Day-1:

Cloud Computing:

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=>It is a process of delivering computing services (servers, databases, storage) over the internet is known as CC.

Cloud:

=>It is a process of accessing the data or application via internet at anytime and anywhere.

ex: Instagram, fb etc.

Vendors of cloud:

1.AWS

2.AZURE

3.GCP

4.SALESFORCE

5.IBM etc.

TYPES of CC:

1.Service Model:

a.IAAS b.PAAS c.SAAS

2.Deployment Model:

a.Private b.Public c.Hybrid d.Community cloud

1.Service Model:

	On-Premises	IAAS	PAAS	SAAS
Application	All	FIRST	FIRST	ALL
Data	Things	5	2	Managed
Runtime	Managed	Managed	Managed	By
Middleware	By	By	By You	Vendor
OS	You	You		
Virtualization				
Servers		Nxt 4 Managed	Nxt All	
Storage		By Vendor	Managed By Vendor	
Networking				
		Ex:Aws,Gcp etc.	Ex: GoDaddy	Ex: Gmail

Virtualization: creating a virtual version of something-like a server,storage,network-using software.

(or) : running multiple virtual machines on a single physical machine, each with its own os and resources, isolated from others.

e.g.: using VMware

2.Deployment Model:

public cloud	**private**	**hybrid**	**community**
Everyone can access	only Few people	Both	Multiple
cost low	cost high	Public	Organizations

security low	security high	+	use same cloud
pc managed by third parties	used by organizations	Private cloud	to store their data

AWS:(Amazon Web services)

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=>It is the best cloud provider.

->It is the first among all the clouds.

->It offers multiple services on different domains.

->It is the combination of Saas,Paas,Iaas.

why Aws so popular:

->Aws provides wide range of cloud computing services that can be used to build and run applications.

->It offers 200+ services on multiple domains.

->aws covers about 31 geographic regions around the world.

->the aws cloud spans 99 availability zones.

->It Follows Pay as You Go, Model.

Data Center : is the actual physical servers are housed.

Availability zone : is a physically isolated DC within a region. It is nothing but datacenter.

Region : is a geographical area, that contains 2 or more AZ's.

Edge Location : used to cache content closer to user. and used for low latency delivery of web content, videos etc.

cache : is the temporary storage of data to improve speed and performance.

Day-2:

services:

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1.EC2:(Elastic compute cloud)

=>EC2 is a service in the aws cloud which is used to launch/create virtual servers on the cloud. It provides on demand, scalable computing capacity in the aws.

->These servers are used for various purposes like hosting websites, running applications, storing and managing data.

SERVER: is a computer or machine which accepts and process the requests provided by another computer and provides response.

types of servers:

a.web server b. application c.database etc.

->To launch EC2 instance there will be some steps,

I. Add tags:

-you can give name to our instance.

ii. choose an AMI (Amazon Machine Image):

-An AMI is a template that contains the software configuration (os,applicaton server, applications) required to launch instance.

-It consists of an AMI-ID which is region specific.

iii. choose an Instance type:

-IT means server configuration; we are providing CPU & memory to our instance.

ex: t2.micro, t3.micro

Iv. Configure your instance and network part:

-here you need to configure all Ur instance details like no.of instances, subnets (AZ),vpc etc.

v. configure security group:

-A SG is a set of firewalls used to control inbound and outbound traffic for your AWS resources. Whom you want to allow or not

-these are region specific.

-the port range is 0 to 65535

-It deals with inbound and outbound traffic.

-SG are free you can create as many u want.

VI. Add storage:

-To store data in the server we use ebs volumes.

-free tier up to 30gb

vii.Review and launch:

Day-3:

EC2 Analysis:

=>whenever we launch an instance in the aws it will give 2 Ip address:

1.public Ip: To Access the application through internet(which are running in the server)

-It is also used to connect the instance.

-when you start and stop instance the public Ip will change.

2.private Ip: To Access the application within the server.

-Ip will not change

=>whenever we create SG for instance we should give SSH protocol with the port number 22, to connect to the Linux server(machine).

->you can also change SG after the instance creation, select the instance > click Actions >security >change sg >add sg you want >save

->You can use the same Security Group (SG) for multiple AWS EC2 instances.

=>whenever we create a instance a volume is created with mentioned size, after creation we can modify the size of the volume once, after once if u want to modify again u should wait 6hrs to modify. instead of modify again and again we can create volume, and we can attach it to the instance, but the volume should be created in the same availability zone of instance.

->You can attach and detach an Amazon EBS volume while an EC2 instance is running.

=>we can also change instance type, to modify the instance type, you must stop the instance first, after >click on actions >instance settings >change instance type >select type >apply

=>and also, we can change name tags for our instance.

Day-4:

continued Ec2... connect EC2 using putty(key-pair)

=>we can create instance in 2 ways, with key pair and without key pair.

=>keypair: when we launch an instance with keypair, it generates 2 keys

1.public key(instance)

2.private key (local system)

->when you want to connect your instance, the public key will have to match with private key.

->if we create an instance with key-pair, we can connect our instance on multiple ways

1.console (with or without key)

2. terminal (key pair): it is used to connect Linux machines.

ex: putty, mobaxtrem

types of key-pair:

1. RSA – it will support for all types of OS
2. ED25519 – it will not support by windows

->private key file formats are .pem and .ppk

=>using .ppk we can connect to machine though putty

steps: open putty >>give public Ip address of machine >>select SSH on left side and click auth and browse >>select ppk file and open

=>using .pem we can connect to machine through mobaxtrem and also we can convert pem file to ppk and connect it through putty. but we can't convert ppk to pem

=>in real time we use .pem file to connect to our machine.

->to convert .pem to .ppk we use putty Gen tool

steps: open putty gen >> click on load >>select all files at down and select the pem file >> click on save as private key and save

Day-5:

LINUX:

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LINUX: It is an OS which acts as interface between user and computer hardware

->It is free and open-source OS with high security.

->and also, it is multiuser and multitask OS.

OS: SHELL+KERNAL

Shell: It acts as interface between user and kernel

Kernel: It acts as interface between shell and hardware. and it is the core component that manages system resources

Linux OS Distributions:

I. RedHat

II. Ubuntu

III. Debian

Iv. Centos

v. Fedora

VI. Amazon Linux etc.

There are different types of commands in Linux:

- System commands
- Hardware commands
- Network commands
- File commands
- Search commands
- User commands
- Permission commands

=>Whenever you connect with instance, we logging as ec2-user,

=>Ec2-user is the default user in amazon-Linux

=> But we have to login as root user Because Root user is the ultimate king of the Linux.

=>To login from ec2-user to root user,

commands:

sudo -i (or) sudo su -

sudo = super user do

=>To logout from root user,

command: exit

1. SYSTEM COMMANDS:

I. uname : is used to display system information. It provides details about the operating system, kernel, and machine architecture.

uname → Shows the operating system name.

uname -s → Shows the kernel name of the OS

uname -r → used to get kernel release version of OS

uname -a → used to get full information of OS

uname -v → Displays the kernel version Details, including build information and timestamp.

II. uptime: is used to check how long the system has been running since the last reboot.

-It also displays the current time, the total uptime, the number of users currently logged in, and the system load averages over the past 1, 5, and 15 minute

Syntax:

uptime

Example output:

16:12:32 up 5 days, 2:15, 3 users, load average: 0.45, 0.55, 0.60

uptime -p → it displays only time

uptime -s → displays the exact timestamp of when the system was last started.

III. hostname: used to get hostname of the system (the name assigned to the computer on a network).

hostname -i : used to get private Ip address of a system

Set a new hostname (requires root privileges):

sudo hostname new-hostname

(or) hostnamectl set-hostname tcs-swiggy-dev

Iv. ip addr : used to private Ip address of a system

ip route: used to private Ip address of a system

ifconfig : used to private Ip address of a system

v. date : displays the current date and time.

date +"%d" : it displays only date

date +"%m" : it displays only month

date +"%y" : it displays only year

date +"%H" : it displays only hours

date +"%M" : it displays only Minutes

date +" %S" : it displays only seconds

date +"%D" : it displays date (mm/dd/yyyy)

date +"%F" : it displays date (yyyy-mm-dd)

date +" %A" it displays only day of the week

date +"%B" : it displays only month of the year

timedatectl : used to get time zone of our system

timedatectl set-timezone Asia/Kolkata: used to set Indian timezone for our system

VI. whoami : used to display the **current user** logged into the system.

VII. who: displays the no.of user's currently logged into the system.

2. HARDWARE COMMANDS:

I. cat /proc/cpuinfo : used to get cpuinfo

cat ------> is a linux command which is used the read the data in a file

/proc ---> it a directory which contains processor of our system

cpuinfo -----> it a file which contains CPU information

(or)

lscpu : used to get cpuinfo

II.cat /proc/meminfo : used to get RAM info about our system

free: used to get RAM info in KB

free -m : used to get RAM info in MB

free -h   : used to get in human readable format

III. df -h: used to get storage info about our system

fdisk -l: used to list the disks attached to our system

Day-6:

FILE COMMANDS:

To create a file in linux : touch filename

To see list of files : ll (or) ls

ll vs ls

ll : full info about files

ls : it gives only file names

To create multiple files : touch aws azure gcp

To create files in sequential order : touch file{1..7}

To see latest files on top : ll -t

to see the files in reverse order : ll -r

to see all files (including hidden) : ll -a

ls -lh : Sizes are displayed in a human-readable format (e.g., 4.0K).

ls -s : This option displays the size of each file in blocks. The size is shown in the first column.

ls -S : is used to list files and directories in the current directory, sorted by file size in descending order (largest files first).

ls -R : list all files and directories in the current directory and all its subdirectories recursively.

ls -i : to display the inode number of each file and directory.

ls -d */ : This lists only directories in the current directory.

ls -p | grep -v / : to list only the files in the current directory, excluding directories.

TO REMOVE FILES:

To delete files with permissions: rm filename

To delete multiple files with permissions : rm aws azure gcp

To delete a file without permissions : rm -f filename

To delete multiple files without permissions : rm -f aws azure gcp

To delete files in sequential order : rm -f file{1..7}

To delete all files which are started with A name : rm -f a*

To delete all text files : rm -f *.txt

DIRECTORIES (FOLDERS) :

To create a directory : mkdir (make directory)

To create a multiple directories : mkdir aws azure gcp

To create sequential directories : mkdir folder{1..6}

To remove empty directories : rmdir foldername

To remove multiple empty directories : rmdir aws azure gcp

To remove empty directories in sequential order : rmdir folder{1..5}

To remove all empty directories : rmdir *

To remove all files and folders : rm -rf *

INSERT DATA IN A FILE:

cat : is uesd to create file with data + append data to file + print file data

To read the data in a file : cat filename

To insert some data in a file : cat>filename

To append some data in a file : cat>>filename

To save the data : ctrl + d

To display the data including line numbers : cat -n filename

echo:

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->echo command in Unix/Linux is used to display a line of text on terminal. and also used to create file.

-n : prevents the trailing newline.

-e : enables interpretation of backslash escapes.

ex: echo -e "Hello,\nWorld!"

op: Hello,

World!

To create file:

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echo "content" > file

To remove the content of the file but not the file:

1st way:

>echo -n "" >filename

2nd way:

>cat /dev/null > filename

view the contents of file:

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cat

tac

rev

head

tail

more

less

->cat,tac,rev will display total content at a time.

->if it is huge content then we have to navigate head,tail,more,less

tac : To print file content from bottom to top

$ tac f1.txt

rev : To reverse each line of data

$ rev f1.txt

more & less:

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=>to view the content of the file page by page.

=>less is more powerful than more.

more: to view the content page by page in fw direction only.

less: to view the content page by page in bidirection.

press 'd' --> To go to next page

press 'b' --> To go to previous page

Filtering Rows in a File:

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head & tail:

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head : To display file data from top (default 10 lines)

$ head f1.txt (it will print firat 10 lines by default)

$ head -n 5 f1.txt (print first 5 lines only)

$ head -15 f1.txt (print first 15 lines only)

$ head -n -15 f1.txt (it will display all the lines from the top except last 15 lines)

$head -c 15 f1.txt (it will print only 15 characters from top of the file.

tail : To display file data from bottom (default 10 lines)

$ tail f1.txt

$ tail -n 20 f1.txt (print last 20 lines of file)

$ tail -n 100 f1.txt (print last 100 lines of file)

$ tail -n +10 f1.txt (print the lines from 10 line of file)

$ tail -f f1.txt (to get live data

->To continuously monitor a log file, use the -f option:

>tail -f /var/log/syslog

>less +F /var/log/syslog

wc: (word count)

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>wc filename

options:

-l --> To print only no.of lines

-w --> To print only no.of words

-c --> To print only no.of charcters