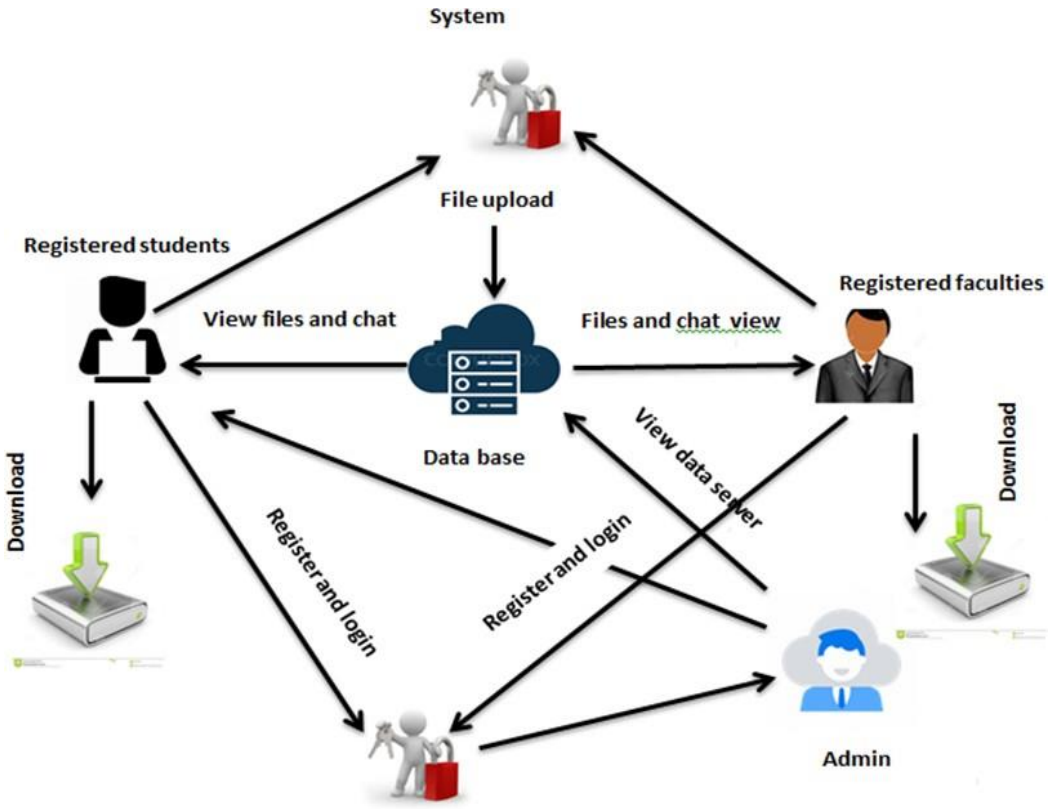


Fig 2: System Architecture for Communication

The block diagram of the proposed system has been shown in the above figures. Admin is the key role for this web application because he can only authorize all the students and faculties information.

Based on the registration done by the students and faculties and also only he can view all the details and can delete if the fake things are posted by students and if the faculties has shared the wrong information also.

They can add and delete students and faculties information. Admin, students and faculties anyone can share both public and private posts. We can download the student and faculty members information at anytime and anywhere by using internet.

4.3 DESCRIPTION OF SOFTWARE FOR IMPLEMENTATION AND TESTING PLAN OF THE PROPOSED MODEL/SYSTEM:

The block diagram of the proposed system has been shown in the above figures. Admin is the key role for this web application because he can only authorize all the students and faculties information. The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub-assemblies, assemblies and/or a finished product. And it have the capability to think and take actions in an write and accurate manner. It is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of tests. Each test type addresses a specific testing requirement. System testing ensures that the entire integrated software system meets requirements. It tests a configuration to ensure known and predictable results. An example of system testing is the configuration oriented system integration test. System testing is based on process descriptions and flows, emphasizing pre-driven process links and integration points. The system testing in proposed system is used to check whether there are any advantages are disadvantages and also check the errors in the proposed model and if there are any errors it will be identified. The identified errors will be checked once again after the implementation of the project. It is the most important step to run the project without any errors and also gives the exact correction of the mistakes by using the several testing methods to ensure the predictable results.

4.4 PROJECT MANAGEMENT PLAN:

A project management plan is a set of documents that outline the how, when and what-ifs of a project's execution. It overviews the project's value proposition, execution steps, resources, communication tools and protocols, risks, stakeholders (and their roles) and the deliverables involved in a project's completion. The below procedure needs to follow while deploying the application**.**

Create an application using python and flask.
Connect database connection to RDS services and configure the security group.
Login to AWS console.

Step1: Open the EC2 dashboard.

Step2: Launch instance.

Step3: Choose which server you want to launch.

Step4: Select instance type:

Step5: Configure instance details:

Step6: Add storage:

Step7: Add tags:

Step8: Add security group:

Step9: Launch key pair:

Step10: Instance state:

Flow Chart:

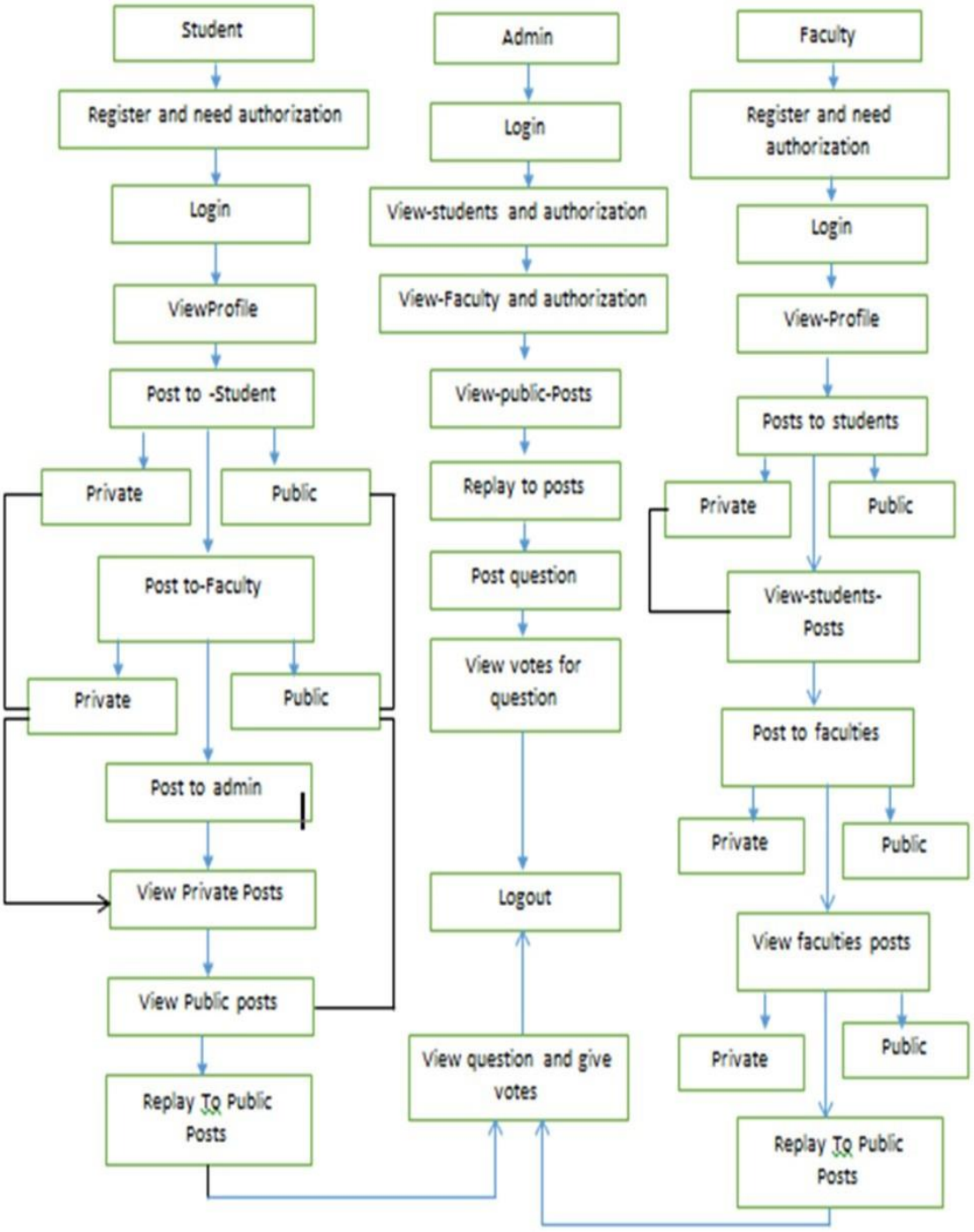


Fig 4.4: Flow Chart for Communication

A project flow diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted. A flowchart diagram in Unified Modeling Language (UML) is a kind of interaction diagram that shows how processes operate with one another and in what order. It is a construct of a Message Sequence Chart. Sequence diagrams are sometimes called event diagrams, event scenarios, and timing diagrams. Flowcharts are nothing but the graphical representation of the data or the algorithm for a better understanding of the code visually. It displays step-by-step solutions to a problem, algorithm, or process. It is a pictorial way of representing steps that are preferred by most beginner-level programmers to understand algorithms of computer science, thus it contributes to troubleshooting the issues in the algorithm. A flowchart is a picture of boxes that indicates the process flow in a sequential manner. Since a flowchart is a pictorial representation of a process or algorithm, it's easy to interpret and understand the process. Flowcharts are nothing but the graphical representation of the data or the algorithm for a better understanding of the code visually. It displays step-by-step solutions to a problem, algorithm, or process. It is a pictorial way of representing steps that are preferred by most beginner-level programmers to understand algorithms of computer science, thus it contributes to troubleshooting the issues in the algorithm. A flowchart is a picture of boxes that indicates the process flow in a sequential manner. Since a flowchart is a pictorial representation of a process or algorithm, it's easy to interpret and understand the process. To draw a flowchart, certain rules need to be followed which are followed by all professionals to draw a flowchart and is widely accepted all over the countries.

4.5 FINANCIAL REPORT ON ESTIMATED COSTING

This study is carried out to check the economic impact that the system will have on the organization. The amount of funds that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products had to be purchased. Cost estimation is the process of approximating the cost of a policy, program or project and is important in establishing the basis for key spending and investment decisions. Following best practice principles for cost estimation help ensure the efficient use of public resources and minimize the risk of the project. For investment proposals there is typically a source of revenue that can be capitalized therefore facilitating the use of an investment or financing instrument. Testing the veracity of the assumptions underpinning revenue projections is equally as important as the strength of the cost estimation process. There are three components of a capital cost estimate for a major project. The base estimate, contingency and escalation. The Base Estimate is the best assessment of the quantities and rates associated with a given scope of work according to a defined estimating practice or policy. The Base Estimate consists of two components – Construction Costs and Client Costs. **Cost** estimation is the process of approximating the **cost** of a policy, program or project and is important in establishing the basis for key spending and investment decisions. Following best practice principles for **cost** estimation help ensure the efficient use of public resources and minimize the risk of **cost** overruns. It is helpful to find the actual cost.

4.6 Transition/Software to Operations Plan

This entire “lost in transition” scenario could have been avoided if the project team included operations support planning and transition early on in the project planning and schedule development. The project team solved the problem by implementing the following six simple steps to improve application governance and improve operational support. Even in resource constrained organizations, it is important to have an individual resource or team responsible for production support. Depending on the volume, the role may be shared or dedicated to production support and application management. An operations status meeting is similar to a project status meeting except the focus is on the operations of the IT application and the results being delivered to the business. The operations status meeting includes business partners and IT management to jointly review the health and performance of the application. The main focus of this meeting is on the operations of the IT applications and also it is known as operation status meeting. By establishing a separate meeting to review production issues and incidents, the project team can focus on issues relevant to the next release while the operations team focuses on immediate support issues. Failing to separate production issues from project issues will only drain the project team from their intended goals and objectives. The end user becomes confused as they struggle with identifying a single point of contact for assistance. Change management is an ongoing operational process as well as a project management process area. Business needs will change and new reports, fields, interfaces and customizations will be needed. Some of these enhancements can be bundled with a future software release and others will be made off-cycle based on the request’s severity. By establishing a change control board, the business customer will have a method to request changes to the application without deterring the project team from their intended goal. The changes introduced to the change control board should also be vetted and reviewed with the project team to ensure there are no impacts or conflicts. Once the participants are identified for each of the key operational meetings, the operations governance model should be communicated and reviewed by business and IT stakeholders. By presenting a solution on how issues, changes and operational status will be reviewed, the business partners will have greater confidence in the IT manager’s role in delivering services and supporting the business.

CHAPTER 5

IMPLEMENTATION DETAILS

The project implementation plan is a critical component of project management that focuses on documenting how you'll go about a project. Project implementation plan should include everything from project goals to deliverables and act as a blueprint for the project team to execute their plans. Every project is different and requires a unique planning and implementation plan. And since 11.4% of business investment is wasted because of poor project planning, companies need to ensure that their project planning and management are strategic and efficient.

1. Install the required packages.

2. Create a registration page for students and faculties.

3. Create a login page for student and faculties.

4. Admin perform authorization for students and faculties.

5. Admin post a question and collects information from students and faculties.

6. Students perform posts to students, faculties and admin in private and public manner.

7. Students perform votes for the question and view all results.

8. Faculties also perform same procedure like students. But in case of faculties also posts to faculties in private and public manner.

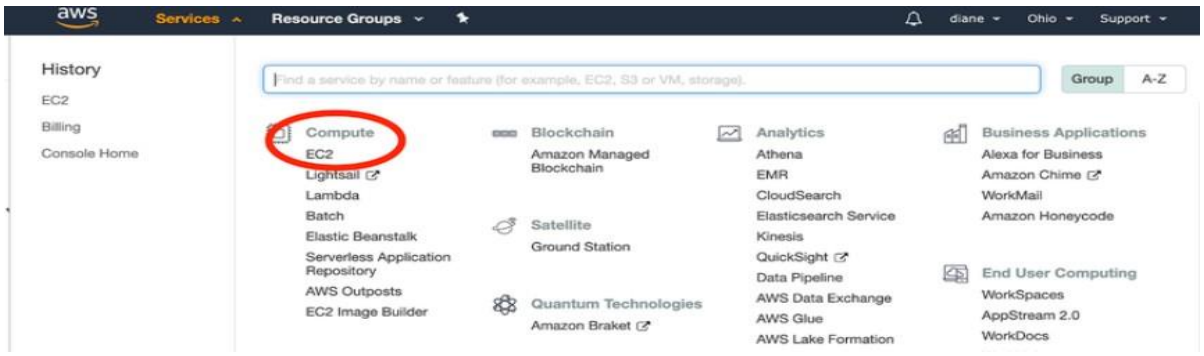
9. Faculty perform votes for the question and view all results.

10. Logout admin, faculty and students.

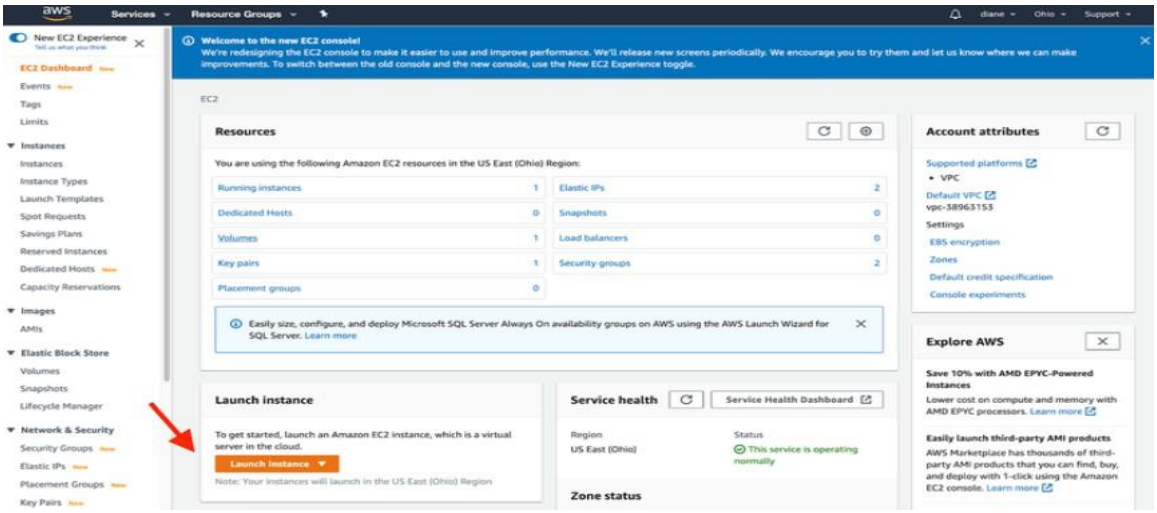
5.1 DEVELOPMENT AND DEPLOYMENT SETUP

- Create an application using python and flask
- Connect database connection to RDS services and configure the security group.
- Login to AWS console.

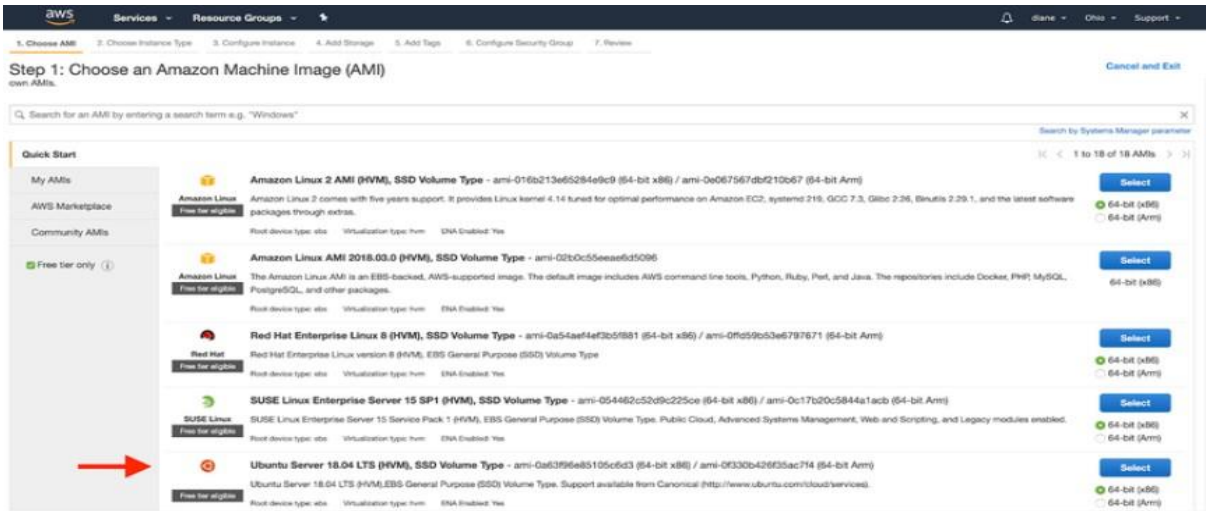
Step1: Open the EC2 dashboard.



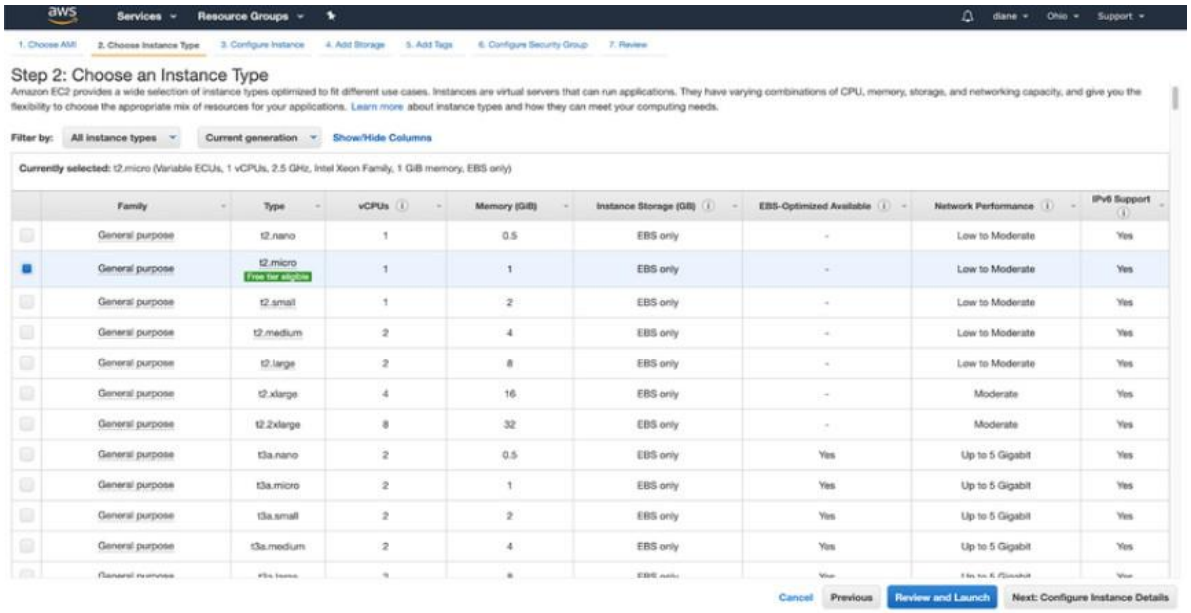
Step2: Launch instance



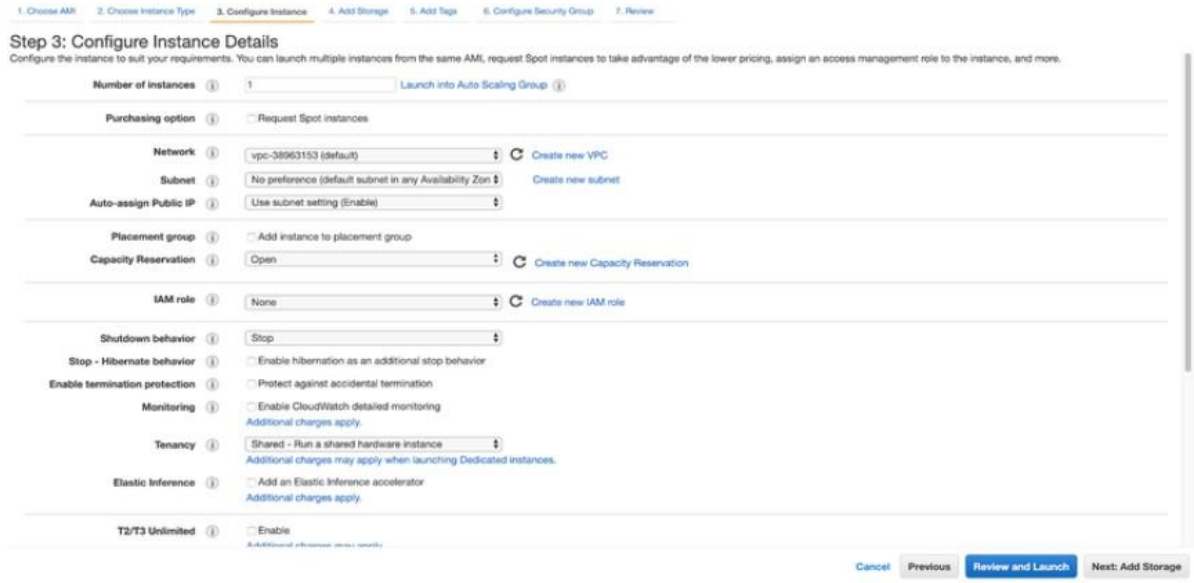
Step3: Choose which server you want to launch.



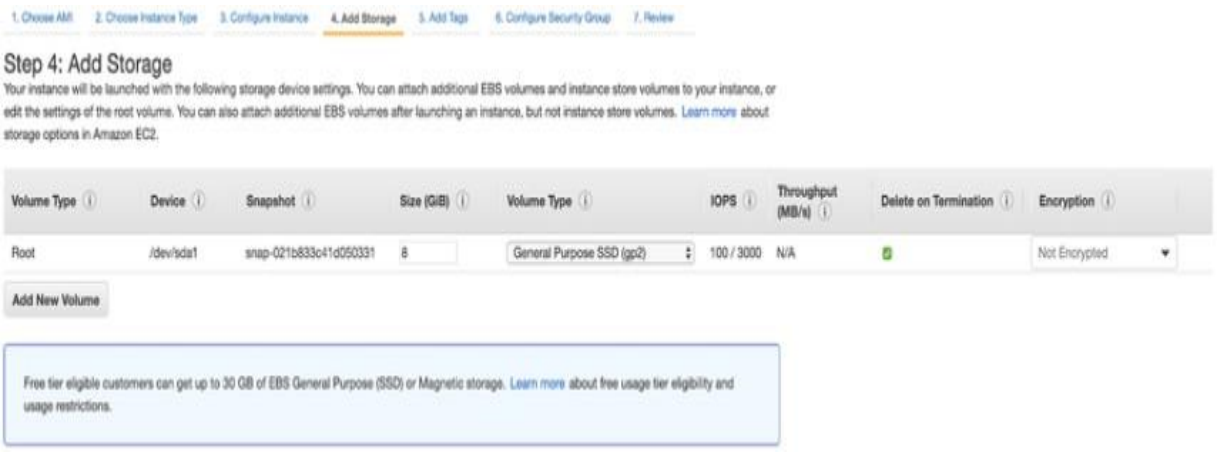
Step4: Select instance type:



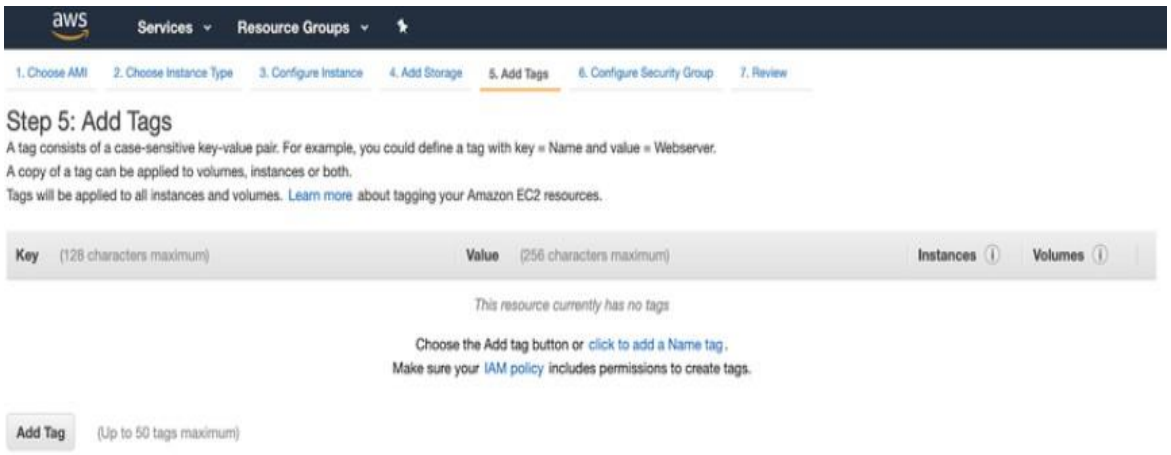
Step5: Configure instance details:



Step6: Add storage:

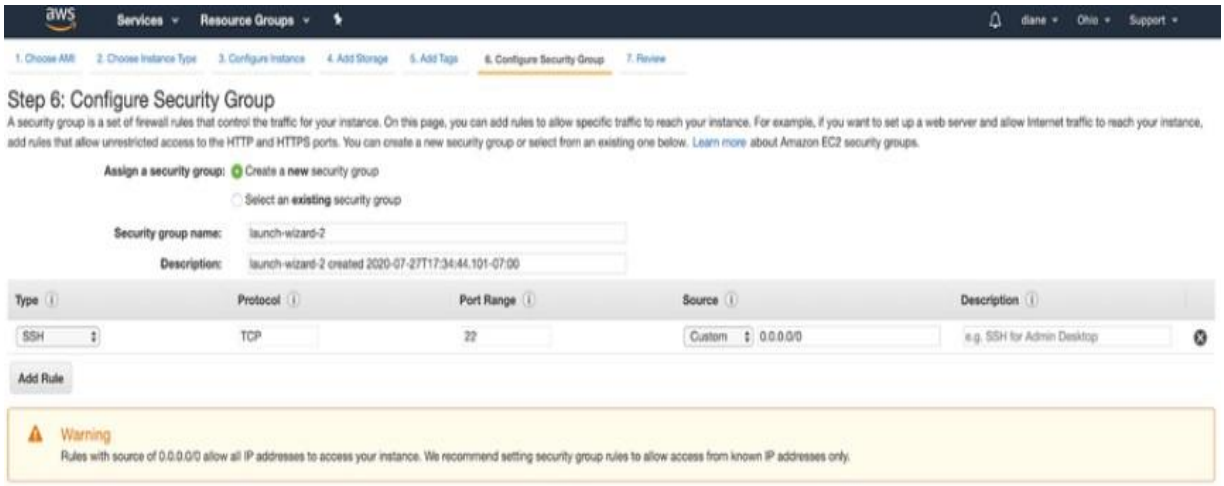


Step7: Add tags:



Step8: Add security group:

This is the important step to run our application, here you need to allow the traffic to your website. Make sure to which port you want to run.



HTTP, **Protocol** *TCP*, **Port range** *80*, and **Source** to "*0.0.0.0/0*".

HTTP, **Protocol** *TCP*, **Port range** *80*, and **Source** to "*::/0*".

Custom TCP, **Protocol** *TCP*, **Port range** *8080*, and **Source** to "*0.0.0.0/0*".

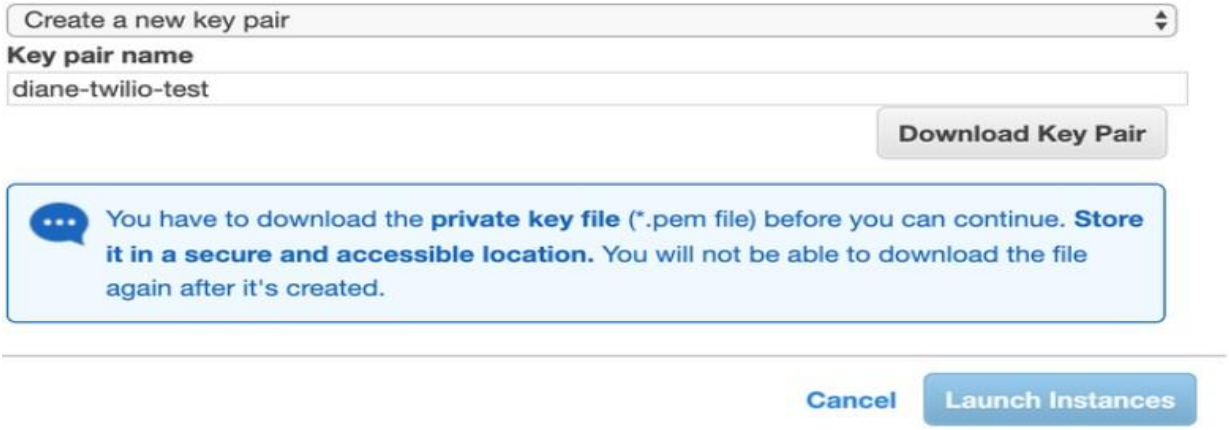
SSH, **Protocol** *TCP*, **Port range** *22*, and **Source** to "*0.0.0.0/0*".

HTTPS, **Protocol** *TCP*, **Port range** *443*, and **Source** to "*0.0.0.0/0*".

Step9: Launch key pair:

This provides the security to your instance. You only access your instance using the .PEM file. If you want to access your virtual server from your desktop, you need to convert .PEM file into .PPK using Puttygen.exe. If you access your instance details you

need to login using host address for that we use WINSCP.



Step10: Instance state:

Here you see your instance state.

- Select the instance and connect, there you can connect your instance. For that below steps is needs to follow the below commands is mostly used to identify the following steps is needed to run the command.

    1. sudo apt-get update
    2. sudo apt-get install python3
    3. sudo apt-get install python3-pip
    4. sudo pip3 install flask pandas (Like these you can install the packages)
    5. sudo apt-get install gunicorn
    6. Sudo apt-get install nginx. After these commands you can write your code either VI editor or you can write code in your pc then transfer those files into instance
    7. Move to application directory.
    8. There you can run you application.

This process is running in standalone mode. If you want to run this application in web application mode you need to use gunicorn and setup those required format.

5.2 ALGORITHMS

Web Accessibility of Educational Information In College And Providing Communication Between Students is very important in every university and campus. The purpose of this Project is to design providing communication between students and college based on K-mean clustering algorithm. The purpose of this project is providing communication among all the members of college and also sharing the information analysis and research is to help teachers fully understand, master and adapt to students' skills, achieve the purpose of teaching, and write and develop optimized K-means algorithms. Firstly, through the analysis of the student management data, the system function module is added to the student management system. Then the number of K clusters is selected to set the total range, and the optimal value of the number of K clusters is selected by calculating the ratio of the inner and outer distances. Use the K-means method to analyze the optimization of the algorithm to analysis the performance on student management. The optimized K-mean algorithm has completed the classification of students well, and the average score of Learning is the first category. College student management is a very important innovation, which has played a certain role in promoting the development of student management. An Encryption Algorithm is the method used to transform data into ciphertext. An algorithm will use the encryption key in order to alter the data in a predictable way, so that even though the encrypted data will appear random, it can be turned back into plaintext by using the decryption key. In this project private chat of data is transformed into to cipher text by using encryption algorithm for more secure data message transfer between students and faculty members. A Decryption Algorithm is the method used to transform data ciphertext. Into plain text. Receiver decrypt the message by using private key.

5.3 TESTING

Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program inputs produce valid outputs. All decision branches and internal code flow should be validated. It is the testing of individual software units of the application .it is done after the completion of an individual unit before integration. This is a structural testing, that relies on knowledge of its construction and is invasive. Unit tests perform basic tests at component level and test a specific business process, application, and/or system configuration. Integration tests are designed to test integrated software components to determine if they actually run as one program. Testing is event driven and is more concerned with the basic outcome of screens or fields. Integration tests demonstrate that although the components were individually satisfaction, as shown by successfully unit testing, the combination of components is correct and consistent. Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system documentation, and user manuals.

Functional testing is centered on the following items:

Valid Input : identified classes of valid input must be accepted.

Invalid Input : identified classes of invalid input must be rejected.

Functions : identified functions must be exercised.

Output : identified classes of application outputs must be exercised.

Systems/Procedures: interfacing systems or procedures must be invoked. Organization and preparation of functional tests is focused on requirements, key functions, or special test cases. In addition, systematic coverage pertaining to identify Business process flows; data fields, predefined processes, and successive processes must be considered for testing. System testing ensures that the entire integrated software system meets requirements. It tests a configuration to ensure known and predictable results. An example of system testing is the configuration-oriented system integration test. System testing is based on process descriptions and flows, emphasizing pre-driven process links and integration points. White Box Testing is a testing in which in which the software tester has knowledge of the inner workings, structure and language of the software, or at least its purpose. It is purpose. It is used to test areas that cannot be reached from a black box level. Black Box Testing is testing the software without

any knowledge of the inner workings, structure or language of the module being tested. Black box tests, as most other kinds of tests, must be written from a definitive source document, such as specification or requirements document, such as specification or requirements document. It is a testing in which the software under test is treated, as a black box you cannot “see” into it. Field testing will be performed manually and functional tests will be written in detail.

Test objectives

- All field entries must work properly.
- Pages must be activated from the identified link.
- The entry screen, messages and responses must not be delayed.

Features to be tested

- Verify that the entries are of the correct format
- No duplicate entries should be allowed
- All links should take the user to the correct page.

Software integration testing is the incremental integration testing of two or more integrated software components on a single platform to produce failures caused by interface defects**.** And identify the errors that to be rectified and helps to implement the interface neatly and successfully. The task of the integration test is to check that components or software applications, e.g. components in a software system or – one step up – software applications at the company level – interact without error.

Test Results: All the test cases mentioned above passed successfully. No defects encountered. User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. All the test cases mentioned above passed successfully. No defects encountered.

CHAPTER 6

RESULTS AND DISCUSSION

Assessing all participants learn and can accomplish via evaluation of student success is essential to good teaching and learning. The best instructors can't help their pupils until they have a thorough understanding of who they are and what they've accomplished. Every student can get benefit by using this approach and makes themselves sharp by knowing are getting all the doubts clarified after the class by the same day and it helps them to success more. Can't rest certain that their teaching methods are effective. Private messaging between students and teachers may help create an open environment conducive to this. Each learner may benefit greatly from using the suggested approach to have meaningful conversations with teachers and enhance their ability to communicate. The goal of this initiative was to facilitate open lines of interaction between students, faculty, and administration at the university level. And the faculties will know about the performance of the students.

CHAPTER 7

CONCLUSION

7.1 CONCLUSION

The assessment of student achievement, or understanding what students know and can do, is fundamental to effective teaching and to students' learning. Unless teachers know students well and are knowledgeable about their achievements, they cannot be confident that they are meeting the learning needs of their students. This can be possible when we provide a free atmosphere between students and faculties by inserting private chatting with each other. The proposed system is user friendly and also useful for every student to communicate with the faculty members and can develop their communication skills very much. The project web accessibility and educational information in college and providing communication between students was developed for the communication between the students and faculties and admin. With the help of admin students can convey their problems and can express any doubts regarding the class which happened today and if he was absent his doubts can be clarified by this application. This application is mostly used in schools, colleges and universities for the purpose of collecting information or data from the students.

7.2 FUTURE WORK

As we look to the future, there are several important considerations for improving web accessibility of educational information in college and enhancing student communication. Here are some potential areas of focus. Web developers and designers should prioritize creating websites and online platforms that are inclusive and accessible to all students, including those with disabilities. This includes following web accessibility standards such as the Web Content Accessibility Guidelines (WCAG) to ensure that educational information, including course materials, syllabi, and assignments, are presented in a format that can be easily navigated and understood by individuals with visual, auditory, motor, and cognitive disabilities. Providing alternative formats of educational information can greatly enhance accessibility for students with disabilities. This could include providing captions and transcripts for videos, providing text-based alternatives for images and diagrams, and offering accessible PDFs or Word documents for written content. Additionally, providing content in multiple languages can support students who are non-native English speakers or have limited English proficiency. Colleges should invest in and promote the use of assistive technologies that can help students with disabilities access educational information more effectively. This may include screen readers, speech recognition software, alternative input devices, and other tools that can accommodate diverse learning needs. Regular user testing and feedback collection from students with disabilities can provide valuable insights into the accessibility of educational information and student communication. Colleges should actively seek feedback from students with disabilities and make necessary improvements to ensure that their needs are addressed. Inclusive Communication Channels: Communication channels used by colleges, such as email, learning management systems (LMS), and online discussion forums, should also be made accessible to all students. This may involve using accessible email templates, ensuring that LMS platforms are WCAG compliant, and providing accessible options for online discussion and collaboration.

7.3 RESEARCH ISSUES

As the field of web accessibility in educational settings continues to evolve, there are several research issues that can be explored to advance the understanding and implementation of accessible educational information and effective student communication. Some potential research issues in this area may include. Research can focus on understanding the usability and user experience of accessible educational information and communication channels for students with disabilities. This may involve conducting usability testing and user feedback collection to identify barriers and challenges faced by students with different types of disabilities, and exploring ways to optimize the design and functionality of educational websites, learning management systems (LMS). Research can explore the pedagogical impacts of web accessibility on student learning outcomes. This may involve investigating how accessible educational materials and communication channels impact the academic performance, engagement, and retention of students with disabilities, as well as exploring effective strategies.

7.4 IMPLEMENTATION ISSUES

Implementing web accessibility for educational information in college and improving student communication may face several challenges. Some of the common implementation issues in web accessibility and student communication include. Many faculty, staff, and web developers may lack awareness and knowledge about web accessibility guidelines and best practices. This can result in educational materials and communication channels that are not designed with accessibility in mind. Addressing this issue requires education and training programs to raise awareness and build knowledge about web accessibility and inclusive communication practices. Implementing web accessibility can require additional resources, including time, budget, and expertise. Colleges may face challenges in allocating adequate resources for web accessibility initiatives, including hiring qualified web developers or designers with expertise in accessibility, purchasing assistive technologies, and conducting regular user testing and feedback collection. Ensuring web accessibility can involve technical challenges, such as making complex websites, learning management systems (LMS), or online platforms fully accessible. This may require addressing issues related to coding, multimedia content, navigation, and compatibility with different assistive technologies.

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APPENDIX

A. SOURCE CODE

```
import pymysql
fromflaskimportFlask,request,render_template,session,redirect,url_for,send_from_direc
tory
import pandas as pd
from pylab import *
import requests
from random import *
import smtplib
from email.mime.multipart import MIMEMultipart
from email.mime.text import MIMEText
import os
app=Flask(__name__)
app.config['SECRET_KEY']='b0b4fbefdc48be27a6123605f02b6b86'
db=pymysql.connect(host='localhost',user='root',passwd='',port=3306,
autocommit=True)
cursor  = db.cursor()
sql='''use StudentInteraction'''
cursor.execute(sql)
@app.route("/")
def index():
    return render_template("index.html")
@app.route("/Home")
def Home():
    return render_template("Home.html")
@app.route("/Student",methods=['POST','GET'])
def Student():
    if request.method == "POST":
        name = request.form["name"]
        Email = request.form["email"]
        Number = request.form["number"]
        Date = request.form["dateofbirth"]
        Gender = request.form["gender"]
```

```
        address = request.form["address"]
        branch=request.form["branch"]
        studentstype=request.form["studentstype"]
        password=request.form["password"]
        cpassword=request.form["cpassword"]
        RollNumber = "REQUEST"
        if password== cpassword:
            import pymysql
            sql="select * from sreg where name='%s' and email='%s'" %(name,Email)
            x=cursor.execute(sql)
            if x>0:
                returnrender_template('StudentRegistration.html', msg1="invalid_username")
            else:
                sql="insertinto
sreg(name,email,number,dateofbirth,gender,address,rollnumber,branch,studentstype,p
assword,cpassword)          values          (%s,%s,%s,%s,%s,%s,%s,%s,%s,%s,%s)"
val=(name,Email,Number,Date,Gender,address,RollNumber,branch,studentstype,pass
word,cpassword)
                cursor.execute(sql,val)
                db.commit()
                return render_template('Student Registration.html', msg="success")
        else:
            return render_template('Student Registration.html', msgf="success")
    return render_template('Student Registration.html')
@app.route("/StudentLogin",methods=['POST','GET'])
def StudentLogin():
    if request.method=='POST':
        rollnumber=request.form["rollnumber"]
        password=request.form["password"]
        try:
            sql="select * from sreg where rollnumber=%s and password=%s "
            values = (rollnumber, password)
            X = cursor.execute(sql, values)
            Results = cursor.fetchall()
            if X > 0:
                print("results[0]")
                session["np"] = Results[0][0]
```

```
            Name = Results[0][1]
            # session['aws_help']=Results[0][1]
            session["Name"] = Results[0][1]
            session["OTp"] = Results[0][6]
            session["email"]=Results[0][2]
            session["rollnumberlogin"]=Results[0][7]
            global Email
            Email=session["email"]
            import os
            every_new_path = os.getcwd()
            List_Of_Directries = os.listdir(every_new_path)
            Directry_name = str(session["np"]) + "-" + session["Name"]
            session["Directry_name"] = Directry_name
            if Directry_name not in List_Of_Directries:
                mode = 0o666
                path = os.path.join(every_new_path, Directry_name)
                os.mkdir(path, mode)
            else:
                print("continue")
            return render_template("StudentHome.html", msg="success",NAME=Name)
        else:
            return render_template("StudentLogin.html",mseg="not found")
    except:
        return render_template("StudentLogin.html",mm="not")
    return render_template("StudentLogin.html")
@app.route("/jk")
def jk():
    return render_template("StudentHome.html")
@app.route("/Viewnotification")
def Viewnotification():
    try:
        sql = "select * from que"
        results = pd.read_sql_query(sql, db)
        result = results.drop(["sl"], axis=1)
        avb = result.drop(["question"], axis=1)
        data = str(avb.values[0][0])
        data1=data.split(";")
```

```
        sql="select * from calculation"
        vb=pd.read_sql_query(sql,db)
        if len(vb)==0:
            for v in data1:
                options=v
                global dfghj
                dfghj=0
                sql="insertintocalculation(ansewer,numbercounts)values
('%s','%s')"%(options,dfghj)
                cursor.execute(sql)
                db.commit()
        else:
            return  render_template("Viewnotification.html",  row_val=result.values.tolist(),
data1=data1)
        returnrender_template("Viewnotification.html",
row_val=result.values.tolist(),data1=data1)
    except:
        return render_template("Viewnotification.html",msg="invalidchance")
import matplotlib.pyplot as plt
import numpy as np
@app.route("/calculation",methods=['POST','GET'])
def calculation():
    if request.method=='POST':
        n1=request.form["question"]
        sql="select * from calculation where ansewer='%s'"%(n1)
        res=pd.read_sql_query(sql,db)
        countnumber=res["numbercounts"].values[0]
        countnumber+=1
        sql = "update calculation set numbercounts=%s where ansewer='%s'" %
(countnumber, n1)
        cursor.execute(sql)
        db.commit()
        return redirect(url_for('graph'))
@app.route("/graph")
def graph():
    try:
        import matplotlib
```

```
    matplotlib.use('TkAgg')
    sql="select * from calculation"
    cursor.execute(sql)
    results=pd.read_sql_query(sql,db)
    hui=results["numbercounts"].tolist()
    cui=results["ansewer"].tolist()
    a = cui
    b = hui
    c = []
    k=len(hui)
    for i in range(k):
        d = a[i], b[i]
        c.append(d)
    d = {}
    for i in c:
        if i[0] not in d:
            d[i[0]] = i[1]
        else:
            d[i[0]].append(i[1])
    que_opt=[]
    que_count=[]
    for x in hui:
        que_count.append(x)
    for y in cui:
        que_opt.append(y)
    y = np.array(que_count)
    mylabels = que_opt
    sql = "select * from que"
    cursor.execute(sql)
    results = pd.read_sql_query(sql, db)
    hui = results["question"][0]
    plt.pie(y, labels=mylabels,data=d)
    plt.savefig('static/ml.png')
    plt.show()
    return redirect(url_for('jiods'))
except:
    return redirect(url_for('Viewnotification'))
```

```
@app.route("/Home1")
def Home1():
    return render_template("StudentHome1.html")
@app.route("/ViewProfile")
def ViewProfile():
    sql="Select * from sreg where slno=%s "%(session["np"])
    cursor.execute(sql)
    result = pd.read_sql_query(sql, db)
    result["Update"]="Update"
    returnrender_template("StudentView
Profile.html",col_name=result.columns.values,row_val=result.values.tolist())
@app.route("/profileupdate/<s1>/<s2>")
def profileupdate(s1=0,s2=""):
    session["pu"]=s1
    return render_template("profileupdate.html",s1=s1,s2=s2)
@app.route("/klmiops",methods=['POST','GET'])
def klmiops():
    fi=request.form["studentstype"]
    sql = "update sreg set studentstype=%s where slno=%s"
    val=(fi,session["pu"])
    cursor.execute(sql,val)
    db.commit()
    print(fi)
    return redirect(url_for('ViewProfile'))
@app.route("/PrivateRequestsToStudents",methods=['POST','GET'])
def PrivateRequestsToStudents():
    sql="select * from sreg"
    cursor.execute(sql)
    X = cursor.fetchall()
    results=pd.read_sql_query(sql,db)
    print(results)
    global List_of_names
    List_of_names=results["rollnumber"]
    List_of_names=pd.DataFrame(List_of_names)
    LIST=[]
    for i in List_of_names["rollnumber"]:
```

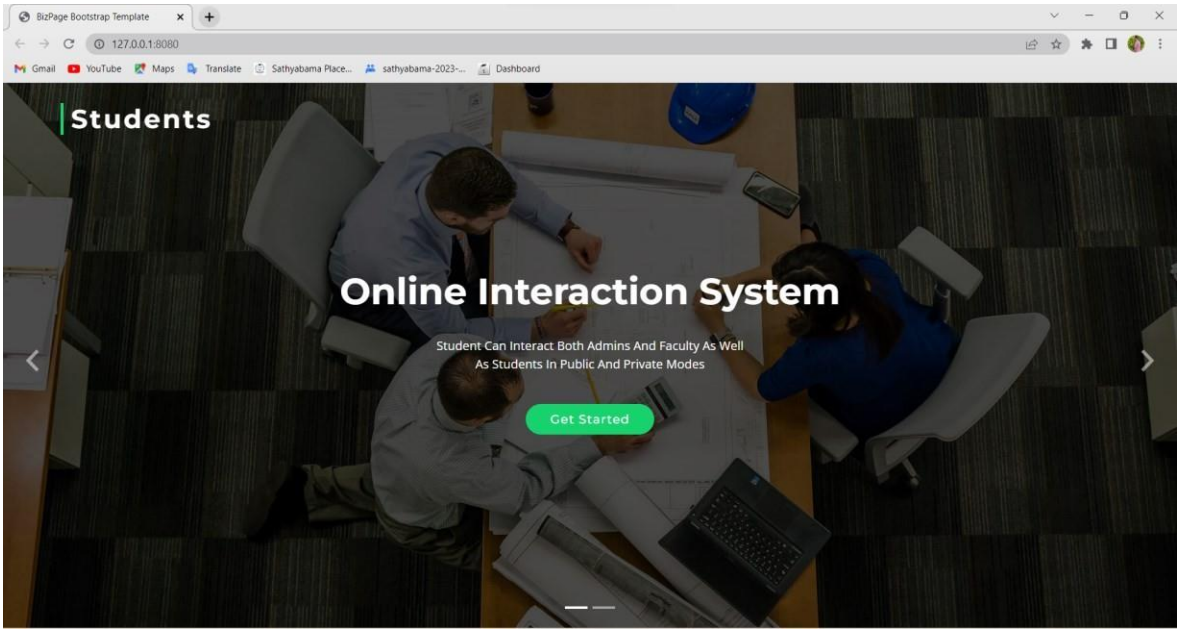
```
        if i==session["rollnumberlogin"]:
            continue
        LIST.append(i)
    if request.method=='POST':
        rollnumber=request.form["rollnumber"]
        # declare roll number in seesion
        session["rollnumber"] =rollnumber
        print(session["rollnumber"])
        sql="select * from sreg where rollnumber='%s'"%(rollnumber)
        cursor.execute(sql)
        rest=cursor.fetchall()
        return render_template("Student Chat.html")
    return render_template("Post Requests To Students.html",names=LIST)
def convertToBinaryData(filename):
    # Convert digital data to binary format
    with open(filename, 'rb') as file:
        binaryData = file.read()
    return binaryData
@app.route("/StudentChat",methods=['POST','GET'])
def StudentChat():
    if request.method=='POST':
        studentchat=request.form["chat"]
        print(studentchat)
        images=request.form["images"]
        files=request.form["files"]
        if images=='':
            if files=='':
                sql="insertinto gf (origin,source,chat,images,files) values(%s,%s,%s,%s,%s)"
                insert_blob_tuple=(session["rollnumber"],session["rollnumberlogin"],
studentchat, '', '')
                cursor.execute(sql, insert_blob_tuple)
                db.commit()
                return render_template("Student Chat.html", message="success")
            else:
                filez = open(files, 'r')
                file_content = filez.read()
                filez.close()
```

```
            sql="insertinto gf (origin,source,chat,images,files) values(%s,%s,%s,%s,%s)"
            insert_blob_tuple=(session["rollnumber"],session["rollnumberlogin"],
studentchat, '', file_content)
            cursor.execute(sql, insert_blob_tuple)
            db.commit()
            return render_template("Student Chat.html", message="success")
        else:
            if files=='':
                mypath = os.path.join('images_for/', images)
                empPicture = convertToBinaryData(mypath)
                sql="insertinto gf (origin,source,chat,images,files) values(%s,%s,%s,%s,%s)"
                insert_blob_tuple=(session["rollnumber"],session["rollnumberlogin"],
studentchat,empPicture,'')
                cursor.execute(sql, insert_blob_tuple)
                db.commit()
                return render_template("Student Chat.html", message="success")
            else:
                filez = open(files, 'r')
                file_content = filez.read()
                filez.close()
                mypath = os.path.join('images_for/', images)
                empPicture = convertToBinaryData(mypath)
                sql="insertinto gf (origin,source,chat,images,files) values(%s,%s,%s,%s,%s)"
                insert_blob_tuple = (
                session["rollnumber"], session["rollnumberlogin"], studentchat, empPicture,
file_content)
                cursor.execute(sql, insert_blob_tuple)
                db.commit()
                return render_template("Student Chat.html", message="success")
    return render_template("Student Chat.html")
@app.route("/PublicStudentChat",methods=['POST','GET'])
def PublicStudentChat():
    if request.method=='POST':
        Msg=request.form["chat"]
        images=request.form["images"]
        files=request.form["files"]
        if images==='':
```

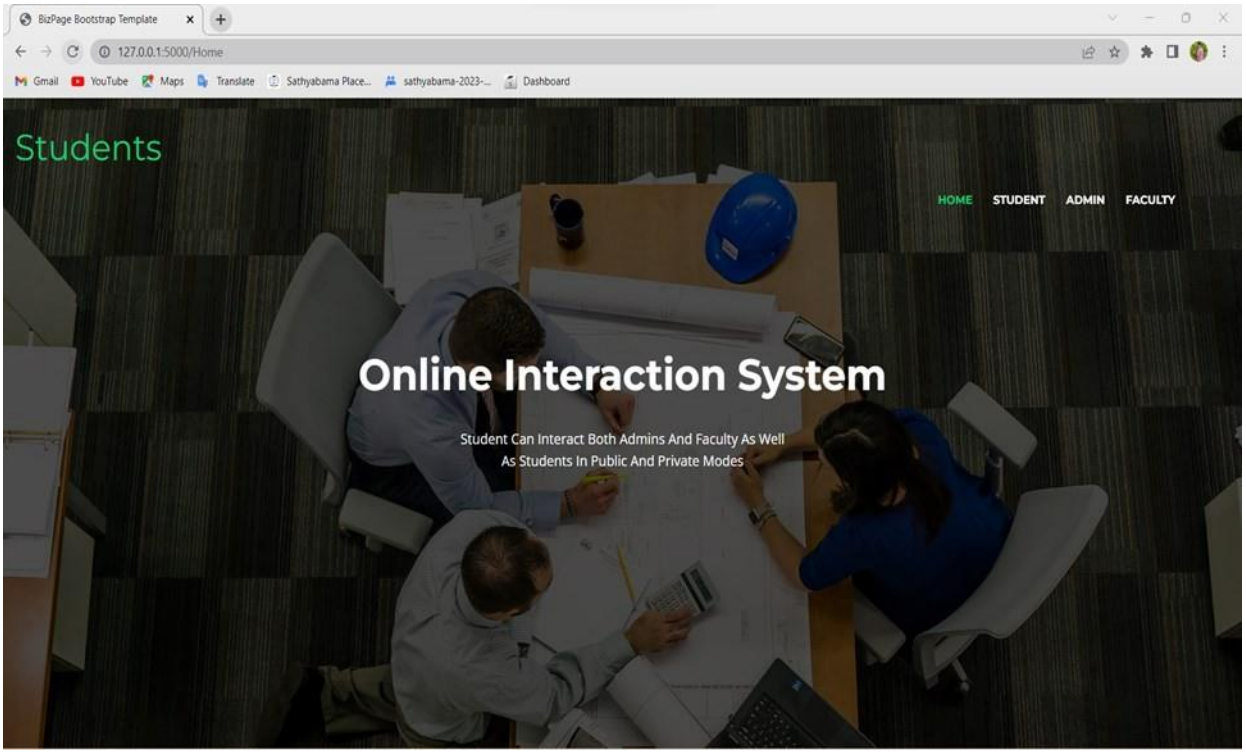
```
    if files=='':
        sql = "insert into publicchat (origin,chat,images,files) values(%s,%s,%s,%s)"
        val = (session["rollnumberlogin"], Msg, '', '')
        cursor.execute(sql, val)
        db.commit()
        return render_template("Public Student Chat.html", msg="success")
    else:
        filez = open(files, 'r')
        file_content = filez.read()
        print(file_content)
        filez.close()
        sql = "insert into publicchat (origin,chat,images,files) values(%s,%s,%s,%s)"
        val = (session["rollnumberlogin"], Msg, '', file_content)
        cursor.execute(sql, val)
        db.commit()
        return render_template("Public Student Chat.html", msg="success")
else:
    if files=='':
        mypath = os.path.join('images_for/', images)
        empPicture = convertToBinaryData(mypath)
        sql = "insert into publicchat (origin,chat,images,files) values(%s,%s,%s,%s)"
        val = (session["rollnumberlogin"], Msg, empPicture, '')
        cursor.execute(sql, val)
        db.commit()
        return render_template("Public Student Chat.html", msg="success")
    else:
        filez = open(files, 'r')
        file_content = filez.read()
        filez.close()
        mypath = os.path.join('images_for/', images)
        empPicture = convertToBinaryData(mypath)
        sql = "insert into publicchat (origin,chat,images,files) values(%s,%s,%s,%s)"
        val = (session["rollnumberlogin"], Msg, empPicture, file_content)
        cursor.execute(sql, val)
        db.commit()
X = cursor.fetchall()
```

B. SCREEN SHOTS

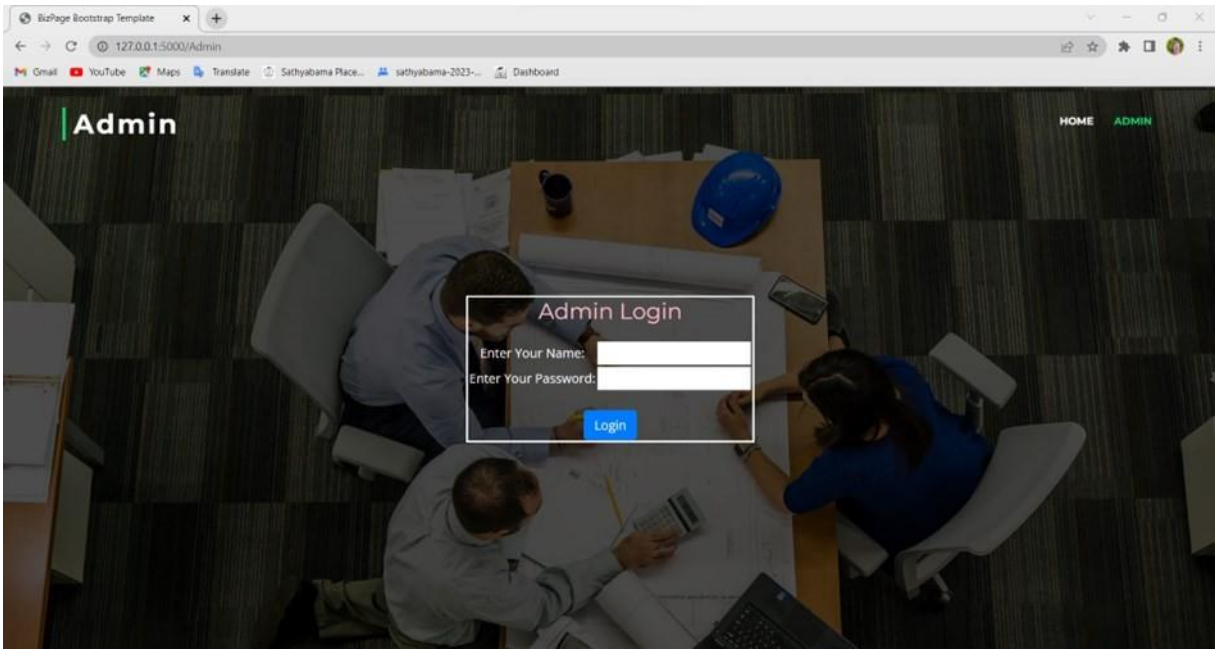
STARTING PAGE



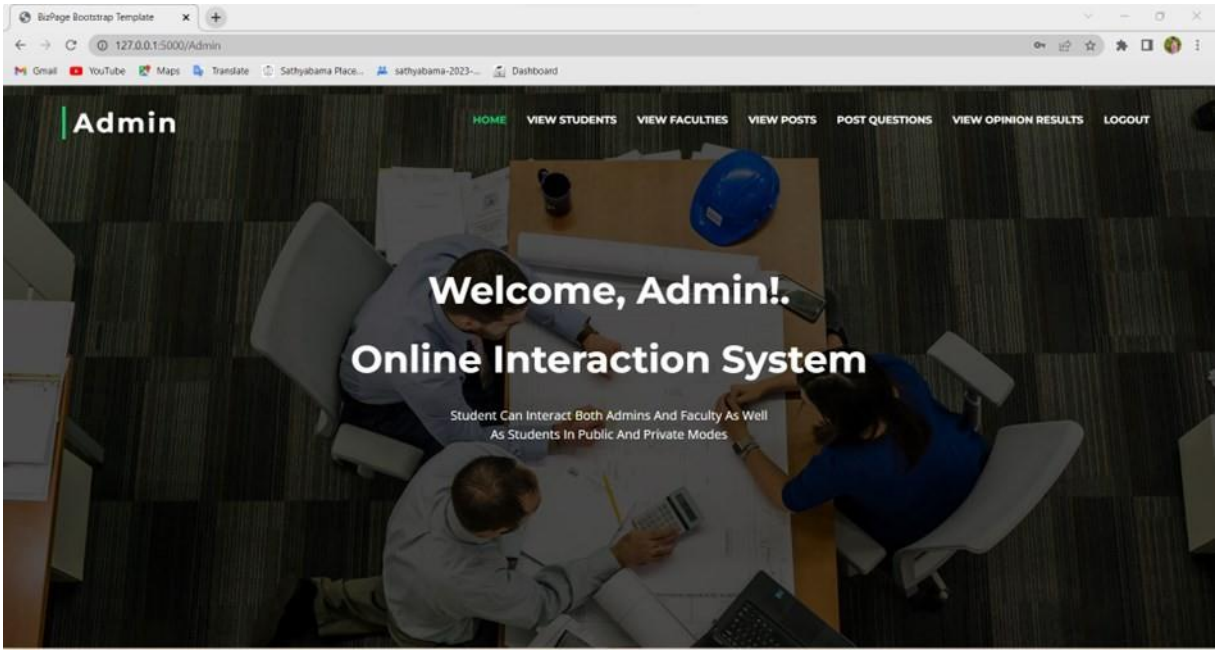
HOME PAGE



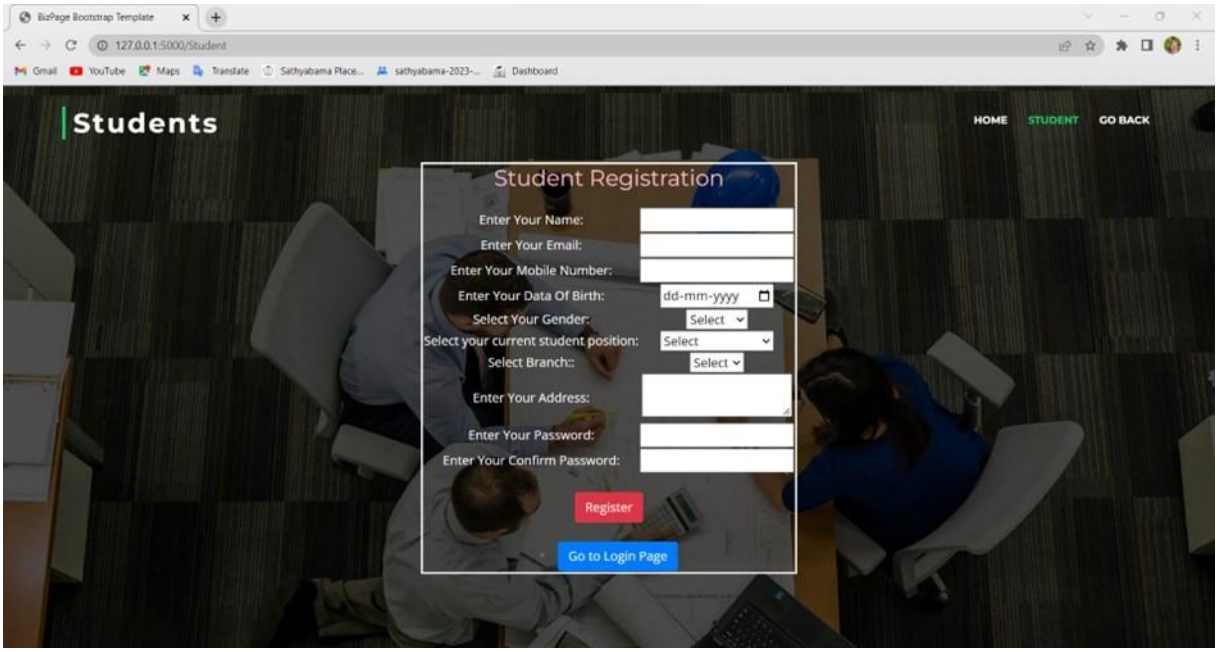
ADMIN LOGIN PAGE



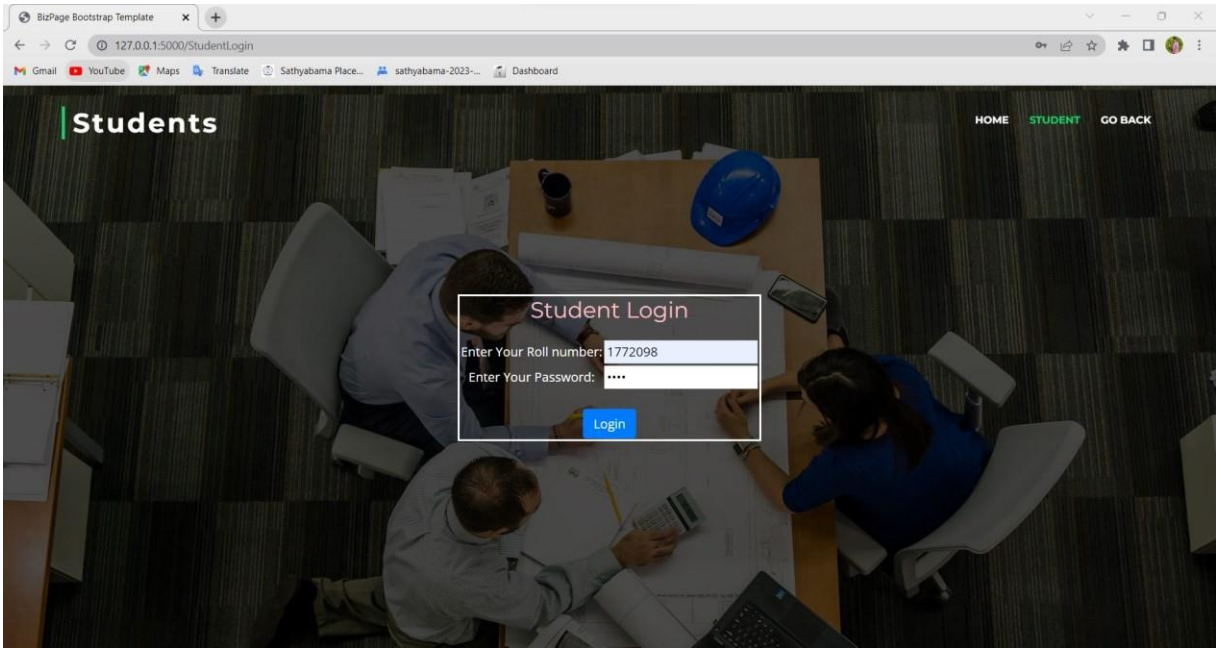
ADMIN HOME PAGE



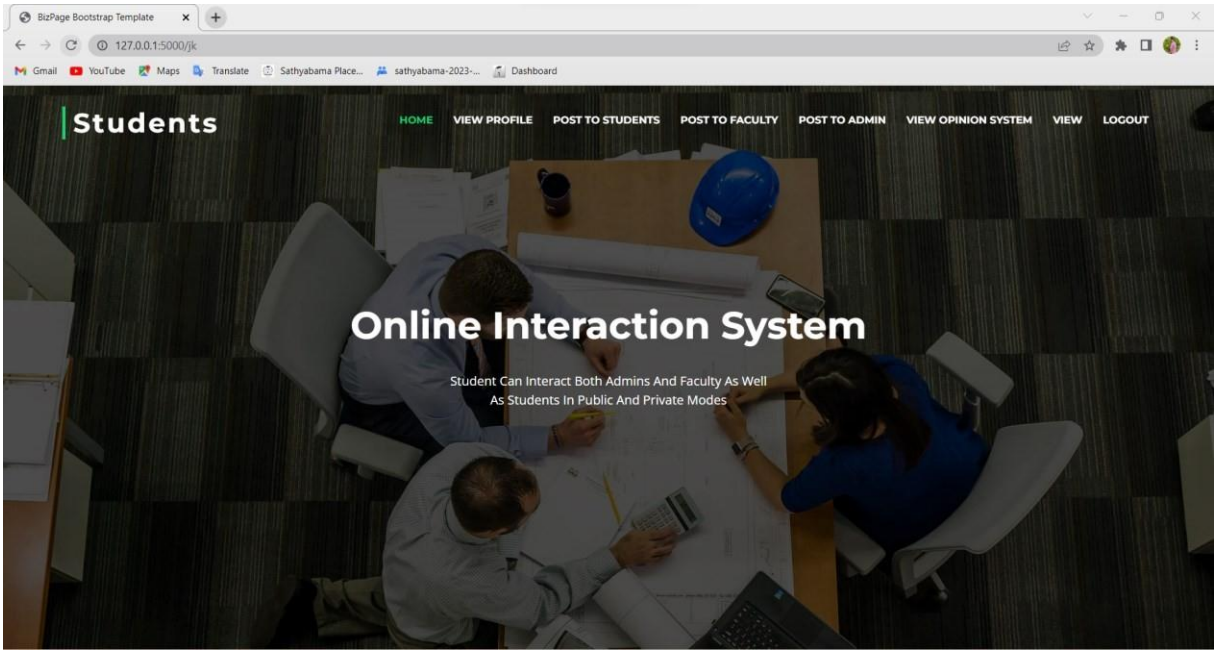
STUDENT REGISTRATION PAGE



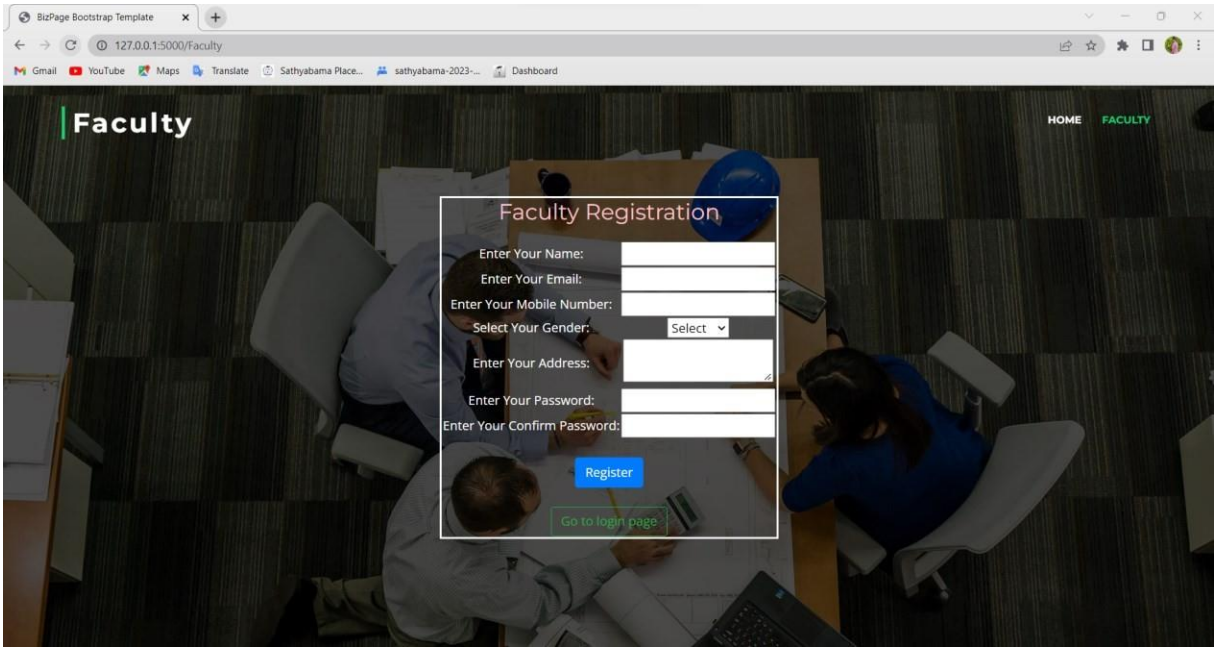
STUDENT LOGIN PAGE



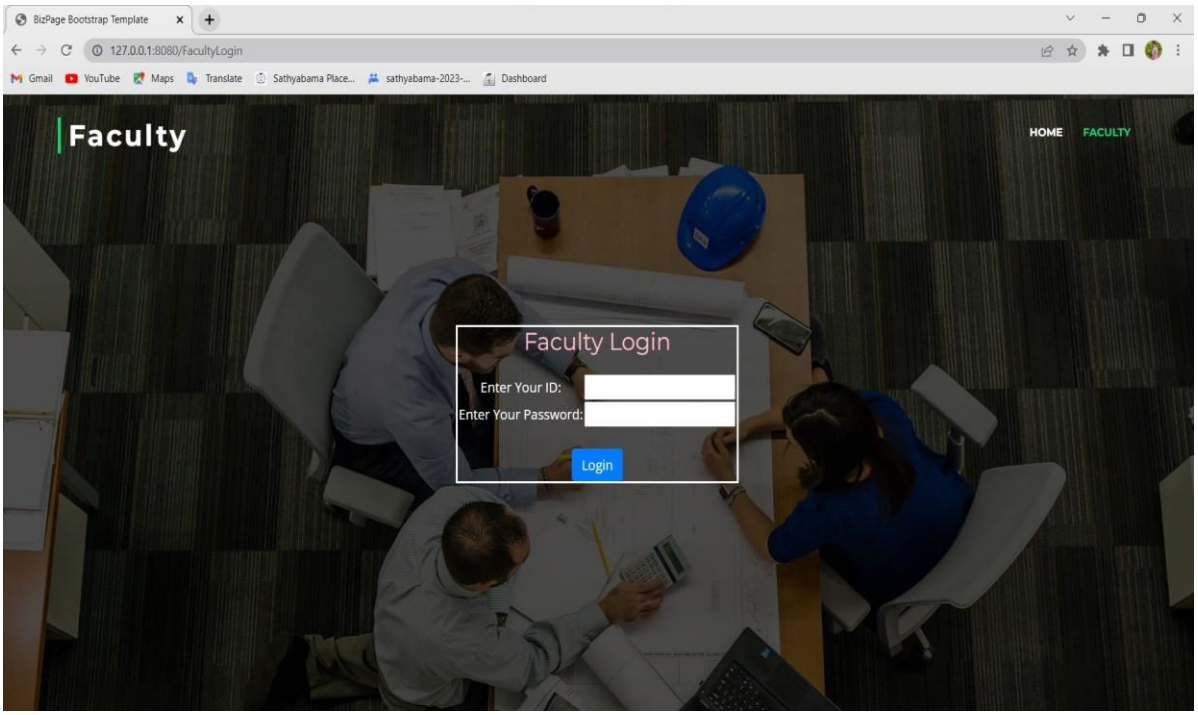
STUDENT HOME PAGE



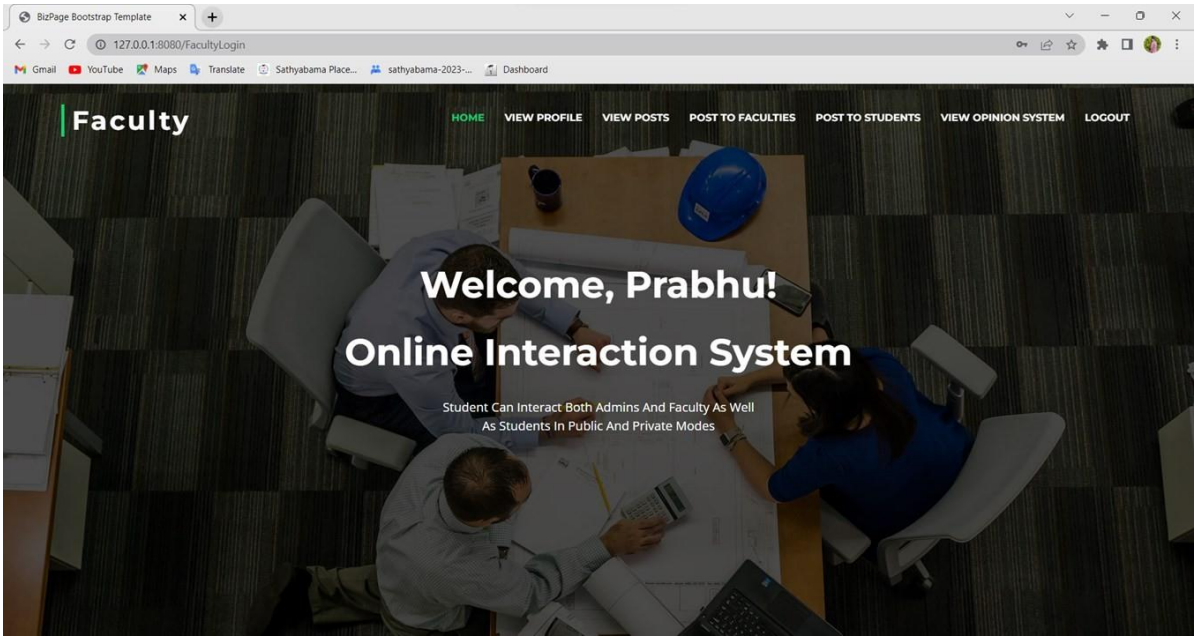
FACULTY REGISTRATION PAGE



FACULTY LOGIN PAGE



FACULTY HOME PAGE



C.RESEARCH PAPER

Web Accessibility Education in College and Student Communication

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ABSTRACT:

Education has always felt the effects of technological advancements. Web-based learning is one illustration of the vital role that websites play in today's society. Several crucial functions of the World wide web in today's educational contexts include service delivery, interaction facilitation, creative space provision, as well as the delivery of teaching. Educators are beginning to recognize the value of websites. Web-based training and its use in the classroom are discussed, and findings from related studies are reported. In addition, online accessibility is covered in detail as it relates to multimedia features. Therefore, a website may serve as a reference, an evaluation instrument, and a venue for the creation and dissemination of content.

Keywords—EC2 Instance, Communication System, Private, Online Interaction.

I. INTRODUCTION

Interaction between students is essential in every learning environment. In a classroom context, this kind of connection occurs organically as students take turns talking, engage in discussion, and generally spend a lot of time in close proximity to one another. In an online classroom, instructors may encourage student collaboration by including official and informal discussion forums into their course design. University accrediting organizations like the Central States Higher Education Commission demand proof of it in education platform and program design, highlighting the need of designing for a high degree of student-to-student contact online. Having students connect with one another is crucial to establishing a sense of belonging in an online classroom, which in turn promotes effective and enjoyable learning and the growth of students' analytical and deductive reasoning abilities. High-interaction pupils reported more happiness and academic growth, according to one research. Results showed that students in online courses with high levels of engagement outperformed their peers in similar courses with lower levels of interaction. Moore's characterization of the

three kinds of interactions in online education—between the student and the material, between the learner and the instructor, and between the learners themselves—forms the basis for these practices. Online courses need to be designed with these factors in mind if they are to facilitate communication and collaboration among students. Students' test scores, grades, and overall happiness in class may all be influenced by how often they interact with one another. Students in an online class need a lot of face-to-face time together to develop meaningful relationships with one another.The data transmission has been facilitated by technological means. On the other hand, technology may be improved by using it to collect and disseminate information. The question "How?" has to be asked now. Computers are become a commonplace item in everyday life. Because of the Web, machines have taken on new significance. The internet has transformed the way they interact socially, professionally, and most significantly, academically. As a result, web pages' significance in our everyday lives is undeniable. In the twenty-first century, websites serve as platforms for the development of relevant applications and software as well as instruments for doing commerce, educating, advertising, promoting to, and caring for the public's health. A student's sense of self-worth and their ability to learn are both positively influenced by the connections they develop with their teachers. Interactions between students and teachers are crucial to the development of students' academic identities and to the stimulation of their interest in and performance in the classroom. There are several advantages for both students and teachers at universities and colleges that make it possible for them to interact often and closely. Professors who care about their students' academic performance may play a crucial role in fostering their personal and professional growth. Evidence suggests that students who get to know even one tenured professor well have a more positive college experience and have higher job aspirations. Students who have informal encounters with instructors are more likely to be motivated, interested, and involved in their education than those who have just formal classroom interactions. There is a strong correlation between students' interests, attitudes, and values and the amount of time they spend in informal engagement with faculty members. Although it has been formed that pupil relationships are significant, more research is needed to determine that what facets of students' learning are beneficial and how they might strongly impact students' persistence in higher education, their motivation to work hard, their enthusiasm for learning, and their pursuit of the highest levels of academic achievement. To fill this void, the present research analyses how academic self-concept, academic motivation, and academic accomplishment are affected by eight distinct forms of students' learning at a large, mid-sized institution in the Midwest region of the USA.

II. LITERATURE REVIEW

Genadiy Nikishkove, Tsuyoshi Tsuchimoato, and Nikoley Mirenkoav. (2004).
The goal of this project is to create a Java application that can be used by instructors, TAs, and students in a classroom setting, regardless of the device they are using. A dedicated Web server, a regular Web server, a mail, and basic databases are all part of a TSI software. All messages are sent and received via the HTTP protocol. The TSI server may be accessed by both instructors and students using standard Web browsers. Students may access their own information (grades and comments), access course materials, submit files, and interact with the teacher and TAs. The teacher and TAs may submit an Excel table with student information, communicate with students one-on-one through e-mail, and more. Two years of TSI usage prove that it is an effective method for enhancing student-teacher dialogue in conventional classroom settings.

Teoh, ping (2011).
A Research Synthesis of Undergraduate and Graduate Students. Use of Digital Lms Publication of the Asian Organization of Independent Universities & Colleges. One of the most important aspects of web-based teaching learning that contributes to the development and upkeep of sustained classroom community is the level of interactions between students and information online. The learner and the material engage in an internal conversation of reflective thinking known as interaction. Activities inside the education system often serve as catalysts and supports for interaction, with an emphasis on the way a learner engages with the subject matter. This study compares and contrasts the online LMS interactions of undergraduate and graduate level students. Information first from LMS logging & action data was collected and analysed using a methodology designed to probe how students at Wawasn University engage with digital material. Learners' patterns and actions in response to the courses' online materials are then examined to draw conclusions. Online forum conversations and exchanges between instructors and students are transcribed and analyzed further by looking into their dimensions, depths, and categories.

Sonia Lamba1, A Shivam Sharma2, Rohit Rawat3, Shwetank Singh4, Rakshit Jain5[2020].
A crucial part of any university degree is the opportunity for students and teachers to engage in informal settings beyond the lecture. Which is lacking in today's classrooms.

One's maturation as a whole is hampered as a result. Connecting the two is what this LMS is all about. Thanks to this, teachers and students may communicate whenever and wherever they choose. Recent studies have demonstrated a significant decline in communication between students and teachers over the last decade. As a result, pupils' development as a whole has been stunted. UCUES and NSB research in the United States indicated that higher quality student-faculty contact led to greater student growth in all aspects of technology, not only success in school.

Alderman, Rosalinnd Veroniica May [2008].

The goal of this research was to uncover students' extracurricular interactions with teachers and to ascertain students' perceptions of what constitutes high-quality contact. Moreover, this research aimed to understand how students and teachers communicate with one another outside of formal classroom settings. With this information in hand, institutions will be better able to facilitate extracurricular activities that bring together academics and students for both formal and informal discussions. The research strategy used in this study was based on the principles of naturalistic inquiry. All of the pupils who were questioned had met with teachers in a setting other than a classroom. There were six main categories of student-faculty interaction that emerged: degree programme activities; symposium or student exchange travel; casual college interactions; interaction focused on careers and graduate school; going to visit teaching staff in one‘s office spaces; and school grounds clubs and sports in general.

Ekici and Delel [2016].

The research is to determine the diaries of the work on the preservice teachers in the terms of web-based technology with in the context of amount of teaching during their teaching in web based technology and to maintain the things to be done successfully. The websites have been created to examine the students and teachers to be done. They participants are visible to the amount of people to be done are entered to the meeting. There are more than three activities to be done on the basis of the research findings. The researchers have been found to maintain the amount of work to be done and to maintain their comfort and also save the time and also they have the more opportunities like sharing viewing and also the visual use , visual use, reduction and also the writing of the amount about the project layout. These are the main advantages of the time saving and also for the purpose of visual and to use for the process of reduction.

III. EXISTING METHOD

The current system requires a lot of time and effort due to the manual nature of the interaction between teachers and students.

Cons -

- Difficulty in interacting with a large number of pupils.
- - It is difficult to gather data from teachers and students
- - Private conversation is impossible.
- Additional time is required.

IV. PROPOSED SYSTEM

Several technological options exist to facilitate communication between online course participants. Instructors should encourage student collaboration by using tools that are both relevant to course objectives and within students' technical capabilities.

Teachers who connect with their students on a personal level are better able to foster an atmosphere conducive to learning and satisfy the students' emotional, social, and intellectual requirements. As a people-focused career, teaching requires a lot of time spent interacting with students one-on-one. A productive relationship between the instructor and the student is essential for the development of knowledge. Teaching and learning that succeeds is among these variables. Tolerance, compassion, love, closeness, confidence, esteem, caring, and collaboration are all hallmarks of a for well relationship. It takes work on the part of both the instructor and the student for a good connection to develop, but the teacher has a special duty in this regard. As well as working to initiate good teacher-student connections, a teacher who is pragmatic in depiction, recognition, knowledge, closeness, expectation, respect, caring, and collaboration with his or her pupils enhances the possibility of creating strong, long-lasting relationships. There are a number of reasons why communication between teachers and their students is crucial. The ability to adapt to university life, succeed academically, and get along with classmates are all greatly impacted by the interactions between teachers and their students. Teachers who felt safe talking to their students about anything said that their pupils were less inclined to skip class, were more capable and supportive of one another, and were actively engaged in their own learning. Communication between educators and their students influences both student development and classroom administration. According to progressive viewpoint, when teachers and students form a strong bond, it promotes the student's intellectual, social, and emotional maturity, as well as their overall psychological health.

Pros -

-Less time is needed for conversation

-User-friendly

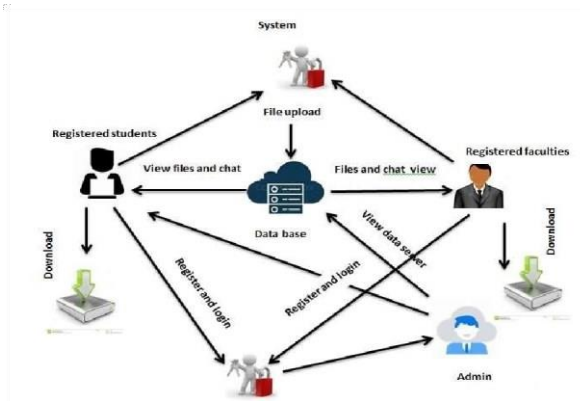

Fig.3. System Architecture

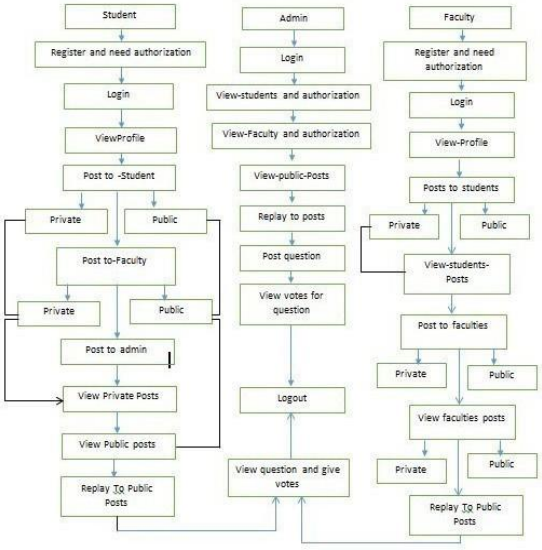

Fig.4. Flow Chart

V. METHODOLOGY

A. Relational database storage -

A RDBMS on the cloud is easier to set up, administer, and scale. Cost-effective scalability is provided, as are automation of tedious administrative tasks like configuring, data setup, upgrading, and archiving. You can put your attention where it belongs: on your applications, giving them the speed, reliability, safety, and

compatibility, they need. Because Amazon Relational Database Service (RDS) takes care of a lot of the tedious and time-consuming duties associated with managing a relational database. To allow for different scaling of each, Amazon RDS is used to partition them. Allocating more CPU, fewer I/O operations, or more storage is possible. Amazon RDS takes care of everything, including backups, software updates, automated failure detection, and recovery. Amazon RDS, being a managed service, does not allow shell access to database instances. It also restricts access to protected system features and data tables. You may set up automatic backups to run whenever they are required, or you can take a backup snapshot whenever you choose. This data may be used to recover a database. The data recovery method used by Amazon RDS is trustworthy and effective. Having a main version and a simultaneous backup version that can be used as a fail over in the event of failure is a way to achieve high availability. AWS & IAM allows you to set accounts and privileges to govern who has access to your RDS databases in addition to the security provided by your database package. Moving your databases to a private cloud environment is another way to guarantee their safety.

B. Identity Access Management -

Time is a major constraint in the classroom, as is responding to each student's questions and gathering their input. In order to make advantage of the AWS API, applications must sign requests with AWS credentials. So, if you're an app developer, you should have a plan for keeping tabs on your EC2 credentials. If you're using Amazon Web Services (AWS), for instance, you may safely share your credentials across several instances so that the applications running on those instances can sign requests on your behalf without exposing your credentials to the public. Finding the best credentials for each instance, particularly ones that AWS has generated on your behalf like Check For signs or instance in App Engine groups, is a complicated and demanding task. On Keeping track of the security credentials your apps use, built IAM roles that allow them to perform secure API requests from your instances. You may use IAM functions to transfer authorization to make API queries instead of creating and sharing AWS credentials. Create a new position in IAM. Specify the authorised AWS accounts and services that may fill the void. Once you've taken on the role, you'll need to specify which API methods and resources the app is authorised to utilise. You may either add the function to a current example or specify it when establishing a new one. Don't block the software from accessing a temporary set of credentials. For instance-based apps that need access to a specific Amazon S3 bucket, you may utilise IAM roles to provide that permission. Restrictions for IAM roles may be specified by setting

a rule in Json. The rules you create for IAM users are analogous to these. Changing a part has an effect on every instance where that part is used.To ensure that only the necessary API calls may be made by the application, lowest permission IAM policies should be assigned to IAM roles. A single instance can have only one IAM role allocated to it, but the same role may be given to several instances. For additional details on creating IAM roles, may consult the AWS User Handbook.

C. Elastic Compute Cloud -

EC2 instances are digital servers that may be used to deploy and manage software on the AWS cloud.AWS is an all-encompassing, ever-evolving cloud platform, while Amazon web services is a platform that allows commercial clients execute application software in the cloud. It may behave as a pool of essentially infinite virtual machines (VMs). Amazon offers a wide range of instance types, each with its own unique combination of central processing unit (CPU), memory (RAM), storage (SSD), and network (NIC) Size options exist across all varieties to cater to varying workloads. Amazon Machine Images are used to build instances (AMI). The pictures created by the machines serve as models. They are set up with a user's preferred OS and other applications, which together form the user's operating system (OS). They have the most affordable cloud-based pricing per judgment machine and the greatest market valuation for ml training. A majority of Crm, Hp, Rl, and Pc applications are hosted on AWS. Amazon Elastic Compute Cloud (EC2) provides businesses with a safe, dependable, high performance, and low-cost computing infrastructure. Get instantaneous, low-cost access to the resources and computing power you need to execute high-performance computing (HPC) applications.

D. Security Groups-

A domain controller functions as a virtualized barrier to regulate the traffic moving into and out of your EC2 instances. Both inbound and outbound rules are necessary to control the flow of traffic into and out of your instance. Any number of security groups may be created and used during an instance launch. If you don't provide a security group when creating an instance in Ec2 Instances, it will utilise the security configuration group. Each security group may have rules set up for it to enable communication between the instances it protects. In a security group, the rules may be changed as necessary. All instances that are part of the security group will have any new or updated rules applied to them immediately. When choosing if or not to permit access to an example, Ec2 considers each of the criteria from all the multiple clusters that are connected the with instance. You must provide a VPC-specific security group

when deploying instances to that VPC. You may update the security groups for an instance once it has started. Connections between networks may be protected by using access control. Any changes made to an instance's security groups will also affect the security groups for that instance's primary local network (eth0).

VII. RESULT AND CONCLUSION

Assessing all participants learn and can accomplish via evaluation of student success is essential to good teaching and learning. The best instructors can't help their pupils until they have a thorough understanding of who they are and what they've accomplished. Can't rest certain that their teaching methods are effective. Private messaging between students and teachers may help create an open environment conducive to this. Each learner may benefit greatly from using the suggested approach to have meaningful conversations with teachers and enhance their ability to communicate. The goal of this initiative was to facilitate open lines of interaction between students, faculty, and administration at the university level. If a student is away from class today, this application may assist him or her understand what occurred in class and have their questions answered. This software is often used in educational institutions including schools, institutions, and colleges to gather information or details from students. In addition, they may host events based on the results of student surveys; for instance, if a survey asks if students would like to see more sports events, organizers might focus on such activities. aids administration in fostering more student-teacher dialogue.

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