**Aws**

AWS stands for Amazon Web Services. AWS is a platform that provides on-demand resources for hosting web services, storage, networking, databases and other resources over the internet with a pay-as-you-go pricing.

**Ec2 instance**

\*EC2 stands for Elastic Compute Cloud, which is a cloud computing service provided by Amazon Web Services (AWS). EC2 allows users to rent virtual machines, called instances, on which they can run their own applications or software.

\*With EC2, users have the flexibility to choose the amount of computing power, memory, and storage

\*EC2 instances can be launched in multiple regions and availability zones

**Ec2 7 steps**

Choose instance, choose ami , instance type, add tag, storage, key pair,

pricing models for EC2instances

On-demand ,Reserved, Spot, Scheduled, Dedicated

**key-pairs**

:Key-pairs are secure login information for your instances/virtual machines. To connect to the instances we use key-pairs that contain a public-key and private-key

**S3**

Amazon S3 (Simple Storage Service) is a cloud-based object storage service provided by Amazon Web Services (AWS). It allows you to store and retrieve any amount of data, at any time, from anywhere on the web. S3 is designed for 99.999999999% durability and 99.99% availability, making it highly reliable and scalable

S3 is used by individuals, businesses, and organizations to store and backup data such as photos, videos, documents, and large datasets

Advantages of s3

Scalability: S3 can scale up or down as per your requirement, making it ideal for both small and large scale applications.

Durability: S3 stores multiple copies of your data across multiple availability zones, ensuring high durability and reliability.

Security: S3 provides multiple security features such as encryption, access controls, and IAM policies, ensuring your data is secure.

autoscaling

An Auto Scaling group is a collection of Amazon EC2 instances that are treated as a logical unit. You configure settings for a group and its instances as well as define the group’s minimum, maximum, and desired capacity. Setting different minimum and maximum capacity values forms the bounds of the group, which allows the group to scale as the load on your application spikes higher or lower, based on demand. To scale the Auto Scaling group, you can either make manual adjustments to the desired capacity or let Amazon EC2 Auto Scaling automatically add and remove capacity to meet changes in demand.

IAM ROLE

IAM roles in AWS are a way to grant permissions to entities that you trust. These entities can be AWS service instances, applications, or users that you authenticate with an external identity provider.

Roles play a crucial role in enhancing security and managing permissions in a flexible and scalable manner within AWS

**TCP/IP**

TCP/IP (Transmission Control Protocol/Internet Protocol) is the suite of communication protocols that powers the internet.

TCP and IP are different protocols of Computer Networks. The basic difference between TCP (Transmission Control Protocol) and IP (Internet Protocol) is in the transmission of data.

How Does the TCP/IP Model Work?

Whenever we want to send something over the internet using the TCP/IP Model, the TCP/IP Model divides the data into packets at the sender’s end and the same packets have to be recombined at the receiver’s end to form the same data, and this thing happens to maintain the accuracy of the data. TCP/IP model divides the data into a 4-layer procedure, where the data first go into this layer in one order and again in reverse order to get organized in the same way at the receiver’s end.

Layers of TCP/IP Model

Application Layer

Transport Layer(TCP/UDP)

Network/Internet Layer(IP)

Data Link Layer (MAC)

Physical Layer

IPv4 and IPv6 is the appearance of the IP addresses. IPv4 uses four 1 byte decimal numbers, separated by a dot (i.e. 192.168. 1.1), while IPv6 uses hexadecimal numbers that are separated by colons (i.e. fe80::d4a8:6435:d2d8:d9f3b11).

**VPN**

A virtual private network (VPN) is a mechanism for creating a secure connection between a computing device and a computer network, or between two networks

**DNS in networking**

The Domain Name System (DNS) is a hierarchical naming system that allows communication across devices on a network. Most commonly, it translates human-readable domain names (like bluecatnetworks.com) to computer-friendly Internet Protocol (IP) addresses (like 104.239. 197.100).

**RDS**

Amazon Relational Database Service (RDS) is a managed database service offered by Amazon Web Services (AWS). It provides an easy way to set up, operate, and scale a relational database in the cloud. With RDS, you can create, manage, and scale relational databases such as MySQL, PostgreSQL, Oracle, and SQL Server, without worrying about the underlying infrastructure.

It also helps with relational database management tasks, such as data migration, backup, recovery and patching

RDS provides several benefits, including:

Automated database management: RDS automates routine database management tasks, such as software patching, backups, and monitoring, so you can focus on your applications and data.

Scalability and availability: RDS provides scalable and highly available database instances that can automatically scale up or down based on your application needs.

Security: RDS provides several security features, such as network isolation, encryption at rest and in transit, and automated backups, to help you meet compliance requirements.

Easy to use: RDS provides an easy-to-use console and APIs that enable you to create and manage databases, monitor performance, and troubleshoot issues.

Cost-effective: RDS is a cost-effective solution for running relational databases in the cloud, as you only pay for what you use, with no upfront costs or long-term commitments.

**Fire Wall**

A firewall is a network security system designed to control and monitor incoming and outgoing network traffic based on predetermined security rules. The main purpose of a firewall is to block unauthorized access to a computer network while allowing authorized traffic to pass through.

A firewall can be implemented either as a hardware device or as software running on a computer. It typically operates at the network level, analyzing incoming and outgoing traffic based on IP addresses, ports, and protocols, among other factors.

Firewalls are an essential component of network security and are used by organizations of all sizes to protect their networks and sensitive information from unauthorized access and cyber threats.

**http and https**

HTTP (Hypertext Transfer Protocol) and HTTPS (Hypertext Transfer Protocol Secure) are two protocols used to transfer data over the internet. The main difference between them is that HTTP is not secure, while HTTPS is designed to be a secure protocol

1.Encryption: HTTPS encrypts the data being transmitted using SSL (Secure Sockets Layer) or TLS (Transport Layer Security) protocols. This means that any data exchanged between a website and a user is protected and cannot be read by third-party attackers.

2.Authentication: HTTPS also provides authentication, which means that the website that a user is accessing is verified and cannot be impersonated by a third-party attacker.

3.Security: As a result of encryption and authentication, HTTPS is more secure than HTTP. This makes it much harder for attackers to intercept or modify data transmitted between a user and a website.

4.Port: HTTP typically uses port 80, while HTTPS uses port 443.

**efs**

EFS stands for Amazon Elastic File System, which is a cloud-based file storage service provided by Amazon Web Services (AWS). EFS provides scalable and flexible file storage for use with EC2 instances and other AWS services.

With EFS, users can create a file system and mount it on multiple EC2 instances, allowing applications running on these instances to share data. EFS supports the Network File System (NFS) protocol, which means that it can be used with a variety of Linux-based operating systems.

1.Standard Storage: This is the default storage class, designed for frequently accessed files, and offers low-latency performance.

2.Infrequent Access (IA) Storage: This storage class is designed for files that are accessed less frequently, and therefore has a lower cost per GB stored compared to the Standard Storage class.

**load balancer**

Load balancers can be hardware or software-based, and they work by receiving incoming network traffic, analyzing it, and then distributing it across multiple servers in a way that optimizes the use of resources and reduces the risk of downtime or failure

Load balancers are commonly used in web applications, where they can distribute traffic across multiple web servers to handle a high volume of requests, as well as in database systems, where they can help distribute read and write requests to master and replica database

**linux commands**

Command             Description

ls  --     List the directory (folder) system.

cd pathname -- Change directory (folder) in the file system.

cd .. -- Move one level up (one folder) in the file system.

cp --    Copy a file to another folder.

mv --    Move a file to another folder.

mkdir --  Creates a new directory (folder).

rmdir --  Remove a directory (folder).

clear -- Clears the CLI window.

exit --    Closes the CLI window.

man command --     Shows the manual for a given command. dir --    List the directory (folder) system.

cd pathname --     Change directory (folder) in the file system.

cd \  -- Move to the root folder of the file system.

cd .. -- Move one level up (one folder) in the file system.

copy -- Copy a file to another folder.

move --    Move a file to another folder.

type filename -- Type a file.

mkdir or md --     Creates a new directory (folder).

rmdir or rd --     Removes a directory (folder).

cls --     Clears the CLI window.

exit --  Closes the CLI window.

help command -- Shows the manual for a given command.has context menu

**web server**

A web server is software and hardware that uses HTTP (Hypertext Transfer Protocol) and other protocols to respond to client requests made over the World Wide Web. The main job of a web server is to display website content through storing, processing and delivering webpages to users.

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\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*sql\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*what is mysql

Structured query language (SQL) is a standard language for database creation and manipulation.

MySQL is a relational database program that uses SQL queries.

\*\* what is database

data base is a organised collection of data and it can be stored in a computer sysem

SELECT

- retrieves or select data from the database.

FROM

- specifies the table(s) from which to retrieve data.

WHERE

- filters data based on a specific condition.

GROUP BY

- groups data based on a specific column.

HAVING

- filters data after it has been grouped.

ORDER BY

- sorts data in ascending or descending order based on a specific column.

JOIN

- combines data from multiple tables based on a common column.

LEFT JOIN

- returns all rows from the left table and the matching rows from the right table.

RIGHT JOIN

- returns all rows from the right table and the matching rows from the left table.

FULL OUTER JOIN

- returns all rows from both tables, matching rows are combined and non-matching rows are filled with null values.

INNER JOIN

- returns only the matching rows from both tables.

UNION

- combines the results of two or more SELECT statements.

UNION ALL

- combines the results of two or more SELECT statements, including duplicate rows.

INSERT INTO

- inserts data into a table.

VALUES

- specifies the values to be inserted into a table.

UPDATE

- updates data in a table.

SET

- specifies the columns to be updated and their new values.

DELETE FROM

- deletes data from a table.

TRUNCATE

- deletes all data from a table.

CREATE TABLE

- creates a new table in a database.

ALTER TABLE

- modifies an existing table.

DROP TABLE

- deletes a table from a database.

CREATE INDEXG

- creates an index on a table.

DROP INDEX

- deletes an index from a table.

CREATE VIEW

- creates a virtual table based on a SELECT statement.

DROP VIEW

- deletes a virtual table from a database.

CREATE DATABASE

- creates a new database.

DROP DATABASE

- deletes a database from a server.

GRANT

- grants privileges to a user or group.

REVOKE

- revokes privileges from a user or group.

ALTER USER

- modifies a user account.

CREATE USER

- creates a new user account.

DROP USER

- deletes a user account.

SHOW

- displays information about a database or server.

DESCRIBE

- displays information about a table.

EXPLAIN

- explains how a SELECT statement is executed.

COMMIT

- commits a transaction.

ROLLBACK

- rolls back a transaction.

primary key\*\*\*\*\*\*\*\*\*\*\*

The PRIMARY KEY constraint uniquely identifies each record in a table.

\*\*\*stored procedure

An SQL statement or a set of sql statement,that can be stored on the database server.

--Stored procedure

--functions

syntax:

Delimiter $$

Create procedures roll\_id(roll\_id integer)

Begin

select \* from ecollegeinfo

limit 1000;

End $$

Delimiter ;

\*\*\*\*\*to find max salery order query

SELECT (salery) FROM january limit 5

\*\* select top5 salery query

SELECT \* from january

order by salery desc limit 5;

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*dq dashboard\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

data quality................

Data quality refers to the overall utility of a dataset(s) as a function of its ability to be easily processed and analyzed for other uses, by a database

dashboard..............

dashboard is a tool used to monitor and display live data.

A dashboard is typically connected to a database and features visualizations that automatically update to reflect the most current data in the database.

frontend.............

Frontend, in the context of web development, refers to the client-side part of a website or web application that users interact with directly. in that data visible to the users in their web browsers.

HTML (Hypertext Markup Language): HTML is the standard markup language used to structure the content of web pages.

backend....

Backend in the context of web development, refers to the client-side part of a website or web application that users interact with directly to the database and require data is retrive to despley the web broeser

Validation..........

Validation refers to the process of checking the accuracy of the data