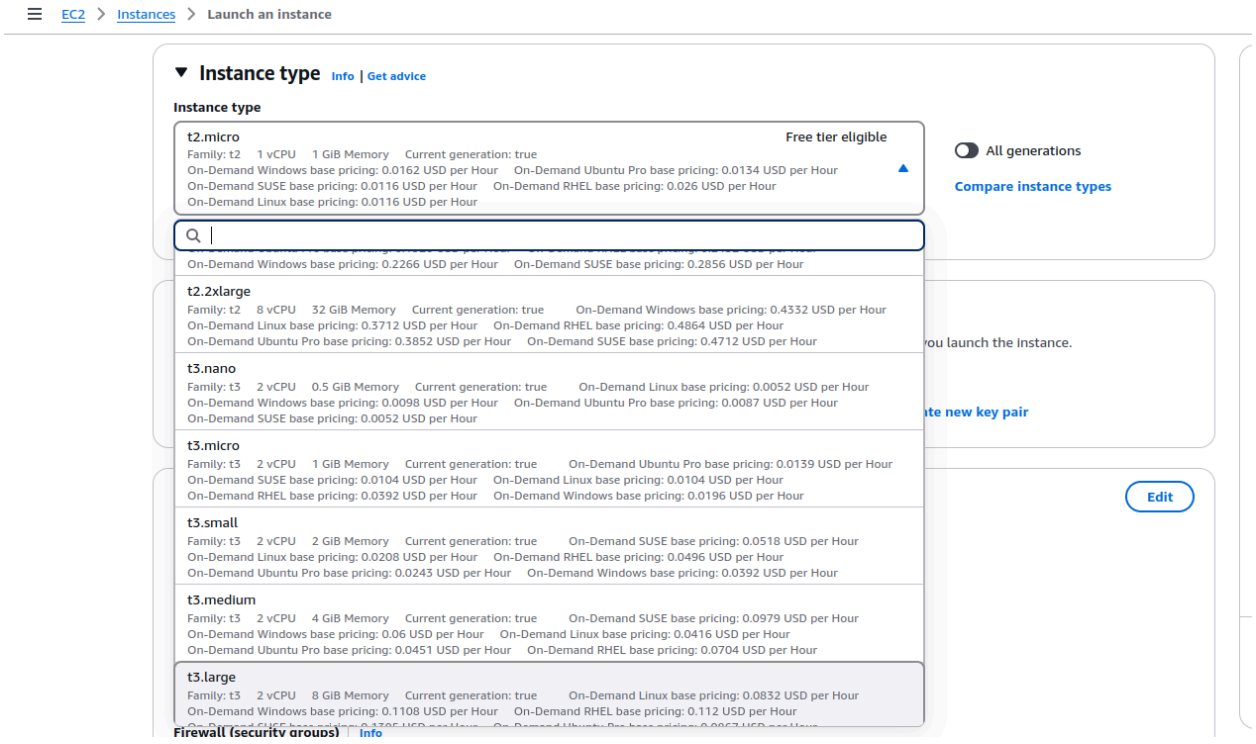
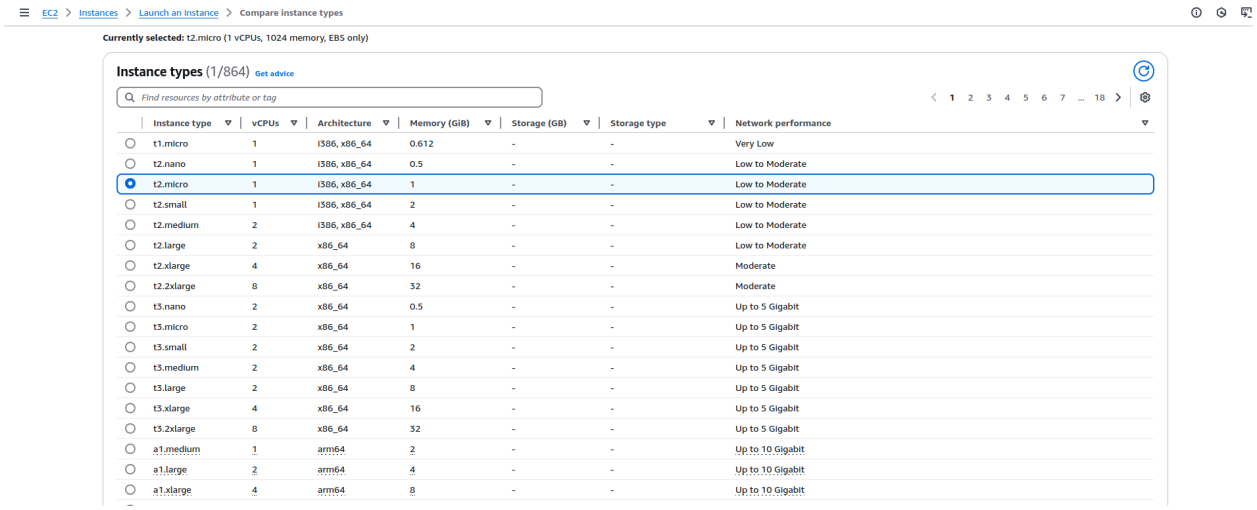
Q1) List out the types of instance base on the pricing model and write a brief about your understanding about it.

Ans. Types of instances:

1. **General Purpose**: Balanced compute, memory, and networking for scale-out workloads. Types: A1, T-family (T2, T3, T3a). Pricing: On-Demand, Reserved, Spot, Savings Plans.
2. **Compute Optimized**: High compute-to-memory ratio for CPU-bound tasks. Types: C-family (C5). Pricing: On-Demand, Reserved, Spot.
3. **Memory Optimized**: Designed for memory-intensive tasks like in-memory databases. Types: R-family (R5). Pricing: On-Demand, Reserved, Spot.
4. **Storage Optimized**: Ideal for high storage and sequential read/write workloads. Types: H1, D2. Pricing: On-Demand, Reserved, Spot.

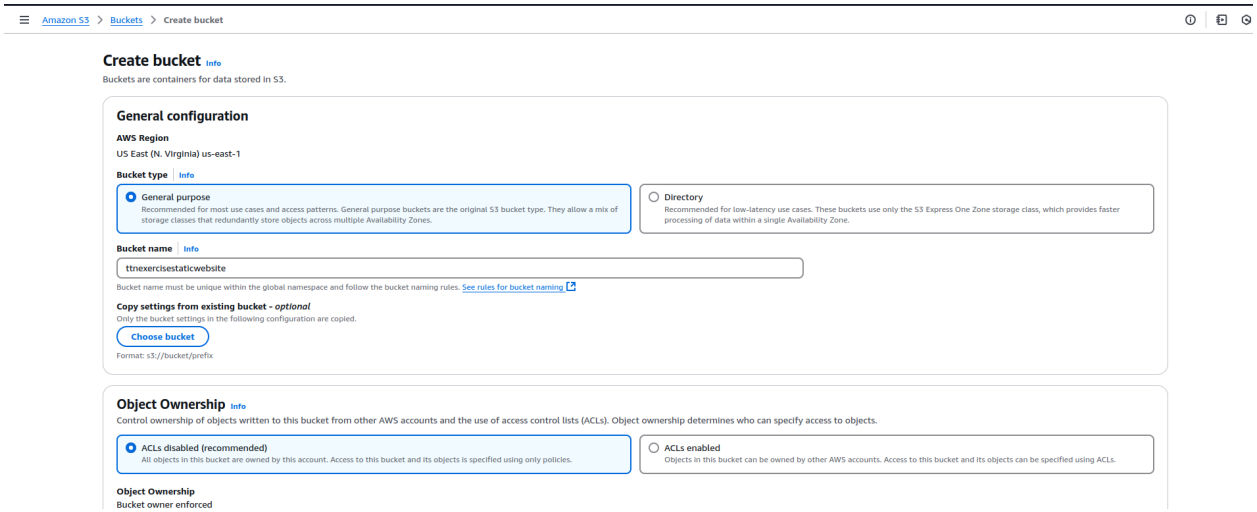
Here is the list of instances:



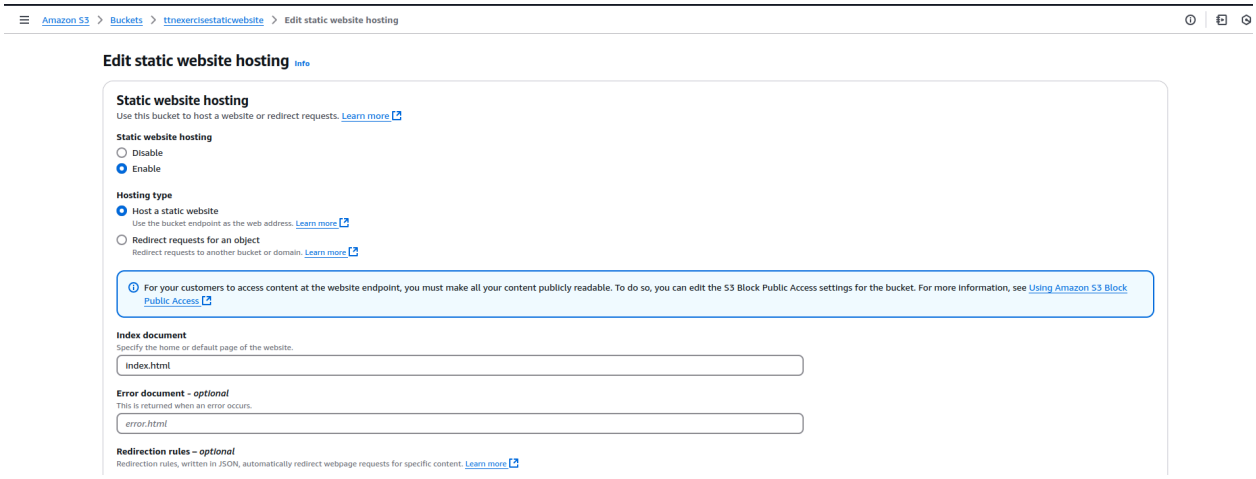


Q2)Host a static website in S3.
Ans. Steps to host a static website in S3 is :

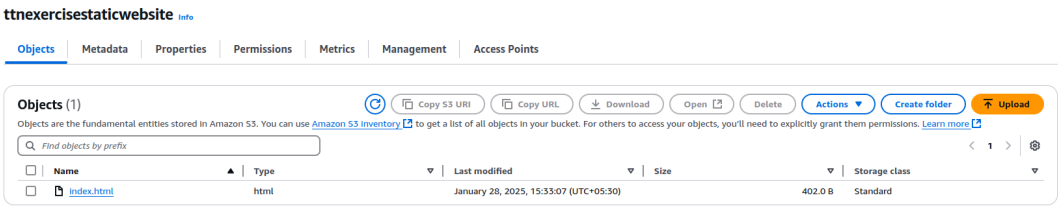
1. Create a bucket - bucket name should be unique globally. Unchecking the "Block all public access"

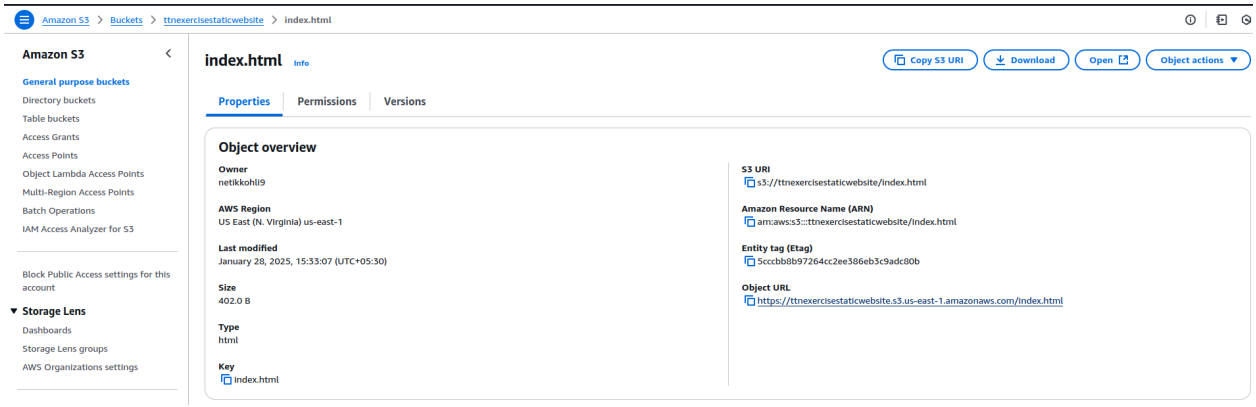


2. Inside the bucket upload files such as HTML, CSS, JS and then enable the static website hosting -



here for demo purpose I am uploading a HTML file with name index.html:

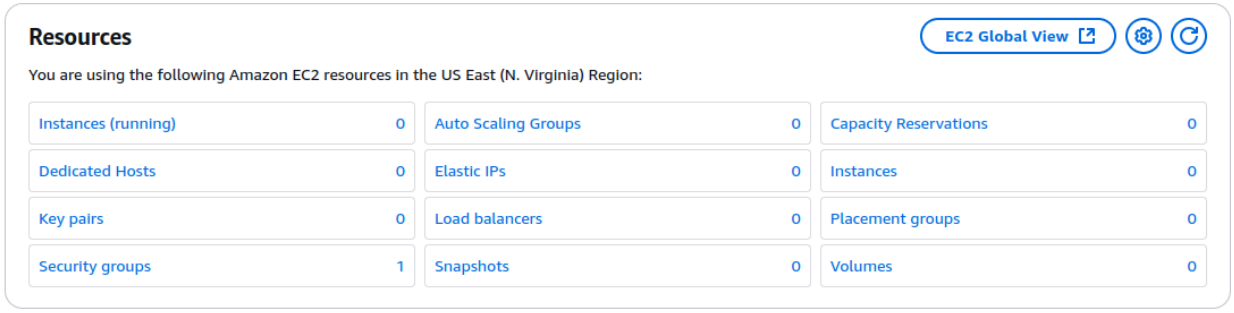


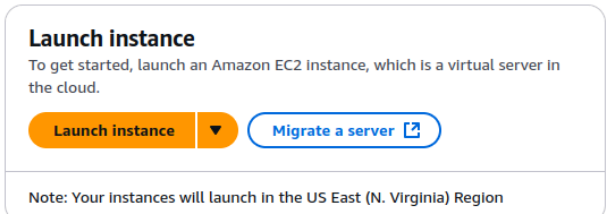


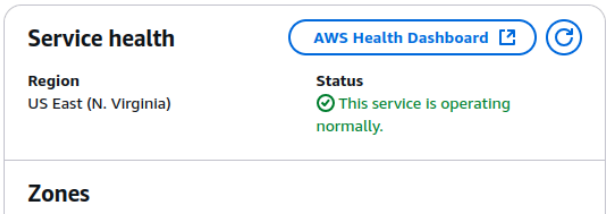
On clicking the object url as shown in above image our static website will open.

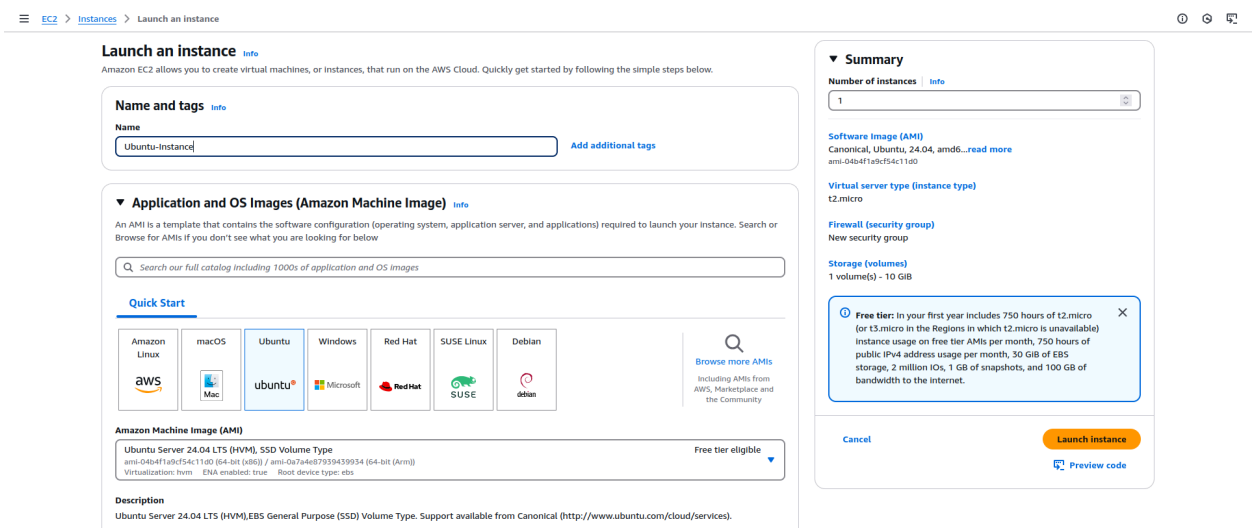
Q3) Launch an Ubuntu EC2 instance on AWS, with 10GB root volume, and SSH from your local machine using the private key.

Ans.









Create key pair

Key pair name

Key pairs allow you to connect to your instance securely.

key pair exercise

The name can include up to 255 ASCII characters. It can't include leading or trailing spaces.

Key pair type

- (•) RSA — RSA encrypted private and public key pair
- ( ) ED25519 — ED25519 encrypted private and public key pair

Private key file format

- (•) .pem — For use with OpenSSH
- ( ) .ppk — For use with PuTTY

Instances (1) Info

Last updated less than a minute ago | Connect

Find Instance by attribute or tag (case-sensitive) | All states

Instance ID = i-02633772b7fb30205 | Clear filters

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
Ubuntu Instance	i-02633772b7fb30205	Running	t2.micro	Initializing	View alarms +	us-east-1b

```
netik@TTNPL-netikkohli:~$ sudo ssh -i '/home/netik/Downloads/key pair exercise.pem' ubuntu@54.166.81.181
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1021-aws x86_64)

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

 System information as of Tue Jan 28 15:32:39 UTC 2025

  System load:  0.0               Processes:             106
  Usage of /:   19.5% of 8.65GB   Users logged in:       0
  Memory usage: 20%               IPv4 address for enX0: 172.31.85.103
  Swap usage:   0%


Expanded Security Maintenance for Applications is not enabled.

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


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

Last login: Tue Jan 28 15:31:30 2025 from 152.58.119.99
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-85-103:~$
```

Q4) Install nginx package in the above server and access this page from your local browser using a domain name instead of IP address of the server.

Ans.

SSH from local machine with key pair :

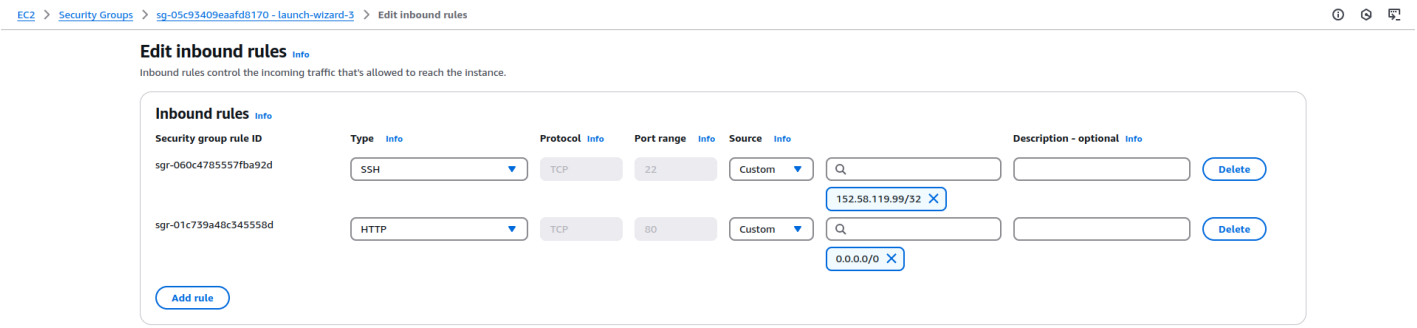
```
netik@TTNPL-netikkohli:~$ sudo ssh -i '/home/netik/Downloads/key pair exercise.pem' ubuntu@54.166.81.181
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1021-aws x86_64)

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

```
ubuntu@ip-172-31-85-103:~$ sudo apt install nginx -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  nginx-common
Suggested packages:
  fcgiwrap nginx-doc ssl-cert
The following NEW packages will be installed:
  nginx nginx-common
0 upgraded, 2 newly installed, 0 to remove and 49 not upgraded.
Need to get 552 kB of archives.
After this operation, 1596 kB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 nginx-common all 1.24.0-2ubuntu7.1 [31.2 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 nginx amd64 1.24.0-2ubuntu7.1 [521 kB]
Fetched 552 kB in 0s (23.2 MB/s)
Preconfiguring packages ...
Selecting previously unselected package nginx-common.
(Reading database ... 70610 files and directories currently installed.)
Preparing to unpack .../nginx-common_1.24.0-2ubuntu7.1_all.deb ...
```

4. Inbound rules are set by : first go to the ec2 in the AWS console.In the left sidebar, click on Security Groups. Select the Security Group associated with your EC2 instance.

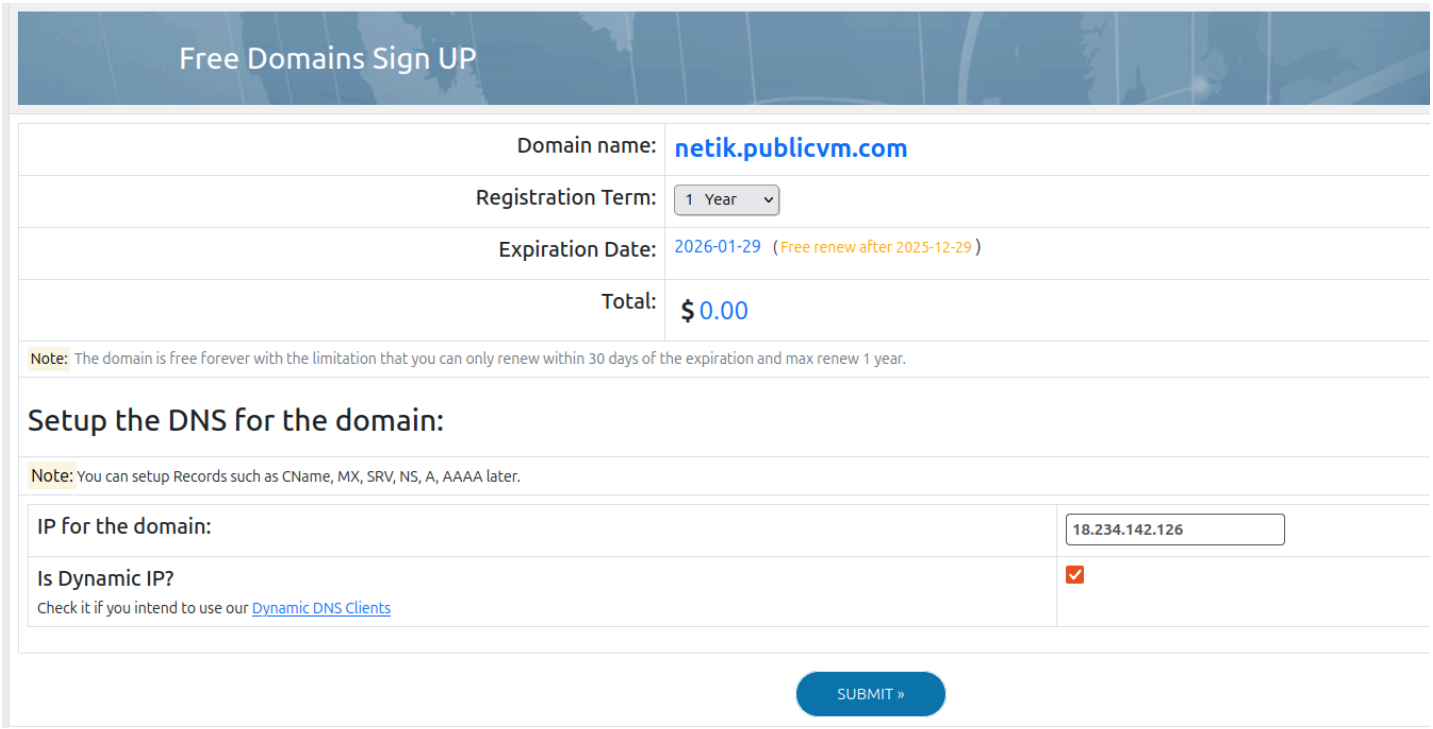
Click on the Inbound rules tab and then click Edit inbound rules.

Add a rule to allow HTTP (port 80): Type: HTTP, port: 80 and Source: anywhere (0.0.0.0/0) or specify your IP for restricted access, then click on save rules.



```
ubuntu@ip-172-31-85-103:~$ sudo systemctl enable nginx
Synchronizing state of nginx.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable nginx
ubuntu@ip-172-31-85-103:~$ systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
     Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)
     Active: active (running) since Tue 2025-01-28 15:35:00 UTC; 44min ago
       Docs: man:nginx(8)
   Main PID: 2018 (nginx)
      Tasks: 2 (limit: 1130)
     Memory: 1.7M (peak: 1.9M)
        CPU: 9ms
     CGroup: /system.slice/nginx.service
             ├─2018 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
             └─2019 "nginx: worker process"

Jan 28 15:35:00 ip-172-31-85-103 systemd[1]: Starting nginx.service - A high performance web server and a reverse proxy server...
Jan 28 15:35:00 ip-172-31-85-103 systemd[1]: Started nginx.service - A high performance web server and a reverse proxy server.
```

Purchase or get a free domain name and in ip address add ec2 instance public ip :



Now edit the /etc/nginx/site-available/default:

```
ubuntu@ip-172-31-80-181:~$ sudo nano /etc/nginx/sites-available/default
```

Add domain name in the serer_name section:

```
#
server {
        listen 80 default_server;
        listen [::]:80 default_server;

        root /var/www/html;

        # Add index.php to the list if you are using PHP
        index index.html index.htm index.nginx-debian.html;

        server_name exercise-aws-ttn.run.place;

        location / {
                # First attempt to serve request as file, then
                # as directory, then fall back to displaying a 404.
                try_files $uri $uri/ =404;
        }
```

Restart nginx and paste the domain on web brower:

```
ubuntu@ip-172-31-80-181:~$ sudo systemctl restart nginx
ubuntu@ip-172-31-80-181:~$ systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
     Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)
     Active: active (running) since Wed 2025-01-29 06:37:40 UTC; 6s ago
       Docs: man:nginx(8)
    Process: 1793 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
    Process: 1798 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
   Main PID: 1799 (nginx)
      Tasks: 2 (limit: 1130)
     Memory: 1.7M (peak: 1.9M)
        CPU: 9ms
     CGroup: /system.slice/nginx.service
             ├─1799 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
             └─1800 "nginx: worker process"
```