**DevOps**

Git: It is an open-source version control tool

Maven: It is an open-source-build management tool

Jenkins: It is an open-source continuous Integration tool

Docker: It is an open-source container tool

Jenkins: It is an open-source configuration management tool

Jenkins: It is an open-source Infrastructure as a code(Iac) tool

Kubernetes (K8S): It is an open-source container management tool

**Software Requirements:**

1. git(global infrastructure tracker)

2. Mobixtream

3. Docker hub

4. AWS

**Installation of git:**

Steps:

1. Download git

2. Downloads for Windows 2.42.0

3. Click on 64-bit git for Windows setup

4. Click on next->next🡪------🡪 install🡪finish

**Installation of mobaxterm:**

1. Download mobaxterm

2. Home edition-> Download now

3. Click on the portable edition

**Create an account in GitHub**

1. type github -🡪 first link

2. Sign Up

**Create account on AWS:**

1. amazon management console

2. create an account

3. emailed

Username

Verify email address

4. root password

5. step (1-5) Select the bank account and PAN number

**Computer Networking**

Computer Networking is a process of connecting billions of computer devices with the network and it allows to share resources and files to each other.

Types of Network:

1. PAN [ Personal Area Network]

2. LAN [Local Area Network]

3. MAN [Metropolitan Area Network]

4. WAN [Wide Area Network]

Switch: Switch is a hardware device used to connect multiple computing devices within the network.

Firewall: A firewall is a network-securing device that monitors and filters the network's incoming and outgoing traffic.

Router: A router is a gateway that passes/processes the data from one network to another network.

Gateway: A Gateway is a hardware device that is used to connect two similar or dissimilar networks.

**Server:**

The server is the main computer that will be used to share the resources to each other devices within the network.

Types of servers:

Majorly we have 3 types

1 Web server: It will process the request in the form of HTTP or https[Apache format, Ngnix]

2. Application server: The application server is used to run the application in the servers.

3. Database Server: The database server is used to store the data.

**Server Scaling**: Server scaling is a process of adjusting the power of computing devices like scale-up and scale-down

**Typing of server scaling:**

1. Horizontal scaling: Increasing the number of servers.

2. Vertical scaling: Increasing the system configuration like RAM, Storage, and CPU.

Note: Vertical scaling is not yet preferred for any type of operation because it will have single point of contact.

**Internet:**

Internet is a wide area network which is used to formatting and processing the data.

**Protocols:**

Protcols are the set of rules whih is used to formatting and processing the data.

**Few important protocls:**

1. TCP: Transmission control protocol.

2. Ip: Internet protocol.

3. HTTP: Hypertext transfer protocol

4. HTTPS: Hypertext transfer protocol secured

5.POP: Post Office protocol

6. SMTP: Simple mail transfer protocol

7. UDP: User Datagram protocol

8. FTP: File Transfer protocol

**IP:**

IP stands for Internet protocol

An IP address is a unique number provided to each and every devices.

We have 2 types of IP address

1.IPV4

2.IPv6

Difference between Ipv4 and IPv6

URL [ Uniform Resource Locator]

IPV4 Classification

1. Public IP

2. Private IP

**Cloud Computing:**

Cloud computing is a delivery of on-demanded IT services over a Internet which follows pay as you go basis.

Key Characteristics of Cloud Computing:

1. One +-demand self service

2. Scalability

3. Flexibility

4. Automation

5. Larger-Network access

6. Availability

**Classification of Cloud Computing:**

1. Based on the deployment Model:

2. Based on the Service Model

Based on the deployment Model

We have 4 type

1. Private Cloud

2. Pubilc cloud

3. Community Cloud

4. Hybrid Cloud

The cloud deployment model identifies the specific cloud environment based on ownership, scale, access, and purpose

1. Private Cloud: Resources are managed and used by the organization.

2. Pubic Cloud: Resources available for the general public on a pay-as-you-go basis.

3. Community Cloud: Resources shared by the several organizations. Working in the same industry.

4. Hybrid Cloud: It is a combination of public and private cloud

This cloud is partially managed by the service provider and partially managed by the organization.

**Based on service Model**

**Saas: [Software as a Service]**

It replaces the traditional on-device software and SaaS applications can be accessed directly from the web browser without any downloads.

->Without downloading any application we can access that application through the web browsers

Ex: Whatsapp web

**Paas: [Platform as a Service]**

It allows organizations to build, run, and manage applications without any IT infrastructure

This makes it easier and faster development, testing and deployment

**Iaas: [Infrastructure as a service]**

It is a self-service model for managing the remote data center, Iaas provides virtualized comuting resources over the Internet hosted by a third party such as Amazon Web Service[AWS], Microsoft Azure and Google Cloud Platform[GCP]

**Introductions to AWS:**

We can access AWS Services by using 3 Ways

1) Amazon Management Console

2) AWS CLI[ Command Line Interface]

3) AWS SDK [Software Development Kit]

AWS Stands for Amazon web services which is a broadly adopted cloud platform that provides all the IT services based on demand on a pay-as-you go basis.

**Benefits of AWS:**

1. Security

2. Availability

3. Performance

4. Scalability

5. Flexibility

6. Global Footprint

**AWS Global Infrastructure**

The most secure, extensive, and reliable Global Cloud Infrastructure for all your applications.

1 Region: Region is the geographical area that consists of 2 or more availability zones.

2. Availability zones: An availability zone is an area location that is designed in isolated from each other.

Each availability zone is designed as an independent failure zone.

3. Edge Locations: Edge Locations are AWS data centers designed to deliver the services.

**AWS Service:**

Aws service provides total 212 services

Compute: Amzon EC2 – Elastic Compute Cloud

Database: Amazon RDS – Relatinal Database Service

Management and Governance – Amazon Cloud Watch

Networking And Content Delivery -> Amazon VPC

-> Route53

-> Elastic Load Balancing [ELB]

Strorage: -> Amazon Simple Storage Service(S3)

->Amazon Elastic Block Storage(EBS)

-> Amazon Elastic File System (EFS)