Aim :

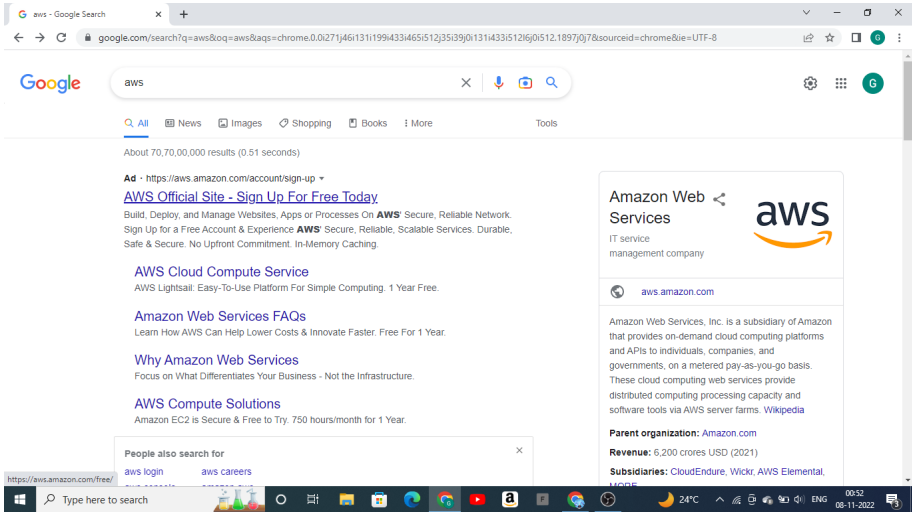
Implementation of Amazon Web Services

Theory :

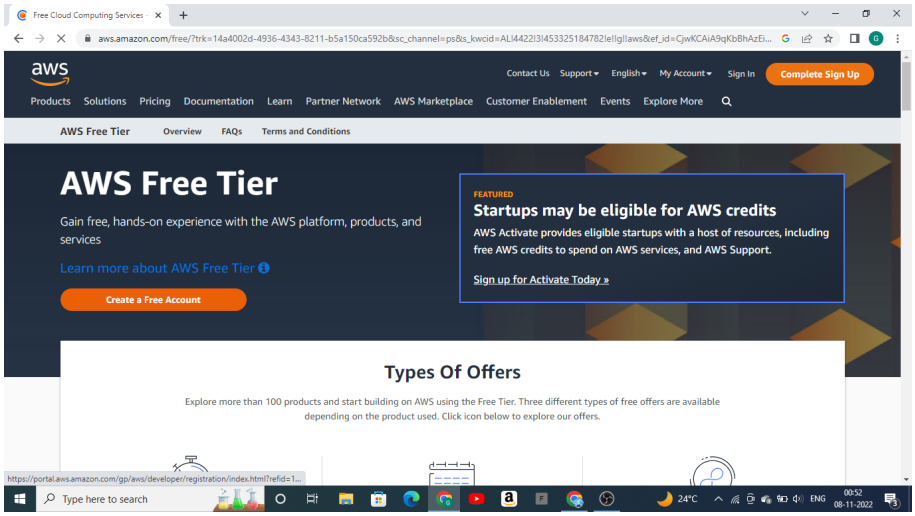
- Amazon Web Services, Inc. (AWS) is a subsidiary of Amazon that provides on-demand cloud computing platforms and APIs to individuals, companies, and governments, on a metered pay-as-you-go basis.
- These cloud computing web services provide distributed computing processing capacity and software tools via AWS server farms.
- One of these services is Amazon Elastic Compute Cloud (EC2), which allows users to have at their disposal a virtual cluster of computers, available all the time, through the Internet.

Steps to Create Account in AWS

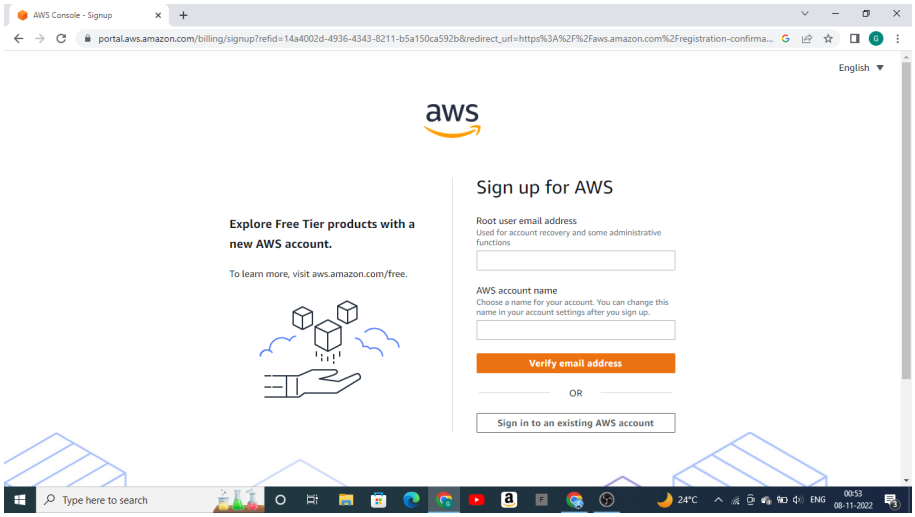
1. Open the Amazon Web Services home page



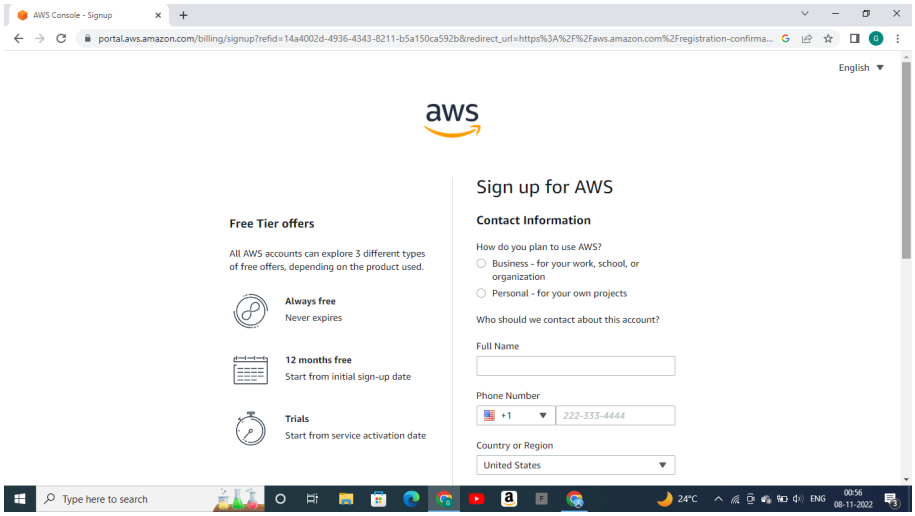
2. Choose Create an AWS account.



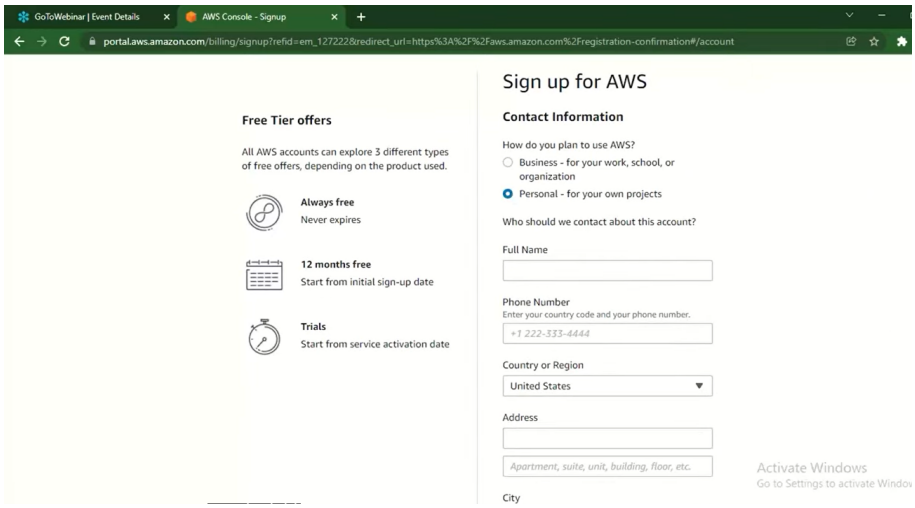
3. Enter your account information, and then choose Continue. Be sure that you enter your account information correctly, especially your email address. If you enter your email address incorrectly, you won't be able to access your AWS account.



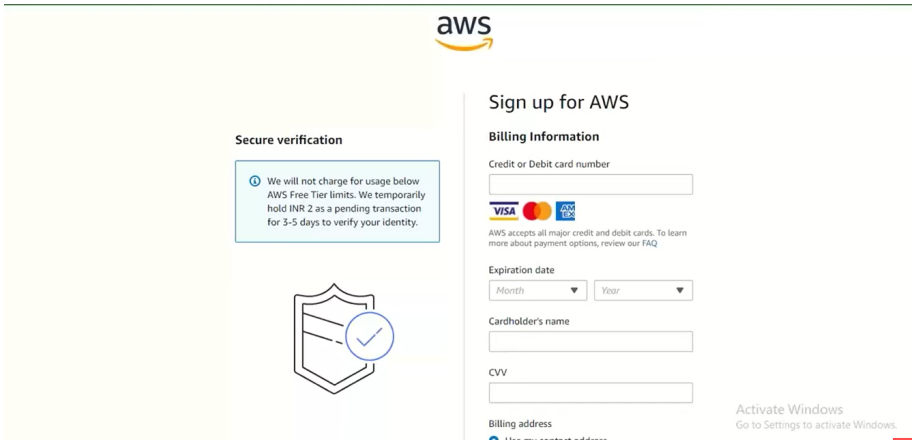
4. Choose Personal or Professional



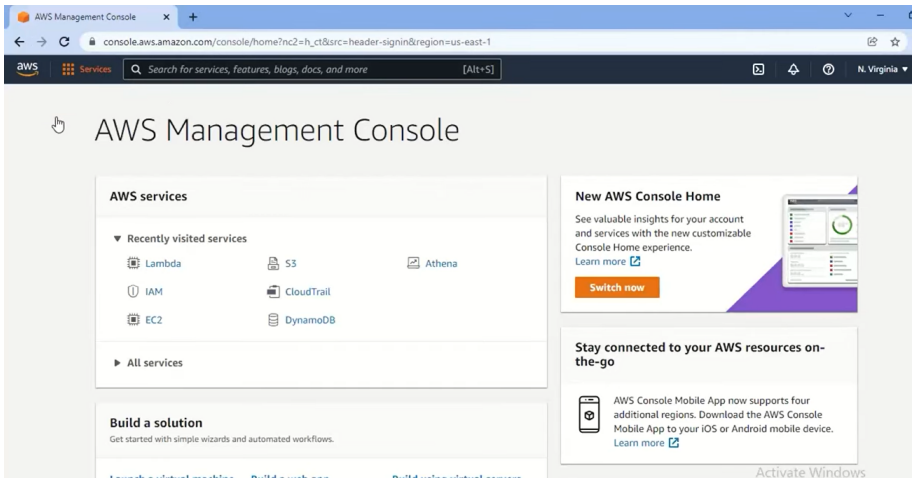
5. Enter your company or personal information. Read and accept the AWS Customer Agreement



6. Choose Create Account and Continue. On the Payment Information page, enter the information about your payment method, and then choose Verify and Add. You can't proceed with the sign-up process until you add a valid payment method.



8. Next, you must verify your phone number. Choose your country or region code from the list, and enter a phone number where you can be reached in the next few minutes. Enter the code displayed in the CAPTCHA, and then submit. When the automated system contacts you, enter the PIN you receive and then choose Continue. Finally, wait for your new account to be activated. This usually takes a few minutes but can take up to 24 hours. When your account is fully activated, you receive a confirmation email message. Check your email and spam folder for the confirmation message. After you receive this email message, you have full access to all AWS services.



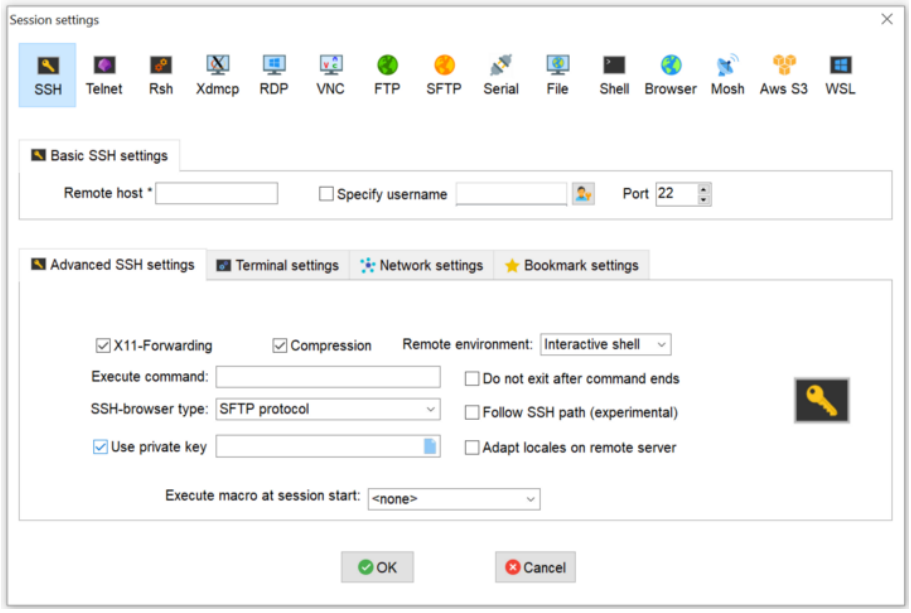
How to Upload Jupyter NoteBook on AWS cloud

1. Download Mobaxterm Installer version

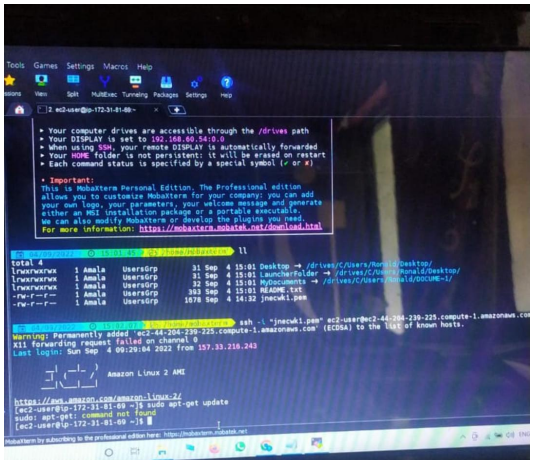
MobaXterm is the recommended application to use for SSH connections from a Windows operating system.Secure Shell (SSH) is a network protocol used to allow secure access to a UNIX terminal.

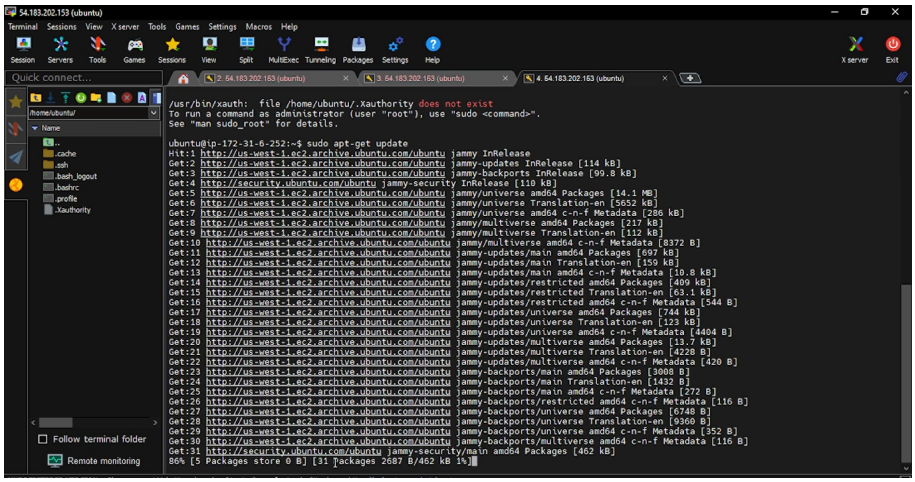
MobaXterm allows you to access your files and email stored on the engineering servers, and provides a UNIX environment to run programs.

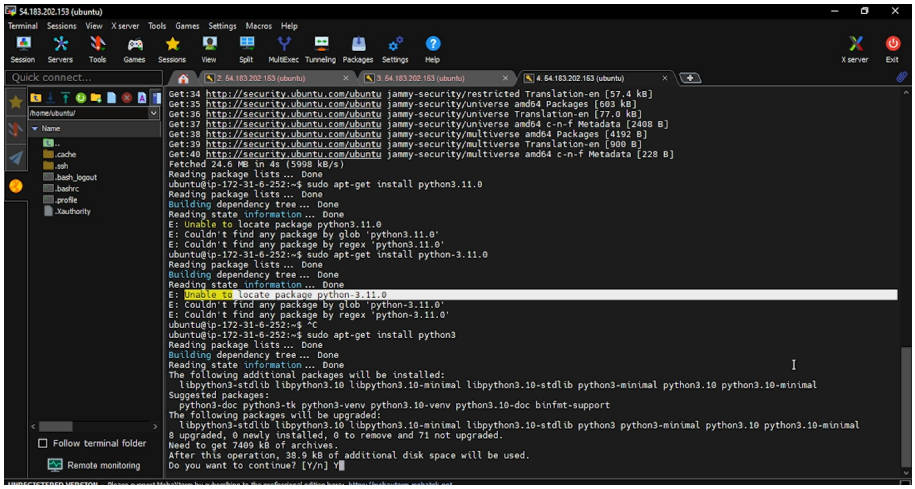
2. In MobaXterm go to Sessions settings>Click on ‘SSH’>Copy IP Address of the instance launched in aws>Specify username>Advance SSH settings>Click on ‘Use Private Key’>Upload the key>Click ‘Ok’

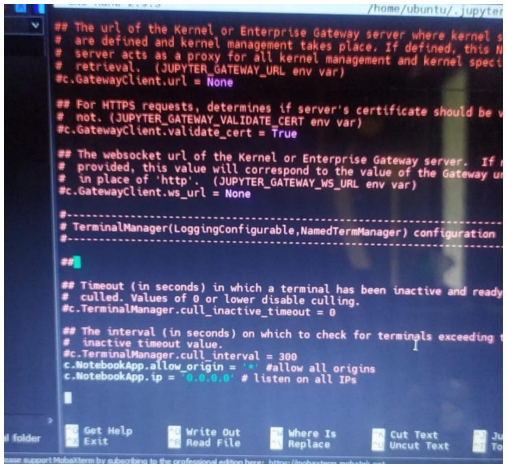


3. After following the above steps, a required session is created on the screen. On this terminal we have to execute the following steps to upload Jupyter Notebook to AWS


Tools Games Settings Macros Help
Your computer drives are accessible through the /drives path
Your DISPLAY is set to 192.168.60.54:0.0
When using SSH, your remote DISPLAY is automatically forwarded
Your HOME folder is not persistent: it will be erased on restart
Each command status is specified by a special symbol (✓ or ✗)
Important:
This is MobaXterm Personal Edition. The Professional edition
allows you to customize MobaXterm for your company: you can add
your own logo, your parameters, your welcome message and generate
either an MSI installation package or a portable executable.
We can also modify MobaXterm or develop the plugins you need.
For more information: https://mobaxterm.mobatek.net/download.html
total 4
lrwxrwxrwx 1 Amala UsersGrp 31 Sep 4 15:01 Desktop → /drives/C/Users/Ronald/Desktop/
lrwxrwxrwx 1 Amala UsersGrp 31 Sep 4 15:01 LauncherFolder → /drives/C/Users/Ronald/Desktop/
lrwxrwxrwx 1 Amala UsersGrp 32 Sep 4 15:01 Mydocuments → /drives/C/Users/Ronald/DOCUME~1/
-rw-r--r-- 1 Amala UsersGrp 383 Sep 4 15:01 README.txt
-rw-r--r-- 1 Amala UsersGrp 1678 Sep 4 14:32 jnacwk1.pem
Warning: Permanently added 'ec2-44-204-239-225.compute-1.amazonaws.com' (ECDSA) to the list of known hosts.
X11 forwarding request failed on channel 0
Last login: Sun Sep 4 09:29:04 2022 from 157.33.216.243
Amazon Linux 2 AMI
https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-81-69 ~]$ sudo apt-get update
sudo: apt-get: command not found
[ec2-user@ip-172-31-81-69 ~]$


54.183.202.153 (ubuntu)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
/home/ubuntu/
Name
.cache
.ssh
.bash_logout
.bashrc
.profile
.Xauthority
Follow terminal folder
Remote monitoring
/usr/bin/xauth: file /home/ubuntu/.Xauthority does not exist
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
ubuntu@ip-172-31-6-252:~$ sudo apt-get update
Hit:1 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [114 kB]
Get:3 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [99.8 kB]
Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:5 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [14.1 MB]
Get:6 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy/universe Translation-en [5652 kB]
Get:7 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 c-n-f Metadata [286 kB]
Get:8 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 Packages [217 kB]
Get:9 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse Translation-en [112 kB]
Get:10 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 c-n-f Metadata [8372 B]
Get:11 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [697 kB]
Get:12 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [159 kB]
Get:13 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 c-n-f Metadata [10.8 kB]
Get:14 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [409 kB]
Get:15 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted Translation-en [63.1 kB]
Get:16 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 c-n-f Metadata [544 B]
Get:17 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [744 kB]
Get:18 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe Translation-en [123 kB]
Get:19 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 c-n-f Metadata [4404 B]
Get:20 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 Packages [13.7 kB]
Get:21 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse Translation-en [4228 B]
Get:22 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 c-n-f Metadata [420 B]
Get:23 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main amd64 Packages [3008 B]
Get:24 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main Translation-en [1432 B]
Get:25 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main amd64 c-n-f Metadata [272 B]
Get:26 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/restricted amd64 c-n-f Metadata [116 B]
Get:27 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/universe amd64 Packages [6748 B]
Get:28 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/universe Translation-en [9360 B]
Get:29 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/universe amd64 c-n-f Metadata [352 B]
Get:30 http://us-west-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/multiverse amd64 c-n-f Metadata [116 B]
Get:31 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [462 kB]
86% [5 Packages store 0 B] [31 Packages 2687 B/462 kB 1%]


54.183.202.153 (ubuntu)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
/home/ubuntu/
Name
.cache
.ssh
.bash_logout
.bashrc
.profile
.Xauthority
Follow terminal folder
Remote monitoring
Get:34 http://security.ubuntu.com/ubuntu jammy-security/restricted Translation-en [57.4 kB]
Get:35 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [603 kB]
Get:36 http://security.ubuntu.com/ubuntu jammy-security/universe Translation-en [77.0 kB]
Get:37 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 c-n-f Metadata [2408 B]
Get:38 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 Packages [4192 B]
Get:39 http://security.ubuntu.com/ubuntu jammy-security/multiverse Translation-en [900 B]
Get:40 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 c-n-f Metadata [228 B]
Fetched 24.6 MB in 4s (5998 kB/s)
Reading package lists... Done
ubuntu@ip-172-31-6-252:~$ sudo apt-get install python3.11.0
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package python3.11.0
E: Couldn't find any package by glob 'python3.11.0'
E: Couldn't find any package by regex 'python3.11.0'
ubuntu@ip-172-31-6-252:~$ sudo apt-get install python-3.11.0
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package python-3.11.0
E: Couldn't find any package by glob 'python-3.11.0'
E: Couldn't find any package by regex 'python-3.11.0'
ubuntu@ip-172-31-6-252:~$ ^C
ubuntu@ip-172-31-6-252:~$ sudo apt-get install python3
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
libpython3-stdlib libpython3.10 libpython3.10-minimal libpython3.10-stdlib python3-minimal python3.10 python3.10-minimal
Suggested packages:
python3-doc python3-tk python3-venv python3.10-venv python3.10-doc binfmt-support
The following packages will be upgraded:
libpython3-stdlib libpython3.10 libpython3.10-minimal libpython3.10-stdlib python3 python3-minimal python3.10 python3.10-minimal
8 upgraded, 0 newly installed, 0 to remove and 71 not upgraded.
Need to get 7409 kB of archives.
After this operation, 38.9 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y



4. Steps to execute in Mobaxterm terminal

1. sudo apt-get update

2. sudo apt-get install python3.8

3. sudo apt-get -y install python3-pip

4. sudo python3 -m pip install --upgrade pip

5. sudo pip3 install jupyter

6. jupyter notebook --generate-config

It will give the path of a file. Copy that path and open with nano or vi
Paste below 2 lines in the file and save it

c.NotebookApp.allow_origin = '*' #allow all origins

c.NotebookApp.ip = '0.0.0.0' # listen on all IPs

7. jupyter notebook password

8. jupyter notebook
9. Now go to chrome browser
Open public dns of instance, make it http and use port :8888

What is sudo apt ?
Sudo stands for SuperUser DO and is used to access restricted files and operations. By default, Linux restricts access to certain parts of the system preventing sensitive files from being compromised. The sudo command temporarily elevated privileges allowing users to complete sensitive tasks without logging in as the root user. sudo is just a keyword to execute a given command with privileges
The apt command is a powerful command-line tool, which works with Ubuntu's Advanced Packaging Tool (APT) performing such functions as installation of new software packages, upgrade of existing software packages, updating of the package list index, and even upgrading the entire Ubuntu system.

1. Sudo apt-get update

It'll figure out what the latest version of each package and dependency is, but will not actually download or install any of those updates.Update the system's local repository list. In other words this command fetches the latest version of the package list from your distro's software repository, and any third-party repositories you may have configured.

2. Sudo apt-get install python3

Download the latest version of Python. APT will automatically find the package and install it on your computer.

3. Sudo apt-get -y install python3-pip

Once the installation is complete, verify the installation by checking the pip version: pip3 –version. In above command -y or –yes or –assume-yes is used during the execution of apt-get command, it may sometimes prompt the user for a yes/no. With this option, it is specified that it should assume ‘yes’ for all prompts, and should run without any interaction.

4. Sudo python3 -m pip install -–upgrade pip

Python pip install –user –upgrade is used to update a package. We can also upgrade any package to a specific version using upgrade pip.

5. sudo pip3 install jupyter

This command to install a Jupyter Notebook

6. Juypter notebook –generate-config

This command to install a Jupyter Notebook. This command configures the Notebook server. To create a Jupyter_notebook_config.py file in jupyter directory, with all defaults commented out.

It will give the path of a file. Copy that path and open with nano or vi.Paste below 2 lines in the file and save it

Linux allows users to edit and manage files via a text editor, such as nano, vi, or jed. nano and vi come with the operating system, while jed has to be installed.
The nano command denotes keywords and can work with most languages. To use it, enter the following command:
nano [filename]
vi uses two operating modes to work – insert and command.
insert is used to edit and create a text file. On the other hand, the command performs operations, such as saving, opening, copying, and pasting a file.
To use vi on a file, enter:vi [filename]

7. NotebookApp.allow_origin = '*' #allow all origins
8. c.NotebookApp.ip = '0.0.0.0' # listen on all IPs.

By default, Jupyter Notebook only accepts connections from localhost (eg, from the same computer that it's running on). By modifying the NotebookApp.allow_origin option from the default ' ' to '*', you allow Jupyter to be accessed externally.
c.NotebookApp.allow_origin = '*' #allow all origins
There is also need to change the IPs that the notebook will listen on
c.NotebookApp.ip = '0.0.0.0'# listen on all IPs
Make sure that you uncomment these settings (remove the # at the beginning) after making any modifications. If you don't, they'll be interpreted as comments, and they won't change the behavior of the Jupyter notebook client.

9. jupyter notebook password

Set the password

10. Now go to chrome browser

Open public dns of instance, make it http and use port :8888

Conclusion:

In this practical we learned to create an AWS account and to upload a jupyter notebook.