



AWS EC2 INSTALLATION FOR ALGO TRADING

With TA-Lib

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Launching the EC2 Instance

Step 1: Logon to <https://console.aws.amazon.com>

Step2: Change your region to Mumbai

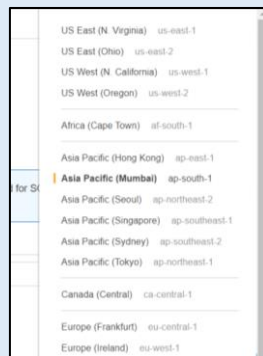
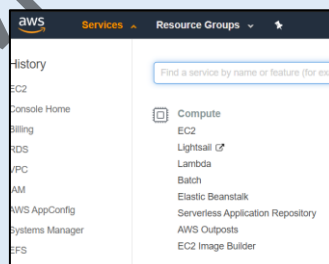


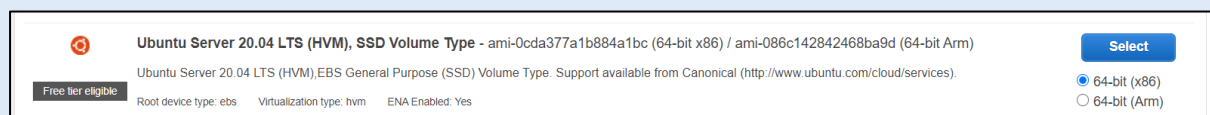
Figure 1 Change region in AWS console

Step 3: Click on services > EC2



Step 4: Click on Launch Instance (Launch is creating in AWS terminology)

Step 5: Select below OS AMI as below



Step 6: Select **free tier eligible** or choose as your plan.

Step 2: Choose an Instance Type
Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: All instance types Current generation Show/Hide Columns

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GiB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	General purpose	t2.micro <small>Free tier eligible</small>	1	1	EBS only	-	Low to Moderate	Yes

Step 7:

1. Configure Instance: don't change anything and proceed.
2. Add Storage: Size : 30 GB (by default it shows 8gb change it to 30GB)
3. Add Tags: can be skipped
4. **Configure security Group : This is important keep as below snap only.**
Source should be **Anywhere**. I struggled a lot to set this without knowing.
Problem was I was not able to login inside the server

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

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:
Description:

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	Anywhere 0.0.0.0, ::0	e.g. SSH for Admin Desktop

5. Now here click on Review and Launch and after full summary is done click on Launch.
6. Saving Key pair is must otherwise forget VM logging inside
7. This completes the EC2 creation part.
8. You should be able to see below

Launch Status

☒ **Your instances are now launching**
The following instance launches have been initiated: [i-03ea7ed5daf07e85d](#)

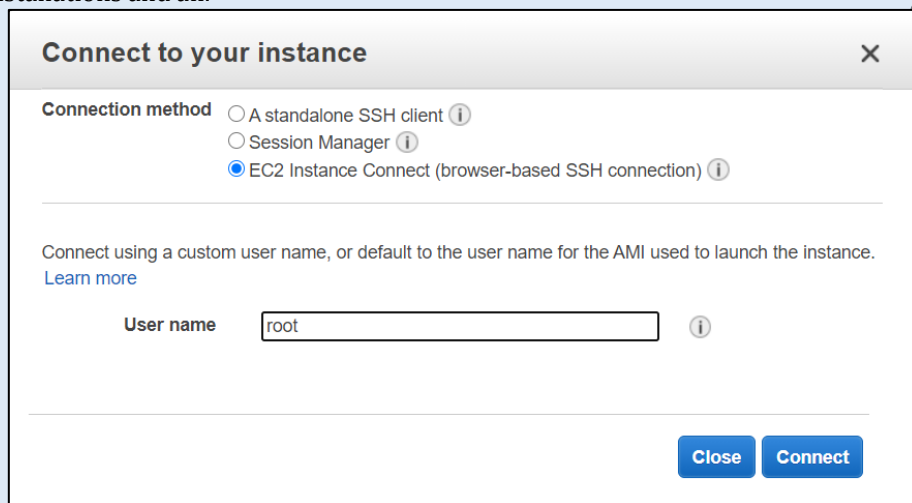
Step 8: You should be able to see your instance is running with green icon

Launch Instance <input type="button" value="Connect"/> <input type="button" value="Actions"/>								
Filter by tags and attributes or search by keyword								
	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)
<input type="checkbox"/>	morning	i-035ca7...	t2.micro	ap-south-1a	terminated	None		
<input checked="" type="checkbox"/>		i-03ea7e...	t2.micro	ap-south-1a	running	Initializing	None	ec2-13-2...
<input type="checkbox"/>	evening	i-0adcf0...	t2.micro	ap-south-1a	stopped	None		

Step 9: By selecting your VM click on Connect as shown in image.

Launch Instance <input type="button" value="Connect"/> <input type="button" value="Actions"/>						
Filter by tags and attributes or search by keyword						
	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks
<input type="checkbox"/>	morning	i-035ca7...	t2.micro	ap-south-1a	terminated	
<input checked="" type="checkbox"/>		i-03ea7ed5daf07e85d	t2.micro	ap-south-1a	running	2/2 checks ...
<input type="checkbox"/>	evening	i-0adcf094...	t2.micro	ap-south-1a	stopped	

Step 10: Here I've chosen browser based SSH to login. Make sure username to be root as we need to be root to do installations and all.



Connect to your instance ✕

Connection method

- ☐ A standalone SSH client ?
- ☐ Session Manager ?
- ☒ EC2 Instance Connect (browser-based SSH connection) ?

Connect using a custom user name, or default to the user name for the AMI used to launch the instance.
[Learn more](#)

User name ?

Close Connect

Step 11: If all steps above followed as mentioned you should see below image

```
ap-south-1-... Connect - Google Chrome
ap-south-1-...com/ec2/v2/connect/root/i-03...
Welcome to Ubuntu 20.04.1 LTS (GNU/Linux 5.4.0-1024-aws x86_64)

* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:       https://ubuntu.com/advantage

System information as of Thu Sep 17 13:00:22 UTC 2020

System load:  0.0          Processes:            99
Usage of /:   16.6% of 7.69GB Users logged in:      0
Memory usage: 20%         IPv4 address for eth0: 10.0.0.1
Swap usage:   0%

1 update can be installed immediately.
0 of these updates are security updates.
To see these additional updates run: apt list --upgradable

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

root@ip-17
```

Installation of necessary tools

Step 12: System necessary development tools

Run below scripts in console window

```
sudo apt-get update
sudo apt-get install build-essential -y
sudo apt-get install gcc libpq-dev -y
sudo apt-get install python3-dev python3-pip -y
sudo apt-get install python3-dev python3-pip python3-venv python3-wheel -y
pip3 install wheel
```

Above steps completes the system specific installations only

Step 13: Installation Confirmation

Check python version by typing below

```
python3 --version
```

You should get version below. I've python 3.8 in my case.

Step 14: Create python virtual env

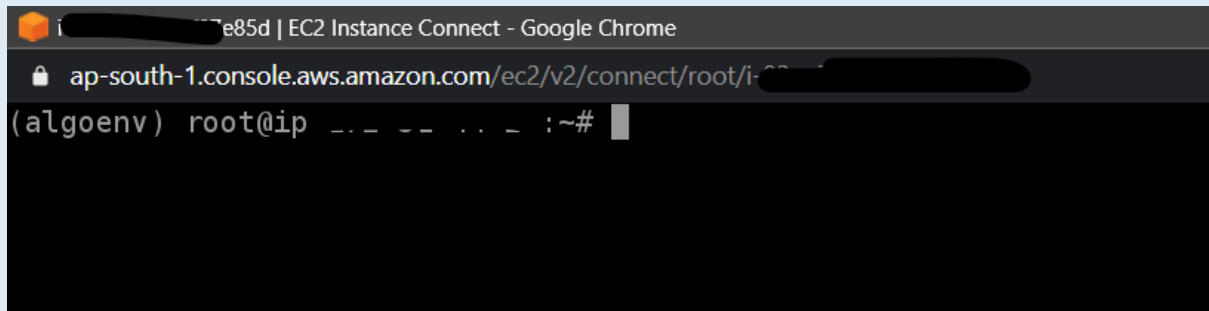
Here I had algoenv as my environment name you name as you like in second line. And so will apply everywhere henceforth.

```
sudo apt install python3-venv -y
python3 -m venv algoenv
```

```
source algoenv/bin/activate
```

You should see below window so far till here

notice: algoenv in braces in left. This confirms you've activated the virtual environment.



Step 13: Now here comes the place where we would install TA-Lib

Run below lines step-by-step

Stage 1

```
wget http://prdownloads.sourceforge.net/ta-lib/ta-lib-0.4.0-src.tar.gz
tar -xzf ta-lib-0.4.0-src.tar.gz
cd ta-lib/
#install
sudo ./configure
sudo make
sudo make install
```

Stage 2

```
pip install numpy pandas
export LD_LIBRARY_PATH=/usr/local/lib:$LD_LIBRARY_PATH
pip install ta-lib
```

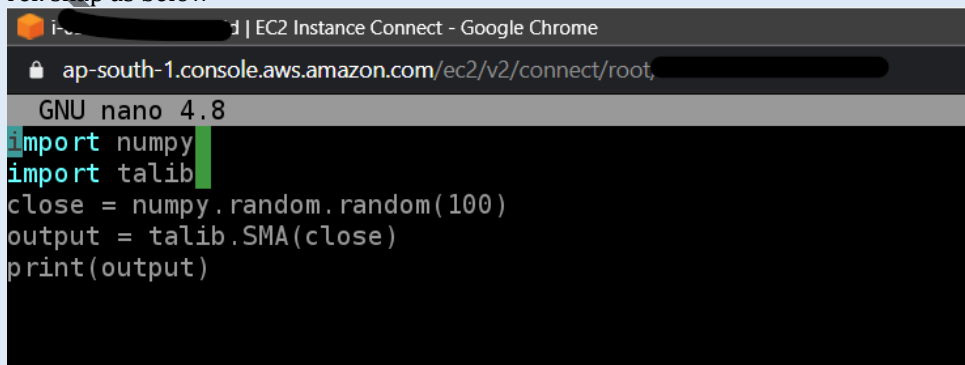
This completes the successful installation of TA-Lib

No similar to backtest we'll test installation was successful or not. 😊

Step 14: type `nano sample.py` and paste below code

```
import numpy
import talib
close = numpy.random.random(100)
output = talib.SMA(close)
print(output)
```

ref. snap as below



Press Ctrl X and Y and it saves it.

Step 15: run below line to see the output if all goes well. You'll see the output below 🚀🚀

```
i-0f1... | EC2 Instance Connect - Google Chrome
ap-south-1.console.aws.amazon.com/ec2/v2/connect/root/i-0f1...

(algoenv) root@ip-172-31-44-29:~# python3 sample.py
[      nan      nan      nan      nan      nan      nan
      nan      nan      nan      nan      nan      nan
      nan      nan      nan      nan      nan      nan
      nan      nan      nan      nan      nan      nan
      nan      nan      nan      nan      nan 0.49733323
0.51366191 0.5355424 0.53029884 0.52324859 0.51003122 0.51582955
0.52885284 0.53238046 0.53522148 0.53766397 0.52881484 0.52873341
0.54459157 0.54090077 0.5271294 0.53815941 0.53210884 0.50707217
0.49141739 0.46540759 0.48240984 0.45916545 0.46205329 0.4653037
0.4626049 0.46079198 0.46242089 0.47484763 0.49081622 0.50034531
0.51227497 0.50083948 0.50874855 0.52284777 0.52976154 0.51423827
0.49693185 0.48608978 0.47518795 0.48074223 0.47167189 0.45030145
0.440065 0.44407914 0.43542177 0.41636041 0.40915827 0.41517802
0.41467321 0.43731427 0.42666544 0.44636662 0.42899457 0.4254808
0.4259136 0.43913386 0.45100964 0.42415171 0.43589647 0.41159429
0.4124467 0.40441257 0.40129819 0.39013214 0.38092622 0.3789035
0.38216217 0.39646249 0.426012 0.42213005]
(algoenv) root@ip-172-31-44-29:~#
```

Setting the Time zone

Setting the time zone to India is MUST. This saves your time a lot in conversion

When you type `date`

If you getting as below in IST Format then fine.

```
i-0a... (ning) | EC2 Instance Connect - Google Chrome
ap-south-1.console.aws.amazon.com/ec2/v2/connect/root/i-0a...

root@ip-172-31-44-29:~# date
Fri Sep 18 18:17:26 IST 2020
root@ip-172-31-44-29:~#
```

If NOT then follow steps as below

Run

```
sudo dpkg-reconfigure tzdata
```


once running, follow as per below snaps

1. Asia



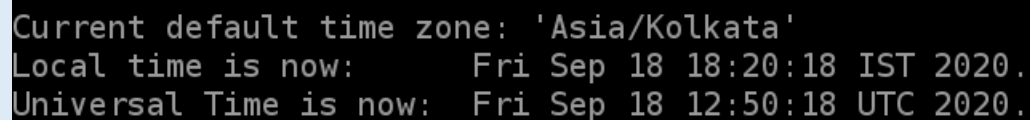
```
Africa
America
Antarctica
Australia
Arctic Ocean
Asia
Atlantic Ocean
Europe
Indian Ocean
Pacific Ocean
System V timezones
US
None of the above
```

2. Kolkata



```
Hovd
Irkutsk
Istanbul
Jakarta
Jayapura
Jerusalem
Kabul
Kamchatka
Karachi
Kashgar
Katmandu
Khandyga
Kolkata
Krasnoyarsk
Kuala Lumpur
Kuching
Kuwait
Macau
Magadan
Makassar
Manila
```

Once done you should see as below in console window.



```
Current default time zone: 'Asia/Kolkata'
Local time is now:      Fri Sep 18 18:20:18 IST 2020.
Universal Time is now:  Fri Sep 18 12:50:18 UTC 2020.
```

to re-check if it's not coming as above start from start again follow closely steps.

Scheduling your python scripts/files using CRONTAB

This was the reason we went to Cloud 😊 right? where we could automate to run continuously/scheduled tasks without any hindrances and manual intervention.

So now time has come to AUTOMATE it.

Follow below steps to schedule your first script. In this example I follow the file I've created.

I've used nano editor in my case for editing cron file

Step 1: If you want to choose editor of your choice type below script to do so.

```
select-editor
Select an editor. To change later, run 'select-editor'.
 1. /bin/nano          <----- easiest
 2. /usr/bin/vim.basic
 3. /usr/bin/vim.tiny
 4. /bin/ed
Choose 1-4 [1]:
```

Type 1 and press enter

And your default editor is now saved as nano. If you wish to change it follow step1 again.

Step 2: Editing the crontab file and scheduling it.

Type `crontab -e` and schedule your job and shown below for hello.py

Press Ctrl X and Y and it saves it.

```
# email to the user the crontab file belongs to (unless redi
#
# For example, you can run a backup of all your user account
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) an
#
# m h dom mon dow   command
* * * * * env/bin/python3 /hello.py >> resp.log

^G Get Help      ^O Write Out     ^W Where Is     ^K Cut Ta
^X Exit          ^R Read File     ^_ Replace      ^U Paste
```

References:

- <https://linuxize.com/post/how-to-create-python-virtual-environments-on-ubuntu-18-04/>
- <https://sachsenhofer.io/install-ta-lib-ubuntu-server/>
- <https://stackoverflow.com/questions/34819221/why-is-python-setup-py-saying-invalid-command-bdist-wheel-on-travis-ci>
- <https://mrjbq7.github.io/ta-lib/func.html>
- <https://stackoverflow.com/questions/45406361/importerror-libta-lib-so-0-cannot-open-shared-object-file-no-such-file-or-dir>
- <https://github.com/freqtrade/freqtrade/issues/1676>
- <https://www.cumulations.com/blogs/37/How-to-write-Cron-jobs-on-Amazon-Web-ServicesAWS-EC2-server>
- <https://stackoverflow.com/questions/15470016/how-to-write-cron-job-in-aws-ec2-server>

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