DOCKERFILE

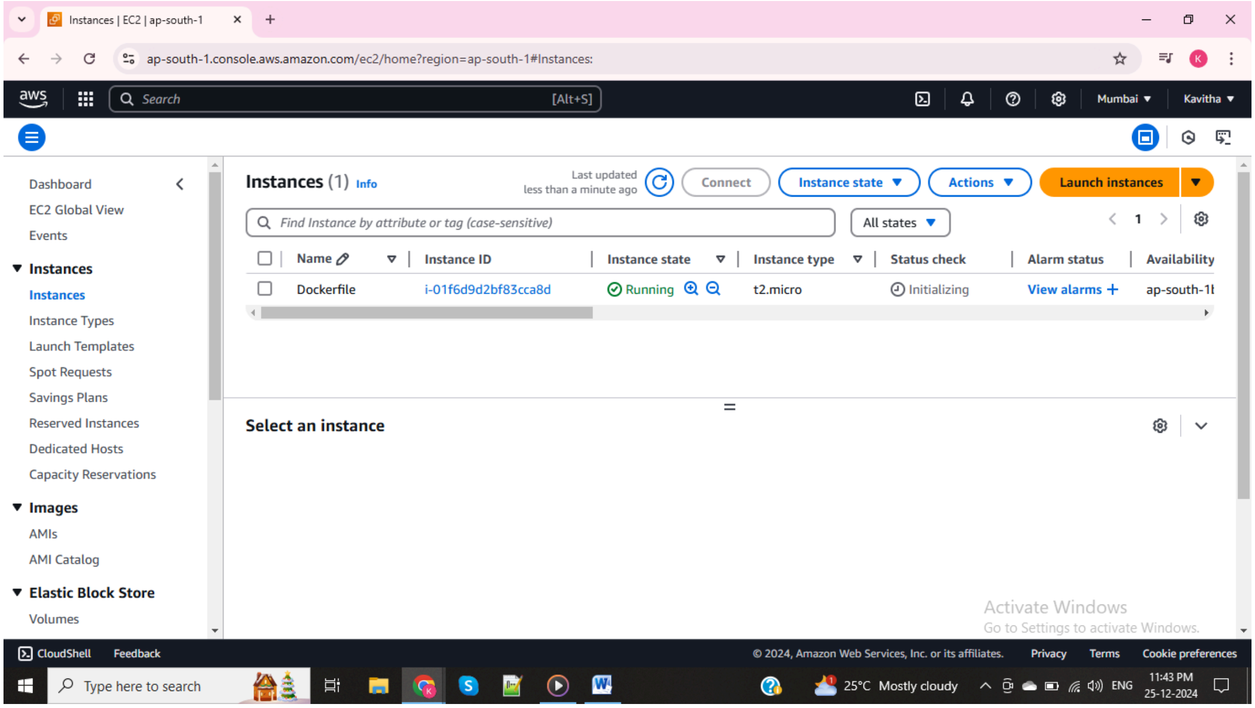
A **Dockerfile** is a text file that contains a set of instructions to automate the process of building a **Docker image**. Each instruction in the Dockerfile specifies a command or operation that Docker performs in order to assemble the image.

The Dockerfile allows developers to create lightweight, portable, and consistent environments for their applications by defining dependencies, configurations, and the application code itself.

Key Features of Dockerfile

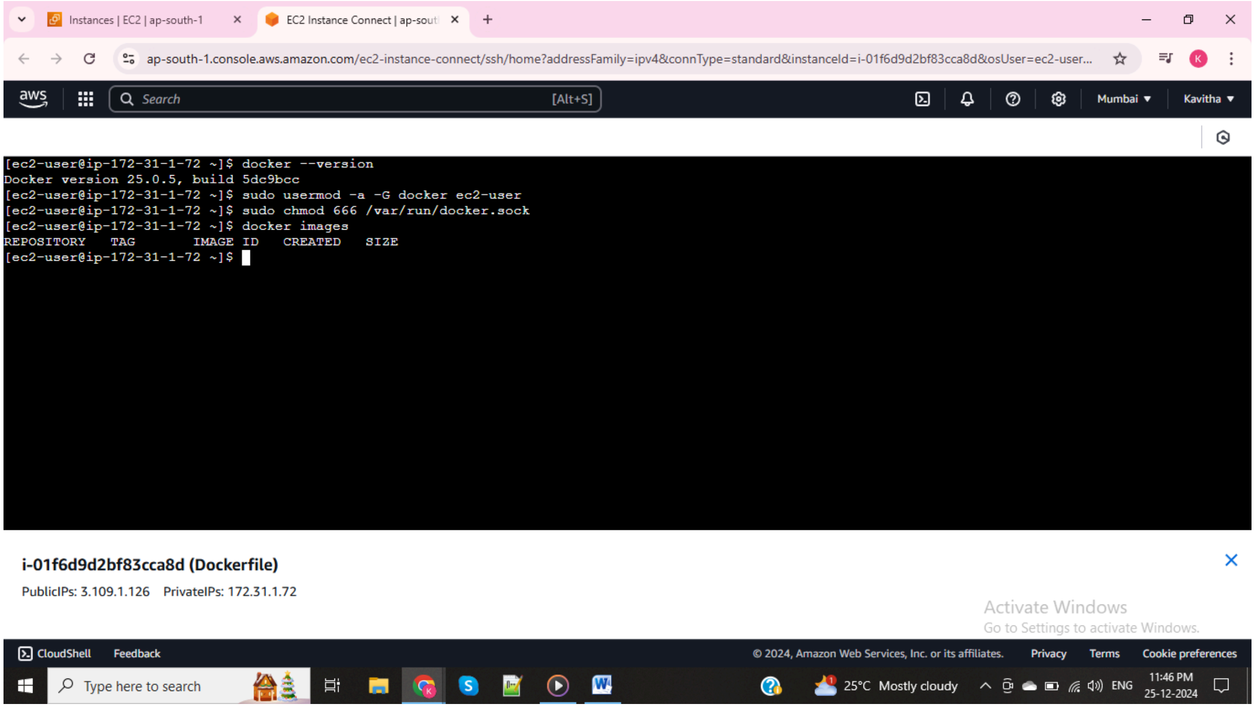
1. **Automation**: Automates the image creation process.
2. **Version Control**: Dockerfiles can be managed in version control systems like Git, allowing easy collaboration and tracking of changes.
3. **Consistency**: Ensures the same environment across different deployments (e.g., development, testing, production).
4. **Reusability**: You can reuse the Dockerfile across teams or projects.

Steps 1: Create a EC2 instance and launch instance



□	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability
□	Dockerfile	i-01f6d9d2bf83cca8d	Running	t2.micro	Initializing	View alarms +	ap-south-1

2. Install Docker and add user with docker and allow permissions



Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south
ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?addressFamily=ipv4&connType=standard&instanceId=i-01f6d9d2bf83cca8d&osUser=ec2-user...
Search [Alt+S]
Mumbai
Kavitha
Activate Windows
Go to Settings to activate Windows.
CloudShell Feedback
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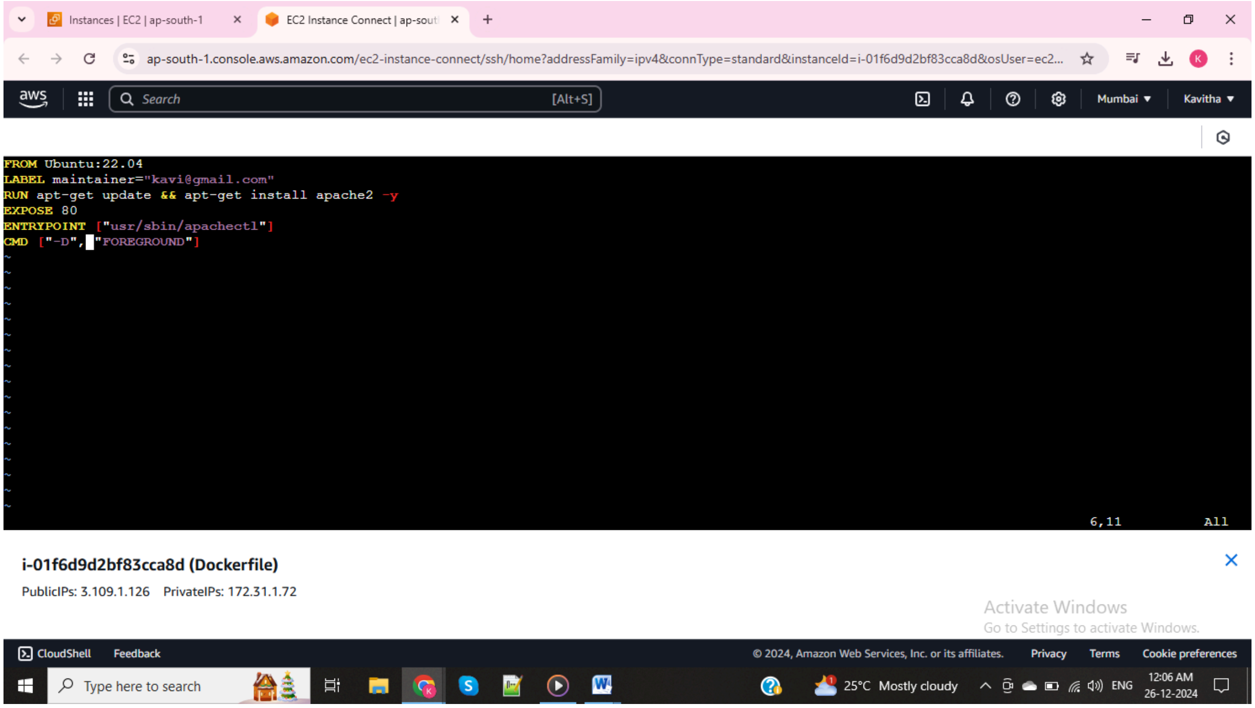
Type here to search
25°C Mostly cloudy
ENG
11:46 PM
25-12-2024

```
[ec2-user@ip-172-31-1-72 ~]$ docker --version
Docker version 25.0.5, build 5dc9bcc
[ec2-user@ip-172-31-1-72 ~]$ sudo usermod -a -G docker ec2-user
[ec2-user@ip-172-31-1-72 ~]$ sudo chmod 666 /var/run/docker.sock
[ec2-user@ip-172-31-1-72 ~]$ docker images
REPOSITORY   TAG       IMAGE ID   CREATED   SIZE
[ec2-user@ip-172-31-1-72 ~]$
```

i-01f6d9d2bf83cca8d (Dockerfile)

PublicIPs: 3.109.1.126 PrivateIPs: 172.31.1.72

3. Using Dockerfile ATTRIBUTES creating a Apache2 image



Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south
ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?addressFamily=ipv4&connType=standard&instanceId=i-01f6d9d2bf83cca8d&osUser=ec2...
Search [Alt+S]
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Kavitha
Activate Windows
Go to Settings to activate Windows.
CloudShell Feedback
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Type here to search
25°C Mostly cloudy
ENG
12:06 AM
26-12-2024

```
FROM Ubuntu:22.04
LABEL maintainer="kavi@gmail.com"
RUN apt-get update && apt-get install apache2 -y
EXPOSE 80
ENTRYPOINT ["usr/sbin/apachectl"]
CMD ["-D", "FOREGROUND"]
~
~
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~
~
~
~
~
                                                                                6,11          All
```
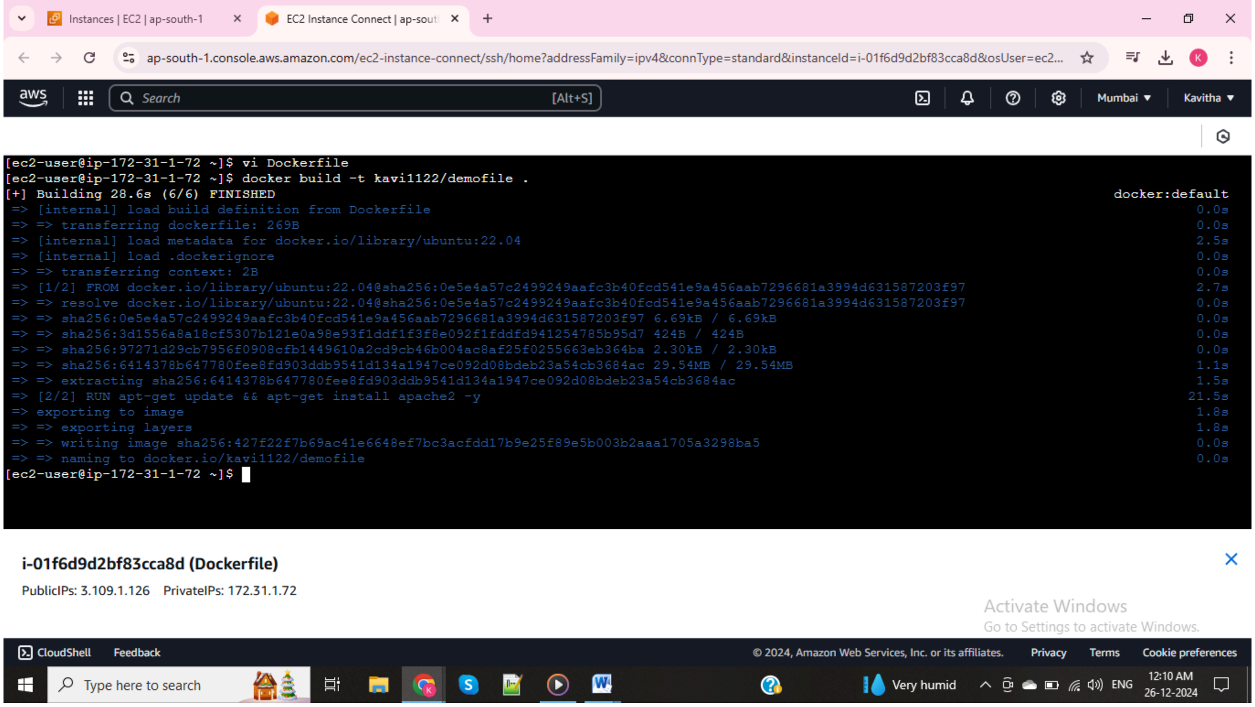

i-01f6d9d2bf83cca8d (Dockerfile)

PublicIPs: 3.109.1.126 PrivateIPs: 172.31.1.72

4. To build the Dockerfile --> docker build -t kavi1122/demofile **.**

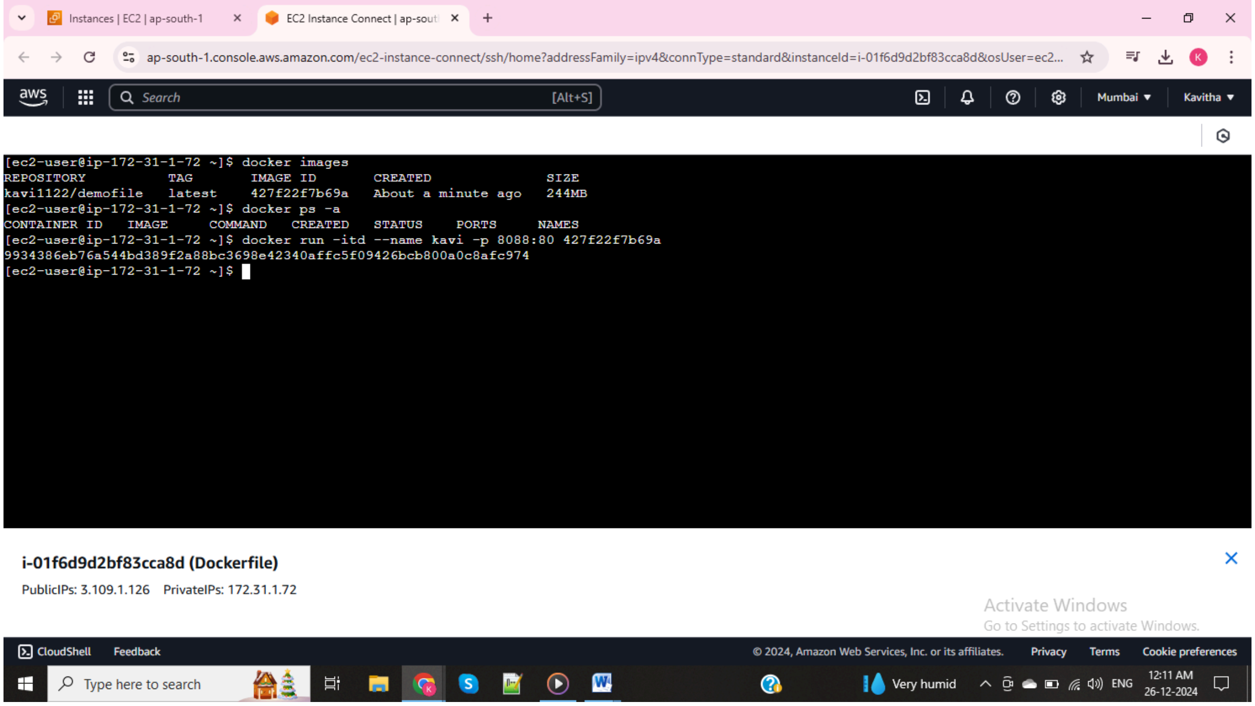

Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-sout
ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?addressFamily=ipv4&connType=standard&instanceId=i-01f6d9d2bf83cca8d&osUser=ec2...
Search [Alt+S]
Mumbai
Kavitha

```
[ec2-user@ip-172-31-1-72 ~]$ vi Dockerfile
[ec2-user@ip-172-31-1-72 ~]$ docker build -t kavi1122/demofile .
[+] Building 28.6s (6/6) FINISHED                                                                                        docker:default
 => [internal] load build definition from Dockerfile                                                                               0.0s
 => => transferring dockerfile: 269B                                                                                               0.0s
 => [internal] load metadata for docker.io/library/ubuntu:22.04                                                                    2.5s
 => [internal] load .dockerignore                                                                                                  0.0s
 => => transferring context: 2B                                                                                                    0.0s
 => [1/2] FROM docker.io/library/ubuntu:22.04@sha256:0e5e4a57c2499249aafc3b40fcd541e9a456aab7296681a3994d631587203f97              2.7s
 => => resolve docker.io/library/ubuntu:22.04@sha256:0e5e4a57c2499249aafc3b40fcd541e9a456aab7296681a3994d631587203f97              0.0s
 => => sha256:0e5e4a57c2499249aafc3b40fcd541e9a456aab7296681a3994d631587203f97 6.69kB / 6.69kB                                    0.0s
 => => sha256:3d1556a8a18cf5307b121e0a98e93f1ddf1f3f8e092f1fddfd941254785b95d7 424B / 424B                                        0.0s
 => => sha256:97271d29cb7956f0908cfb1449610a2cd9cb46b004ac8af25f0255663eb364ba 2.30kB / 2.30kB                                    0.0s
 => => sha256:6414378b647780fee8fd903ddb9541d134a1947ce092d08bdeb23a54cb3684ac 29.54MB / 29.54MB                                  1.1s
 => => extracting sha256:6414378b647780fee8fd903ddb9541d134a1947ce092d08bdeb23a54cb3684ac                                          1.5s
 => [2/2] RUN apt-get update && apt-get install apache2 -y                                                                        21.5s
 => exporting to image                                                                                                             1.8s
 => => exporting layers                                                                                                            1.8s
 => => writing image sha256:427f22f7b69ac41e6648ef7bc3acfdd17b9e25f89e5b003b2aaa1705a3298ba5                                       0.0s
 => => naming to docker.io/kavi1122/demofile                                                                                       0.0s
[ec2-user@ip-172-31-1-72 ~]$ 
```

i-01f6d9d2bf83cca8d (Dockerfile)

PublicIPs: 3.109.1.126 PrivateIPs: 172.31.1.72

5. Now, Checking the image was created and from that image created container with specific port number.

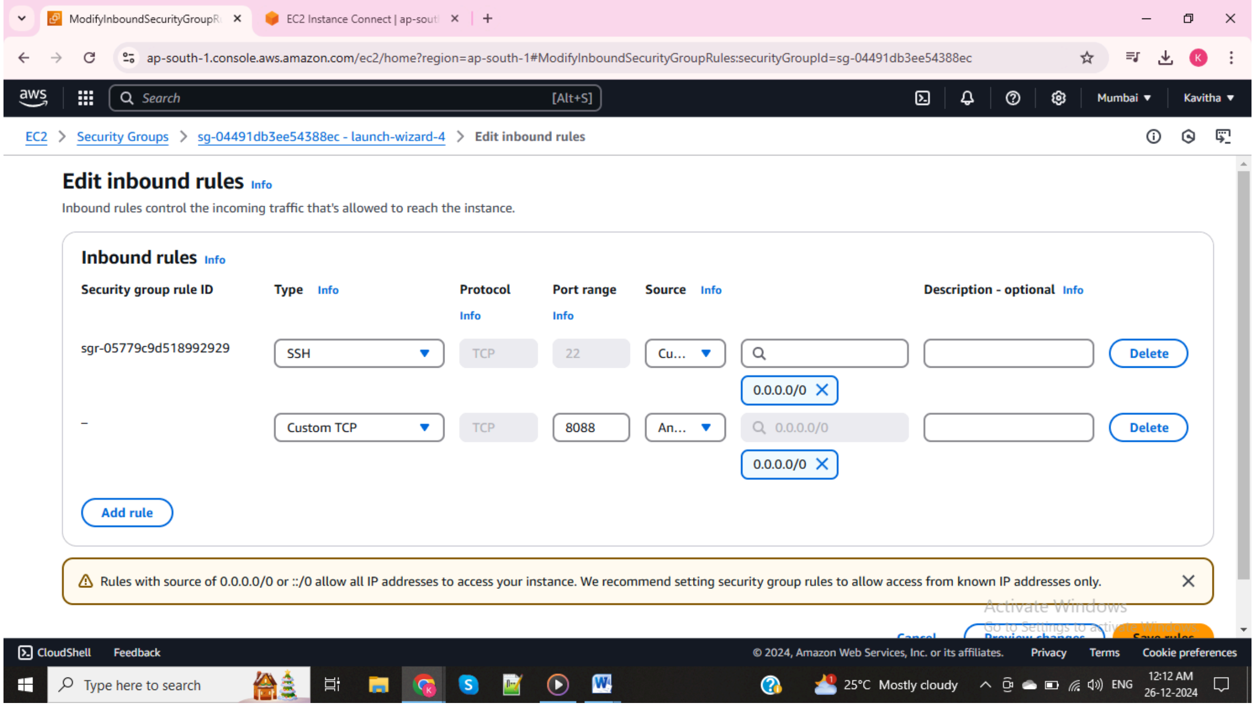

Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-sout
ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?addressFamily=ipv4&connType=standard&instanceId=i-01f6d9d2bf83cca8d&osUser=ec2...
Search [Alt+S]
Mumbai
Kavitha

```
[ec2-user@ip-172-31-1-72 ~]$ docker images
REPOSITORY          TAG       IMAGE ID       CREATED              SIZE
kavi1122/demofile   latest    427f22f7b69a   About a minute ago   244MB
[ec2-user@ip-172-31-1-72 ~]$ docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
[ec2-user@ip-172-31-1-72 ~]$ docker run -itd --name kavi -p 8088:80 427f22f7b69a
9934386eb76a544bd389f2a88bc3698e42340affc5f09426bcb800a0c8afc974
[ec2-user@ip-172-31-1-72 ~]$ 
```

i-01f6d9d2bf83cca8d (Dockerfile)

PublicIPs: 3.109.1.126 PrivateIPs: 172.31.1.72

6. Then Edited the security group inbound rules for allowing the port number



ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#ModifyInboundSecurityGroupRules:securityGroupId=sg-04491db3ee54388ec

EC2 > Security Groups > sg-04491db3ee54388ec - launch-wizard-4 > Edit inbound rules

Edit inbound rules

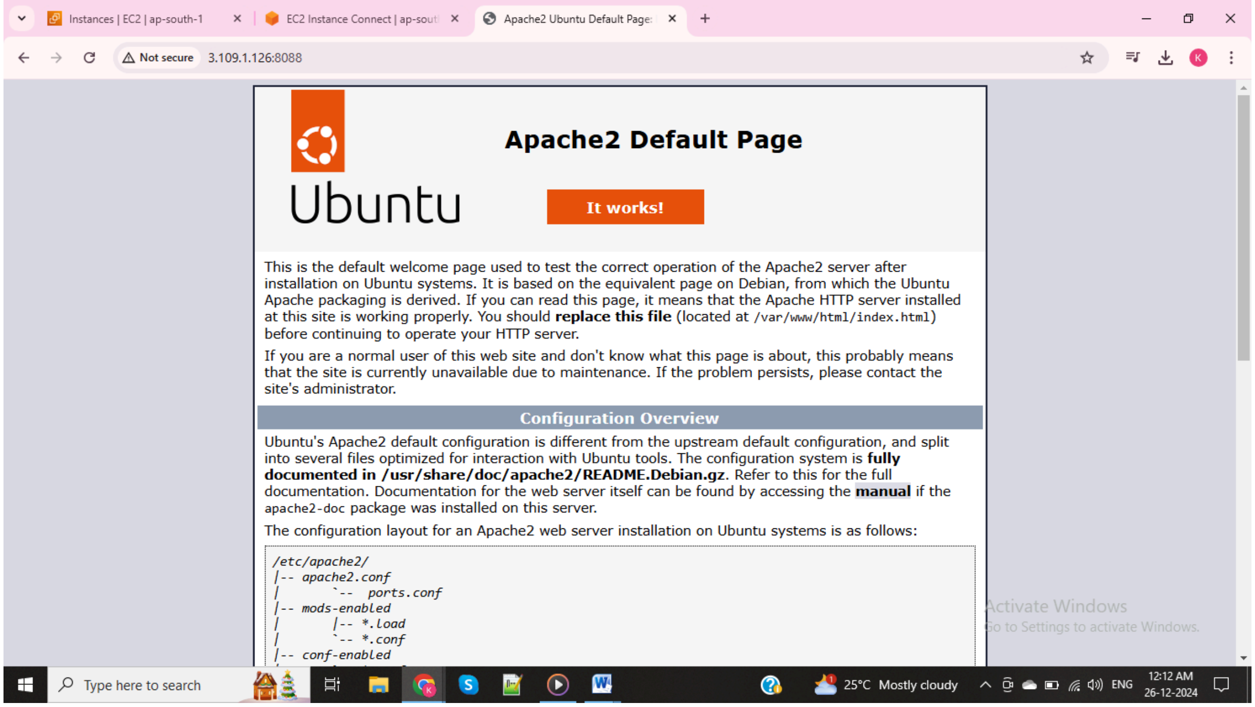
Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules

Security group rule ID	Type	Protocol	Port range	Source		Description - optional
sgr-05779c9d518992929	SSH	TCP	22	Cu...	0.0.0.0/0	
–	Custom TCP	TCP	8088	An...	0.0.0.0/0	

Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

7. OUTPUT



3.109.1.126:8088

Apache2 Default Page

It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

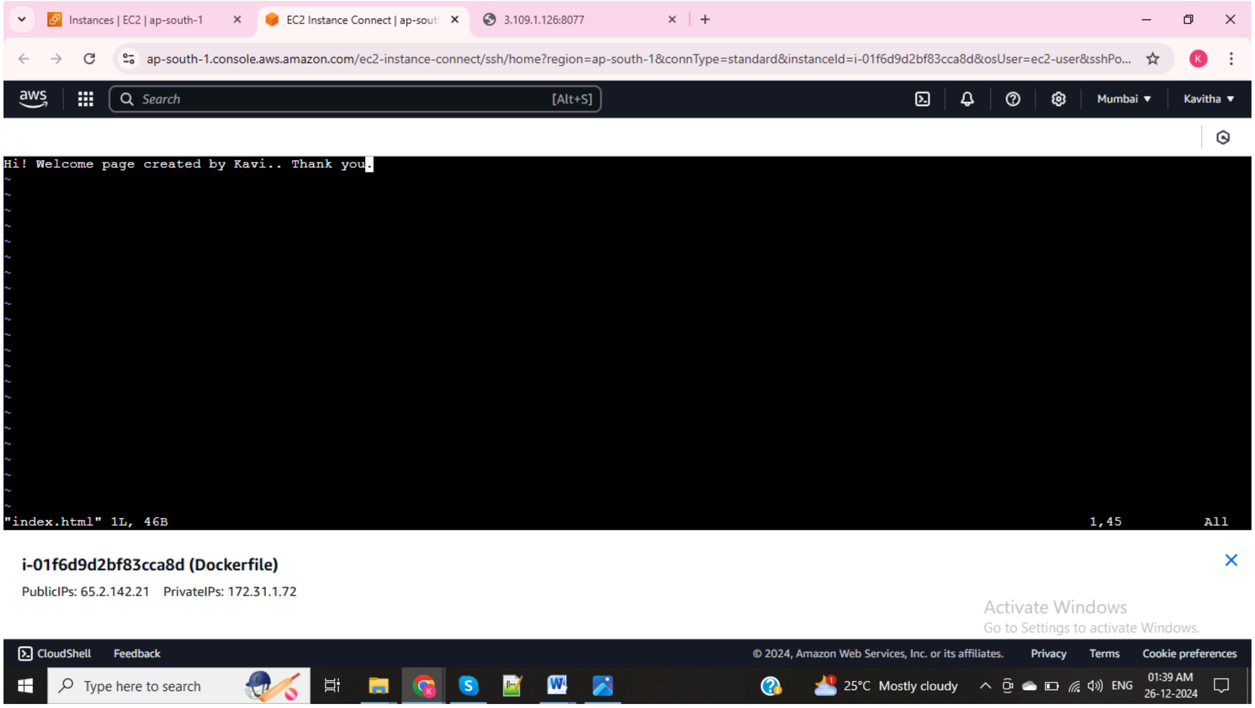
Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is **fully documented in /usr/share/doc/apache2/README.Debian.gz**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

```
/etc/apache2/
|-- apache2.conf
|       `--  ports.conf
|-- mods-enabled
|       |-- *.load
|       `-- *.conf
|-- conf-enabled
```

Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-sout
Apache2 Ubuntu Default Page:
Not secure
Ubuntu
Activate Windows
Go to Settings to activate Windows.
Type here to search
25°C Mostly cloudy
ENG
12:12 AM
26-12-2024

8. Created a index.html file and given some text in that


Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-south
3.109.1.126:8077
ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?region=ap-south-1&connType=standard&instanceId=i-01f6d9d2bf83cca8d&osUser=ec2-user&sshPo...
Search
[Alt+S]
Mumbai
Kavitha
Activate Windows
Go to Settings to activate Windows.
CloudShell
Feedback
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Privacy
Terms
Cookie preferences
Type here to search
25°C Mostly cloudy
ENG
01:39 AM
26-12-2024

```
Hi! Welcome page created by Kavi.. Thank you.
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~
"index.html" 1L, 46B                                                                      1,45          All
```
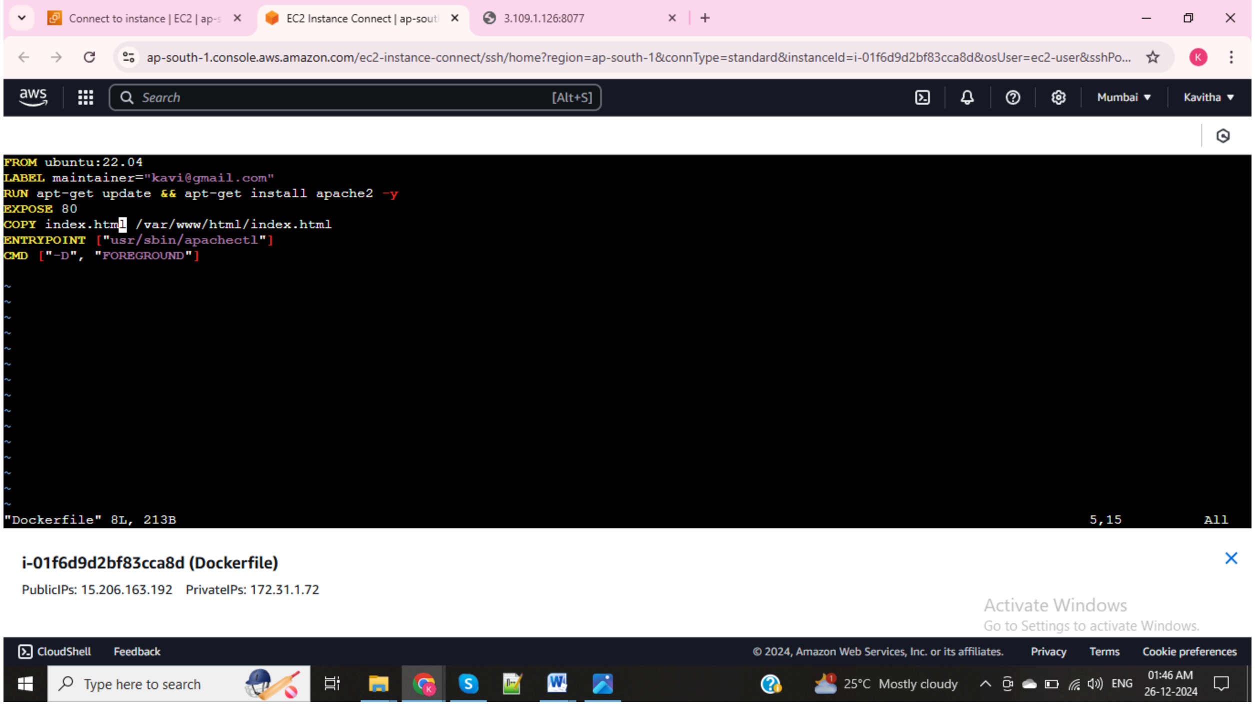

i-01f6d9d2bf83cca8d (Dockerfile)

PublicIPs: 65.2.142.21 PrivateIPs: 172.31.1.72

9. Edited the Dockerfile


Connect to instance | EC2 | ap-s
EC2 Instance Connect | ap-south
3.109.1.126:8077
ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?region=ap-south-1&connType=standard&instanceId=i-01f6d9d2bf83cca8d&osUser=ec2-user&sshPo...
Search
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Mumbai
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Activate Windows
Go to Settings to activate Windows.
CloudShell
Feedback
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Privacy
Terms
Cookie preferences
Type here to search
25°C Mostly cloudy
ENG
01:46 AM
26-12-2024

```
FROM ubuntu:22.04
LABEL maintainer="kavi@gmail.com"
RUN apt-get update && apt-get install apache2 -y
EXPOSE 80
COPY index.html /var/www/html/index.html
ENTRYPOINT ["usr/sbin/apachectl"]
CMD ["-D", "FOREGROUND"]

~
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~
"Dockerfile" 8L, 213B                                                                     5,15          All
```
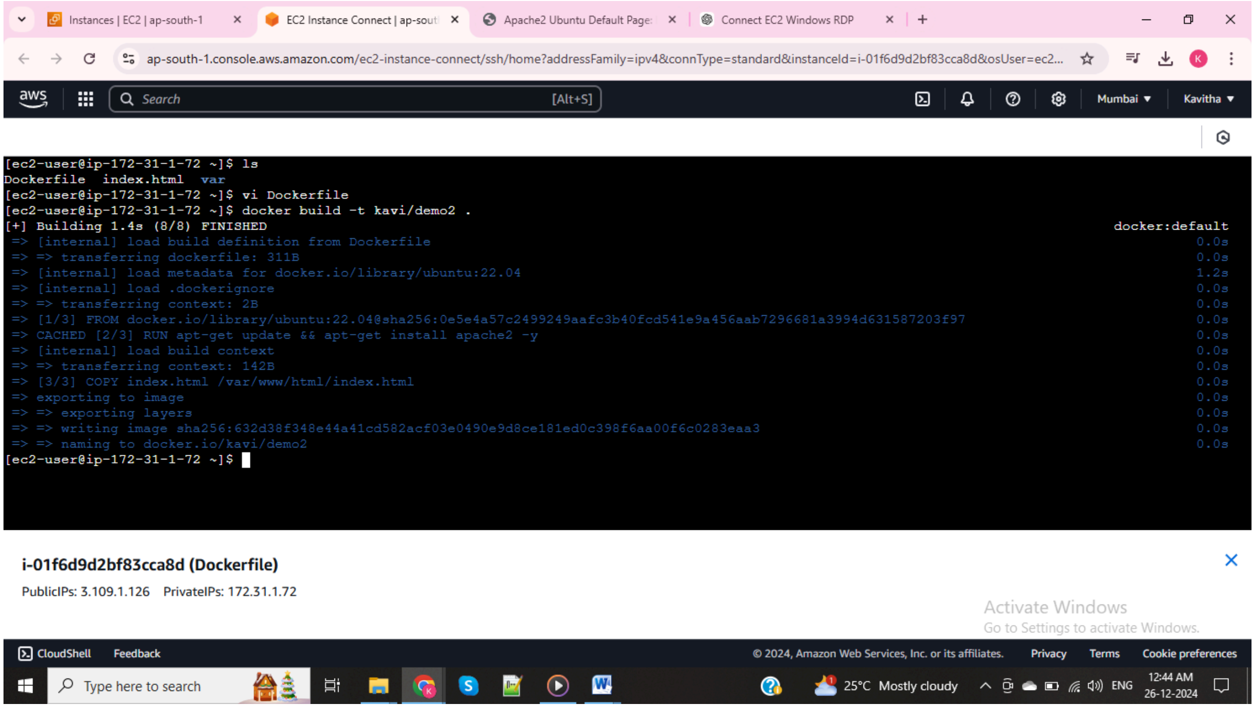

i-01f6d9d2bf83cca8d (Dockerfile)

PublicIPs: 15.206.163.192 PrivateIPs: 172.31.1.72

10. Dockerfile build successfully

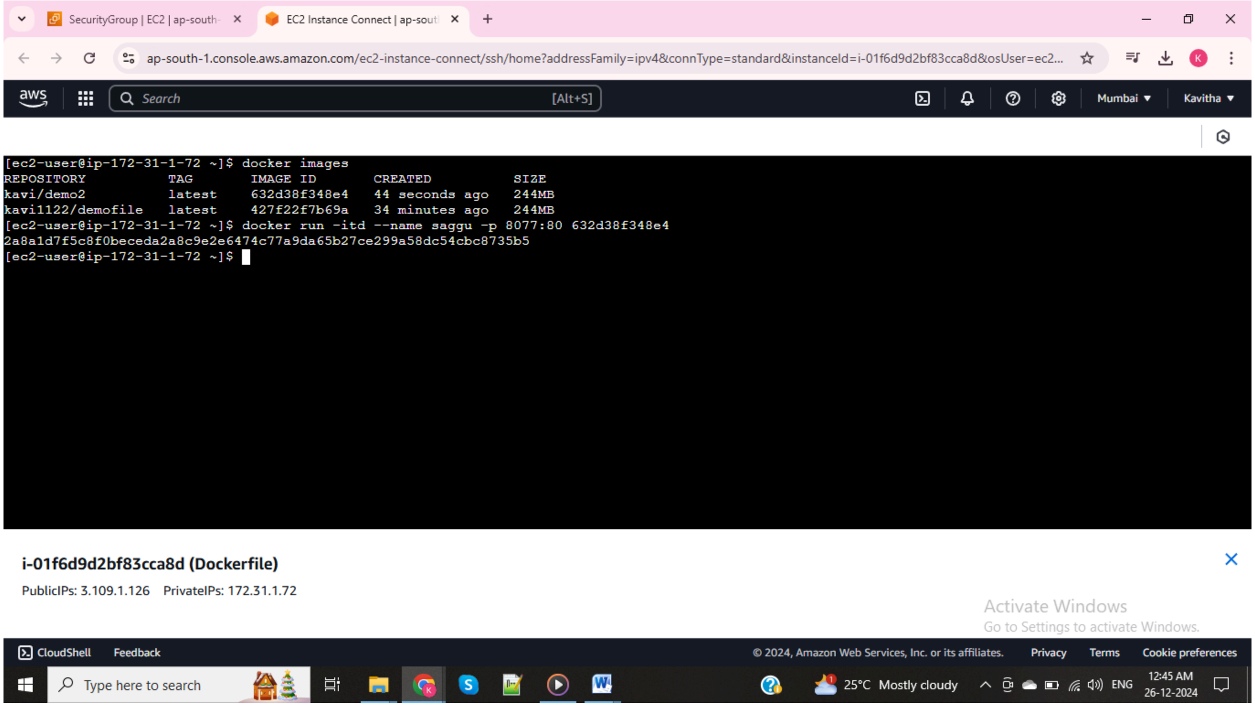

Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-sout
Apache2 Ubuntu Default Page:
Connect EC2 Windows RDP
ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?addressFamily=ipv4&connType=standard&instanceId=i-01f6d9d2bf83cca8d&osUser=ec2...
Search [Alt+S]
Mumbai
Kavitha

```
[ec2-user@ip-172-31-1-72 ~]$ ls
Dockerfile  index.html  var
[ec2-user@ip-172-31-1-72 ~]$ vi Dockerfile
[ec2-user@ip-172-31-1-72 ~]$ docker build -t kavi/demo2 .
[+] Building 1.4s (8/8) FINISHED                                                                   docker:default
 => [internal] load build definition from Dockerfile                                                         0.0s
 => => transferring dockerfile: 311B                                                                         0.0s
 => [internal] load metadata for docker.io/library/ubuntu:22.04                                              1.2s
 => [internal] load .dockerignore                                                                            0.0s
 => => transferring context: 2B                                                                              0.0s
 => [1/3] FROM docker.io/library/ubuntu:22.04@sha256:0e5e4a57c2499249aafc3b40fcd541e9a456aab7296681a3994d631587203f97  0.0s
 => CACHED [2/3] RUN apt-get update && apt-get install apache2 -y                                            0.0s
 => [internal] load build context                                                                            0.0s
 => => transferring context: 142B                                                                            0.0s
 => [3/3] COPY index.html /var/www/html/index.html                                                           0.0s
 => exporting to image                                                                                       0.0s
 => => exporting layers                                                                                      0.0s
 => => writing image sha256:632d38f348e44a41cd582acf03e0490e9d8ce181ed0c398f6aa00f6c0283eaa3                 0.0s
 => => naming to docker.io/kavi/demo2                                                                        0.0s
[ec2-user@ip-172-31-1-72 ~]$
```

i-01f6d9d2bf83cca8d (Dockerfile)

PublicIPs: 3.109.1.126   PrivateIPs: 172.31.1.72

11. Created a container using custom image

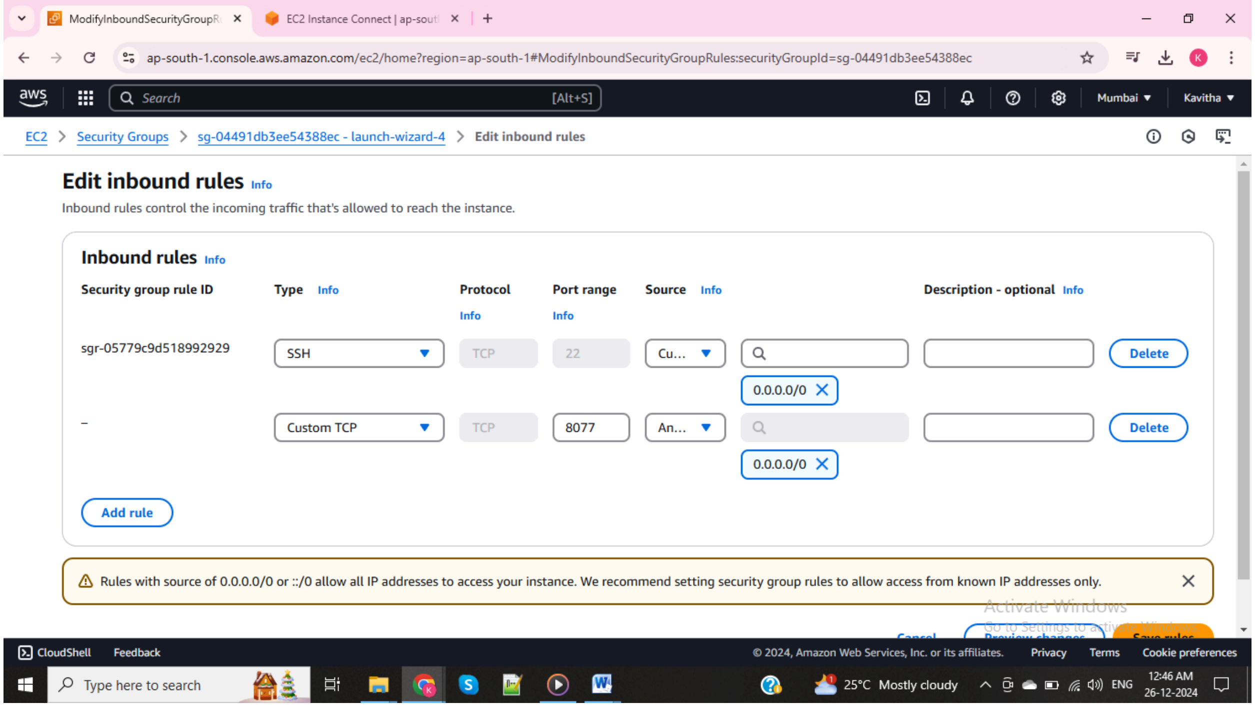

SecurityGroup | EC2 | ap-south-
EC2 Instance Connect | ap-sout
ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?addressFamily=ipv4&connType=standard&instanceId=i-01f6d9d2bf83cca8d&osUser=ec2...
Search [Alt+S]
Mumbai
Kavitha

```
[ec2-user@ip-172-31-1-72 ~]$ docker images
REPOSITORY          TAG       IMAGE ID       CREATED          SIZE
kavi/demo2          latest    632d38f348e4   44 seconds ago   244MB
kavi1122/demofile   latest    427f22f7b69a   34 minutes ago   244MB
[ec2-user@ip-172-31-1-72 ~]$ docker run -itd --name saggu -p 8077:80 632d38f348e4
2a8a1d7f5c8f0beceda2a8c9e2e6474c77a9da65b27ce299a58dc54cbc8735b5
[ec2-user@ip-172-31-1-72 ~]$
```

i-01f6d9d2bf83cca8d (Dockerfile)

PublicIPs: 3.109.1.126   PrivateIPs: 172.31.1.72

12. Edited the inbound rules in security group



ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#ModifyInboundSecurityGroupRules:securityGroupId=sg-04491db3ee54388ec

EC2 > Security Groups > sg-04491db3ee54388ec - launch-wizard-4 > Edit inbound rules

Edit inbound rules Info

Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules Info

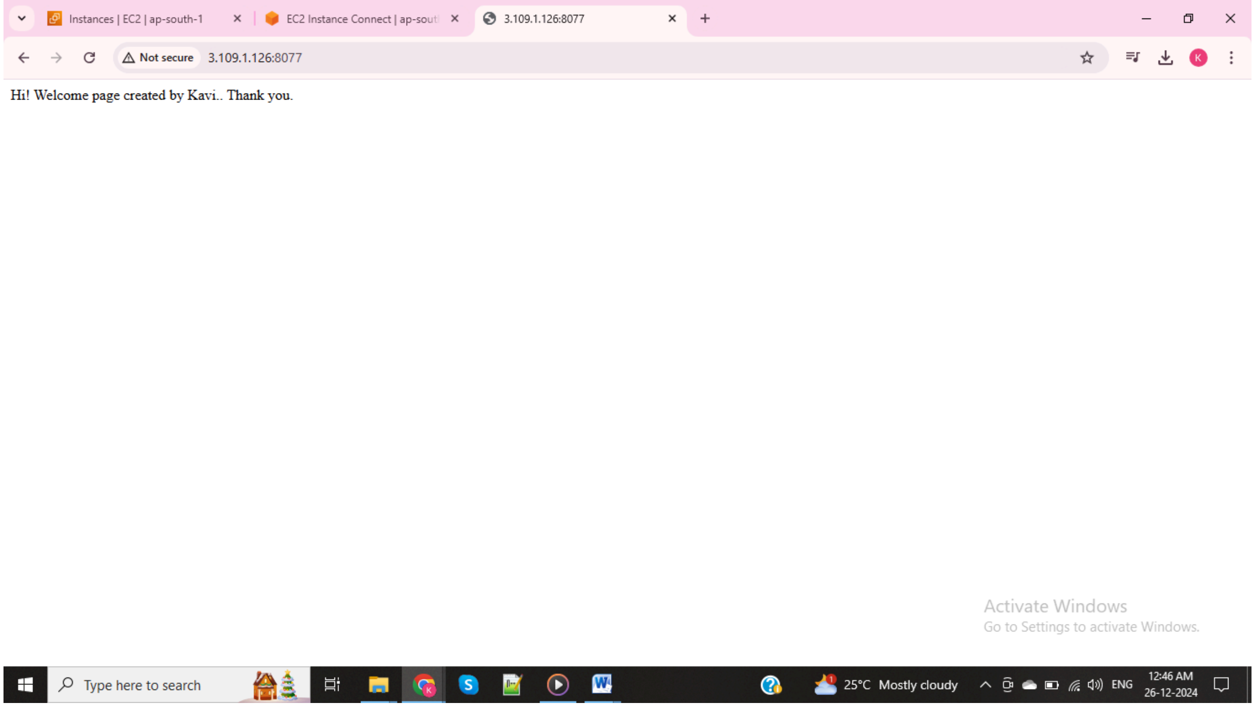
Security group rule ID	Type Info	Protocol Info	Port range Info	Source Info		Description - optional Info	
sgr-05779c9d518992929	SSH	TCP	22	Cu...	0.0.0.0/0		Delete
–	Custom TCP	TCP	8077	An...	0.0.0.0/0		Delete

Add rule

⚠ Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Cancel Preview changes Save rules

13. OUTPUT



3.109.1.126:8077

Hi! Welcome page created by Kavi.. Thank you.