ASSIGNMENT 2

Cloud Project & Video Explainer

STUDENT NAME: ROHIT KUMAR MALIK
STUDENT ID: 35363998

Name: Rohit Kumar Malik
Student ID: 35363998

Contents

Name: Rohit Kumar Malik
Student ID: 35363998

Student and Project Information

- **Name**: Rohit Kumar Malik
- **Student ID**: 35363998
- **Public IP Address**: 13.60.189.141
- **Domain Name**: rohitwebsite.com
- **VideoAddress:**https://rohitwebsite.com/videos/Assignment%20Video%20Explanation.mp4

Project Overview

For this project, I wanted to build something meaningful and practical, not just for the sake of the assignment, but as something I could actually use or build upon later in my degree. I decided to create a website called **Student Portfolio Hub**, a platform where students like myself can showcase their skills and academic projects, while also giving potential employers a way to browse through portfolios and discover fresh talent.

To host this site, I used **Amazon EC2**, which fits the IaaS (Infrastructure as a Service) requirement. I set up a virtual machine running **Ubuntu**, installed and configured **Apache** as the web server. I also bought a domain — rohitwebsite.com — to give the website a more polished and professional feel, and I secured it using a free SSL certificate from **Let's Encrypt**.

The entire server setup was done manually so I could understand each step of the process, from launching the VM to configuring DNS records and handling permissions for file uploads. On top of that, I customized the website design using HTML, CSS, and JavaScript, and added interactive features like a contact form and a video section. A five-minute video is also embedded in the site to explain my work and thought process.

Overall, this project helped me put my learning into action. I've not only built a secure, working server from scratch, but I also gained valuable experience in deployment, documentation, and presenting my work in a real-world context.

Cloud Server Setup

Cloud Service Provider (CSP): Amazon Web Services (AWS)

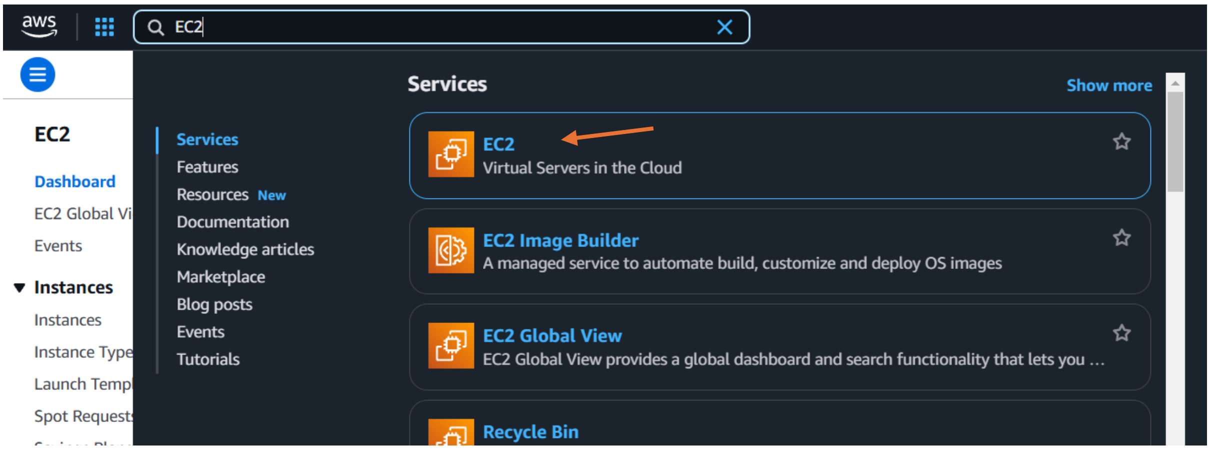
I chose Amazon Web Services (AWS) mainly because it's user-friendly and offers a free tier, which was perfect for trying out cloud hosting without worrying about extra costs. AWS is widely used in the industry, so learning how to use it felt like a smart move for building real-world skills. It is also flexible and I could configure everything manually and had full control over the server. The setup process was straightforward and easy to understand.

Name: Rohit Kumar Malik
Student ID: 35363998

Launching the EC2 Instance

I used the AWS Management Console to launch a new EC2 instance. I selected **Ubuntu 20.04 LTS** as the Amazon Machine Image and the **t2.micro** instance type (which is eligible under the free tier).

- Logging into AWS Management Console and search for EC2.



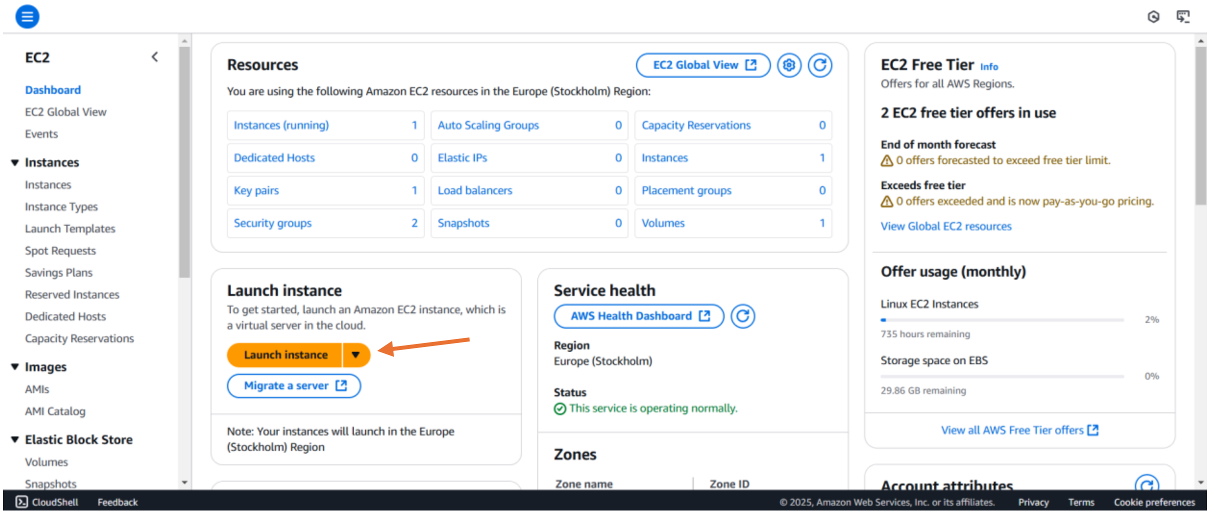
EC2
Virtual Servers in the Cloud

EC2 Image Builder
A managed service to automate build, customize and deploy OS images

EC2 Global View
EC2 Global View provides a global dashboard and search functionality that lets you …

Recycle Bin

- Click Launch Instance.



Resources

You are using the following Amazon EC2 resources in the Europe (Stockholm) Region:

Instances (running)	1	Auto Scaling Groups	0	Capacity Reservations	0
Dedicated Hosts	0	Elastic IPs	0	Instances	1
Key pairs	1	Load balancers	0	Placement groups	0
Security groups	2	Snapshots	0	Volumes	1

Launch instance

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

Note: Your instances will launch in the Europe (Stockholm) Region

Service health

Region
Europe (Stockholm)

Status
This service is operating normally.

Zones

Zone name | Zone ID

EC2 Free Tier Info
Offers for all AWS Regions.

2 EC2 free tier offers in use

End of month forecast
⚠ 0 offers forecasted to exceed free tier limit.

Exceeds free tier
⚠ 0 offers exceeded and is now pay-as-you-go pricing.

Offer usage (monthly)

Linux EC2 Instances 2%
735 hours remaining

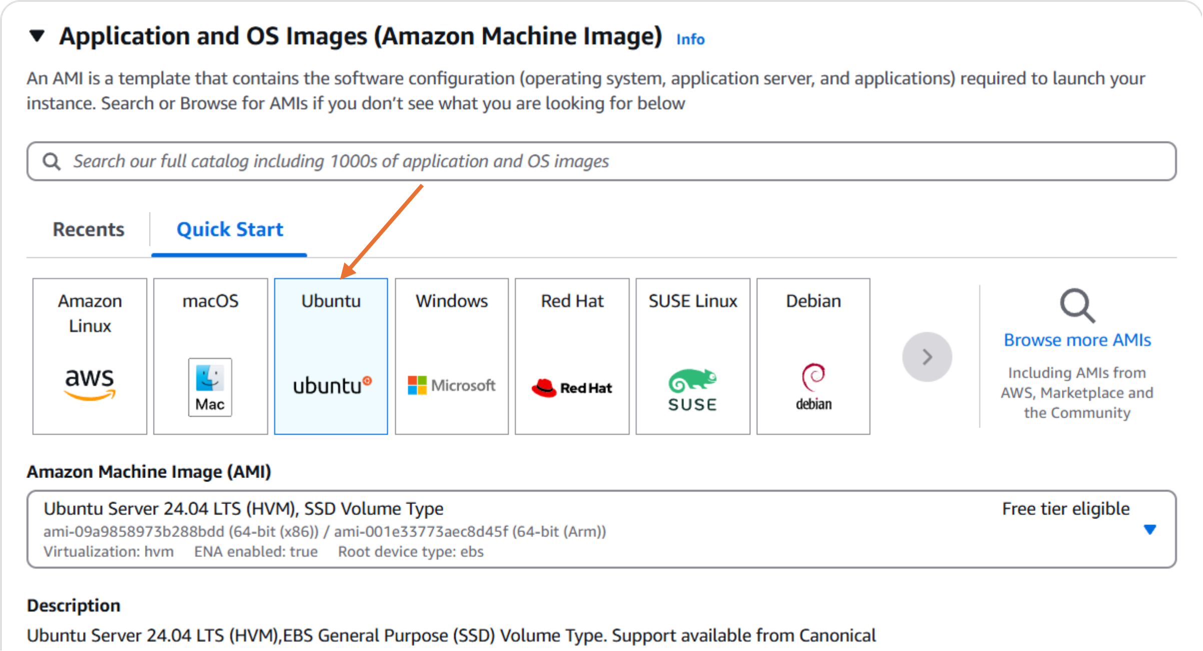
Storage space on EBS 0%
29.86 GB remaining

Account attributes

© 2025, Amazon Web Services, Inc. or its affiliates.

- Select t3.micro Instance Type.
- Select Ubuntu for the **Amazon Machine Image (AMI)**

Name: Rohit Kumar Malik
Student ID: 35363998



▼ **Application and OS Images (Amazon Machine Image)** Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

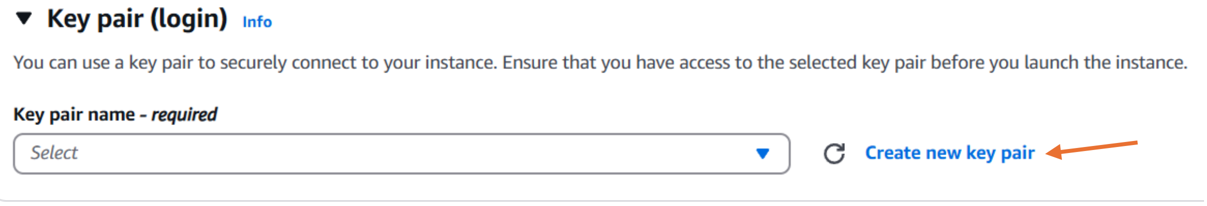
Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type — Free tier eligible
ami-09a9858973b288bdd (64-bit (x86)) / ami-001e33773aec8d45f (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

Description

Ubuntu Server 24.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical

- **Key Pair Generation**: Create a **key pair** in AWS for securely connect to the instance via **SSH**.



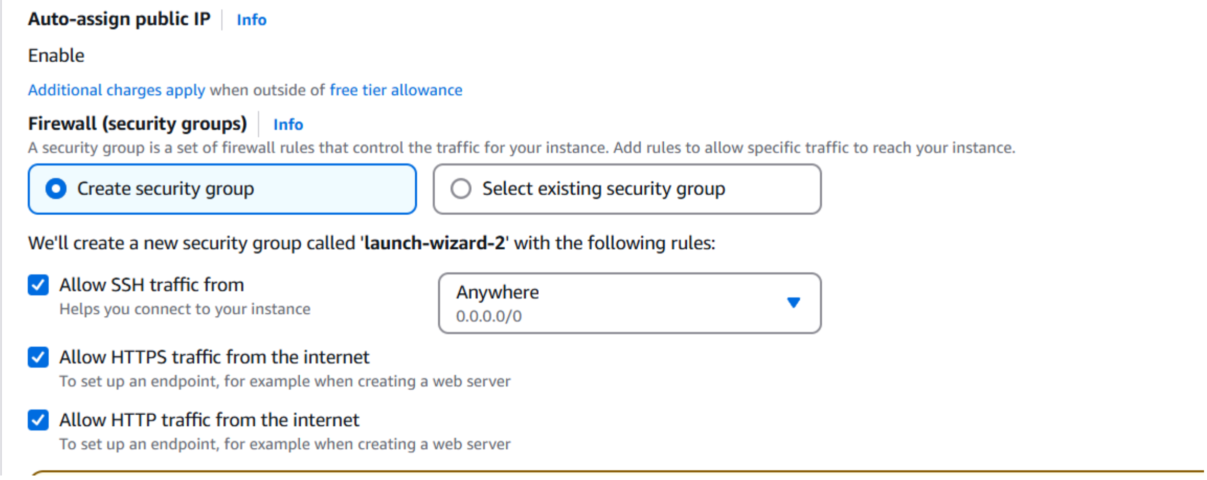
▼ **Key pair (login)** Info

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - *required*

Select

- **Security Groups Configuration**: In **security groups** select these ports to allow inbound traffic on **port 22** for SSH (remote login) and **port 80** for HTTP (web traffic) and **port443** for HTTPS.



Auto-assign public IP Info

Enable

Additional charges apply when outside of free tier allowance

Firewall (security groups) Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

● Create security group ○ Select existing security group

We'll create a new security group called '**launch-wizard-2**' with the following rules:

☑ Allow SSH traffic from — Anywhere 0.0.0.0/0
Helps you connect to your instance

☑ Allow HTTPS traffic from the internet
To set up an endpoint, for example when creating a web server

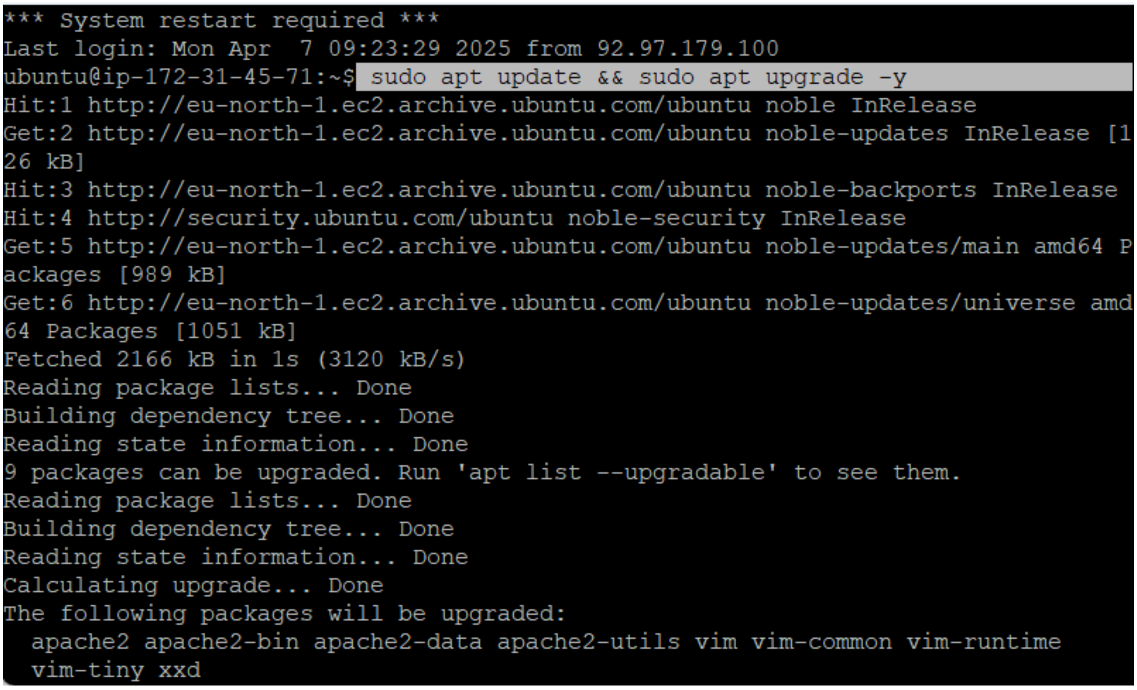
☑ Allow HTTP traffic from the internet
To set up an endpoint, for example when creating a web server

- Then click on **review and launch.**

Name: Rohit Kumar Malik
Student ID: 35363998

SSH Access/ Installing and configurating the web server

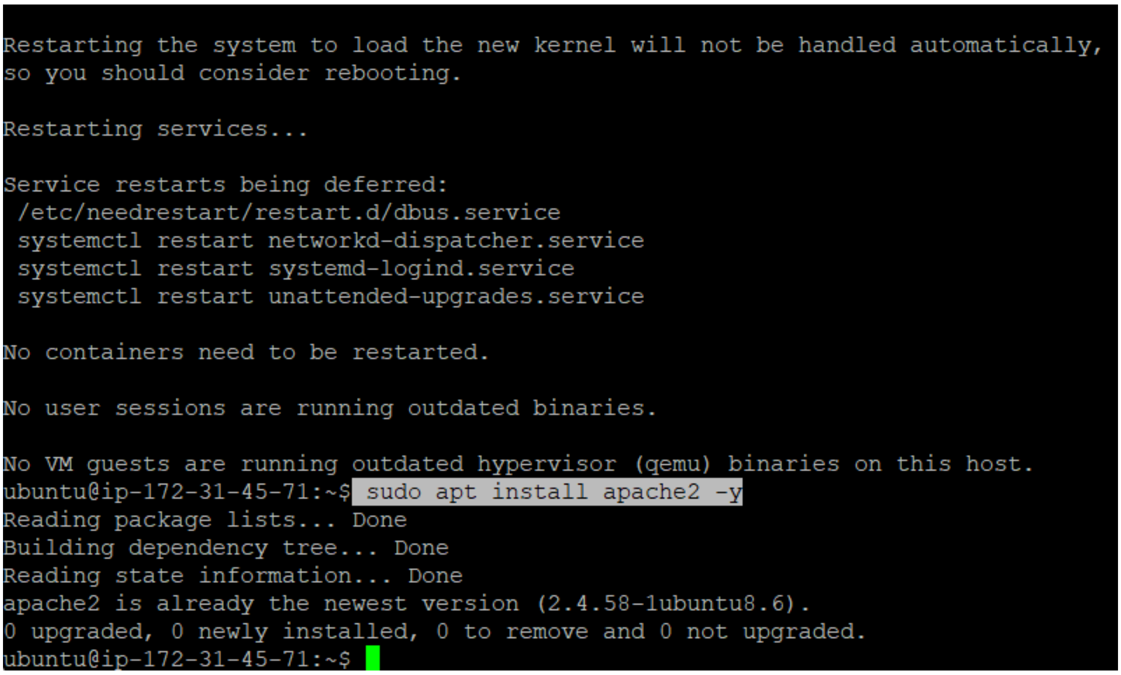
- Installing Apache Web Server.



```
*** System restart required ***
Last login: Mon Apr  7 09:23:29 2025 from 92.97.179.100
ubuntu@ip-172-31-45-71:~$ sudo apt update && sudo apt upgrade -y
Hit:1 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [1
26 kB]
Hit:3 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Get:5 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 P
ackages [989 kB]
Get:6 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd
64 Packages [1051 kB]
Fetched 2166 kB in 1s (3120 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
9 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages will be upgraded:
  apache2 apache2-bin apache2-data apache2-utils vim vim-common vim-runtime
  vim-tiny xxd
```

sudo apt update && sudo apt upgrade -y

--This updates the package list and installs any available updates to keep the system secure and up-to-date.

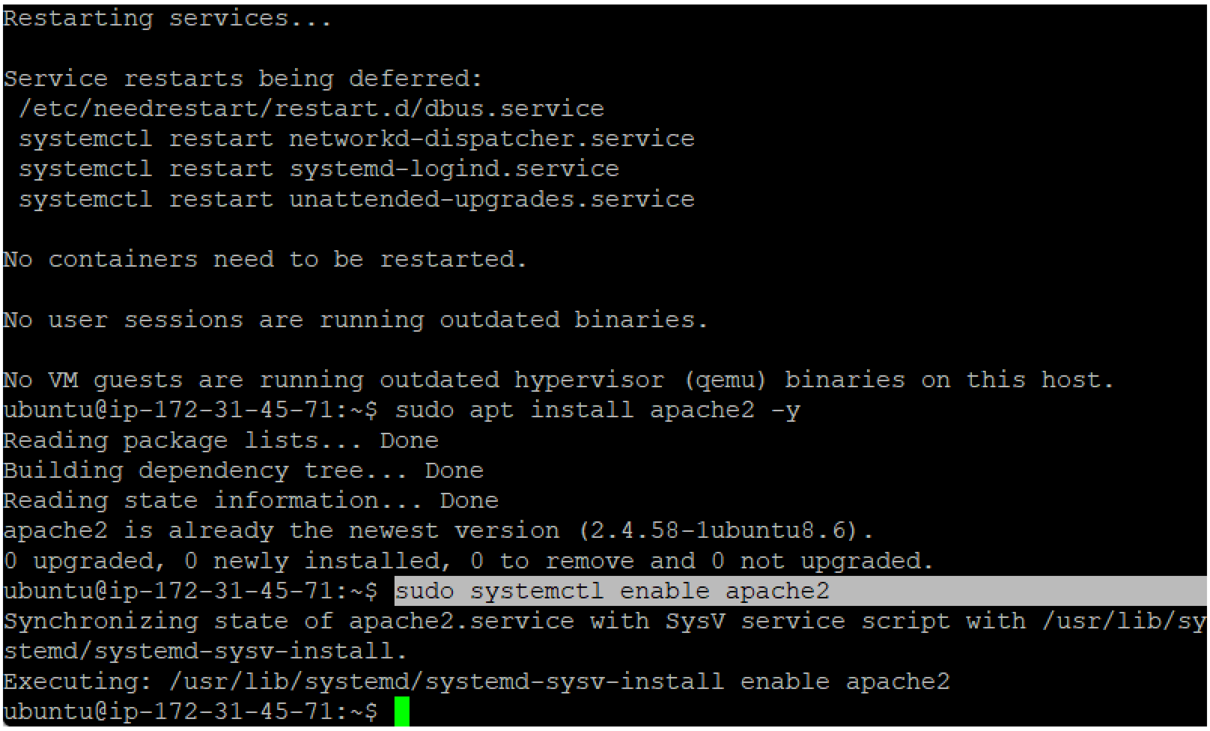


```

Restarting the system to load the new kernel will not be handled automatically,
so you should consider rebooting.

Restarting services...

Service restarts being deferred:
 /etc/needrestart/restart.d/dbus.service
 systemctl restart networkd-dispatcher.service
 systemctl restart systemd-logind.service
 systemctl restart unattended-upgrades.service

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-45-71:~$ sudo apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.58-1ubuntu8.6).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-45-71:~$
```

sudo apt install apache2 -y

--Installs the Apache web server so I can serve my website files online.

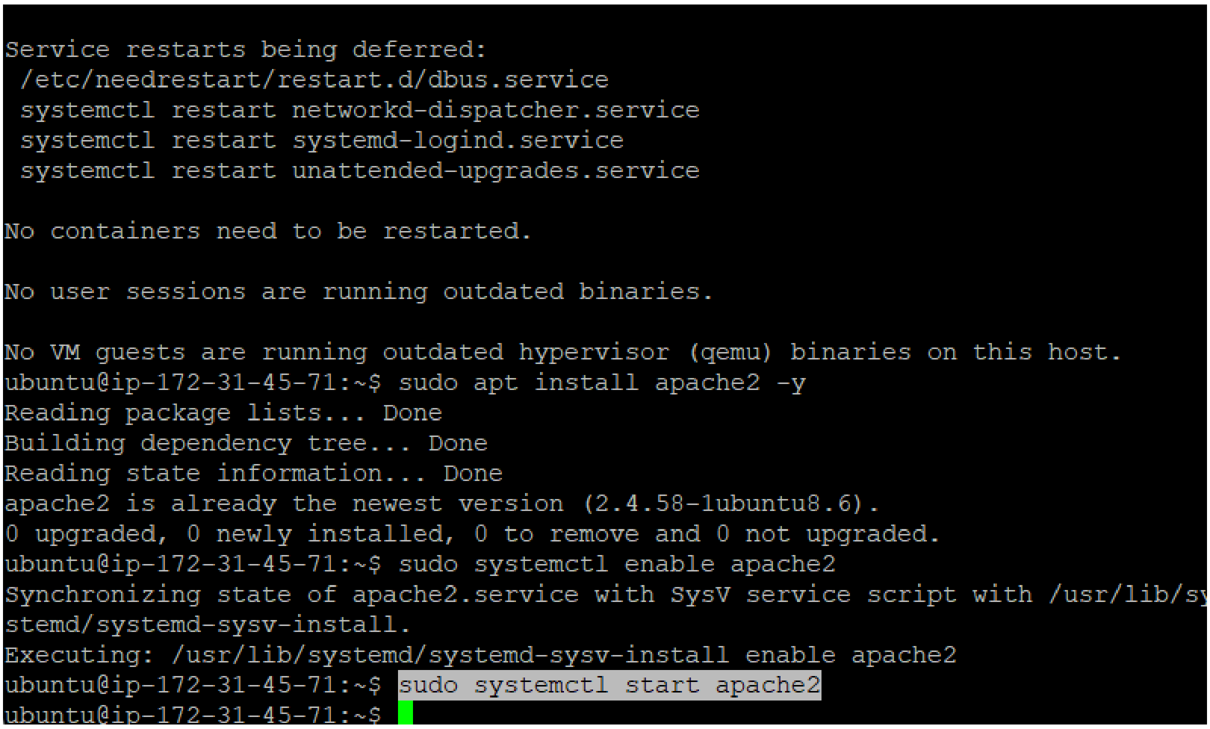
Name: Rohit Kumar Malik
Student ID: 35363998



```
Restarting services...

Service restarts being deferred:
 /etc/needrestart/restart.d/dbus.service
 systemctl restart networkd-dispatcher.service
 systemctl restart systemd-logind.service
 systemctl restart unattended-upgrades.service

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-45-71:~$ sudo apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.58-1ubuntu8.6).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-45-71:~$ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /usr/lib/sy
stemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
ubuntu@ip-172-31-45-71:~$
```

sudo systemctl enable apache2

--Ensures Apache starts automatically whenever the server is rebooted.



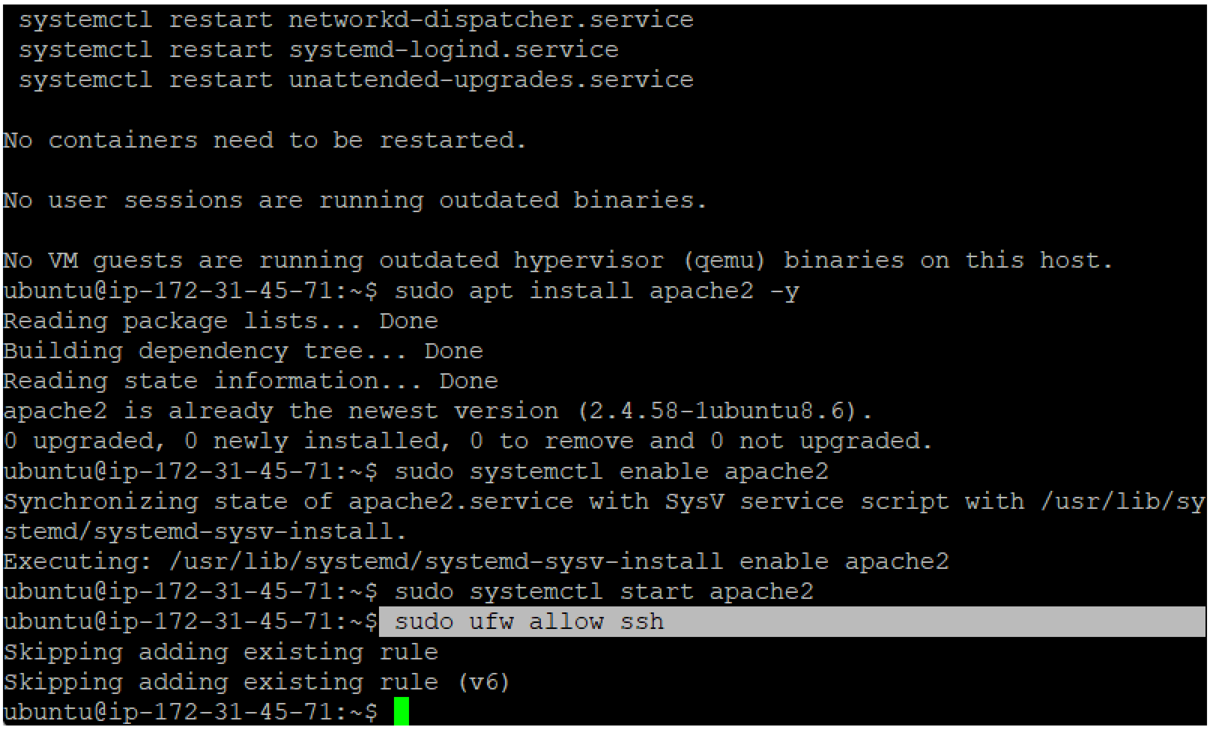
```
Service restarts being deferred:
 /etc/needrestart/restart.d/dbus.service
 systemctl restart networkd-dispatcher.service
 systemctl restart systemd-logind.service
 systemctl restart unattended-upgrades.service

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-45-71:~$ sudo apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.58-1ubuntu8.6).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-45-71:~$ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /usr/lib/sy
stemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
ubuntu@ip-172-31-45-71:~$ sudo systemctl start apache2
ubuntu@ip-172-31-45-71:~$
```

sudo systemctl start apache2

--Starts the Apache service so the website becomes accessible immediately.

Name: Rohit Kumar Malik
Student ID: 35363998

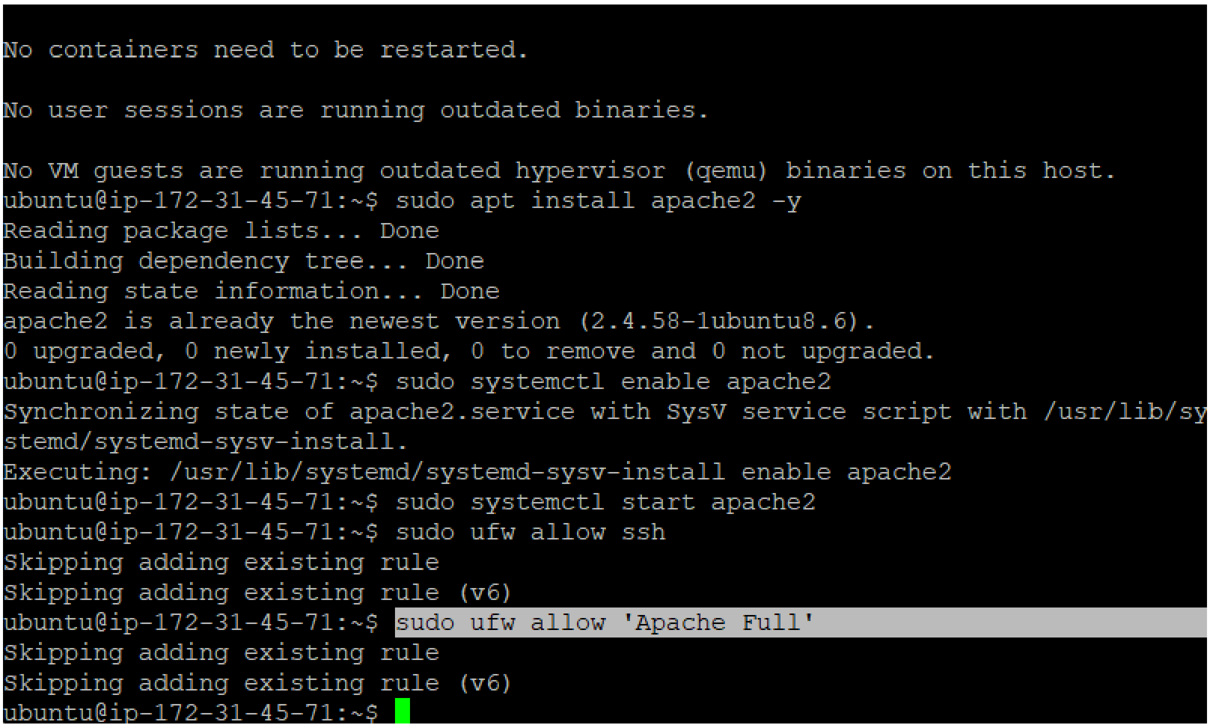
- Firewall (UFW) Configuration



```
 systemctl restart networkd-dispatcher.service
 systemctl restart systemd-logind.service
 systemctl restart unattended-upgrades.service

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-45-71:~$ sudo apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.58-1ubuntu8.6).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-45-71:~$ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /usr/lib/sy
stemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
ubuntu@ip-172-31-45-71:~$ sudo systemctl start apache2
ubuntu@ip-172-31-45-71:~$ sudo ufw allow ssh
Skipping adding existing rule
Skipping adding existing rule (v6)
ubuntu@ip-172-31-45-71:~$
```

sudo ufw allow ssh

--Opens port 22 so I can continue accessing the server via SSH.

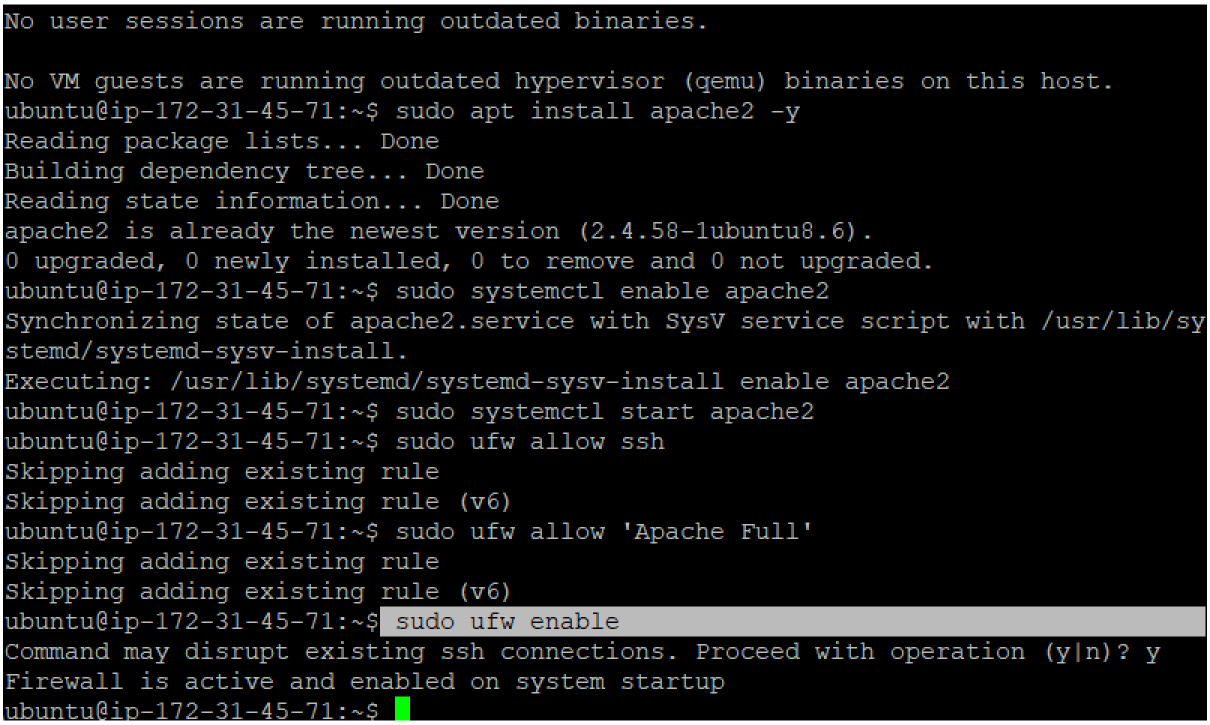


```
No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-45-71:~$ sudo apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.58-1ubuntu8.6).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-45-71:~$ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /usr/lib/sy
stemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
ubuntu@ip-172-31-45-71:~$ sudo systemctl start apache2
ubuntu@ip-172-31-45-71:~$ sudo ufw allow ssh
Skipping adding existing rule
Skipping adding existing rule (v6)
ubuntu@ip-172-31-45-71:~$ sudo ufw allow 'Apache Full'
Skipping adding existing rule
Skipping adding existing rule (v6)
ubuntu@ip-172-31-45-71:~$
```

sudo ufw allow 'Apache Full'

--Allows web traffic (HTTP and HTTPS) through the firewall for the website.

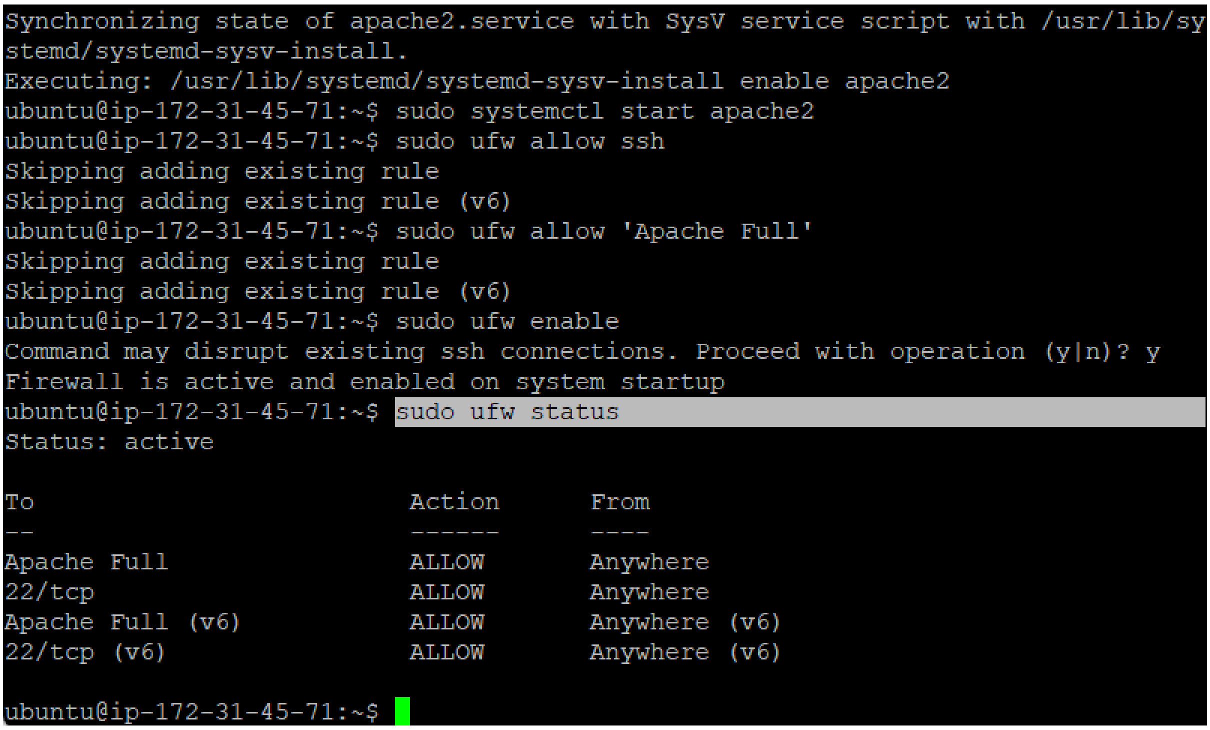
Name: Rohit Kumar Malik
Student ID: 35363998



```
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-45-71:~$ sudo apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.58-1ubuntu8.6).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-45-71:~$ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /usr/lib/sy
stemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
ubuntu@ip-172-31-45-71:~$ sudo systemctl start apache2
ubuntu@ip-172-31-45-71:~$ sudo ufw allow ssh
Skipping adding existing rule
Skipping adding existing rule (v6)
ubuntu@ip-172-31-45-71:~$ sudo ufw allow 'Apache Full'
Skipping adding existing rule
Skipping adding existing rule (v6)
ubuntu@ip-172-31-45-71:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
ubuntu@ip-172-31-45-71:~$
```

`sudo ufw enable`

--Activates the firewall with the rules I’ve set up.

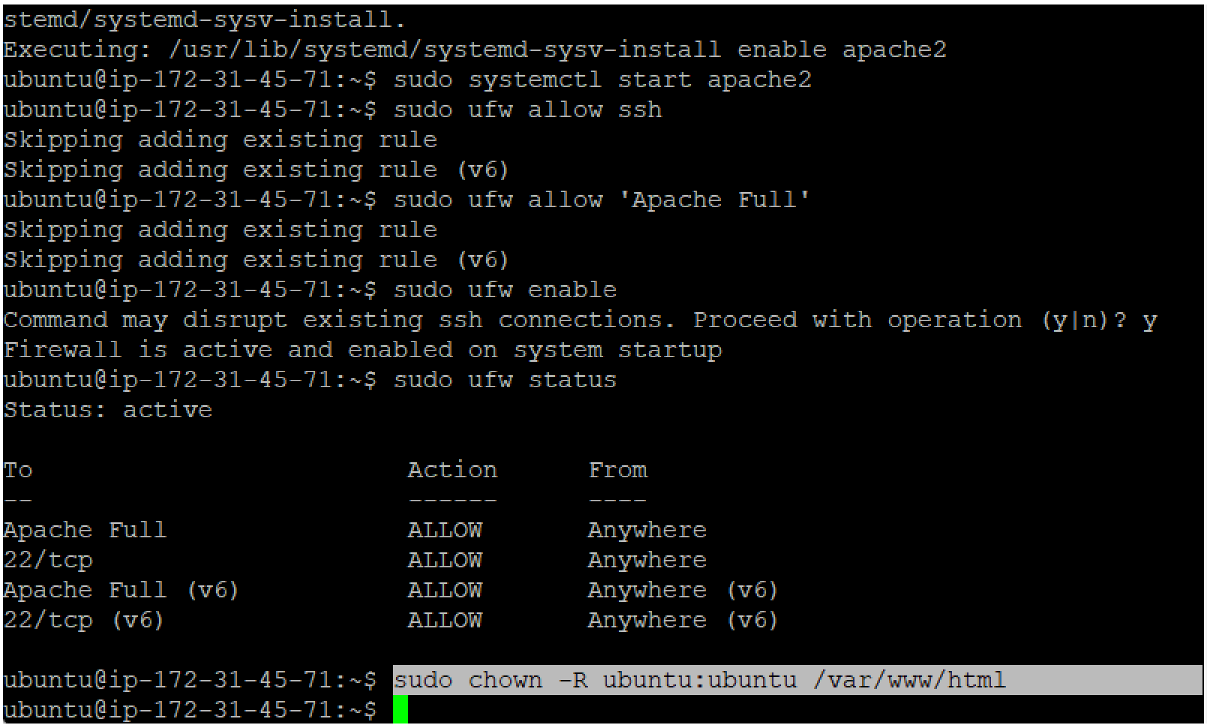


```
Synchronizing state of apache2.service with SysV service script with /usr/lib/sy
stemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
ubuntu@ip-172-31-45-71:~$ sudo systemctl start apache2
ubuntu@ip-172-31-45-71:~$ sudo ufw allow ssh
Skipping adding existing rule
Skipping adding existing rule (v6)
ubuntu@ip-172-31-45-71:~$ sudo ufw allow 'Apache Full'
Skipping adding existing rule
Skipping adding existing rule (v6)
ubuntu@ip-172-31-45-71:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
ubuntu@ip-172-31-45-71:~$ sudo ufw status
Status: active

To                         Action      From
--                         ------      ----
Apache Full                ALLOW       Anywhere
22/tcp                     ALLOW       Anywhere
Apache Full (v6)           ALLOW       Anywhere (v6)
22/tcp (v6)                ALLOW       Anywhere (v6)

ubuntu@ip-172-31-45-71:~$
```

`sudo ufw status`

--Lets me double-check which services are currently allowed through the firewall.

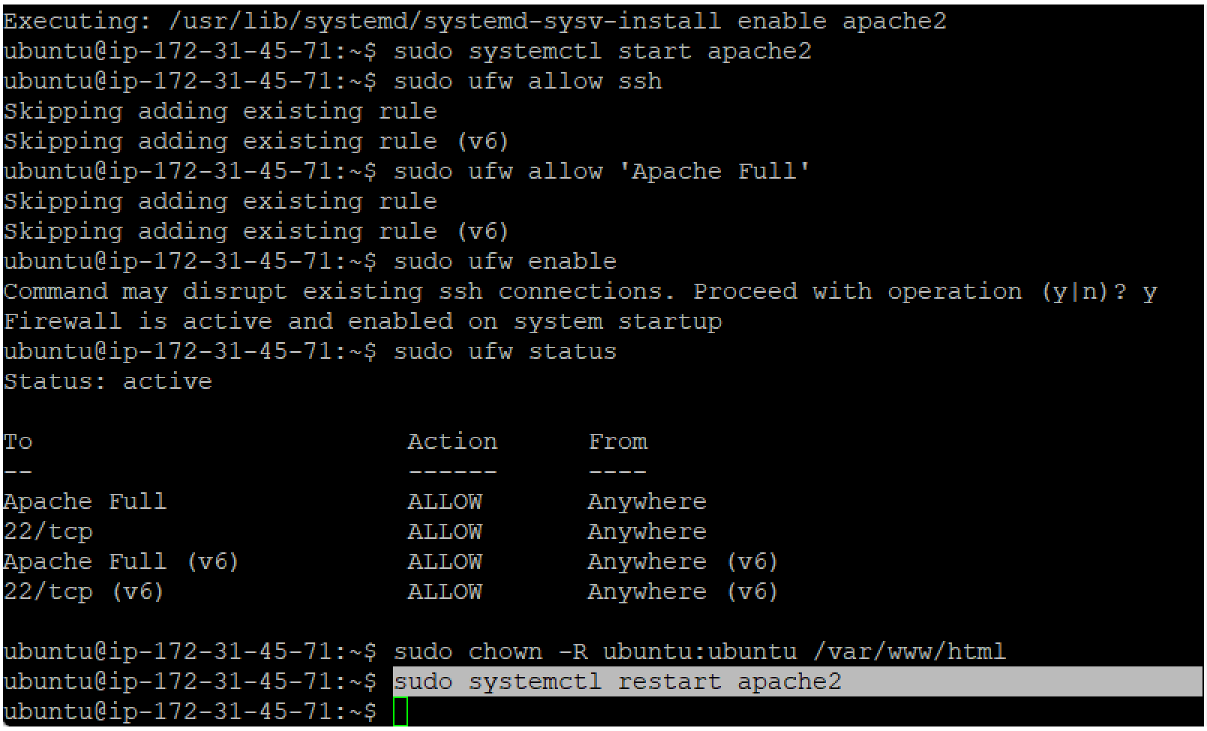
Name: Rohit Kumar Malik
Student ID: 35363998



```
stemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
ubuntu@ip-172-31-45-71:~$ sudo systemctl start apache2
ubuntu@ip-172-31-45-71:~$ sudo ufw allow ssh
Skipping adding existing rule
Skipping adding existing rule (v6)
ubuntu@ip-172-31-45-71:~$ sudo ufw allow 'Apache Full'
Skipping adding existing rule
Skipping adding existing rule (v6)
ubuntu@ip-172-31-45-71:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
ubuntu@ip-172-31-45-71:~$ sudo ufw status
Status: active

To                         Action      From
--                         ------      ----
Apache Full                ALLOW       Anywhere
22/tcp                     ALLOW       Anywhere
Apache Full (v6)           ALLOW       Anywhere (v6)
22/tcp (v6)                ALLOW       Anywhere (v6)

ubuntu@ip-172-31-45-71:~$ sudo chown -R ubuntu:ubuntu /var/www/html
ubuntu@ip-172-31-45-71:~$
```

sudo chown -R ubuntu:ubuntu /var/www/html
--Changes ownership of the website folder so I can upload files without getting permission errors.

- Restart Apache After Uploading Files



```
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
ubuntu@ip-172-31-45-71:~$ sudo systemctl start apache2
ubuntu@ip-172-31-45-71:~$ sudo ufw allow ssh
Skipping adding existing rule
Skipping adding existing rule (v6)
ubuntu@ip-172-31-45-71:~$ sudo ufw allow 'Apache Full'
Skipping adding existing rule
Skipping adding existing rule (v6)
ubuntu@ip-172-31-45-71:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
ubuntu@ip-172-31-45-71:~$ sudo ufw status
Status: active

To                         Action      From
--                         ------      ----
Apache Full                ALLOW       Anywhere
22/tcp                     ALLOW       Anywhere
Apache Full (v6)           ALLOW       Anywhere (v6)
22/tcp (v6)                ALLOW       Anywhere (v6)

ubuntu@ip-172-31-45-71:~$ sudo chown -R ubuntu:ubuntu /var/www/html
ubuntu@ip-172-31-45-71:~$ sudo systemctl restart apache2
ubuntu@ip-172-31-45-71:~$
```

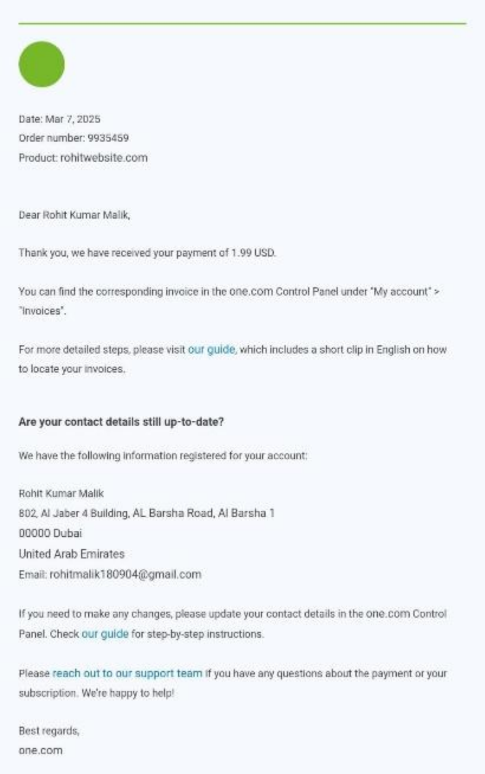
sudo systemctl restart apache2
--Restarts the Apache server so any changes to the website files take effect right away.

Name: Rohit Kumar Malik
Student ID: 35363998

Domain and DNS Configuration

Domain Purchase

I purchased the domain **rohitwebsite.com** from **one.com** for $1.99. This gives me full control of DNS settings.



Date: Mar 7, 2025
Order number: 9935459
Product: rohitwebsite.com

Dear Rohit Kumar Malik,

Thank you, we have received your payment of 1.99 USD.

You can find the corresponding invoice in the one.com Control Panel under "My account" > "Invoices".

For more detailed steps, please visit our guide, which includes a short clip in English on how to locate your invoices.

Are your contact details still up-to-date?

We have the following information registered for your account:

Rohit Kumar Malik
802, Al Jaber 4 Building, AL Barsha Road, Al Barsha 1
00000 Dubai
United Arab Emirates
Email: rohitmalik180904@gmail.com

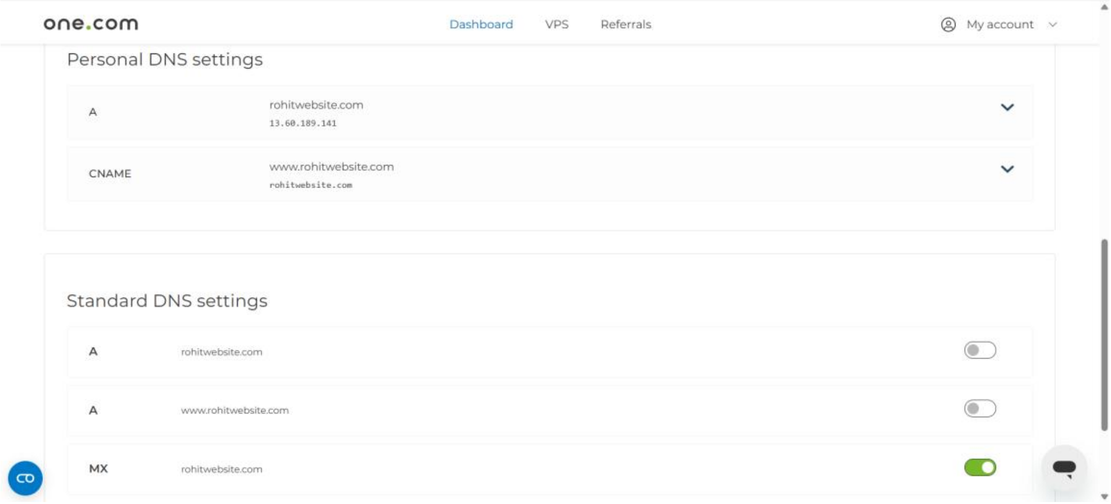
If you need to make any changes, please update your contact details in the one.com Control Panel. Check our guide for step-by-step instructions.

Please reach out to our support team if you have any questions about the payment or your subscription. We're happy to help!

Best regards,
one.com

DNS Record Setup

I pointed an A, CNAME and NS record from rohitwebsite.com to my EC2 public IP (13.60.189.141) using the DNS settings provided by the domain registrar.



Personal DNS settings

A	rohitwebsite.com 13.60.189.141
CNAME	www.rohitwebsite.com rohitwebsite.com

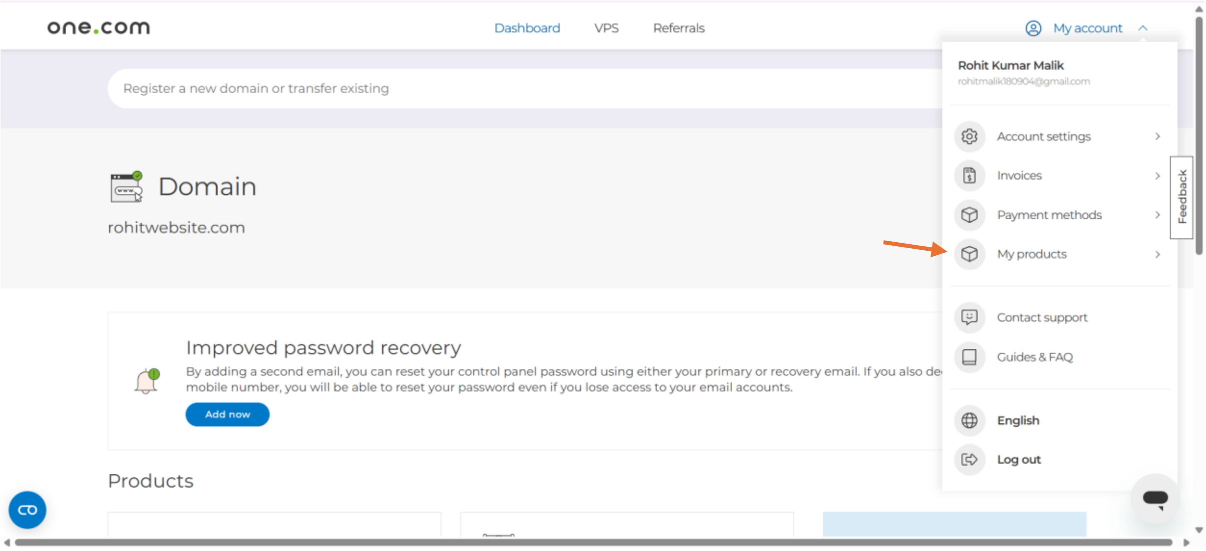
Standard DNS settings

A	rohitwebsite.com	○
A	www.rohitwebsite.com	○
MX	rohitwebsite.com	●

Name: Rohit Kumar Malik
Student ID: 35363998

To begin with, I set up the DNS Records using the following steps:

- After purchasing the domain. Click on **My products**.



one.com

Dashboard VPS Referrals

My account

Register a new domain or transfer existing

Domain

rohitwebsite.com

Improved password recovery

By adding a second email, you can reset your control panel password using either your primary or recovery email. If you also de
mobile number, you will be able to reset your password even if you lose access to your email accounts.

Add now

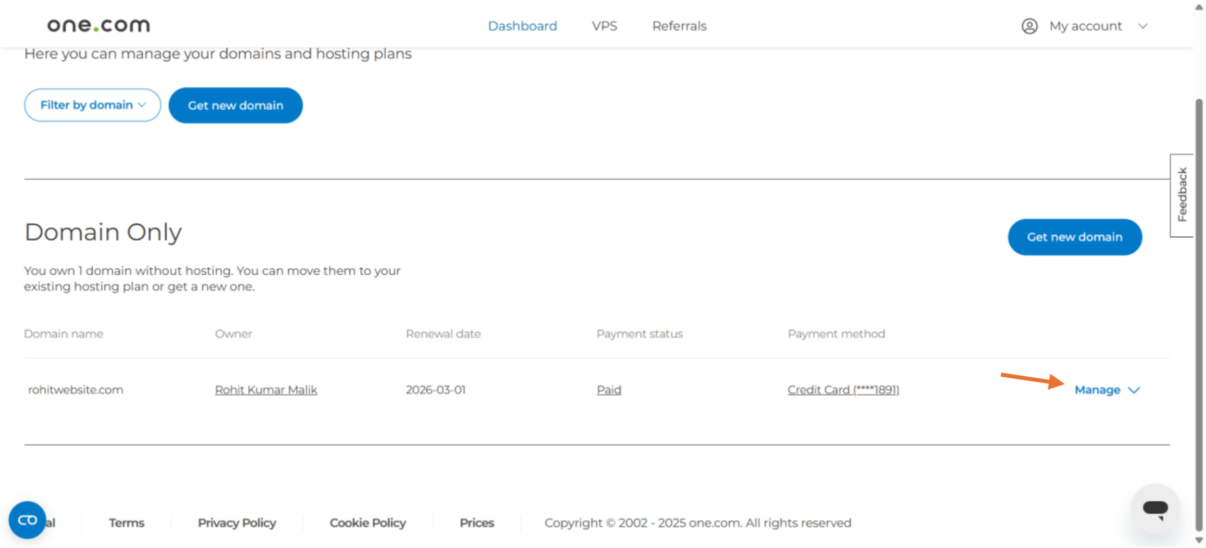
Products

Rohit Kumar Malik
rohitmalik180904@gmail.com

Account settings ›
Invoices ›
Payment methods ›
My products ›
Contact support
Guides & FAQ
English
Log out

Feedback

- Click on **Manage**.



one.com

Dashboard VPS Referrals

My account

Here you can manage your domains and hosting plans

Filter by domain | Get new domain

Domain Only

Get new domain

You own 1 domain without hosting. You can move them to your existing hosting plan or get a new one.

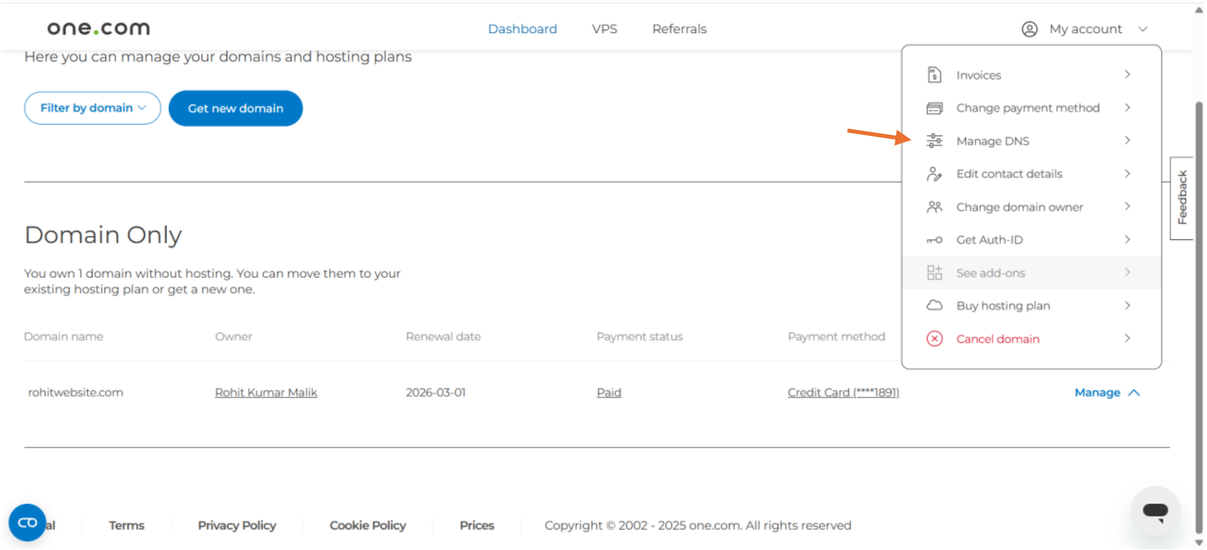
Domain name	Owner	Renewal date	Payment status	Payment method	
rohitwebsite.com	Rohit Kumar Malik	2026-03-01	Paid	Credit Card (****1891)	Manage

al | Terms | Privacy Policy | Cookie Policy | Prices | Copyright © 2002 - 2025 one.com. All rights reserved

Feedback

Name: Rohit Kumar Malik
Student ID: 35363998

- Then, **Manage DNS**.



Here you can manage your domains and hosting plans

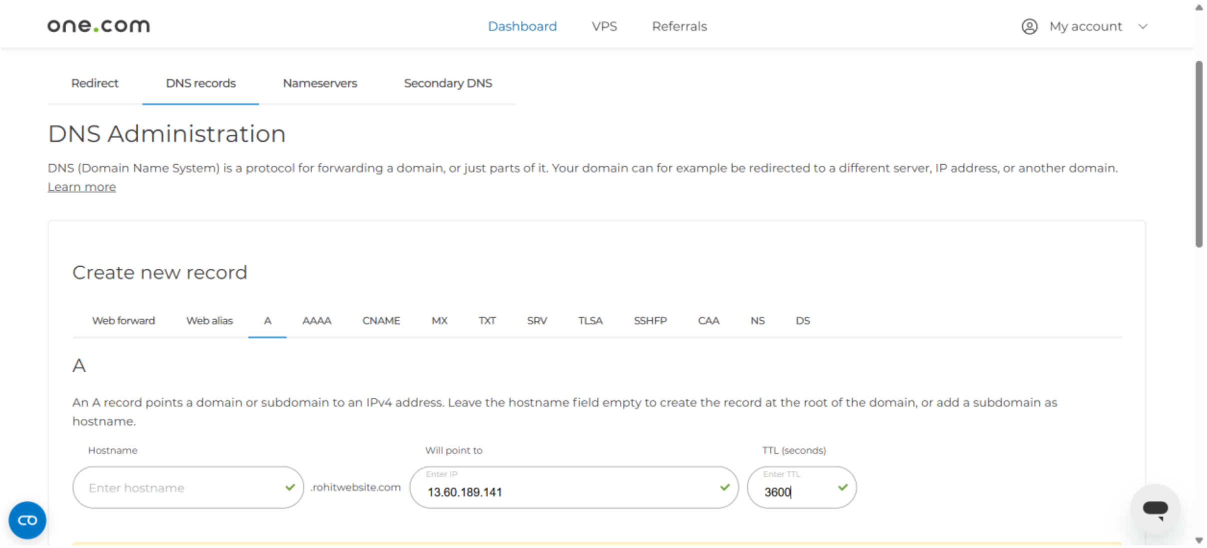
Domain Only

You own 1 domain without hosting. You can move them to your existing hosting plan or get a new one.

Domain name	Owner	Renewal date	Payment status	Payment method
rohitwebsite.com	Rohit Kumar Malik	2026-03-01	Paid	Credit Card (****1891)

Copyright © 2002 - 2025 one.com. All rights reserved

- In DNS records, create A, CNAME, and NS records using my EC2 public IP (13.60.189.141).



DNS Administration

DNS (Domain Name System) is a protocol for forwarding a domain, or just parts of it. Your domain can for example be redirected to a different server, IP address, or another domain. Learn more

Create new record

A

An A record points a domain or subdomain to an IPv4 address. Leave the hostname field empty to create the record at the root of the domain, or add a subdomain as hostname.

Hostname: Enter hostname .rohitwebsite.com

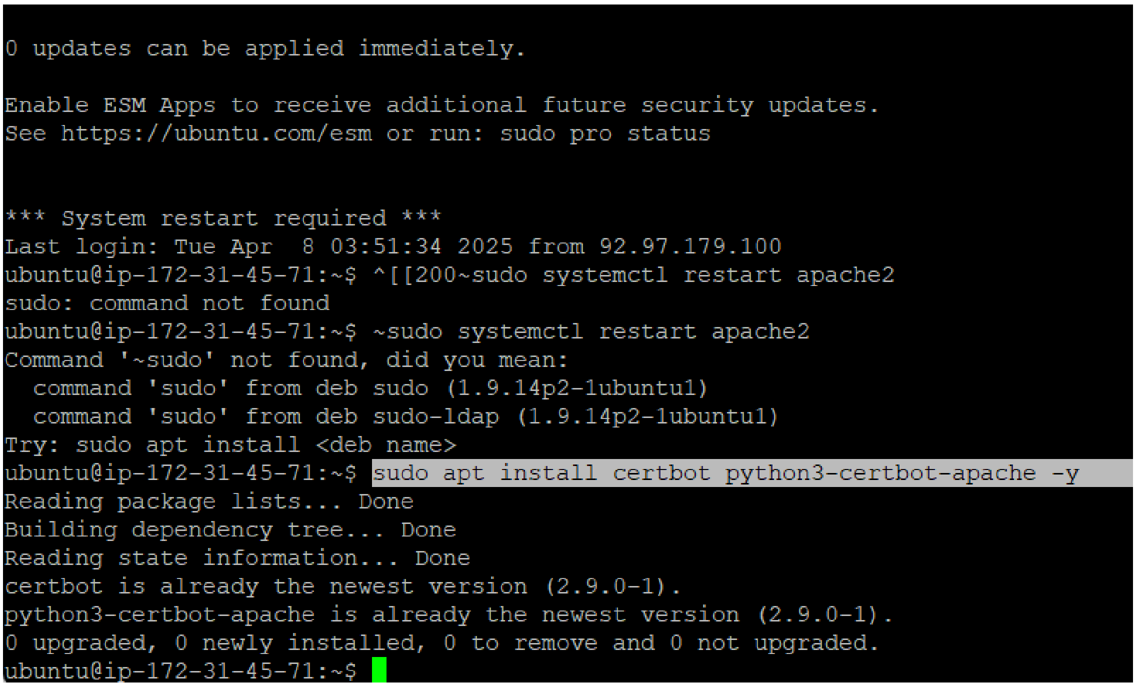
Will point to: Enter IP 13.60.189.141

TTL (seconds): Enter TTL 3600

Name: Rohit Kumar Malik
Student ID: 35363998

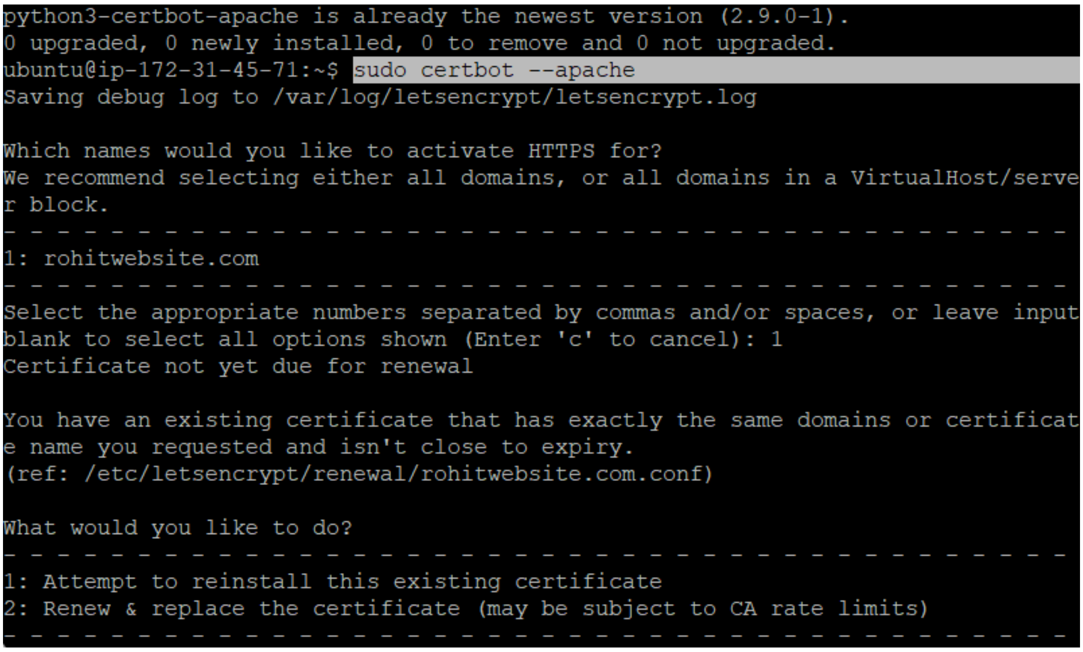
SSL Certificate via Let’s Encrypt

After verifying my domain, I successfully enabled HTTPS. Certbot also configured redirection from HTTP to HTTPS automatically.



```
0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status


*** System restart required ***
Last login: Tue Apr  8 03:51:34 2025 from 92.97.179.100
ubuntu@ip-172-31-45-71:~$ ^[[200~sudo systemctl restart apache2
sudo: command not found
ubuntu@ip-172-31-45-71:~$ ~sudo systemctl restart apache2
Command '~sudo' not found, did you mean:
  command 'sudo' from deb sudo (1.9.14p2-1ubuntu1)
  command 'sudo' from deb sudo-ldap (1.9.14p2-1ubuntu1)
Try: sudo apt install <deb name>
ubuntu@ip-172-31-45-71:~$ sudo apt install certbot python3-certbot-apache -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
certbot is already the newest version (2.9.0-1).
python3-certbot-apache is already the newest version (2.9.0-1).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-45-71:~$
```

sudo apt install certbot python3-certbot-apache -y
--This installs Certbot along with the Apache plugin so I can automatically get and configure an SSL certificate.



```
python3-certbot-apache is already the newest version (2.9.0-1).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-45-71:~$ sudo certbot --apache
Saving debug log to /var/log/letsencrypt/letsencrypt.log

Which names would you like to activate HTTPS for?
We recommend selecting either all domains, or all domains in a VirtualHost/serve
r block.
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
1: rohitwebsite.com
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
Select the appropriate numbers separated by commas and/or spaces, or leave input
blank to select all options shown (Enter 'c' to cancel): 1
Certificate not yet due for renewal

You have an existing certificate that has exactly the same domains or certificat
e name you requested and isn't close to expiry.
(ref: /etc/letsencrypt/renewal/rohitwebsite.com.conf)

What would you like to do?
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
1: Attempt to reinstall this existing certificate
2: Renew & replace the certificate (may be subject to CA rate limits)
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

sudo certbot –apache

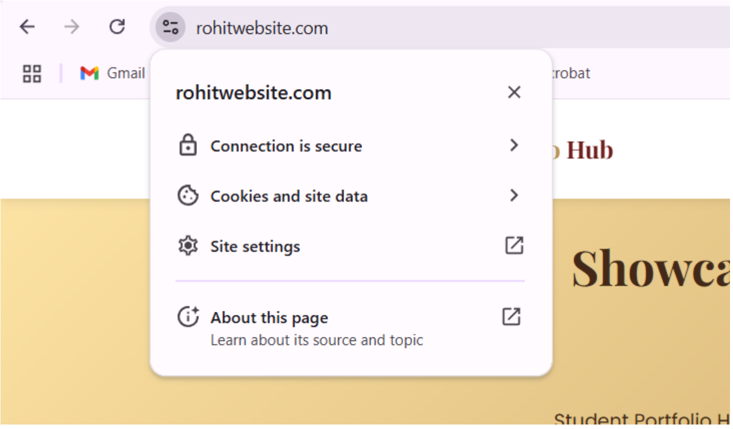
Name: Rohit Kumar Malik
Student ID: 35363998

--This command starts the Certbot tool to set up SSL with Apache. During the process, it asks for my **email address** (Rohitmalik180904@gmail.com), the **domain name** I want to secure (**rohitwebsite.com**), and whether I want to redirect all HTTP traffic to HTTPS.

Note: I had already purchased and configured the SSL certificate earlier, so I'm just re-running the command now to take screenshots for documentation. This didn't make any changes to my existing certificate, but it was useful for capturing the steps again.

Verify SSL Certificate:

Ensuring if the site is accessible via HTTPS.



rohitwebsite.com

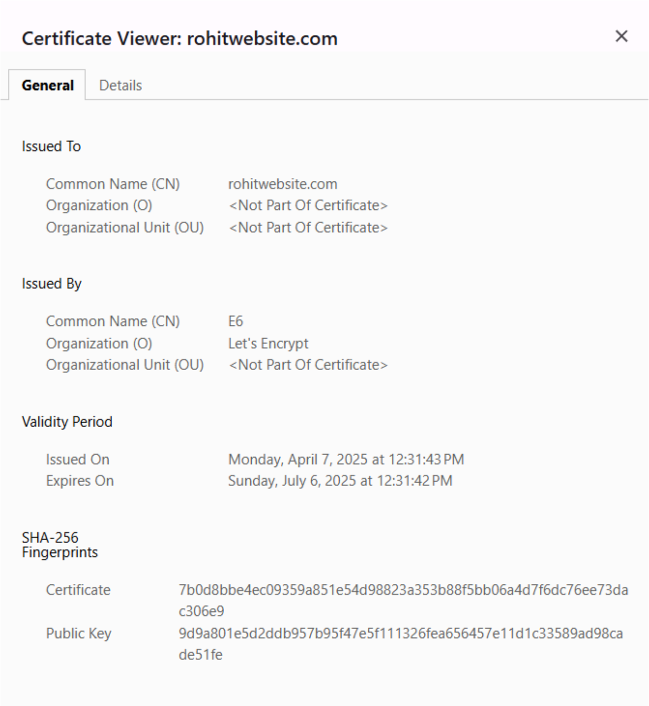
rohitwebsite.com

Connection is secure

Cookies and site data

Site settings

About this page
Learn about its source and topic



Certificate Viewer: rohitwebsite.com

General | Details

Issued To

Common Name (CN) rohitwebsite.com
Organization (O) <Not Part Of Certificate>
Organizational Unit (OU) <Not Part Of Certificate>

Issued By

Common Name (CN) E6
Organization (O) Let's Encrypt
Organizational Unit (OU) <Not Part Of Certificate>

Validity Period

Issued On Monday, April 7, 2025 at 12:31:43 PM
Expires On Sunday, July 6, 2025 at 12:31:42 PM

SHA-256
Fingerprints

Certificate 7b0d8bbe4ec09359a851e54d98823a353b88f5bb06a4d7f6dc76ee73dac306e9
Public Key 9d9a801e5d2ddb957b95f47e5f111326fea656457e11d1c33589ad98cade51fe

Final Testing

To ensure the domain was linked correctly, I tested both:

- **Direct IP Access**: 13.60.189.141
- **Domain Access**: rohitwebsite.com

Both loaded the same website, confirming that the DNS linking was successful.

Website Features and Files

Project Purpose

The goal of my website (**Student Portfolio Hub**) is to bridge the gap between education and employment by giving students a space to showcase their academic and personal projects. It's designed to help university students present their skills in a clean, organized, and interactive way. At the same time, employers can explore student portfolios, making it easier to connect with talent based on real abilities instead of just resumes.

My inspiration came from platforms like LinkedIn, but I wanted to make something simpler and student focused. The entire layout, design, and written content were created by me. Every element, from the fonts and images to the sections like About, Offerings, and Video -was placed intentionally to make the website feel polished yet personal.

Technologies Used

The website is made using modern front-end technologies that I learned throughout the unit:

- **HTML5**: Used to structure all the content on the website including sections like About, Contact, and Video.
- **CSS3**: Responsible for the styling, layout, color palette, and responsive design. I used variables to maintain a consistent theme across all elements.
- **JavaScript**: Enhances user experience by controlling the mobile navigation menu, scroll-based section highlights, and form validation.
- **Let's Encrypt SSL**: Provides HTTPS security to ensure safe, encrypted access to the website.
- **Custom Fonts**: Google Fonts (Poppins and Playfair Display) were used for a modern and elegant look.
- **Responsive Design**: The layout automatically adjusts for desktops, tablets, and mobile devices using media queries.

Name: Rohit Kumar Malik
Student ID: 35363998

File Breakdown

- index.html: This is the main webpage that contains the structure of all visible sections such as the header, about, offerings, video, and contact form.
- styles.css: This file handles the website's layout, color scheme (using my chosen palette), spacing, fonts, responsiveness, and button styling.
- script.js: Contains the JavaScript functionality that enables mobile menu toggling, highlights the current section while scrolling, validates contact form input, and provides user-friendly feedback messages.
- images/ and videos/: I included images for each section and a video explainer that walks through the server setup and features of the site.

JavaScript Script Explanation

To enhance the functionality and user experience of my website, I wrote a custom JavaScript file (script.js) that handles various dynamic features. One of the main tasks it performs is toggling the **mobile navigation menu**. When viewed on smaller screens, the menu collapses into a hamburger icon, which can be clicked to show or hide the links, a small feature, but important for usability.

Another interactive touch I added was **scroll-based navigation highlighting**. As the user scrolls, the navigation bar updates to show which section is currently being viewed, making the browsing experience more intuitive. I also implemented **smooth scrolling** for anchor links, so navigation feels natural.

The most functional part of the script is the **contact form validation**. The script checks that all required fields are filled in before submission and gives immediate feedback using styled success or error messages. Lastly, there's also a **video fallback** that replaces the player with a placeholder if the video fails to load.

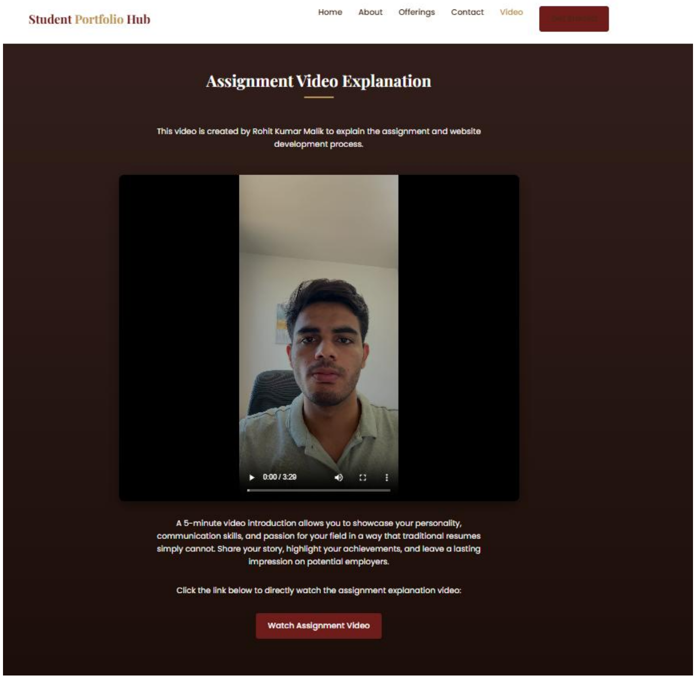
Video Explainer

To complement my written documentation, I recorded a short video (around five minutes) explaining how I set up my cloud server and deployed the website. It walks through key steps like launching the EC2 instance, linking the domain, installing Apache, and setting up SSL.

I also give a quick tour of the website and explain how I built it using HTML, CSS, and JavaScript. The video includes screen recordings and my own voiceover, so it feels more natural and easier to follow — especially for someone trying to replicate the process.

Video link: https://rohitwebsite.com/videos/Assignment%20Video%20Explanation.mp4

Name: Rohit Kumar Malik
Student ID: 35363998



Assignment Video Explanation

This video is created by Rohit Kumar Malik to explain the assignment and website development process.

A 5-minute video introduction allows you to showcase your personality, communication skills, and passion for your field in a way that traditional resumes simply cannot. Share your story, highlight your achievements, and leave a lasting impression on potential employers.

Click the link below to directly watch the assignment explanation video:

GitHub Repository

As part of the assignment requirements, I created a GitHub repository to store and share my project files. This not only helps me stay organized but also showcases that I can use version control platforms effectively, which is a key industry skill. Below is a breakdown of what's included in the repository:

Repository Link:
https://github.com/RohitMalik7/student-portfolio-hub

The repository is public and fully accessible to view and download files.

Source Files
Includes the main files used to build the website: index.html, styles.css, and script.js. These represent the full front-end of the project.

Assignment Documentation (PDF)
I've uploaded the final PDF report that includes server setup, DNS configuration, SSL installation, and more. This is the core deliverable for assessment.

README.md File
A detailed README is included which gives a summary of the project, setup steps, and important links. It's helpful for anyone trying to understand or replicate the project.

Video Explainer Link
The repository also contains a direct link to the assignment video hosted on my server. It walks through the full deployment and explains each feature I built. The link can be found in the README.md file.

Name: Rohit Kumar Malik
Student ID: 35363998

References

Amazon Web Services. (n.d.). *Amazon EC2 documentation*. AWS. https://docs.aws.amazon.com/ec2/

Apache Software Foundation. (n.d.). *Apache License, Version 2.0*. https://www.apache.org/licenses/LICENSE-2.0.html

Certbot. (n.d.). *Let's Encrypt - Free SSL/TLS Certificates*. Electronic Frontier Foundation. https://certbot.eff.org/

Free Software Foundation. (n.d.). *GNU General Public License v3.0*. https://www.gnu.org/licenses/gpl-3.0.html

Mozilla Developer Network. (n.d.). *Client-side form validation*. MDN Web Docs. https://developer.mozilla.org/en-US/docs/Learn/Forms/Form_validation

Google Fonts. (n.d.). *Fonts*. https://fonts.google.com/