A MINI PROJECT REPORT

ON

Deployment of Xampp stack on AWS

Submitted in partial fulfillment of the requirement of the University of Mumbai for the Course

Cloud Computing Lab
In
Computer Engineering (VIII SEM)

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UNIVERSITY OF MUMBAI
Academic Year 2021 - 22

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CERTIFICATE

This is to certify that the requirements for the project report entitled '**Deployment of Xampp stack on AWS'** have been successfully completed by the following students:

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Shreyas Gosavi	10

in partial fulfillment of the course Cloud Computing Lab in Computer Engineering (VIII SEM) of Mumbai University in the Department of Computer Engineering, A.P. Shah Institute of Technology, Thane – 400615 during the Academic Year 2021 – 22.

(Prof. Deepak Khachane)

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PROJECT APPROVAL

This project entitled “Deployment of Xampp stack on AWS” by Shrenik Jangada, Atharv Dumbre, Shreyas Gosavi is approved for the course Cloud Computing Lab in Computer Engineering (VIII sem) of Mumbai University in the Department of Computer Engineering.

Subject Incharge: Prof. Deepak Khachane

_____

Date:

Place: Thane

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DECLARATION

We declare that this written submission for the Cloud Computing Lab mini-project entitled "**Deployment of Xampp stack on AWS**" represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any ideas/data/fact/source in our submission. We understand that any violation of the above will cause disciplinary action by the institute and also evoke penal action from the sources which have not been properly cited or from whom prior permission has not been taken when needed.

Project Group Members:

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Shyamkrishna Menon

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Place:Thane

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Abstract

Cloud computing is the on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. Cloud Computing provides us means of accessing the applications as utilities over the Internet. It allows us to create, configure, and customize the applications online.The term Cloud refers to a Network or Internet. In other words, we can say that Cloud is something, which is present at remote location. Cloud can provide services over public and private networks, i.e., WAN, LAN or VPN.Applications such as e-mail, web conferencing, customer relationship management (CRM) execute on cloud.

Our project implements AWS services to host our LAMP stack on the internet through cloud. We used AWS EC2 instance to achieve this with excellent results. MySQL was used as the database for this project along with PHP for interacting with database. Front-end of the project was designed in HTML, CSS, JS and the Bootstrap framework..

List of Figures

Problem Definition

Discussion forums are perhaps the earliest form of social media platform. Early adopters of Internet technology may recall news groups. Discussion forums are especially valuable from a social analytic standpoint as they are highly focused in their content and provide a candid view of the topic being discussed.

Introduction

Amazon Web Services (AWS) is the world's most comprehensive and broadly adopted cloud platform, offering over 200 fully featured services from data centers globally. AWS has significantly more services, and more features within those services, than any other cloudprovider–from infrastructure technologies like compute, storage, and databases–to emergingtechnologies, such as machine learning and artificial intelligence, data lakes and analytics, and Internet of Things. This makes it faster, easier, and more cost effective to move your existing applications to the cloud and build nearly anything you can imagine.

To develop our project, we first understood that a Comments would require a databases and servers like MySQL and Apache. In this project, to deploy the application on cloud we have utilized one service of AWS which is EC2 Instance

AWS provides these services for user using the Free Tier in AWS but for specific intervals of time, which once exceed incurs some cost for the utilization of the resources. These services, combined helped us to deploy our application in the cloud environment and access it without having to depend on the system on which it was developed.

Project Design Flow

Fig. 1: Flow of Events

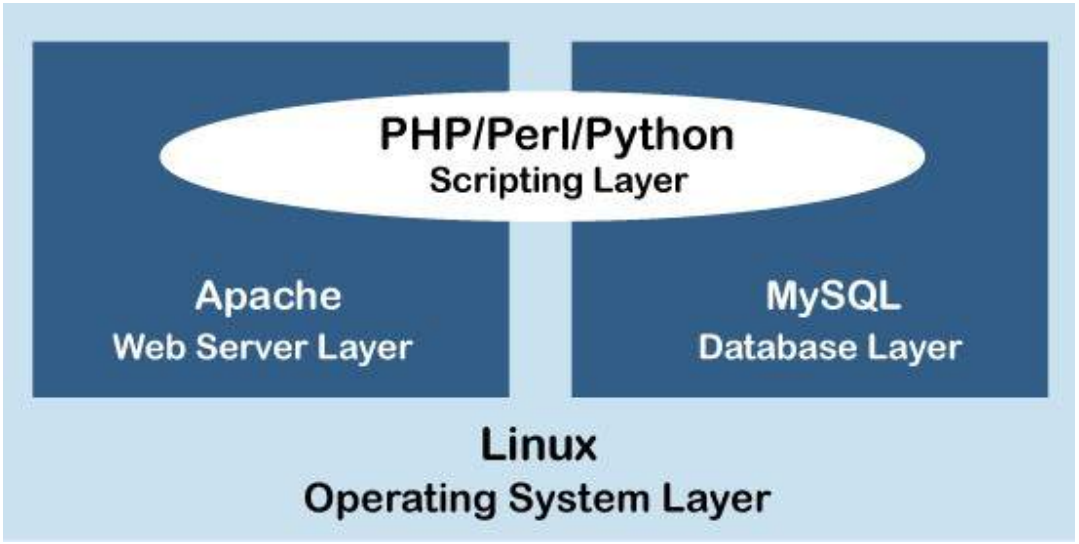


Fig. 2: XAMPP Architecture

Description

The cloud services used in this project have different functionalities which are explained below.

- **EC2 Instance:** 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. They are the first major cloud provider that support Intel, AMD, and Arm processors, the only cloud with on-demand EC2 Mac instances, and the only cloud with 400 Gbps Ethernet networking. They 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.

  EC2 allows users to Access reliable, scalable infrastructure on demand, scale capacity within minutes with SLA commitment of 99.99% availability, optimize performance and cost with flexible options like AWS Graviton-based instances, Amazon EC2 Spot instances, and AWS Savings Plans, and provide secure compute for all applications.

  EC2 Use Cases:

  - Run cloud-native and enterprise applications:

    Amazon EC2 delivers secure, reliable, high-performance, and cost-effective compute infrastructure to meet demanding business needs.

  - Scale for HPC applications:

    Access the on-demand infrastructure and capacity you need to run HPC applications faster and cost-effectively.

- Train and deploy ML applications:

  Amazon EC2 delivers the broadest choice of compute, networking (up to 400 Gbps), and storage services purpose-built to optimize price performance for ML projects.

- **XAMPP:** XAMPP is one of the widely used cross-platform web servers, which helps developers to create and test their programs on a local webserver. It was developed by the Apache Friends, and its native source code can be revised or modified by the audience. It consists of Apache HTTP Server, MariaDB, and interpreter for the different programming languages like PHP and Perl. It is available in 11 languages and supported by different platforms such as the IA-32 package of Windows & x64 package of macOS and Linux. XAMPP helps a local host or server to test its website and clients via computers and laptops before releasing it to the main server. It is a platform that furnishes a suitable environment to test and verify the working of projects based on Apache, Perl, MySQL database, and PHP through the system of the host itself. Among these technologies, Perl is a programming language used for web development, PHP is a backend scripting language, and MariaDB is the most vividly used database developed by MySQL. XAMPP is used to symbolize the classification of solutions for different technologies. It provides a base for testing of projects based on different technologies through a personal server. XAMPP is an abbreviated form of each alphabet representing each of its major components. This collection of software contains a web server named Apache, a database management system named MariaDB and scripting/ programming languages such as PHP and Perl. X denotes Cross-platform, which means that it can work on different platforms such as Windows, Linux, and macOS.

- **MySQL:** MySQL is an open-source relational database management system. As with other relational databases, MySQL stores data in tables made up of rows and columns. Users can define, manipulate, control, and query data using Structured Query Language, more commonly known as SQL. A flexible and powerful program, MySQL is the most popular

open-source database system in the world. As part of the widely-used LAMP technology stack (which consists of a Linux-based operating system, the Apache web server, a MySQL database, and PHP for processing), it's used to store and retrieve data in a wide variety of popular applications, websites, and services.

- **Apache:** The Apache HTTP Server is a free and open-source cross-platform web server software, released under the terms of Apache License 2.0. Apache is developed and maintained by an open community of developers under the auspices of the Apache Software Foundation. Apache supports a variety of features, many implemented as compiled modules which extend the core functionality. These can range from authentication schemes to supporting server-side programming languages such as Perl, Python, Tcl and PHP. Popular compression methods on Apache include the external extension module, mod_gzip, implemented to help with reduction of the size (weight) of web pages served over HTTP. Throughout the last few decades, Apache has proven to be a staple in many popular stacks and the backbone of the early internet year. While it's popularity is declining and the options of web server choices are increasing, Apache still plays a pivotal role in many technology stacks and companies system infrastructure. Even with new technologies and servers coming out nonstop, Apache is still a technology every developer should learn how to handle and configure.

- **PhpmyAdmin:** phpMyAdmin is a free software tool written in PHP, intended to handle the administration of MySQL over the Web. phpMyAdmin supports a wide range of operations on MySQL and MariaDB. Frequently used operations (managing databases, tables, columns, relations, indexes, users, permissions, etc) can be performed via the user interface, while you still have the ability to directly execute any SQL statement.

Literature Survey

- **Implementation of Storage in Virtual Private Cloud using Simple Storage Service on AWS**

  Ambika Gupta1 , Anjani Mehta, Lakshya Daver, Priya Banga,2020

  The primary objective of this research work is to develop a framework that permits confirmed clients to get access to the sensitive information within the organization. In contrast to the traditional system, the proposed system helps in data recovery if there arise any circumstances, the storage can be expanded by checking the accessibility of users logged into the storage system to access the data.

- **Cloud Computing: Fundamentals and Research Issues Suyel Namasudra,Pinki Roy,Balamurugan Balusamy,2017**

  In the first part of this paper, a brief discussion of fundamentals of cloud computing are presented. Moreover, all the issues of cloud computing are also discussed in this paper. Finally, future work directions have been identified for the cloud computing environment

- **Amazon EC2**

  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 instance in the cloud. More SAP, high performance computing (HPC), ML, and Windows workloads run on AWS than any other cloud.

Implementation

The following steps and screenshots depict the implementation of deployment of the application on AWS Cloud environment.

Step 1
After Amazon console login you find the following screen, select EC2 from Compute category.

Step 2
Click Launch Instance button.

Step 3
Now choose operating system for your web server, I suggest use Ubuntu for more package advantages. Make sure, that should be listed in free tier.

Step 4
You find the following screen, now click Launch button.

Step 5
Here you can modify your server type, but initially explore things with free tier.

Creating Amazon Key File - Authentication
Most important part in this installation process.

Step 6
Here choose Create a new pair key

Step 7
Give valid name and click to Download Key Pair. You will get an .pem file.

Step 8
Instance has been created successfully.

Firewall Security Settings

Step 9
You will find the instance status here.

Step 10
Select the instance box and scroll down the page, you will find inbound rules for firewall security

Step 11
Add HTTP rule for web server access.

Elastic IP - Create Static IP Address

Basically, Amazon instance will provide you a dynamic public DNS name, this is not stable. So you need a static IP.

Step 12
Go to Network & Security category and select Elastic IPs, click Allocate New Address

Step 13
Amazon will provide you a random IP address.

Step 14
Now associate IP address with instance box.

Step 15
Choose instance box here.

Step 16
Click Associate address.

Step 17
Associated IP address with instance.

XAMPP Installation Commands for Ubuntu

Download XAMPP for 64 bit

wget https://www.apachefriends.org/xampp-files/7.0.23/xampp-linux-x64-7.0.23-0-installer.run

Make Execute Installation

sudo chmod +x xampp-linux-x64-7.0.23-0-installer.run

Run Installation

sudo ./xampp-linux-x64-7.0.23-0-installer.run

XAMPP instructions

Select the components you want to install; clear the components you do not want to install. Click Next when you are ready to continue.

XAMPP Core Files : Y (Cannot be edited)
XAMPP Developer Files [Y/n] : Y
Is the selection above correct? [Y/n]: Y

Installation Directory
XAMPP will be installed to /opt/lampp
Press [Enter] to continue:
Do you want to continue? [Y/n]:Y

Run XAMPP

sudo /opt/lampp/lampp start

XAMPP Access Forbidden
Open your browser and access http://IP-ADDRESS/ you will find this Access forbidden screen.

XAMPP Configurations
Edit XAMPP configurations.

vi /opt/lampp/etc/extra/httpd-xampp.conf

<LocationMatch "^/(?i:(?:xampp|security|licenses|phpmyadmin|webalizer|server-status|server-info))">
Require local
ErrorDocument 403 /error/XAMPP_FORBIDDEN.html.var
</LocationMatch>

to

<LocationMatch "^/(?i:(?:xampp|security|licenses|phpmyadmin|webalizer|server-status|server-info))">
Order deny,allow
Allow from all
Allow from ::1 127.0.0.0/8 \
fc00::/7 10.0.0.0/8 172.16.0.0/12 192.168.0.0/16 \
fe80::/10 169.254.0.0/16
ErrorDocument 403 /error/XAMPP_FORBIDDEN.html.var
</LocationMatch>

Restart XAMPP

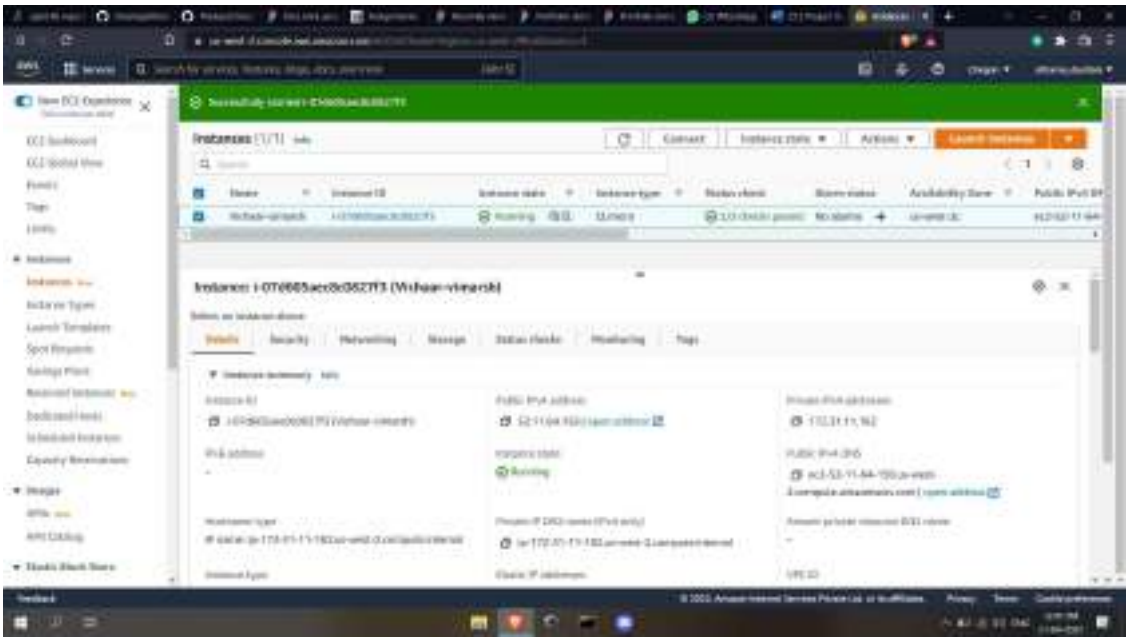
sudo /opt/lampp/lampp restart

Security Settings

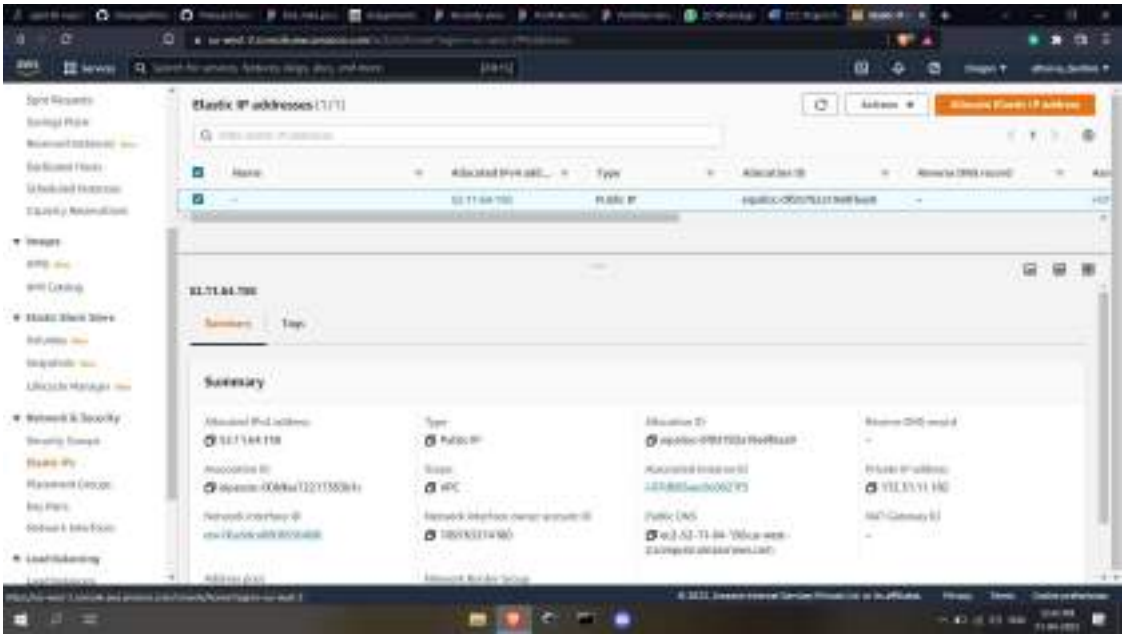
sudo /opt/lampp/xampp security

XAMPP: Your XAMPP pages are NOT secured by a password.
XAMPP: Do you want to set a password? [yes]
XAMPP: Your XAMPP pages are NOT secured by a password.
XAMPP: Do you want to set a password? [yes] no
XAMPP: MySQL is accessable via network.
XAMPP: Normaly that's not recommended. Do you want me to turn it off? [yes] yes
XAMPP: Turned off.
XAMPP: Stopping MySQL...ok.
XAMPP: Starting MySQL...ok.
XAMPP: The MySQL/phpMyAdmin user pma has no password set!!!
XAMPP: Do you want to set a password? [yes] yes
XAMPP: Password:*******
XAMPP: Password (again):*******
XAMPP: Setting new MySQL pma password.
XAMPP: Setting phpMyAdmin's pma password to the new one.
XAMPP: MySQL has no root passwort set!!!
XAMPP: Do you want to set a password? [yes] yes
XAMPP: Write the password somewhere down to make sure you won't forget it!!!
XAMPP: Password:*******
XAMPP: Password (again):*******
XAMPP: Setting new MySQL root password.
XAMPP: Change phpMyAdmin's authentication method.
XAMPP: The FTP password for user 'daemon' is still set to 'xampp'.
XAMPP: Do you want to change the password? [yes] no
XAMPP: Done.

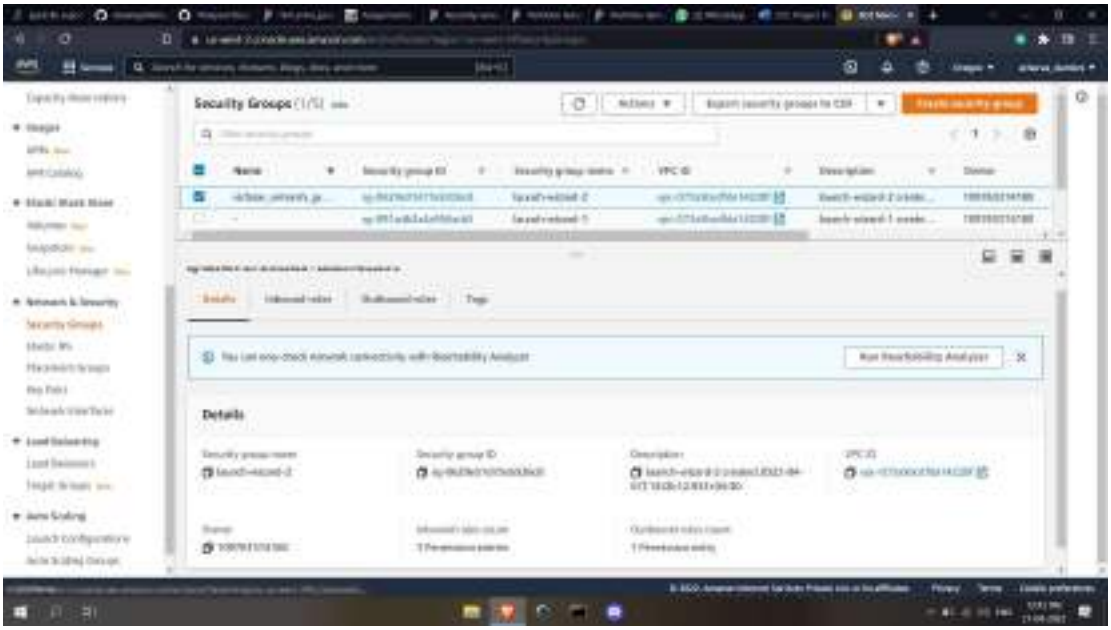
Running Instance



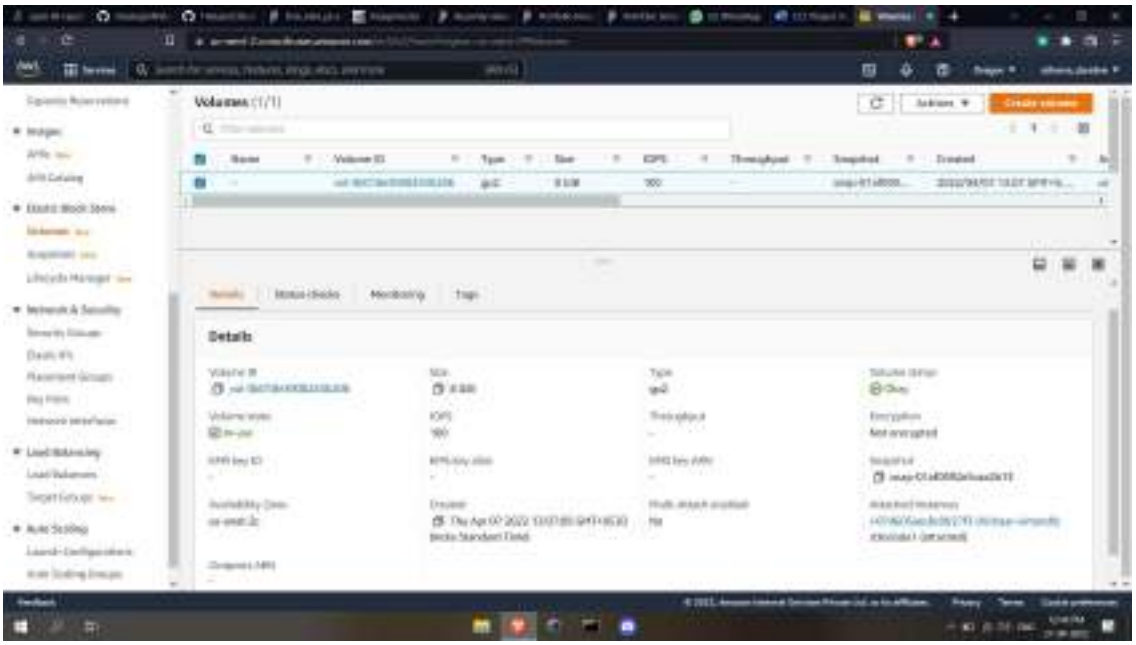
Elastic IP



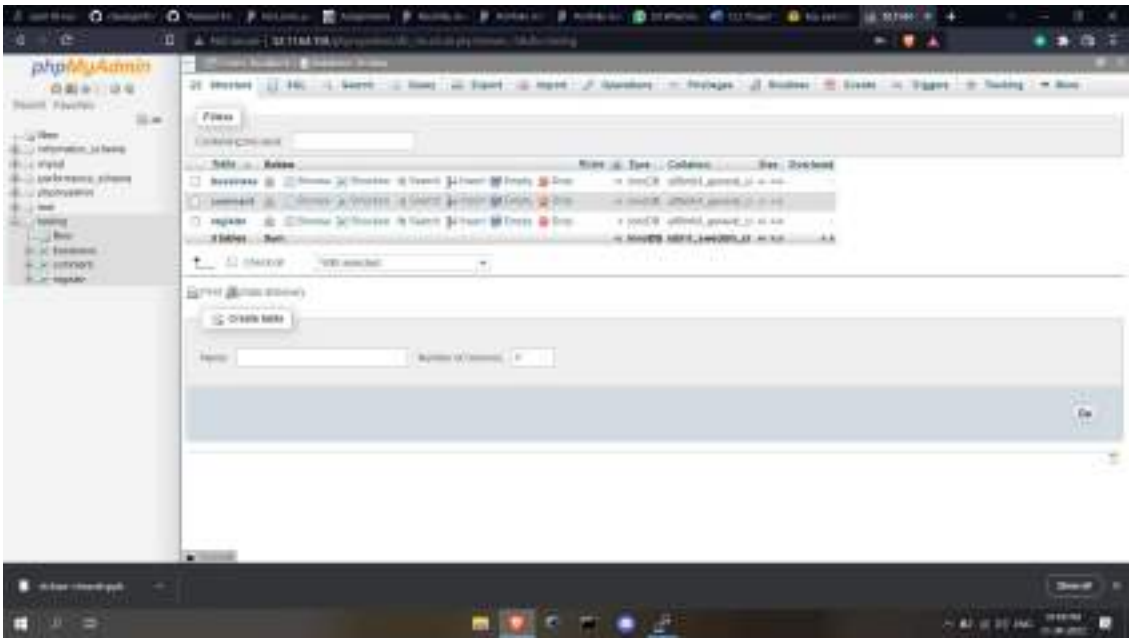
Security Groups



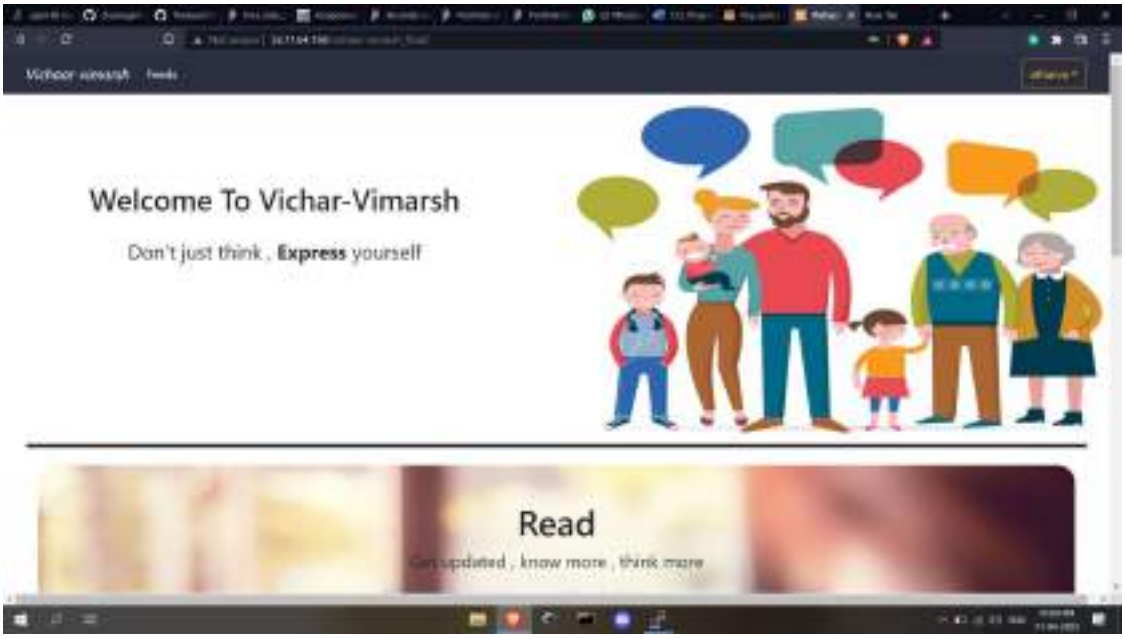
Volumes



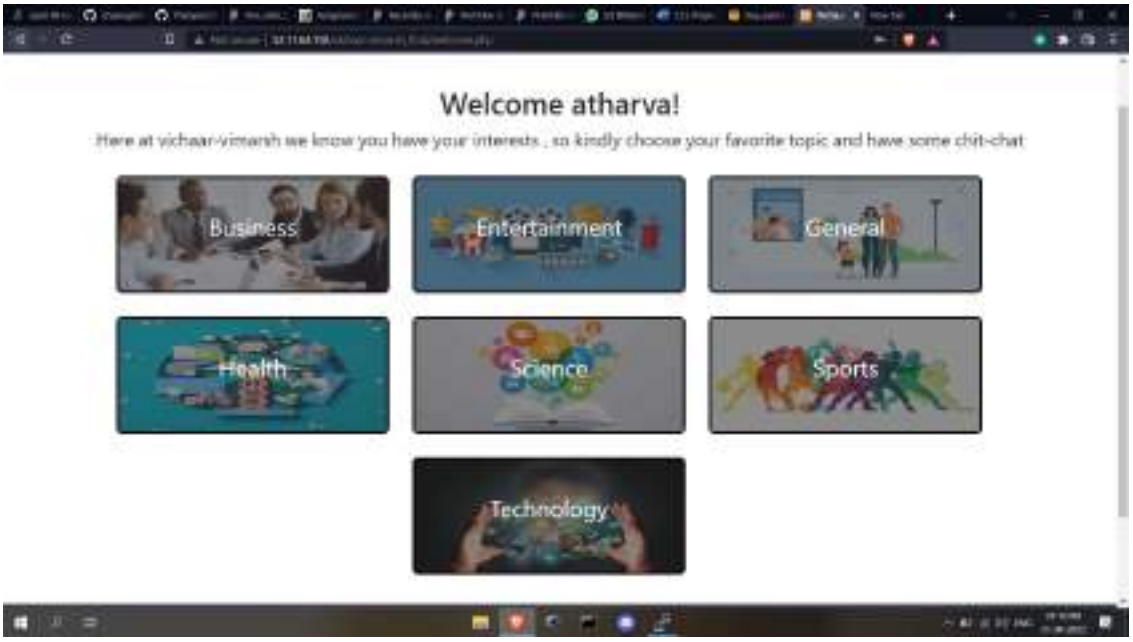
PHPMyAdmin MYSQL



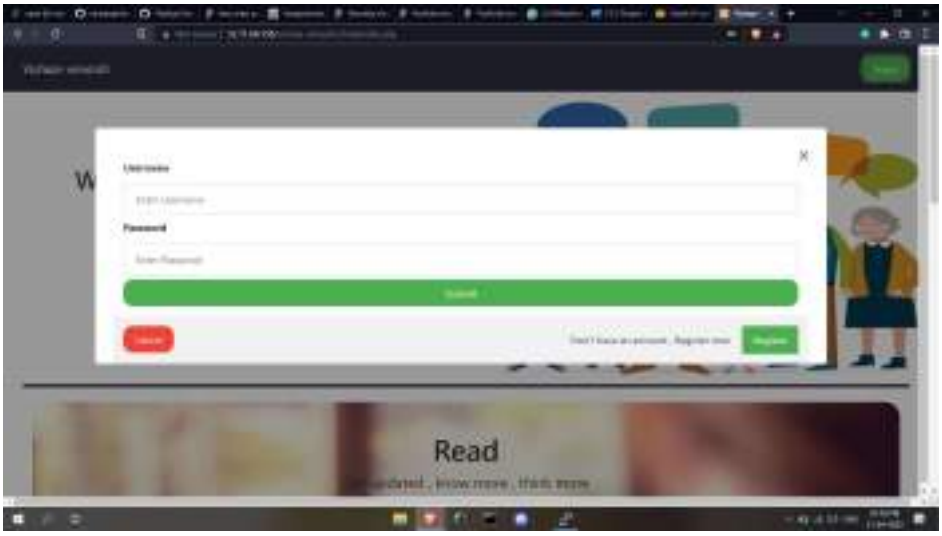
Website Home Page



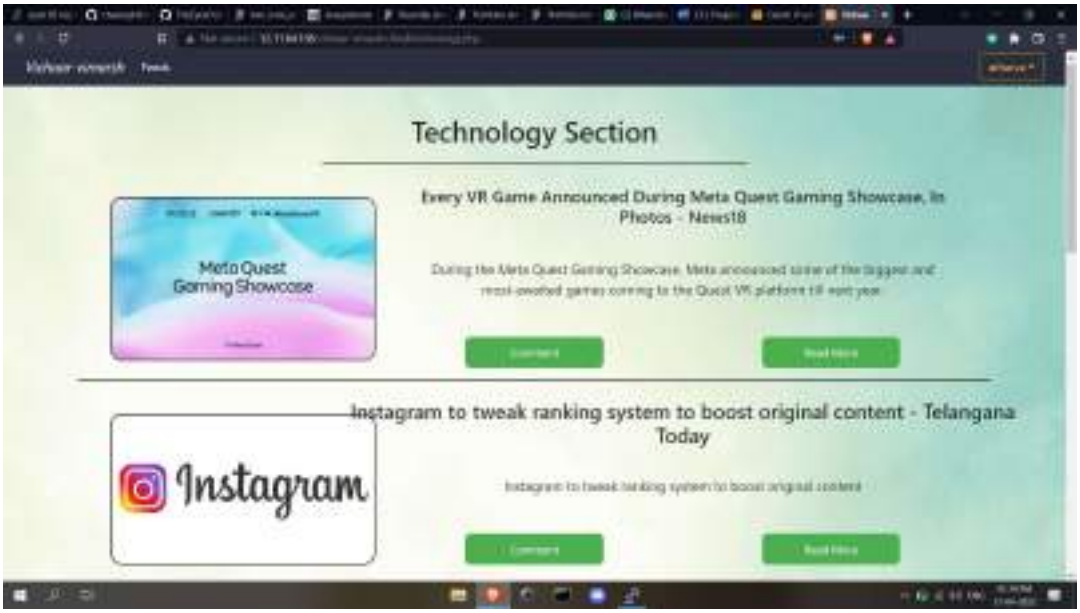
Website Dashboard

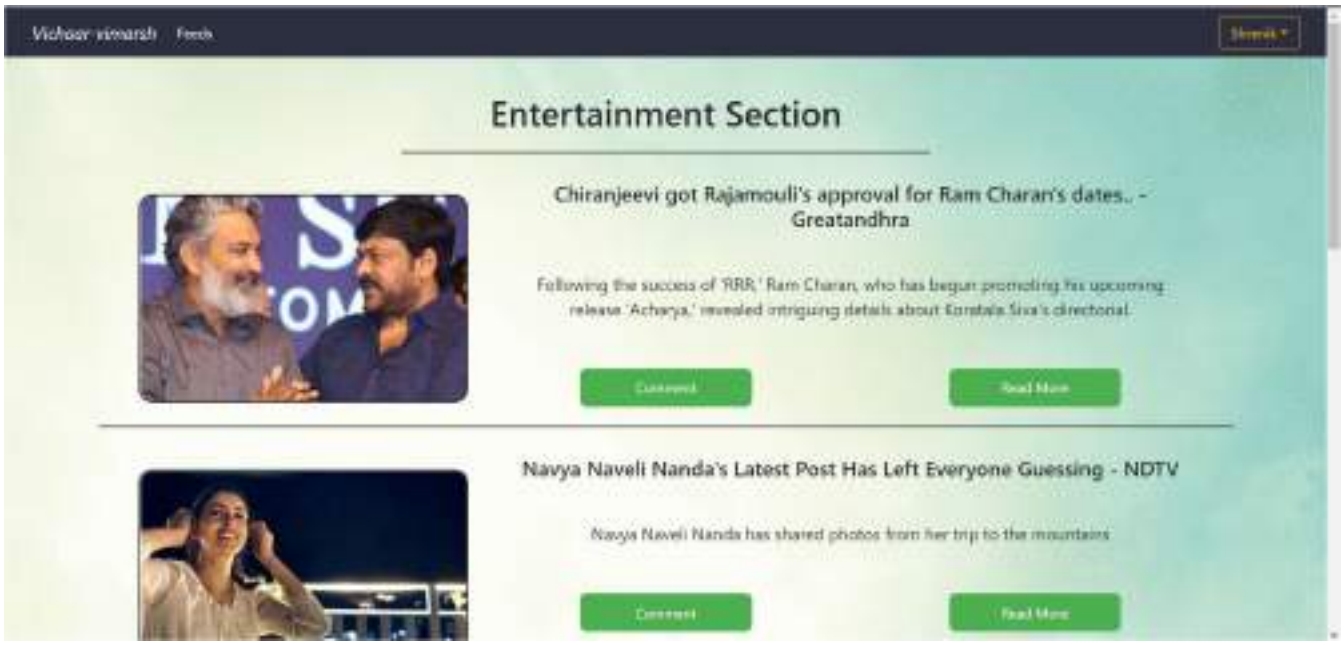


Website Login Page



News Headlines




Vichaar vimarsh
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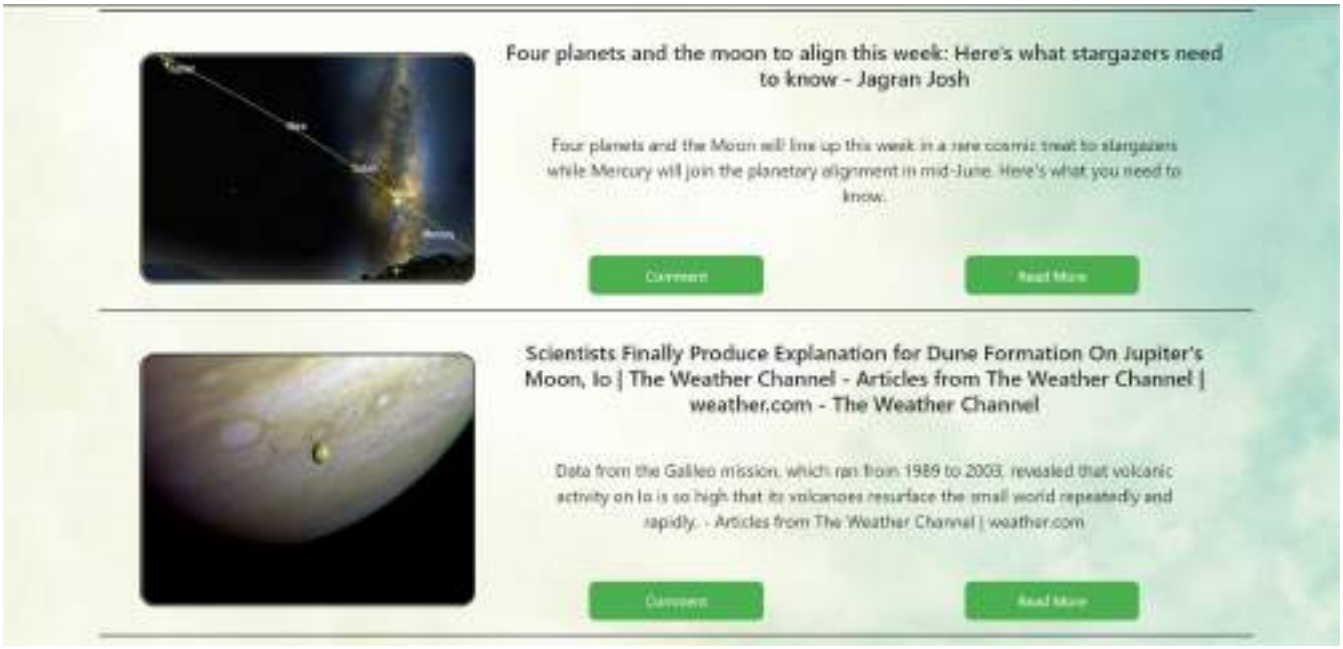
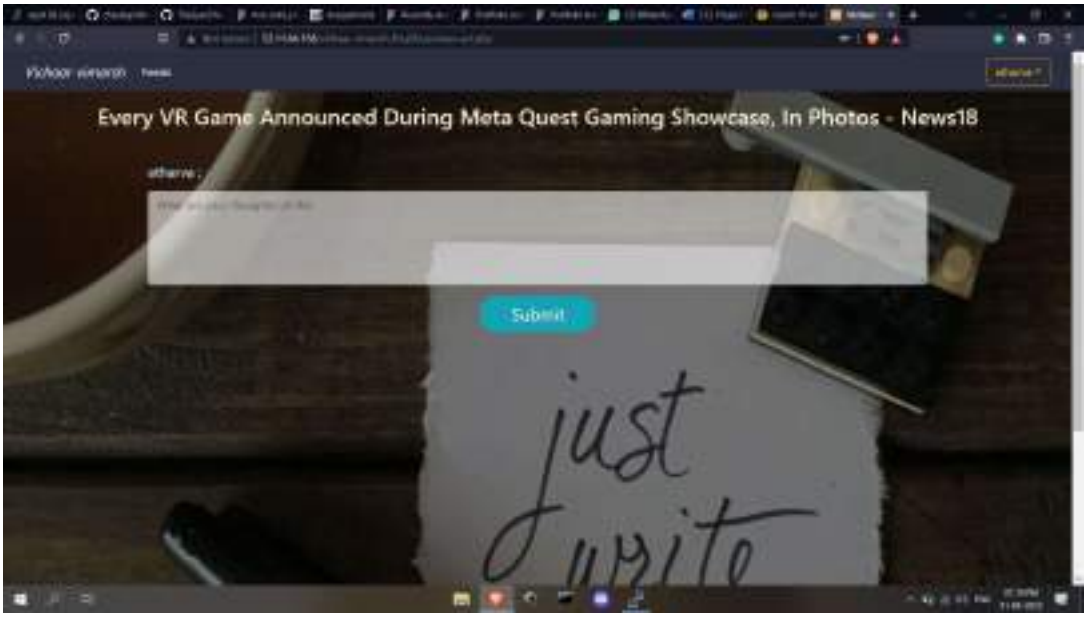
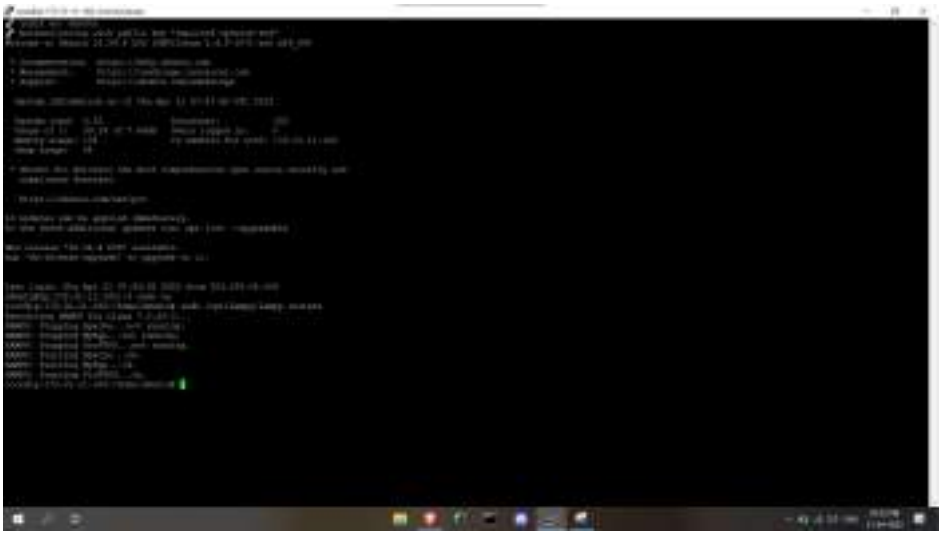


Comment Section



SSH Connection with running instance



Summary

By the means of this project, we learned to implement the concepts of Cloud Computing such as Software as a Service. Software as a service (or SaaS) is a way of delivering applications over the Internet—as a service. Instead of installing and maintaining software, you simply access it via the Internet, freeing yourself from complex software and hardware management. SaaS applications are sometimes called Web-based software, on-demand software, or hosted software.

Learning Outcomes

The main aim of this project was to understand the concepts of cloud computing and implement them by the means of a project. During the course of development of this project we learned to use the AWS Cloud console in terms of using the different services provided by AWS. We have studied and implemented the following concepts and used the cloud services:

- Software as a Service
- EC2

References

- https://aws.amazon.com/ec2/
- https://aws.amazon.com/websites/
- https://www.signitysolutions.com/blog/register-host-and-deploy-website-on-aws/
- https://www.guru99.com/what-is-aws.html

Acknowledgement

We have deployed our website on AWS Cloud with help of guidelines provided by the AWS Account. This was possible only by the support of our subject incharge and our department to whom we express our gratitude