

Hemanth Ramarao Batchu

**AWS
FACE DETECTION APP USING AWS**

By
HEMANTH RAMARAO BATCHU

M.Tech VLSI Design

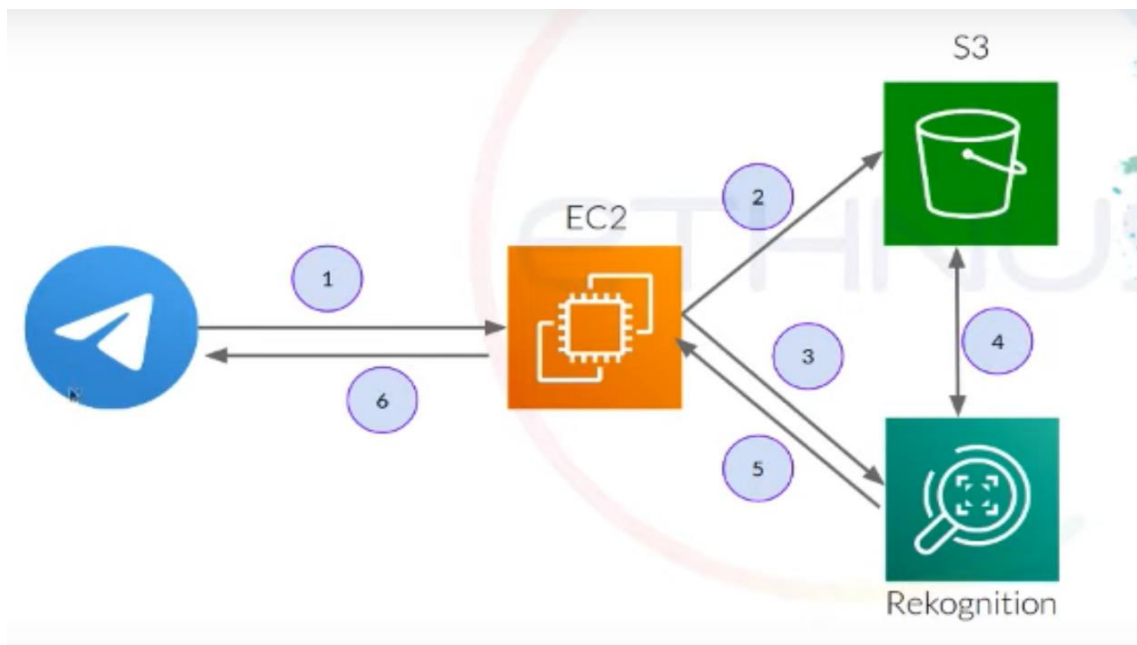


**SCHOOL OF ELECTRONICS ENGINEERING
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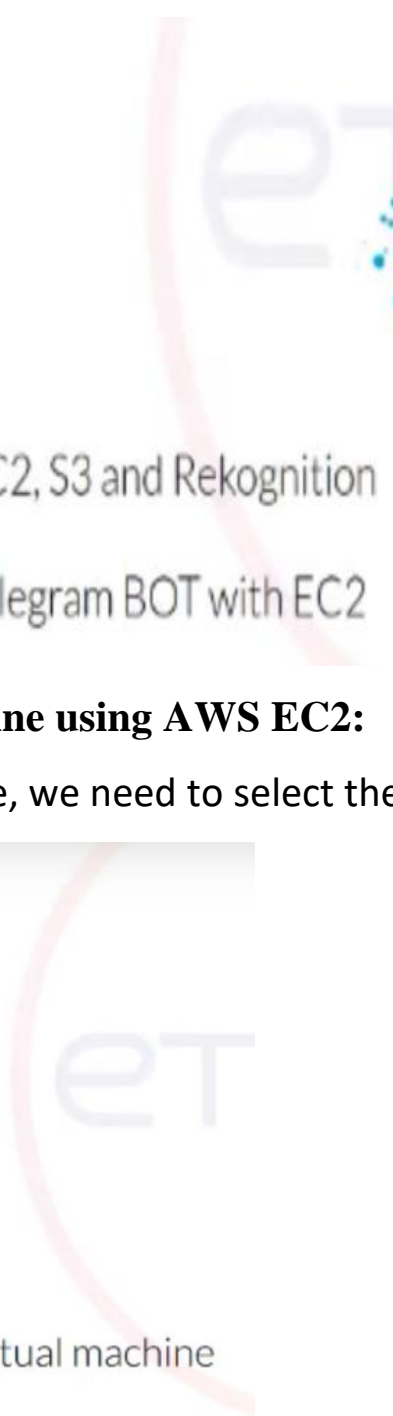
MARCH 2020

Face detection app involves following steps:

1. Solve Account Creation Issues
2. Architecture of the Application
3. Create Your Own Server
4. Put Your Name on Browser
5. Choose the Right AWS Certification
6. Get AWS certification

Architecture involved:

The virtual machine will be created using EC2 and whatever the image in telegram will be get accessed by EC2 and this will store the image in S3 and also call Amazon Rekognition to recognize the image stored in S3. Thus, Amazon Rekognition recognizes and gives back reply to EC2 and from EC2 to telegram where we uploaded the image. Thus, the operation done is explained using architecture.

Day-wise activity to be done:

Day	Topic
01	EC2
02	S3
03	Integrating EC2, S3 and Rekognition
04	Integrating Telegram BOT with EC2

Building virtual machine using AWS EC2:

To build virtual machine, we need to select the following things in EC2.

- 
1. Operating System
 2. RAM & Processor
 3. Storage
 4. Security

instance = server = virtual machine

Each and every step in creating virtual machine is explained as shown in screenshots below.

Step 1: select linux which is free tier eligible.

Launch instance wizard | EC2 M... (144) 7-Day Free Masterclass | D... +

us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#LaunchInstanceWizard:

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

Step 1: Choose an Amazon Machine Image (AMI)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace, or you can select one of your own AMIs.

Search for an AMI by entering a search term e.g. "Windows"

Quick Start

My AMIs

AWS Marketplace

Community AMIs

Free tier only

Amazon Linux 2 AMI (HVM), SSD Volume Type - ami-0e01ce4ee18447327 (64-bit x86) / ami-03201f374ab66a26e (64-bit Arm)

Amazon Linux Free tier eligible

Amazon Linux 2 comes with five years support. It provides Linux kernel 4.14 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras.

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

64-bit (x86)

64-bit (Arm)

Amazon Linux AMI 2018.03.0 (HVM), SSD Volume Type - ami-01b01bdd08f24c7a8

Amazon Linux Free tier eligible

The Amazon Linux AMI is an EBS-backed, AWS-supported image. The default image includes AWS command line tools, Python, Ruby, Perl, and Java. The repositories include Docker, PHP, MySQL, PostgreSQL, and other packages.

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

64-bit (x86)

Red Hat Enterprise Linux 8 (HVM), SSD Volume Type - ami-0520e698dd500b1d1 (64-bit x86) / ami-0099847d600887c9f (64-bit Arm)

Red Hat Free tier eligible

Red Hat Enterprise Linux version 8 (HVM), EBS General Purpose (SSD) Volume Type

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

64-bit (x86)

64-bit (Arm)

Feedback English (US)

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52%

10:37 27-03-2020

Step 2: choose micro

Launch instance wizard | EC2 M... (144) 7-Day Free Masterclass | D... +

us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#LaunchInstanceWizard:

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

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 (GB)	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 Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.large	2	8	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.xlarge	4	16	EBS only	-	Moderate	Yes
<input type="checkbox"/>	General purpose	t2.2xlarge	8	32	EBS only	-	Moderate	Yes

Cancel Previous Review and Launch Next: Configure Instance Details

Feedback English (US)

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10:37 27-03-2020

Step 3:

The screenshot shows the AWS Launch Instance Wizard at Step 3: Configure Instance Details. The wizard is for an EC2 instance in the us-east-2 region. The configuration includes:

- Number of instances:** 1
- Purchasing option:** Request Spot instances (unchecked)
- Network:** vpc-b277bdd9 (default)
- Subnet:** No preference (default subnet in any Availability Zone)
- Auto-assign Public IP:** Use subnet setting (Enable)
- Placement group:** Add instance to placement group (unchecked)
- Capacity Reservation:** Open
- IAM role:** None
- Shutdown behavior:** Stop
- Stop - Hibernate behavior:** Enable hibernation as an additional stop behavior (unchecked)
- Enable termination protection:** Protect against accidental termination (unchecked)
- Monitoring:** Enable CloudWatch detailed monitoring (unchecked)

Buttons at the bottom: Cancel, Previous, Review and Launch, Next: Add Storage.

Step 4: choose 8gb (can use 30gb for free as shown)

The screenshot shows the AWS Launch Instance Wizard at Step 4: Add Storage. The wizard is for an EC2 instance in the us-east-2 region. The configuration includes:

- Volume Type:** General Purpose SSD (gp2)
- Device:** /dev/xvda
- Snapshot:** snap-0f54692056aaa4c20
- Size (GiB):** 8
- IOPS:** 100 / 3000
- Throughput (MB/s):** N/A
- Delete on Termination:** Checked
- Encryption:** Not Encrypted

Buttons at the bottom: Cancel, Previous, Review and Launch, Next: Add Tags.

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.

Step 5:

The screenshot shows the AWS Management Console's 'Launch instance wizard' at Step 5: Add Tags. The breadcrumb trail at the top indicates the steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, and 7. Review. The main heading is 'Step 5: Add Tags'. Below it, a text block explains that a tag consists of a case-sensitive key-value pair and that tags will be applied to all instances and volumes. A table with two columns, 'Key' and 'Value', is provided for adding tags. The 'Key' column has a note '(128 characters maximum)' and the 'Value' column has a note '(256 characters maximum)'. Below the table, a message states 'This resource currently has no tags'. There are two links: 'Choose the Add tag button or click to add a Name tag.' and 'Make sure your IAM policy includes permissions to create tags.' At the bottom, there is an 'Add Tag' button with a note '(Up to 50 tags maximum)'. Navigation buttons at the bottom right include 'Cancel', 'Previous', 'Review and Launch', and 'Next: Configure Security Group'. The taskbar at the bottom shows various application icons and the system clock indicating 10:38 on 27-03-2020.

Launch instance wizard | EC2 Ma x (144) 7-Day Free Masterclass | D x +

us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#LaunchInstanceWizard:

Services Resource Groups

batchu hemanth ramarao Ohio Support

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 (1)	Volumes (1)
This resource currently has no tags			

Choose the Add tag button or [click to add a Name tag](#).
Make sure your [IAM policy](#) includes permissions to create tags.

Add Tag (Up to 50 tags maximum)

Cancel Previous Review and Launch Next: Configure Security Group

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51% 10:38 27-03-2020

Step 6: choose SSH and port range as 22

The screenshot shows the AWS Management Console's 'Launch instance wizard' at Step 6: Configure Security Group. The breadcrumb trail at the top indicates the steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, and 7. Review. The main heading is 'Step 6: Configure Security Group'. Below it, a text block explains that a security group is a set of firewall rules that control the traffic for your instance. Under 'Assign a security group', the 'Create a new security group' option is selected. The 'Security group name' field contains 'launch-wizard-3' and the 'Description' field contains 'launch-wizard-3 created 2020-03-27T10:38:37.732+05:30'. A table with five columns: 'Type', 'Protocol', 'Port Range', 'Source', and 'Description' is shown. The first row has 'SSH' in the Type column, 'TCP' in the Protocol column, '22' in the Port Range column, 'Custom' in the Source column, and '0.0.0.0/0' in the Source column. The Description column contains 'e.g. SSH for Admin Desktop'. An 'Add Rule' button is at the bottom left. A warning box at the bottom states: '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.' Navigation buttons at the bottom right include 'Cancel', 'Previous', 'Review and Launch', and 'Next: Configure Security Group'. The taskbar at the bottom shows various application icons and the system clock indicating 10:38 on 27-03-2020.

Launch instance wizard | EC2 Ma x (144) 7-Day Free Masterclass | D x +

us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#LaunchInstanceWizard:

Services Resource Groups

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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: launch-wizard-3

Description: launch-wizard-3 created 2020-03-27T10:38:37.732+05:30

Type (1)	Protocol (1)	Port Range (1)	Source (1)	Description (1)
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

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Step 7:

Step 7: Review Instance Launch

Root Device Type: ebs Virtualization type: hvm

Instance Type

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

Security Groups

Security group name: launch-wizard-3
Description: launch-wizard-3 created 2020-03-27T10:38:37.732+05:30

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	0.0.0.0/0	

Instance Details

Storage

Tags

Cancel Previous **Launch**

Thus virtual machine is launched.

IP address of the launched machine: **3.17.186.195**

Instances

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)	IPv4 Public IP	IPv6 IPs
	i-07c7b64cfe8f99aab	t2.micro	us-east-2a	running	2/2 checks ...	None	ec2-3-133-152-184.us-...	3.133.152.184	-
	i-0df73c61fee1803d0	t2.micro	us-east-2a	running	2/2 checks ...	None	ec2-3-17-186-195.us-e...	3.17.186.195	-

Instance: i-0df73c61fee1803d0 Public DNS: ec2-3-17-186-195.us-east-2.compute.amazonaws.com

Description

Property	Value
Instance ID	i-0df73c61fee1803d0
Instance state	running
Instance type	t2.micro
Finding	Opt-in to AWS Compute Optimizer for recommendations. Learn more
Private DNS	ip-172-31-10-156.us-east-2.compute.internal
Private IPs	172.31.10.156
Secondary private IPs	
VPC ID	vpc-b277bd99
Subnet ID	subnet-a1962ca
Network interfaces	eth0
IAM role	-

Public DNS (IPv4) ec2-3-17-186-195.us-east-2.compute.amazonaws.com

IPv4 Public IP 3.17.186.195

IPv6 IPs -

Elastic IPs -

Availability zone us-east-2a

Security groups launch-wizard-2 [view inbound rules](#) [view outbound rules](#)

Scheduled events No scheduled events

AMI ID amzn2-ami-hvm-2.0.20200304.0-x86_64-gp2 (ami-0e01ce4ee18447327)

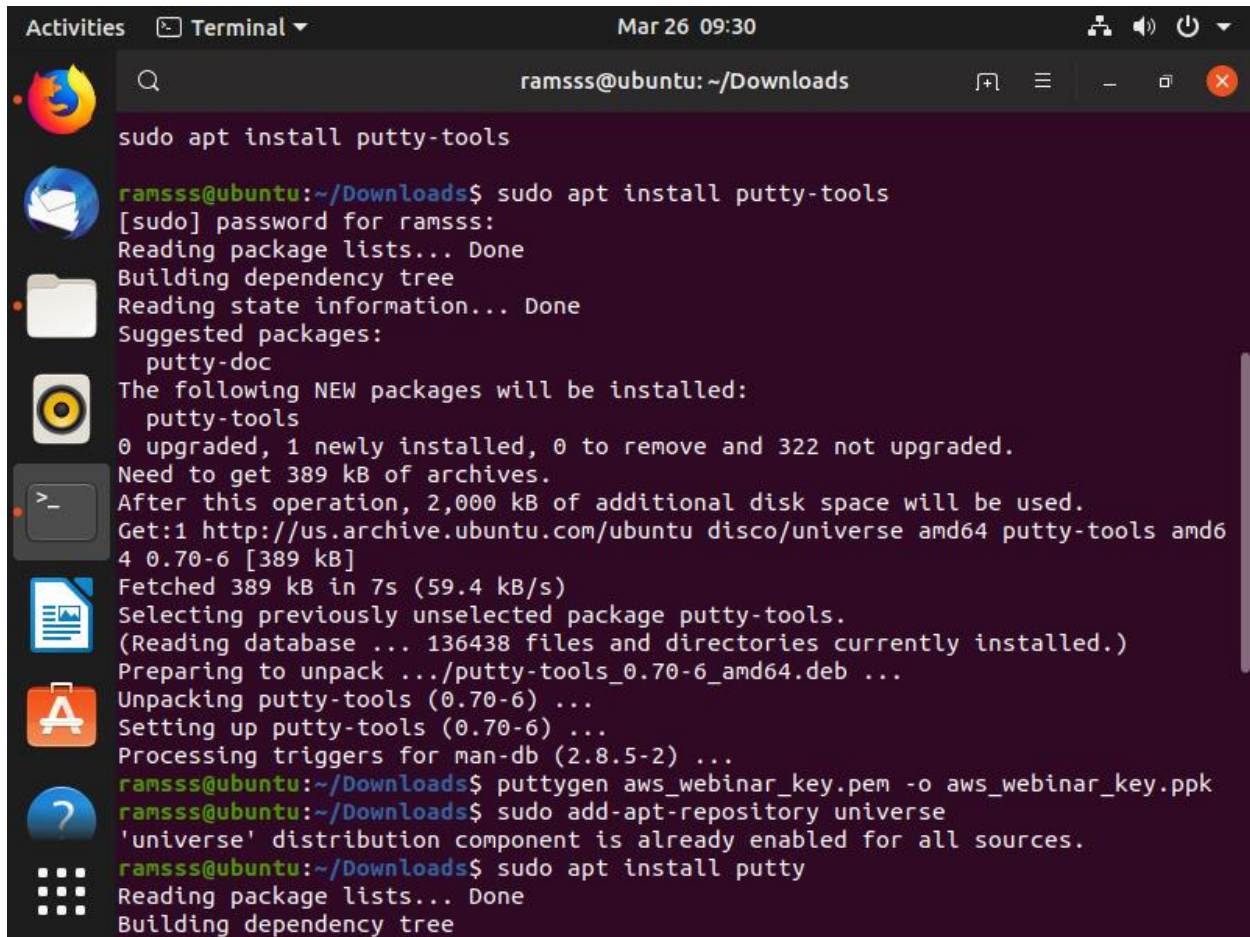
Platform details -

Usage operation -

Source/dest. check True

All this is done in browser in windows and from now on I will be using ubuntu in my VMware software.

Downloading putty in ubuntu:



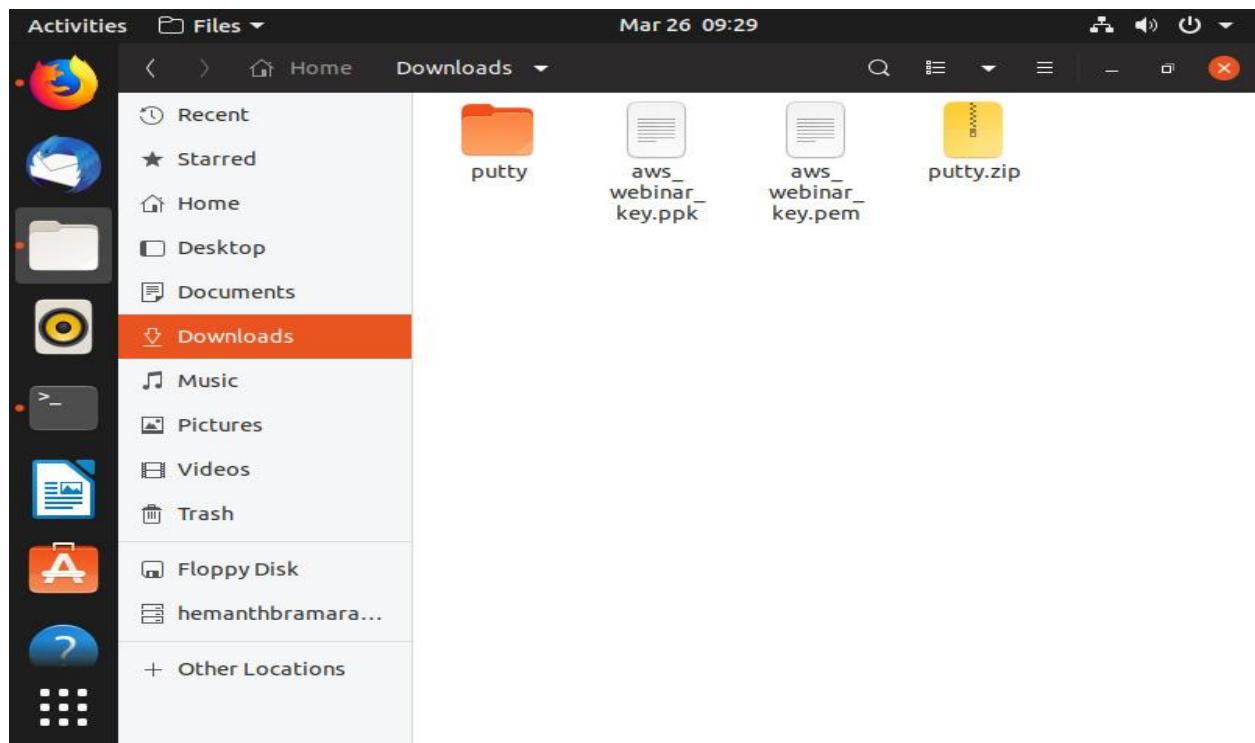
```
Activities  Terminal  Mar 26 09:30
ramsss@ubuntu: ~/Downloads

sudo apt install putty-tools

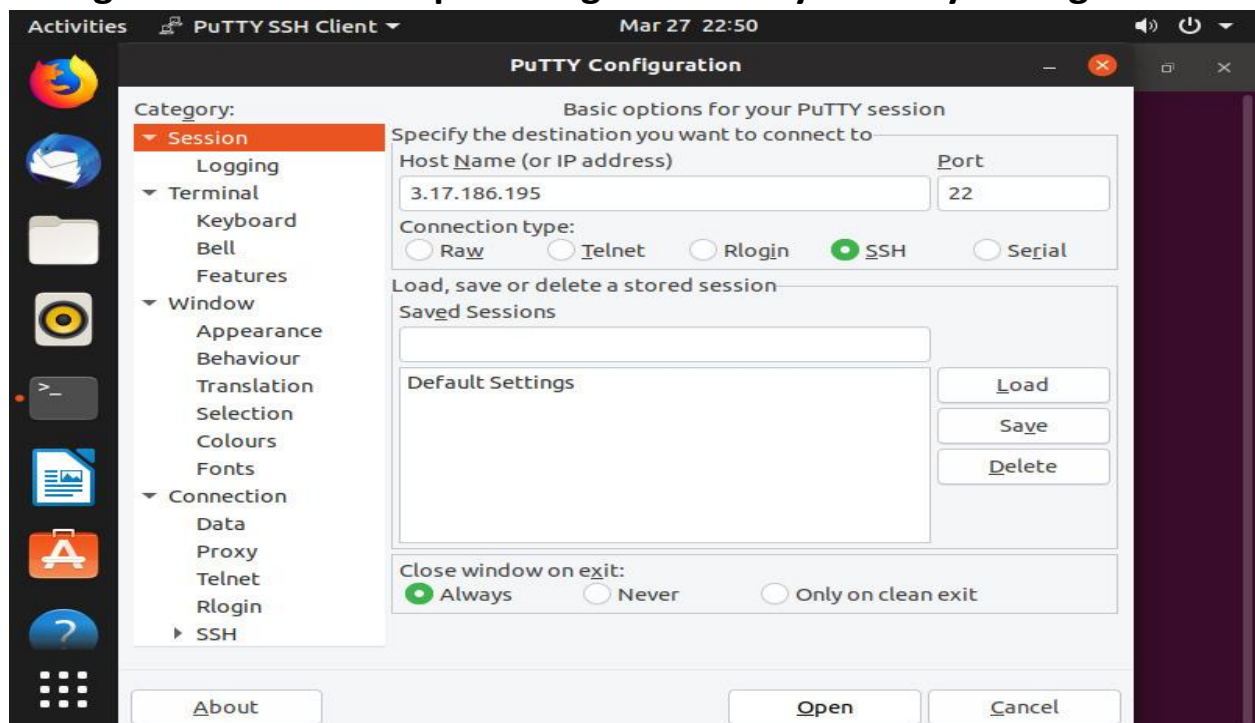
ramsss@ubuntu:~/Downloads$ sudo apt install putty-tools
[sudo] password for ramsss:
Reading package lists... Done
Building dependency tree
Reading state information... Done
Suggested packages:
  putty-doc
The following NEW packages will be installed:
  putty-tools
0 upgraded, 1 newly installed, 0 to remove and 322 not upgraded.
Need to get 389 kB of archives.
After this operation, 2,000 kB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu disco/universe amd64 putty-tools amd64 0.70-6 [389 kB]
Fetched 389 kB in 7s (59.4 kB/s)
Selecting previously unselected package putty-tools.
(Reading database ... 136438 files and directories currently installed.)
Preparing to unpack .../putty-tools_0.70-6_amd64.deb ...
Unpacking putty-tools (0.70-6) ...
Setting up putty-tools (0.70-6) ...
Processing triggers for man-db (2.8.5-2) ...
ramsss@ubuntu:~/Downloads$ puttygen aws_webinar_key.pem -o aws_webinar_key.ppk
ramsss@ubuntu:~/Downloads$ sudo add-apt-repository universe
'universe' distribution component is already enabled for all sources.
ramsss@ubuntu:~/Downloads$ sudo apt install putty
Reading package lists... Done
Building dependency tree
```

Conversion of .pem file to .ppk file using puttygen command can also be observed in above figure which is done in downloads folder path.

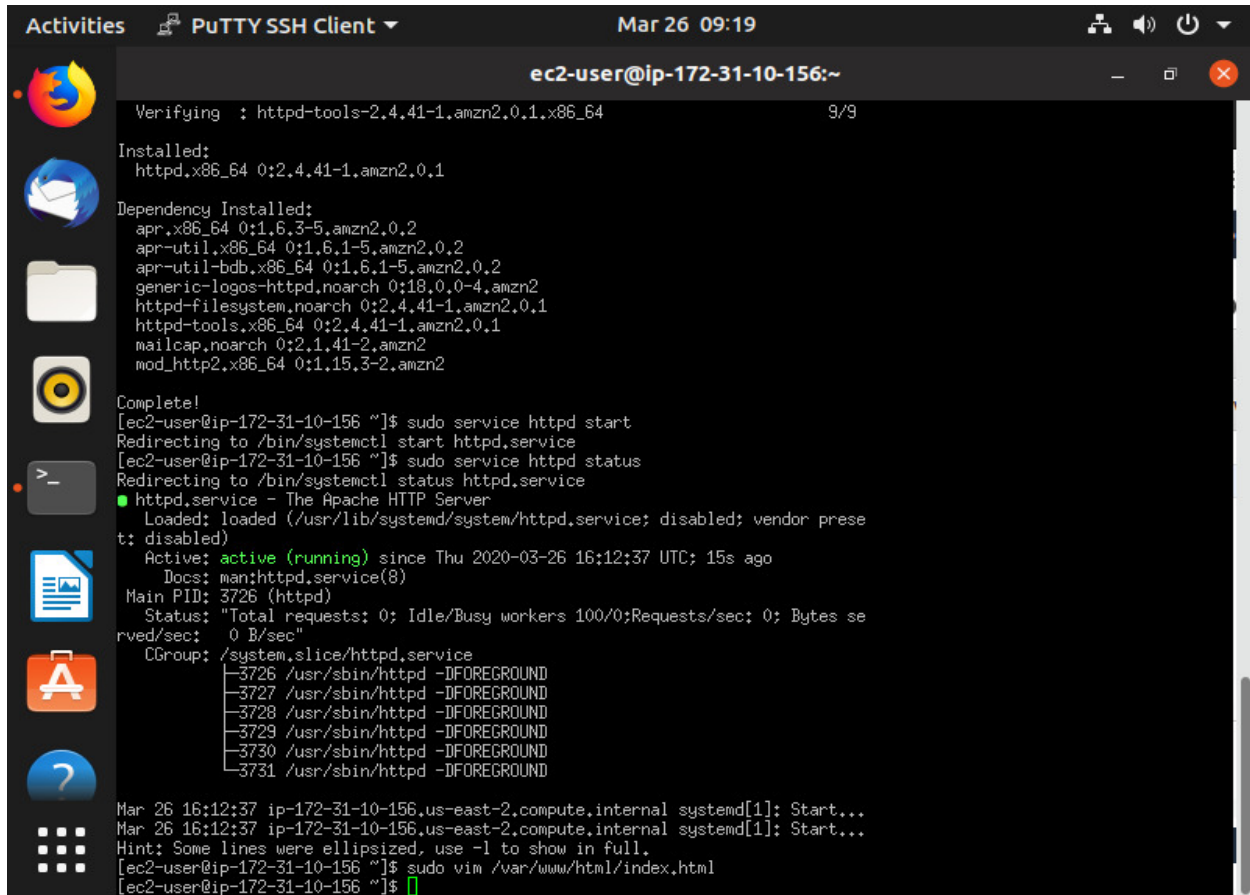
Hence, the created files can be observed in the following screenshot.



Filling in IP address and providing Private Key to Putty for login:



Checking status:



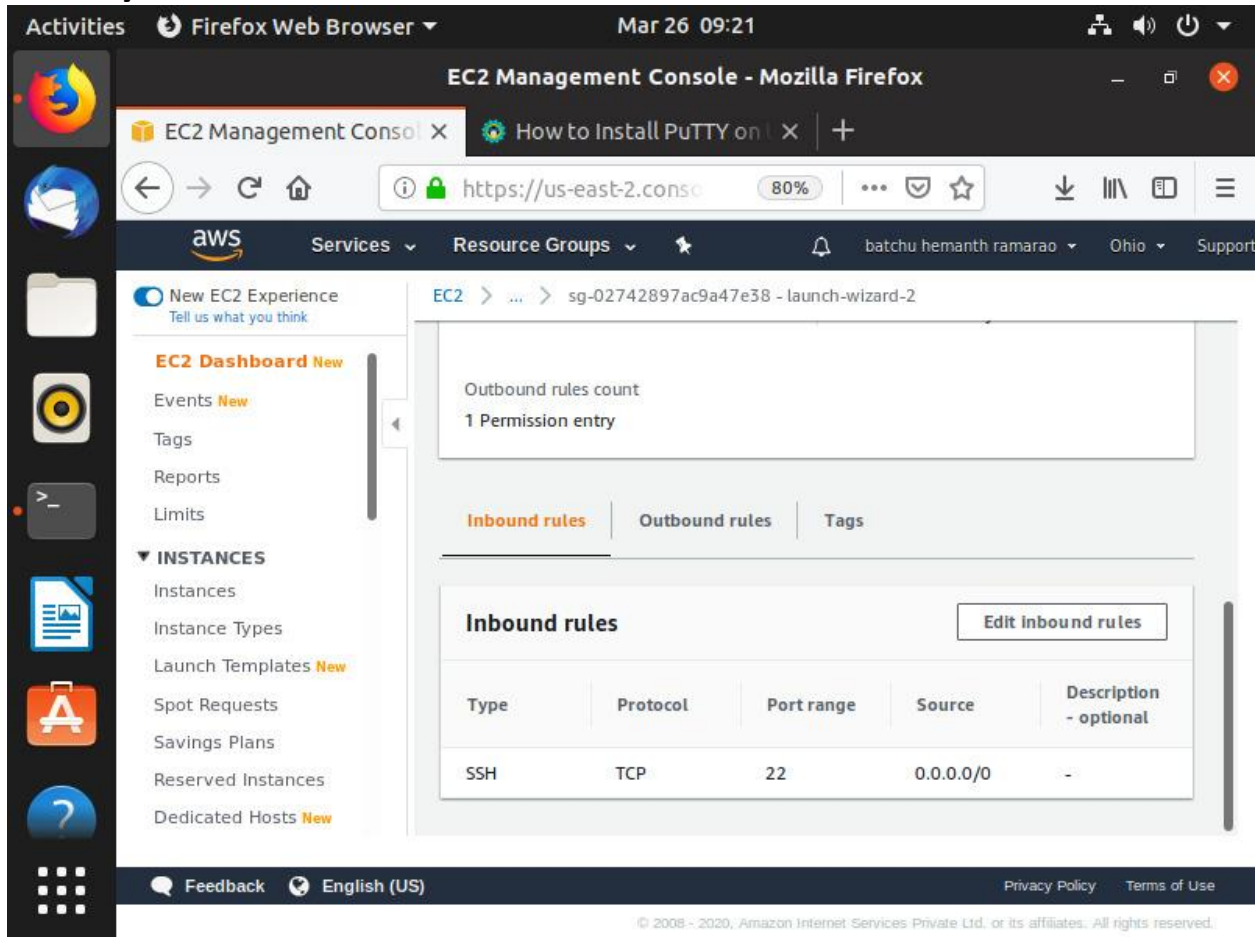
```
Activities  PuTTY SSH Client  Mar 26 09:19
ec2-user@ip-172-31-10-156:~
Verifying : httpd-tools-2.4.41-1.amzn2.0.1.x86_64 9/9
Installed:
httpd.x86_64 0:2.4.41-1.amzn2.0.1
Dependency Installed:
apr.x86_64 0:1.6.3-5.amzn2.0.2
apr-util.x86_64 0:1.6.1-5.amzn2.0.2
apr-util-bdb.x86_64 0:1.6.1-5.amzn2.0.2
generic-logos-httpd.noarch 0:18.0.0-4.amzn2
httpd filesystem.noarch 0:2.4.41-1.amzn2.0.1
httpd-tools.x86_64 0:2.4.41-1.amzn2.0.1
mailcap.noarch 0:2.1.41-2.amzn2
mod_http2.x86_64 0:1.15.3-2.amzn2
Complete!
[ec2-user@ip-172-31-10-156 ~]$ sudo service httpd start
Redirecting to /bin/systemctl start httpd.service
[ec2-user@ip-172-31-10-156 ~]$ sudo service httpd status
Redirecting to /bin/systemctl status httpd.service
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; vendor prese
t: disabled)
   Active: active (running) since Thu 2020-03-26 16:12:37 UTC; 15s ago
     Docs: man:httpd.service(8)
    Main PID: 3726 (httpd)
   Status: "Total requests: 0; Idle/Busy workers 100/0; Requests/sec: 0; Bytes se
rved/sec: 0 B/sec"
    CGroup: /system.slice/httpd.service
            └─3726 /usr/sbin/httpd -DFOREGROUND
              └─3727 /usr/sbin/httpd -DFOREGROUND
                └─3728 /usr/sbin/httpd -DFOREGROUND
                  └─3729 /usr/sbin/httpd -DFOREGROUND
                    └─3730 /usr/sbin/httpd -DFOREGROUND
                      └─3731 /usr/sbin/httpd -DFOREGROUND
Mar 26 16:12:37 ip-172-31-10-156.us-east-2.compute.internal systemd[1]: Start...
Mar 26 16:12:37 ip-172-31-10-156.us-east-2.compute.internal systemd[1]: Start...
Hint: Some lines were ellipsized, use -l to show in full.
[ec2-user@ip-172-31-10-156 ~]$ sudo vim /var/www/html/index.html
[ec2-user@ip-172-31-10-156 ~]$
```

During editing of index.html I wrote

“Hello...I am Hemanth Ramarao Batchu and I am enjoying these quarantine holidays”

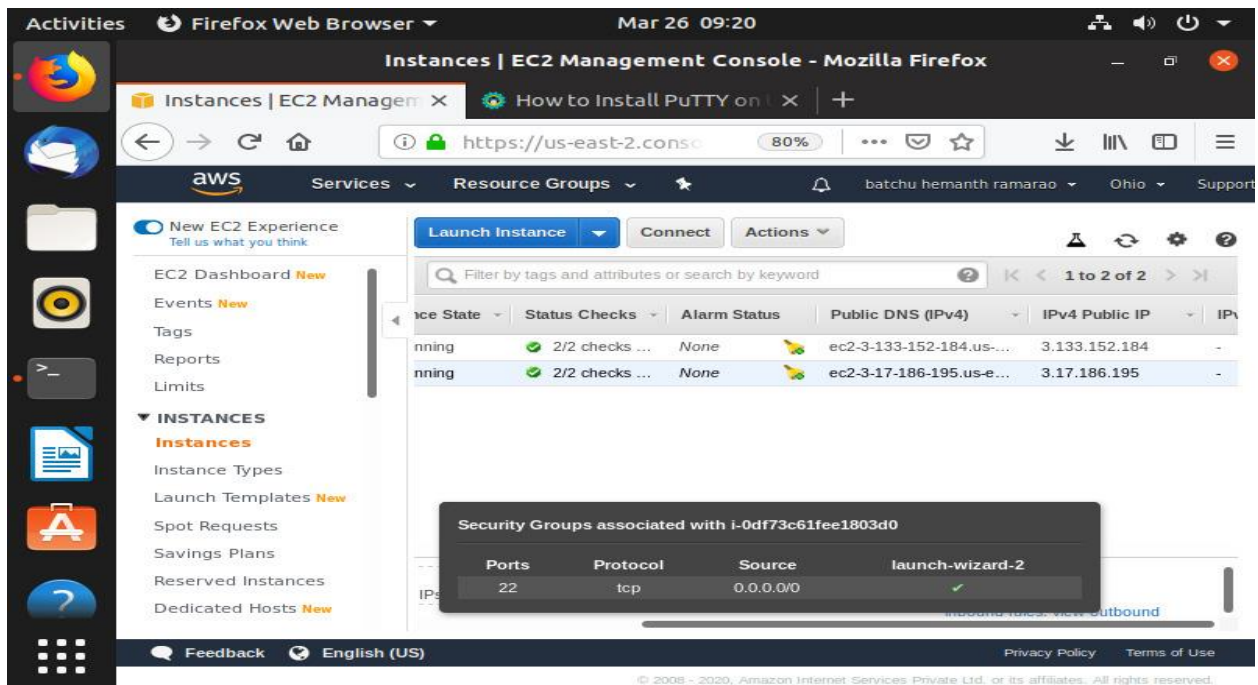
Editing inbound rules to enable HTTP access:

Initially:



The screenshot shows the AWS Management Console in a Firefox browser window. The page title is "EC2 Management Console - Mozilla Firefox". The URL is "https://us-east-2.console.aws.amazon.com/ec2/home?region=us-east-2:sg-02742897ac9a47e38-launch-wizard-2". The left sidebar shows the "EC2 Dashboard" with options like Events, Tags, Reports, Limits, INSTANCES, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, and Dedicated Hosts. The main content area shows the "Inbound rules" tab for a security group. It displays a table with one rule: SSH, TCP, Port range 22, Source 0.0.0.0/0, and Description - optional. There is an "Edit inbound rules" button.

Type	Protocol	Port range	Source	Description - optional
SSH	TCP	22	0.0.0.0/0	-



The screenshot shows the AWS Management Console in a Firefox browser window. The page title is "Instances | EC2 Management Console - Mozilla Firefox". The URL is "https://us-east-2.console.aws.amazon.com/ec2/home?region=us-east-2:instances". The left sidebar shows the "INSTANCES" section with options like Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, and Dedicated Hosts. The main content area shows a table of instances. A modal window is open, displaying the security groups associated with the instance i-0df73c61fee1803d0. The modal shows a table with ports, protocols, and sources.

Ports	Protocol	Source	launch-wizard-2
22	tcp	0.0.0.0/0	✓

Activities Firefox Web Browser Mar 26 09:22

EC2 Management Console - Mozilla Firefox

EC2 Management Console | How to Install PuTTY on | +

https://us-east-2.console.aws.amazon.com/ec2/home?region=us-east-2:sg-02742897ac9a47e38

Services Resource Groups

EC2 Dashboard

- Events
- Tags
- Reports
- Limits

INSTANCES

- Instances
- Instance Types
- Launch Templates
- Spot Requests
- Savings Plans
- Reserved Instances
- Dedicated Hosts
- Capacity Reservations

IMAGES

- AMIs
- Bundle Tasks

ELASTIC BLOCK STORE

- Volumes
- Snapshots
- Lifecycle Manager

NETWORK & SECURITY

sg-02742897ac9a47e38 - launch-wizard-2

Delete security group Copy to new security group

Details

Security group name	launch-wizard-2	Security group ID	sg-02742897ac9a47e38	Description	launch-wizard-2 created 2020-03-26T08:37:51.598-07:00	VPC ID	vpc-b2776dd9
Owner	379546066444	Inbound rules count	3 Permission entries	Outbound rules count	1 Permission entry		

Inbound rules

Type	Protocol	Port range	Source	Description - optional
HTTP	TCP	80	0.0.0.0/0	--
HTTP	TCP	80	:::0	--
SSH	TCP	22	0.0.0.0/0	--

Finally:

Activities Firefox Web Browser Mar 26 09:25

Instances | EC2 Management Console - Mozilla Firefox

Instances | EC2 Management Console | How to Install PuTTY on | +

https://us-east-2.console.aws.amazon.com/ec2/home?region=us-east-2:sg-02742897ac9a47e38

Services Resource Groups

Launch Instance Connect 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)	IPv4 Public IP
	i-07c7b64de8f99a8b	t2.micro	us-east-2a	running	2/2 checks...	None	ec2-3-133-152-184.us-...	3.133.152.184
	i-0df73c01fee1803d0	t2.micro	us-east-2a	running	2/2 checks...	None	ec2-3-17-186-195.us-...	3.17.186.195

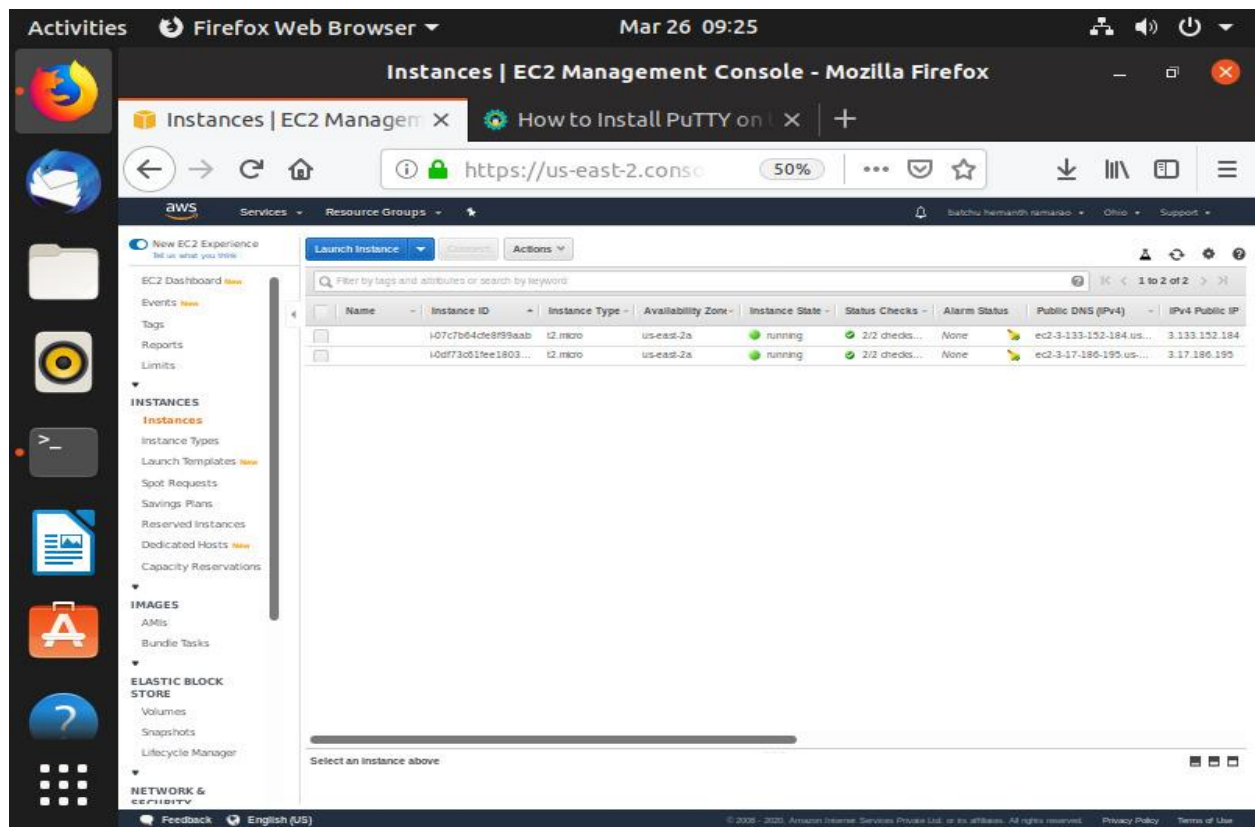
Instance: i-0df73c01fee1803d0 Public DNS: ec2-3-17-186-195.us-east-2.compute.amazonaws.com

Description Status Checks Monitoring Tags

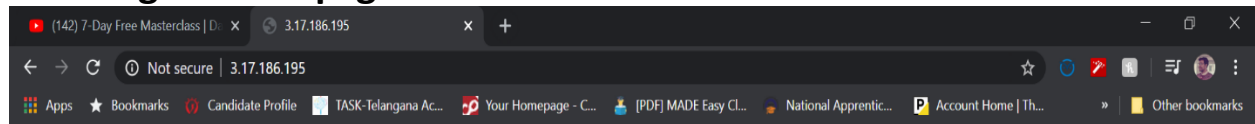
Instance ID	i-0df73c01fee1803d0	Public DNS (IPv4)	ec2-3-17-186-195.us-east-2.compute.amazonaws.com
Instance state	running	IPv4 Public IP	3.17.186.195
Instance type	t2.micro	IPv6 IPs	-
Findings	Opt-in to AWS Compute Optimizer for recommendations. Learn more	Elastic IPs	-
Private DNS	p-172-31-10-156.us-east-2.compute.internal	Availability zone	us-east-2a
Private IPs	172.31.10.156	Security groups	launch-wizard-2, view inbound rules, view
Secondary private IPs	-		
VPC ID	vpc-b2776dd9		
Subnet ID	subnet-a19f02ca		
Network interfaces	eni0		
IAM role	-		
Key pair name	aws_webinar_key		
Owner	379546066444		

Security Groups associated with i-0df73c01fee1803d0

Ports	Protocol	Source	launch-wizard-2
80	tcp	0.0.0.0/0, :::0	✓
22	tcp	0.0.0.0/0	✓



Checking the Final page:



Hello...I am Hemanth Ramarao Batchu and i am enjoying these quarantine holidays.

