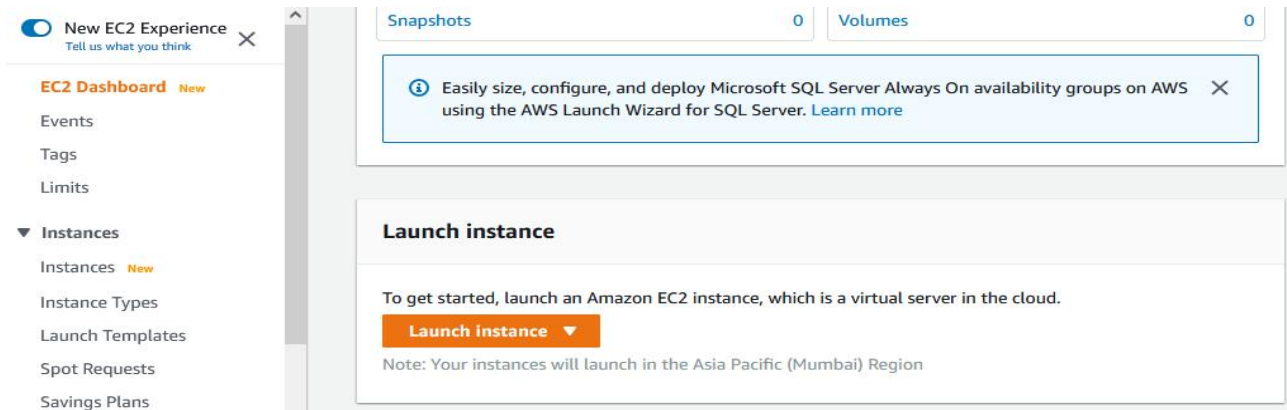


Creating a Linux EC2 Instance and connecting to it

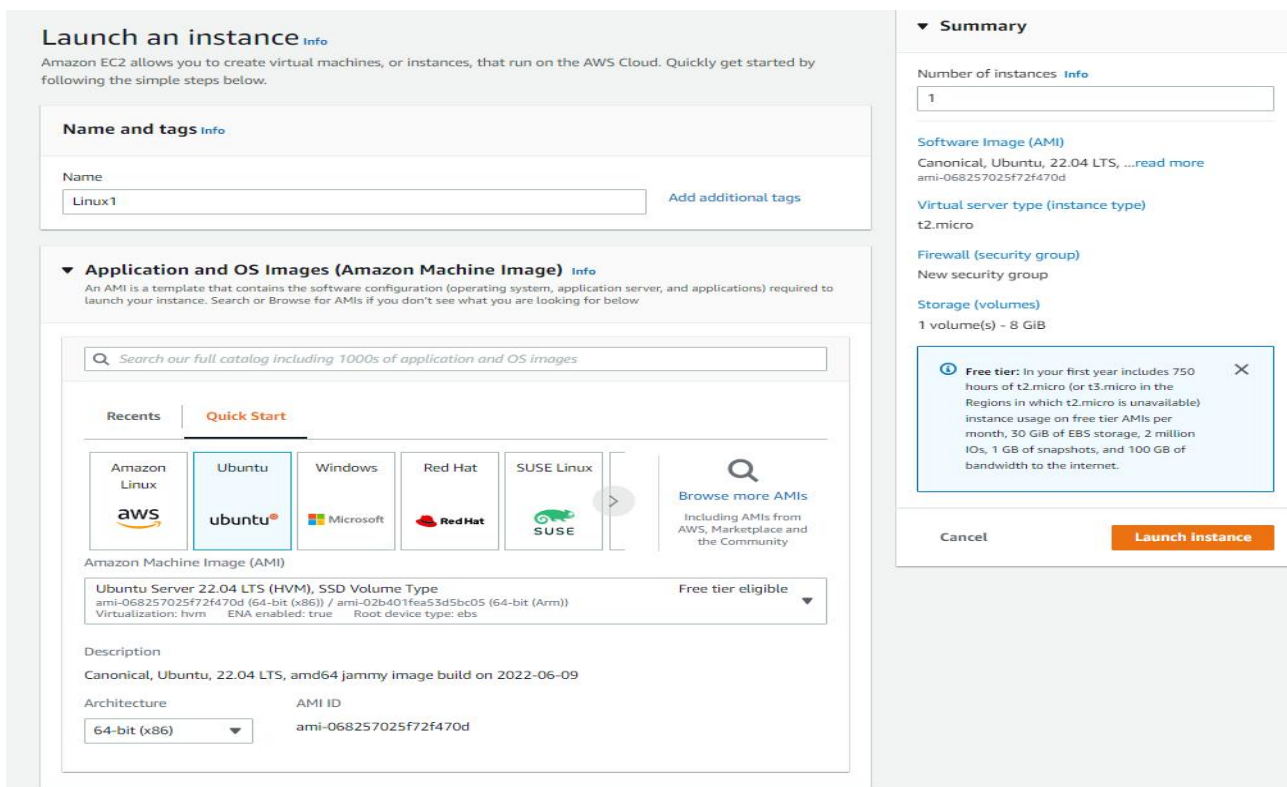
1. Create a Linux EC2 Instance

- a. Logon to the AWS console on <https://console.aws.amazon.com> using your root account.
- b. After logon in the search bar type EC2 and click on EC2 in the search results or click the services drop down button and in compute click EC2. This will open the Amazon EC2 dashboard.
- c. On the dashboard just scroll down and click the Launch instance button.



- d. Step 1: On the Launch an Instance page (image given below) first enter a name for this EC2 Instance.

Step 2: Choose an Amazon Machine Image (AMI).. For this practical we will select the ubuntu AMI. Click Select button ubuntu AMI as shown below. Make sure below the ubuntu button, the version of ubuntu shows free tier eligible option. From that menu using drop down list you can select any ubuntu version that is free tier eligible.



Scroll Below.

The screenshot shows two sections of the AWS Management Console. The first section, titled 'Instance type Info', displays the 't2.micro' instance type, which is 'Free tier eligible'. It lists specifications: Family: t2, 1 vCPU, 1 GiB Memory. Pricing is shown as On-Demand Linux: 0.0124 USD per Hour and On-Demand Windows: 0.017 USD per Hour. A 'Compare instance types' link is present. The second section, titled 'Key pair (login) Info', explains that a key pair is used for secure connection. It features a 'Key pair name - required' dropdown menu with a 'Select' placeholder and a 'Create new key pair' button.

Step 3: Choose an Instance type option is present. you can select the configuration for your EC2 instance. This allows you to decide the number of CPU's, RAM, storage type and Network Bandwidth for your EC2 instance. You need to pay based on the configuration selected. Make sure t2.micro is selected. However it depends on the region selected. Some regions may show t3.micro also. It is by default. This is the only instance type available for the Free tier.

Step 4: The next option asks you to select existing key or to create a new key pair. This generates a public key and a private key. These keys are your identities for this EC2 instance. The public will be attached to the EC2 instance. The private key is downloaded to your machine. It is a file with an .pem or .ppk extension. When you want to access this EC2 instance you need to provide your private key. This key will be matched with the public key with the EC2 instance. If the key matches you are allowed to access the EC2 instance and get the shell . There can not be any other private key matching to your public key. This is for securing the EC2 instance access. Only username and password based access is not secure. The username and password may be leaked. But with this mechanism no one else can access your EC2 instance as the private key is present on your computer only. Thus you need to protect this private key and keep it secure.

For this practical select **Create a new key pair** option . In the key pair name field **type a name for this key**. It can be anything. But make sure you give specific name so that when you create multiple instances you know which key is associated with which instance.

The screenshot shows the 'Create key pair' dialog box. It includes instructions: 'Key pairs allow you to connect to your instance securely. Enter the name of the key pair below. When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. Learn more'. There is a text input field for 'Key pair name' with a placeholder 'Enter key pair name'. Below this, 'Key pair type' is set to 'RSA' (RSA encrypted private and public key pair). 'Private key file format' is set to '.pem' (For use with OpenSSH). At the bottom are 'Cancel' and 'Create key pair' buttons.

Keep key pair type as RSA. For Linux Instances which you will access from the Windows computers, select .ppk file format. This is because you will use putty utility too connect to this Instance from windows. The putty utility does not support .pem file.

But if are going to access this Linux EC2 instance from a Linux computer, then select .pem file. The SSH utility present in Linux supports .pem file.

Then click Create Key Pair button. Your private key will be automatically downloaded in the browser.

You will require this file in the Accessing your EC2 instance step later.
Scroll below to go to the **Network Settings** section.

The screenshot shows the 'Network settings' section of the AWS Management Console. It includes fields for 'Network' (vpc-0e8f90191fa232e | default) and 'Subnet' (No preference). The 'Auto-assign public IP' is set to 'Enable'. Under 'Firewall (security groups)', the 'Create security group' button is selected. Below this, it states 'We'll create a new security group called 'launch-wizard-17' with the following rules:'. Three rules are listed: 'Allow SSH traffic from Anywhere' (checked), 'Allow HTTPs traffic from the internet' (unchecked), and 'Allow HTTP traffic from the internet' (unchecked). A warning box at the bottom states: '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.'

Step 5: Network Settings section lets you decide to connect your EC2 instance to a private Virtual Private Cloud. It is a separate network that you need to create. For this you need to go to VPC dashboard. Also you need to create subnets in the VPC. This allows your different EC2 instances to run in isolated environment. These EC2 instances connected to different VPC's can not communicate with each other.

Firewall (Security Group) allows you to configure firewall rules attached with the EC2 instance that you are creating. The Security Group rules allow different services running on this EC2 instance to be accessed from other machines. The default rule allows you to connect this EC2 instance using putty or SSH client over the internet. This allows you to remotely manage your EC2 instance and install and configure required applications or services.

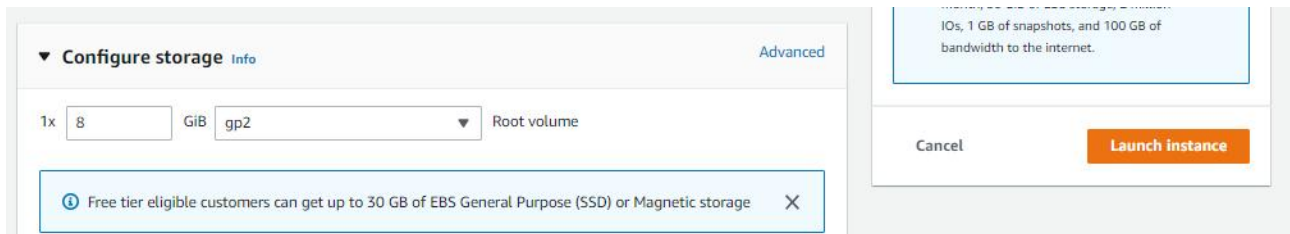
For this practical keep the default options.

The screenshot shows the 'Configure storage' section of the AWS Management Console. It displays '1x' volume of '8' GiB with 'gp2' storage type, designated as the 'Root volume'. A blue banner indicates that 'Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage'. There is an 'Add new volume' button. Below this, a note states: 'The selected AMI contains more instance store volumes than the instance allows. Only the first 0 instance store volumes from the AMI will be accessible from the instance'. At the bottom, it shows '0 x File systems' and an 'Edit' button.

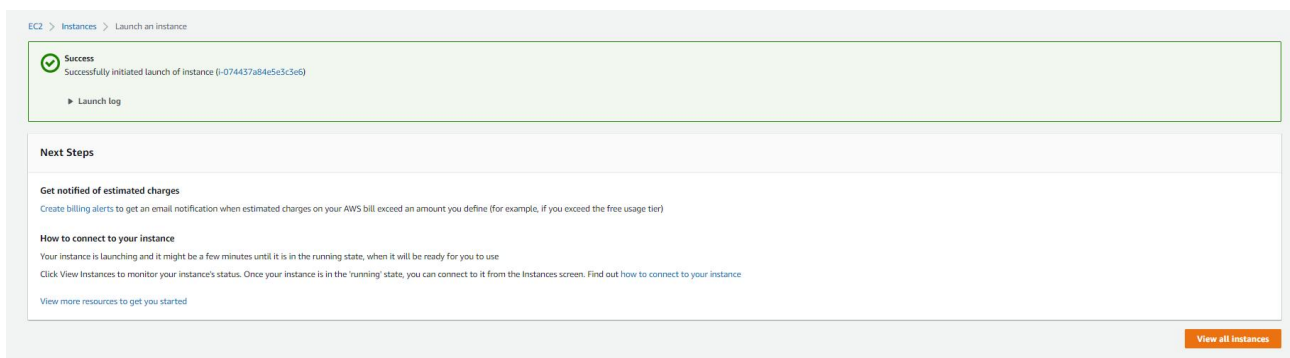
Step 6: In Configure Storage section you can specify the required amount of storage for your EC2 instance. This is the size of the hard disk that will be attached to the EC2 virtual machine. This storage uses the Amazon Elastic Block Storage (EBS) storage service. You can attach multiple volumes to a single EC2 instance by clicking the Add New Volume button and creating a new volume.

For this practical keep the default value as it is.

Finally Click **Launch Instance** button which is present on the right hand side.



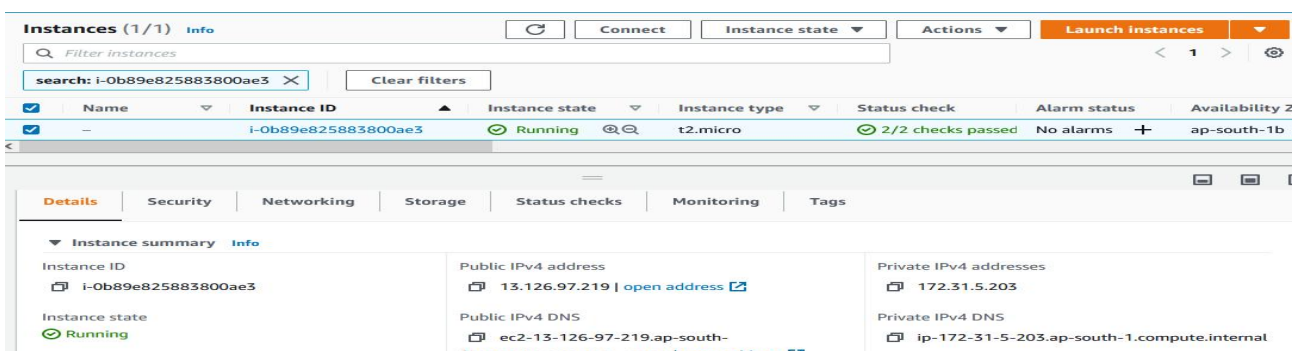
Once the Instance is created its state will be shown as below.



Click View Instances button or click on instances in (EC2 > Instances > Launch an Instance) at the top.

The page that opens will display the EC2 instance that you created just now. Click the check box in front of the instance. This will display the information about the EC2 instance below. The details tab will display the public IPv4 and private IPv4 address associated with this instance. Also it displays the public and private IPv4 DNS names of this instance.

Using public IPv4 address or the public IPv4 DNS name the instance can be accessed over Internet. When you stop an instance and start later the public IPv4 address changes. Thus using Public DNS name is recommended.



Now your Linux EC2 instance is created and running.

2. Accessing the Linux EC2 instance.

a. Copy the public IPv4 address or public IPv4 DNS name of your EC2 instance from the above page.

b. On your Windows machine you need a SSH client like Putty. Here we will use Putty. If this software is not installed on your Windows machine then download it from following URL.

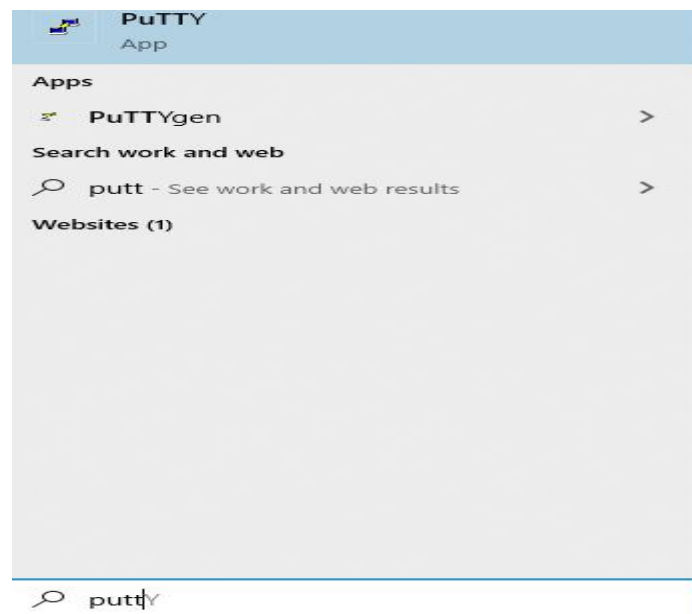
<https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html>

Download 64 bit or 32 bit msi package based on your Windows. Once the MSI package is downloaded, just double click to start installation and follow the installation with default options.

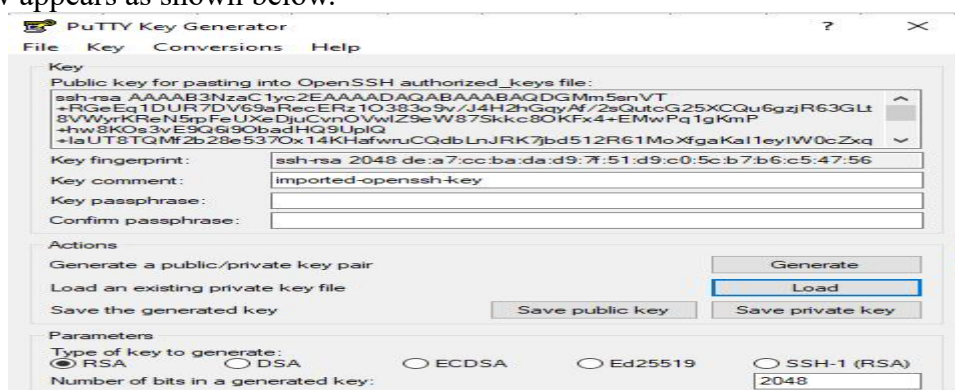
perform this step if you created a pem file and want to access Linux EC2 instance from a Windows computer using Putty. Not required for ppk files (skip to Connect using Putty section)

Before we use Putty to connect to our EC2 instance, we need to convert the .pem private key file that was downloaded to .ppk file. Putty does not directly support .pem key file. Thus putty provides a utility called **puttygen** to convert .pem file to .ppk.

In Windows search bar just type putty and you will get puttygen utility. Click on puttygen.



In the puttygen window that opens, Click the **Load** button. Browse to the folder where you downloaded the .pem file. In the window select **All files (*.*)** option just above the Open button. Then select the .pem file for this EC2 instance. Click Ok on the message displayed. The puttygen window now appears as shown below.



Now click

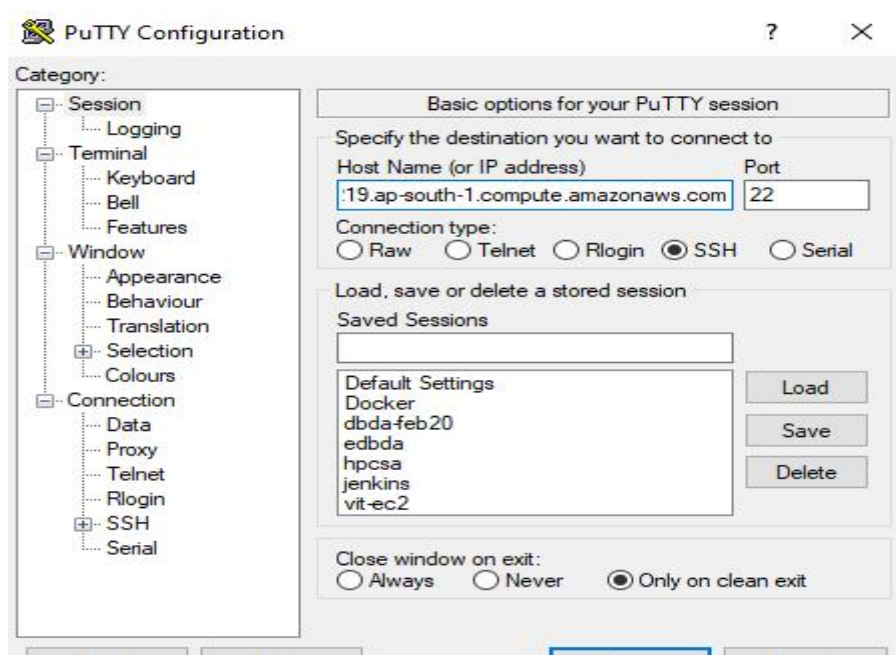
on the **Save Private Key** button. Click Yes on the message window displayed. Now store the file in the same folder. **Make sure you specify the same name to the file as that of downloaded .pem file.**

****When you start typing the name Windows displays the name of the file with .pem extension. If you select it and continue the file will be saved with filename.pem.ppk. This will not work. The filename should be only filename.ppk.**

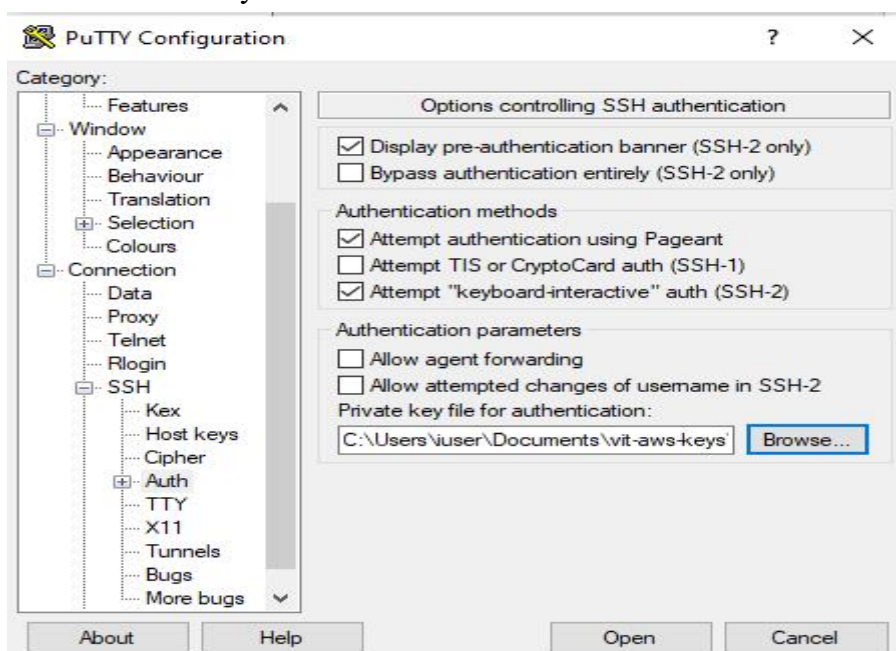
Now close the Puttygen window.

Connect Using Putty

Now open Putty. In the Hostname (or IP address) field paste the copied IPv4 DNS name of your Linux instance.



Then click on plus sign of SSH option on the left side. In the options displayed below SSH, click on Auth. Click Browse and select the .ppk file create with Puttygen in the above steps. Click Open Button to connect to your EC2 instance.



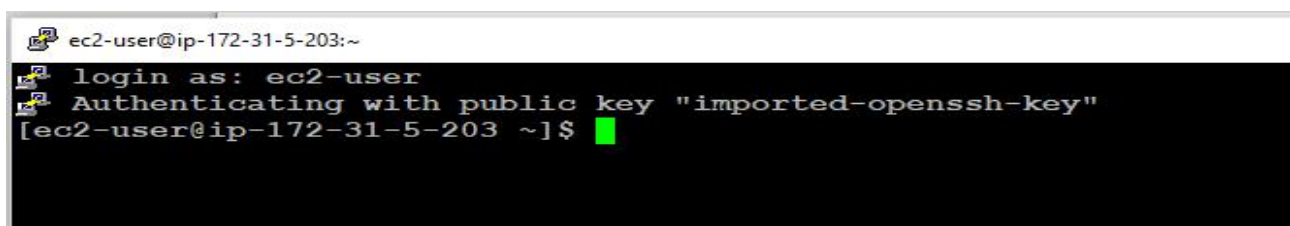
g. A Putty connection window opens, first time it connects to the EC2 instance following message will be displayed. (The screen may differ based on the version of the putty. You may be shown a different message with **Accept** option. Click Accept.)



Click Yes.

h. Now the Window will prompt for the username.

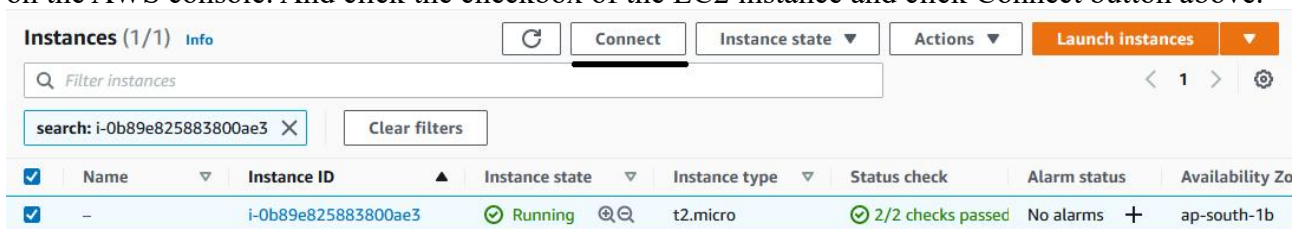
The username for the **Red Hat AMI** is **ec2-user**. The username for the **Ubuntu AMI** is **ubuntu**.



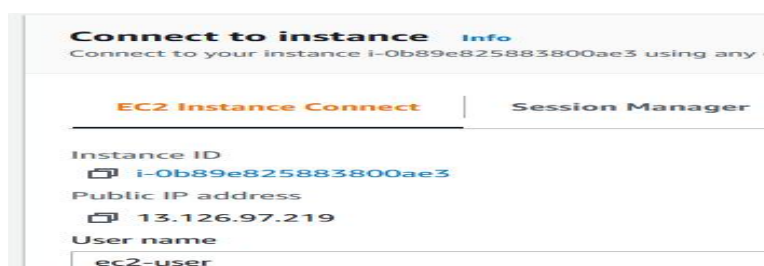
Thus now you are connected to your EC2 instance. Now you can Install any application or platforms like Java, Python etc.

You directly do not get root access. You need to use **sudo** before any command to perform root operations.

*** To find the connection details like username etc. for any EC2 instance, go to the instance page on the AWS console. And click the checkbox of the EC2 instance and click Connect button above.



It will display the information.



*** After this practical make sure you delete all the EC2 instances created.