What IS EC2

- **EC2** stands for **Amazon Elastic Compute Cloud**
- Amazon EC2 is most well-known services, offers businesses the ability to run applications on the public cloud
- EC2 provides resizable computing capacity in the cloud so developers can enjoy great scalability for building applications
- Instead of purchasing your own hardware and connecting it to a network, Amazon gives you nearly unlimited virtual machines to run your applications while they take care of the hardware.
- AWS supports multiple operating systems from Windows to many flavors of Linux etc. As a customer, you are also able to bring your own custom OS and run it on their platform.

    IN OTHER WORDS, A custom rubber band that can stretch for building applications.

What is Linux?

- Linux is an open-source operating system like other operating systems such as Microsoft Windows, Apple Mac OS, iOS, Google android, etc.
- An operating system is a software that enables the communication between computer hardware and software.
- It conveys input to get processed by the processor and brings output to the hardware to display it. This is the basic function of an operating system.
- Linux is around us since the mid-90s. It can be used from wristwatches to supercomputers. It is everywhere in our phones, laptops, PCs, cars and even in refrigerators. It is very much famous among developers and normal computer users.

Evolution of Linux OS

- The Linux OS was developed by Linus Torvalds in 1991, which sprouted as an idea to improve the UNIX OS. He suggested improvements but was rejected by UNIX designers. Therefore, he thought of launching an OS, designed in a way that could be modified by its users.
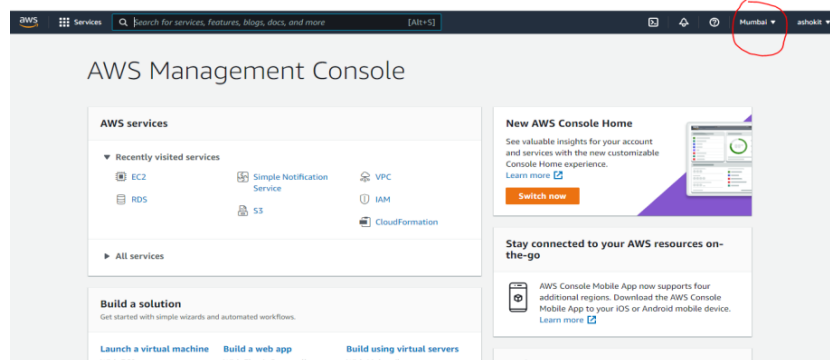
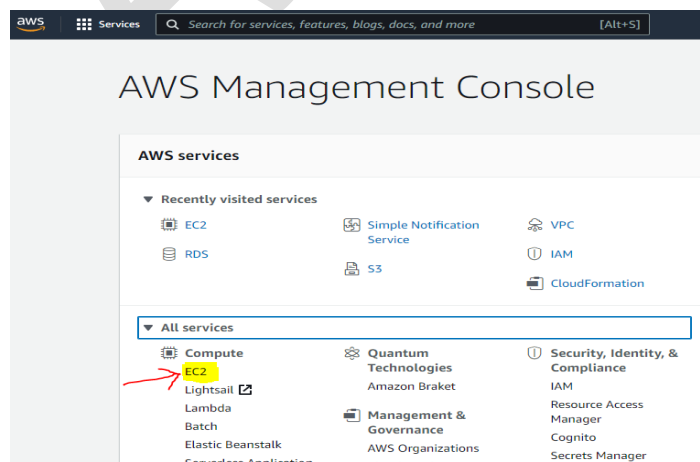## Linux Architecture
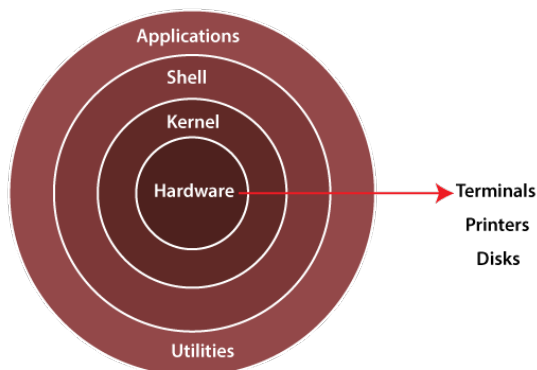
Launching LINUX VM Using AWS EC2 Service

1) **Create Account in AWS (URL: https://portal.aws.amazon.com/billing/signup#/start)**

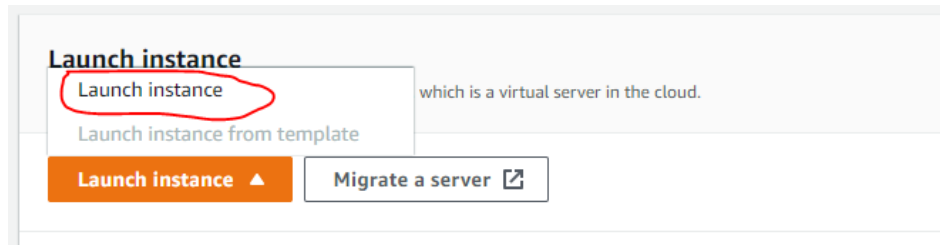2) **Login into AWS Account using your credentials**
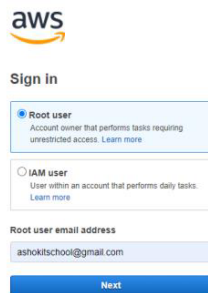
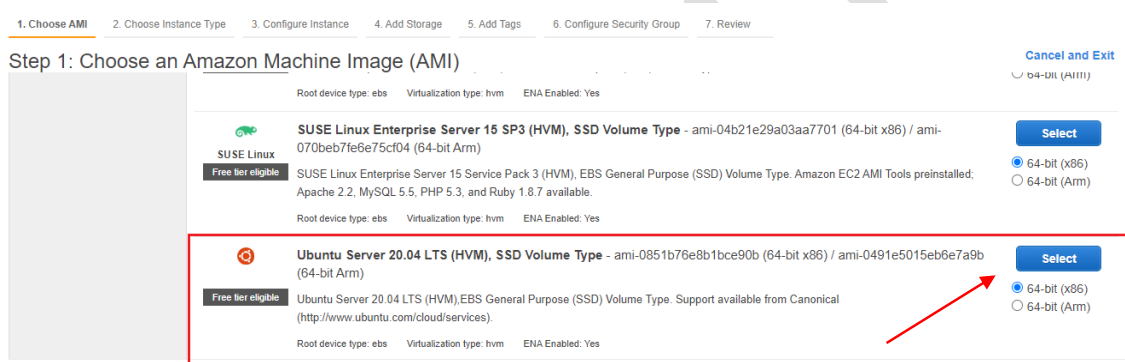3) **Choose region which is near to you (For Me Asia Pacific - Mumbai)**

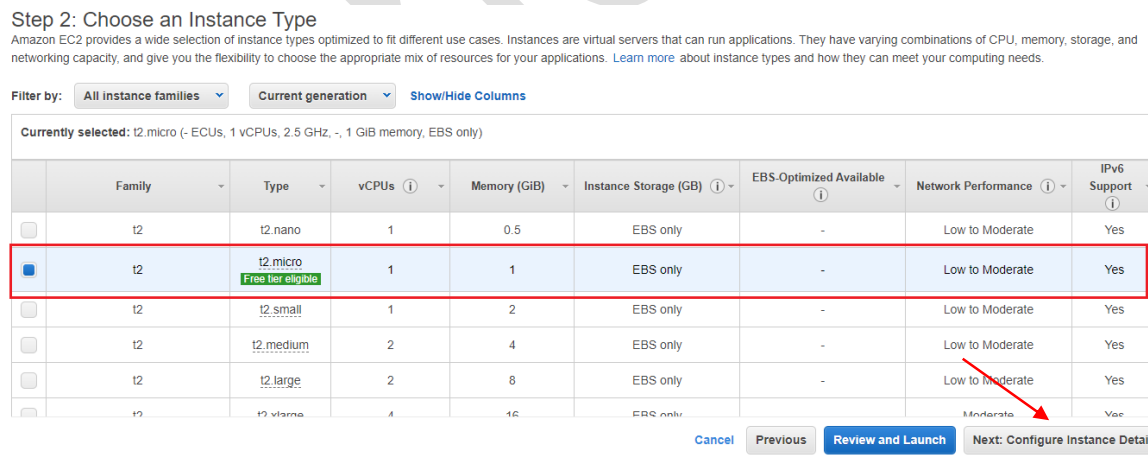4) **Go to services and Select EC2 and Click on Launch Instance**

5) Click on Launch Instance

6) Choose an Amazon Machine Image (AMI) (Note: select free tier eligible)
   Ex: Select Ubuntu Server

7) Select Instance Type (t2.micro and click on Next)

8) Configure Instance Details and Click on Next (Default value 1 instance)

| 1. Choose AMI | 2. Choose Instance Type | 3. Configure Instance | 4. Add Storage | 5. Add Tags | 6. Configure Security Group | 7. Review |

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances ⓘ	1	Launch into Auto Scaling Group ⓘ
Purchasing option ⓘ	☐ Request Spot instances	
Network ⓘ	vpc-0ba4de135353a387d (default)	⟳ Create new VPC
Subnet ⓘ	No preference (default subnet in any Availability Zone)	Create new subnet
Auto-assign Public IP ⓘ	Use subnet setting (Enable)	
Hostname type ⓘ	Use subnet setting (IP name)	
DNS Hostname ⓘ	☑ Enable IP name IPv4 (A record) DNS requests	
	☑ Enable resource-based IPv4 (A record) DNS requests	
	☐ Enable resource-based IPv6 (AAAA record) DNS requests	
Placement group ⓘ	☐ Add instance to placement group	

Cancel   Previous   **Review and Launch**   Next: Add Storage

9) Add Storage and click on Next (Default 8)

| 1. Choose AMI | 2. Choose Instance Type | 3. Configure Instance | 4. Add Storage | 5. Add Tags | 6. Configure Security Group | 7. Review |

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. Learn more about storage options in Amazon EC2.

Volume Type ⓘ	Device ⓘ	Snapshot ⓘ	Size (GiB) ⓘ	Volume Type ⓘ	IOPS ⓘ	Throughput (MB/s) ⓘ	Delete on Termination ⓘ	Encryption ⓘ
Root	/dev/sda1	snap-0ed7eb835e8501dfa	8	General Purpose SSD (gp2)	100 / 3000	N/A	☑	Not Encrypte ▾

Add New Volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. Learn more about free usage tier eligibility and usage restrictions.

▼ Shared file systems ⓘ

Cancel   Previous   **Review and Launch**   Next: Add Tags

10) Add Tag and click on Next

| 1. Choose AMI | 2. Choose Instance Type | 3. Configure Instance | 4. Add Storage | 5. Add Tags | 6. Configure Security Group | 7. Review |

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.
A copy of a tag can be applied to volumes, instances or both.
Tags will be applied to all instances and volumes. Learn more about tagging your Amazon EC2 resources.

Key (128 characters maximum)	Value (256 characters maximum)	Instances ⓘ	Volumes ⓘ	Network Interfaces ⓘ	
Name	MyFirstLinuxVM	☑	☑	☑	⊗

Add another tag (Up to 50 tags maximum)

Cancel Previous Review and Launch Next: Configure Security Group

11) Configure Security Group and Click on 'Review and Launch'

(For Linux We are opening SSH port)

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. Learn more about Amazon EC2 security groups.

Assign a security group: ● Create a **new** security group
　　　　　　　　　　　　　○ Select an **existing** security group

Security group name: launch-wizard-4
Description: launch-wizard-4 created 2022-02-18T11:15:19.583+05:30

Type ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ	Description ⓘ	
SSH	TCP	22	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop	⊗

Add Rule

⚠ **Warning**
Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Cancel Previous Review and Launch

12) Review Instance Launch and click on Launch

Step 7: Review Instance Launch

Please review your instance launch details. You can go back to edit changes for each section. Click Launch to assign a key pair to your instance and complete the launch process.

⚠ **Improve your instances' security. Your security group, launch-wizard-4, is open to the world.**
Your instances may be accessible from any IP address. We recommend that you update your security group rules to allow access from known IP addresses only.
You can also open additional ports in your security group to facilitate access to the application or service you're running, e.g., HTTP (80) for web servers. Edit security groups

▼ AMI Details   Edit AMI

　　Ubuntu Server 20.04 LTS (HVM), SSD Volume Type - ami-0851b76e8b1bce90b
Free tier Ubuntu Server 20.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical (http://www.ubuntu.com/cloud/services).
eligible Root Device Type: ebs   Virtualization type: hvm

▼ Instance Type   Edit instance type

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	-	1	1	EBS only	-	Low to Moderate

Cancel Previous Launch

13) Select New Key Pair --> Choose Name --> Download Key Pair

(Store that key-pair file because we need that file to connect to VM)

14) Once Instance launched you can see below message

15) Go to EC2 Dashboard and see Instance Status -> Select Instance Name and Click on 'Connect'
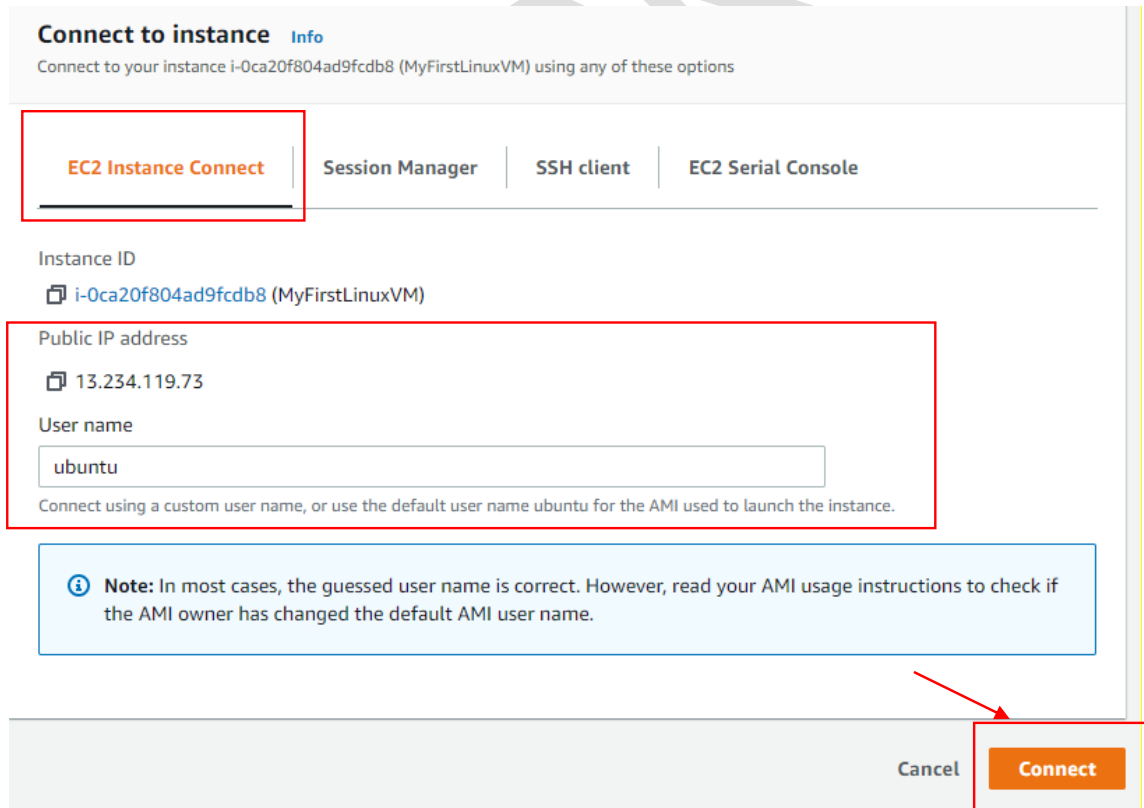
16) Connect to EC2 instance by clicking on Connect button displaying in below window

17) Once you connected to VM, you can see below terminal

i-0ca20f804ad9fcdb8 (MyFirstLinuxVM)

Public IPs: 13.234.119.73   Private IPs: 172.31.35.148

18) You can execute below linux commands in terminal

- **whoami**
- **pwd**
- **ls**

Congratulations, you launched Linux VM using AWS – EC2

Connecting to Linux VM using Putty

1) **Download Putty software (**https://www.putty.org/**) & install it**

2) **Open the folder that PuTTY was installed to (default path is C: > Program Files > PuTTY) and double click on "puttygen.exe"**
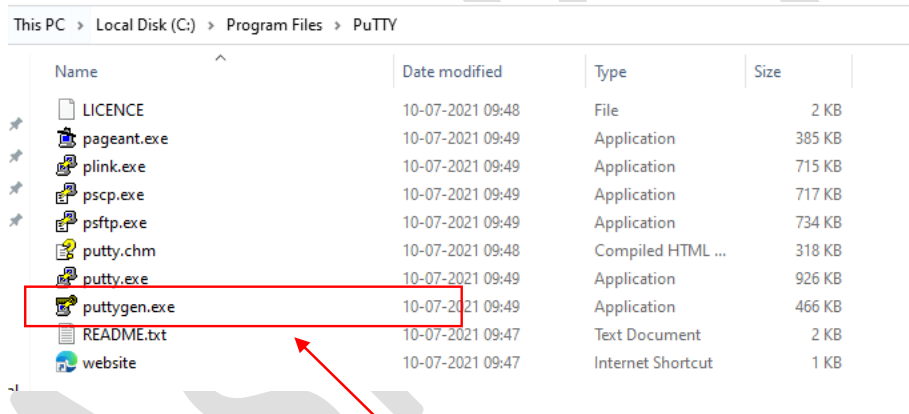
3) **Click on Load button and select .pem file which we have downloaded from EC2**
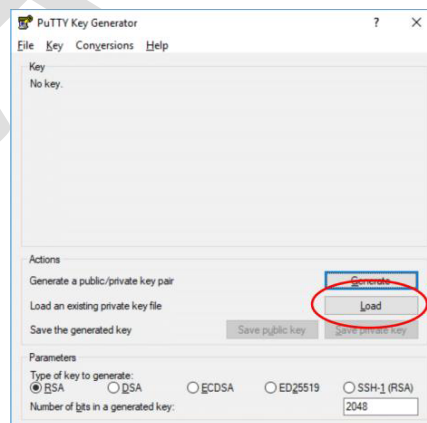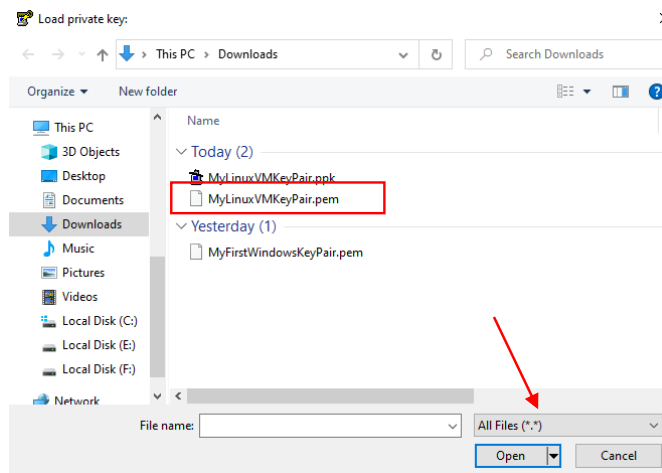
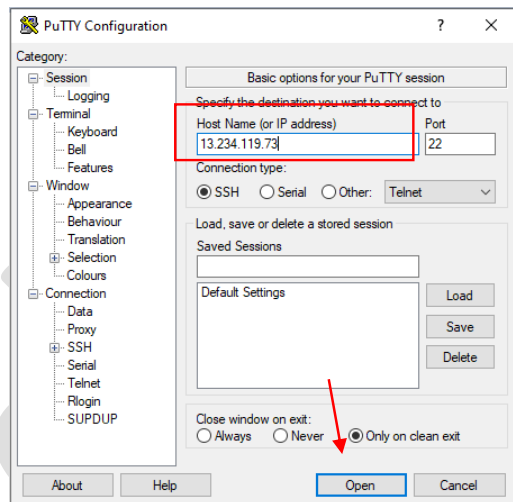**Once PEM file loaded, click on 'Save private key' button (it will give ppk file)**
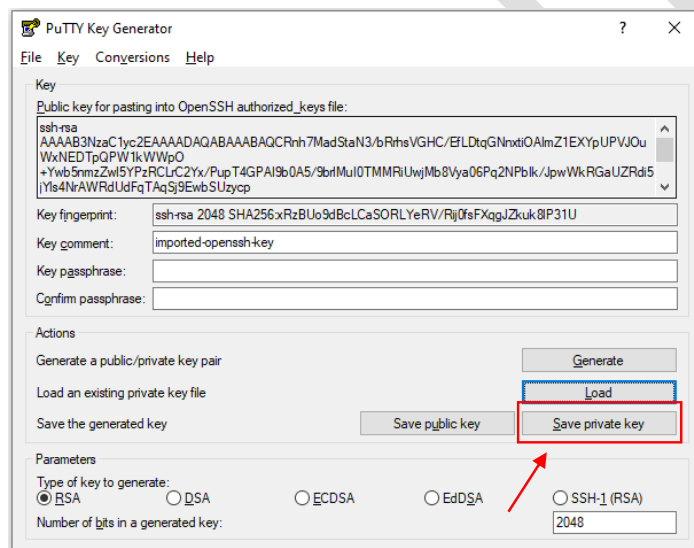
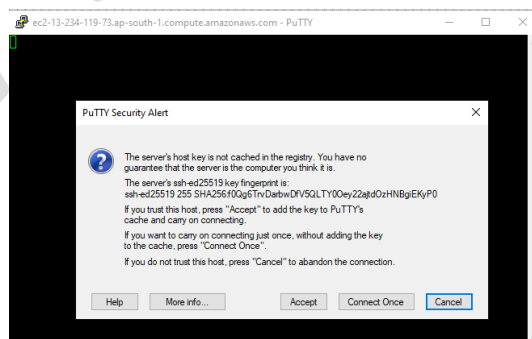4) **Go to putty installed folder and double click on putty.exe file**
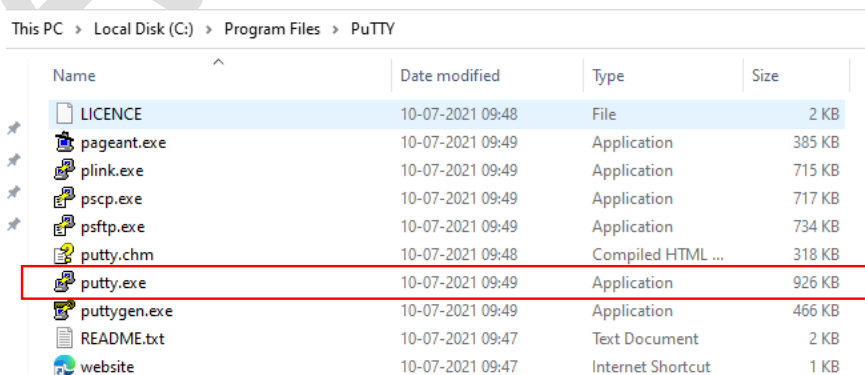
5) In Putty window, Go to SSH -> Auth -> Click Browse -> Select PPK file which we have saved
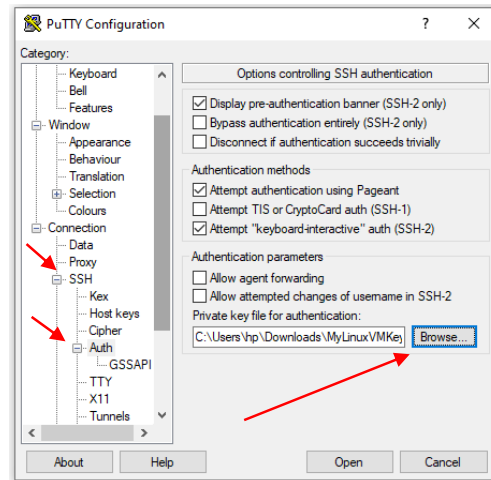
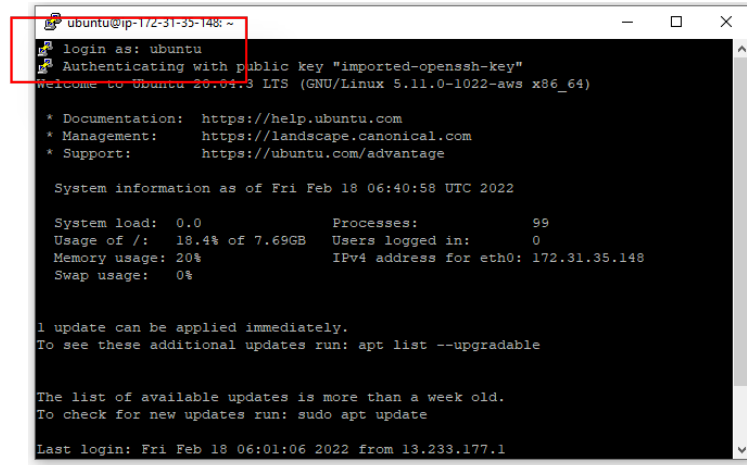**6) Enter EC2 Linux VM Public IP in below window and click on Open**
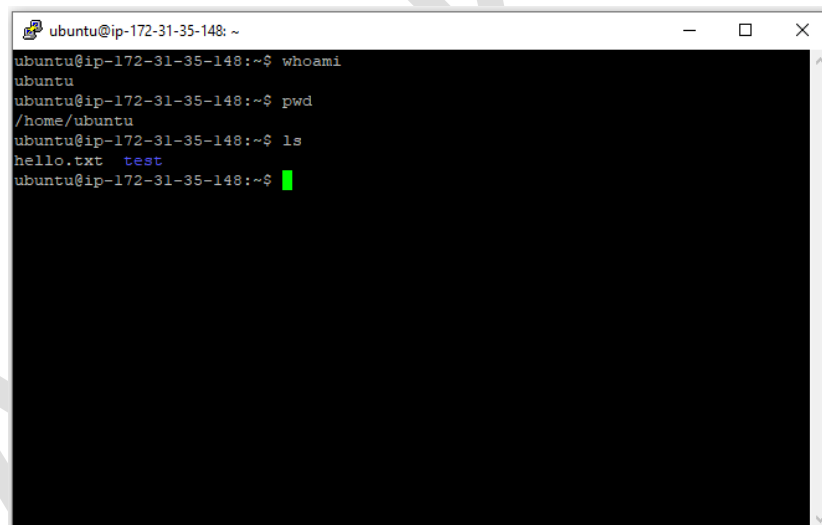

Click on 'Accept' in below window

7) It will ask login as, Enter VM Username (you can find username in EC2 Instance
    (My VM Username is ubuntu)

   Once login successful you can see below terminal

8) Execute below commands in terminal

9) **Congratulations**, you are able to connect to Linux VM using Putty

==== Learn Here.. Lead Anywhere..!! ====