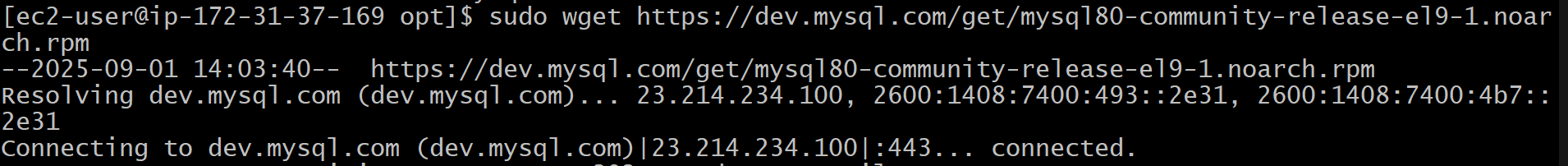
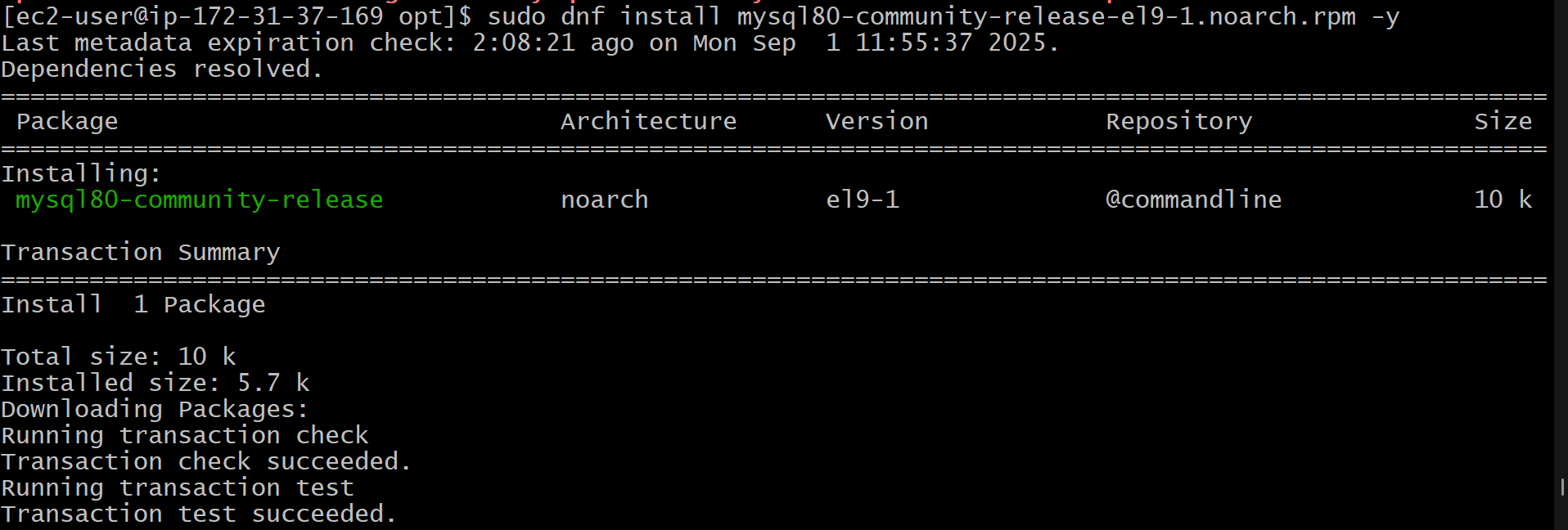
1. **Configure and secure a MySQL Database.**

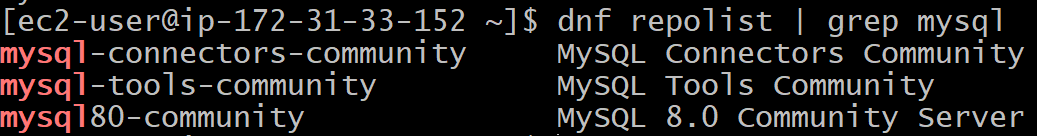
**Step1) Add the MySQL Community Repository**

****

**Step2)** **Install the repository:**

****

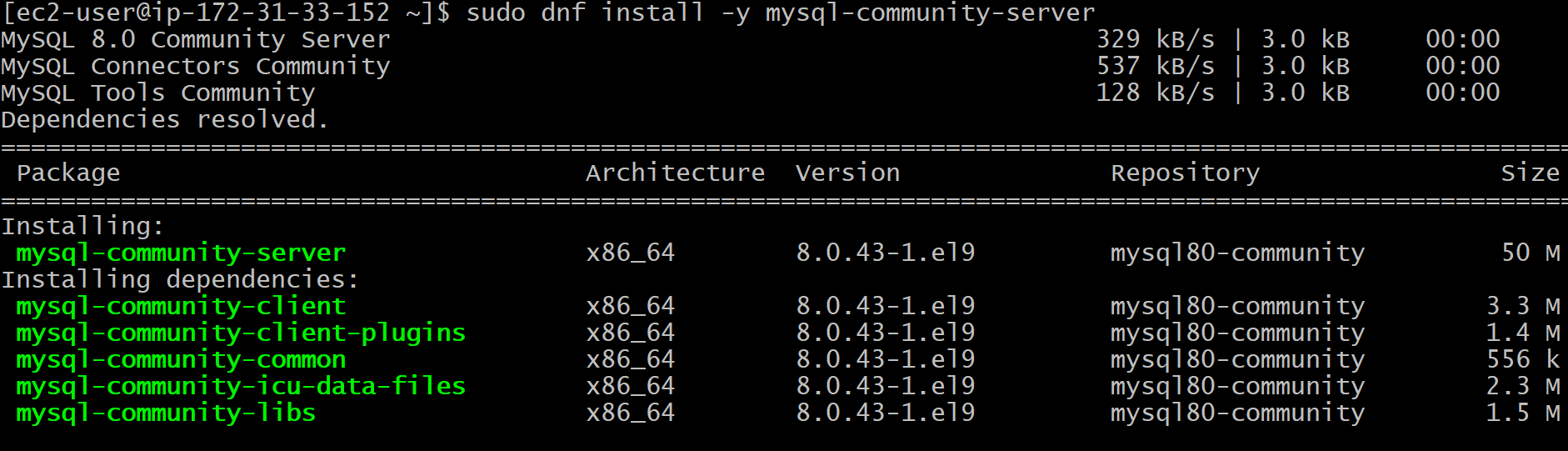
**Step3) Verify the repository is enabled**

****

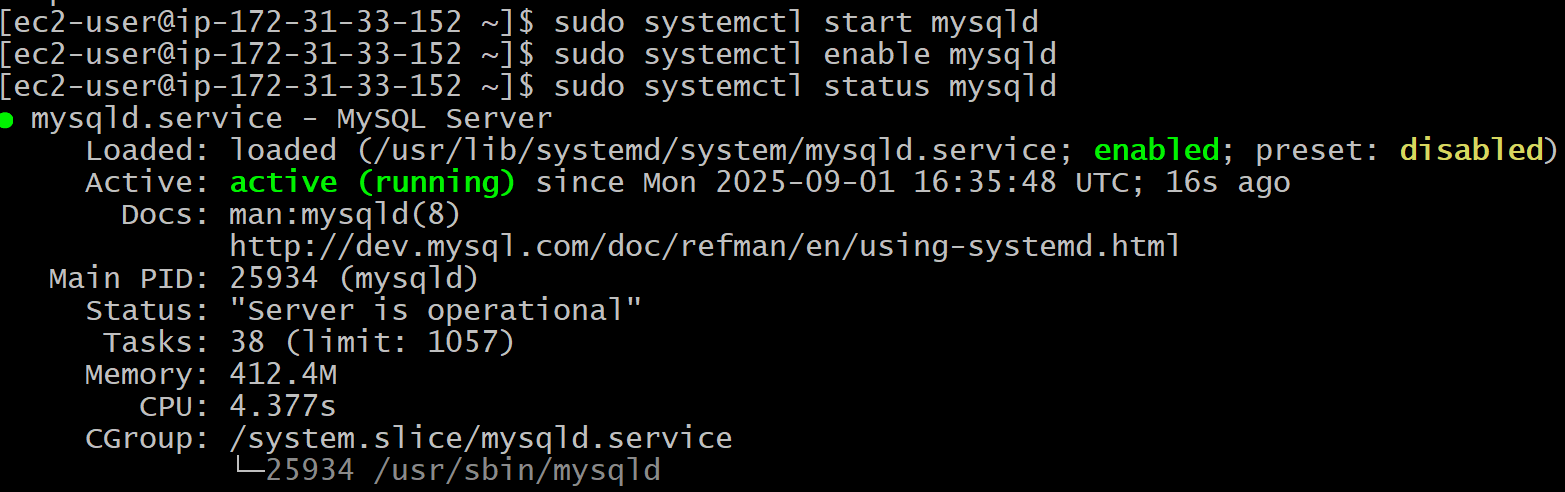
**You should see mysql80-community listed.**

**If you encounter GPG key errors later, you can temporarily disable GPG checking by editing /etc/dnf/dnf.conf or the repo file (/etc/yum.repos.d/mysql-community.repo) and setting gpgcheck=0. Re-enable it after installation for security.**

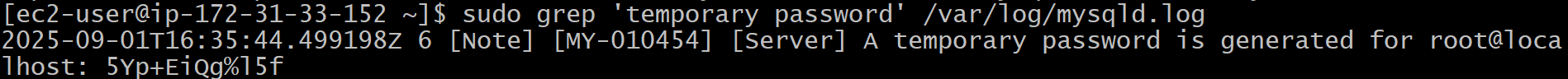
**STEP4) Install MySQL Server**

****

**STEP4) Then start , enable and check the status**

****

**Step5)** **Retrieve the Temporary Root Password**

****

**Step6)** **Secure the MySQL Installation**

**sudo mysql\_secure\_installation**

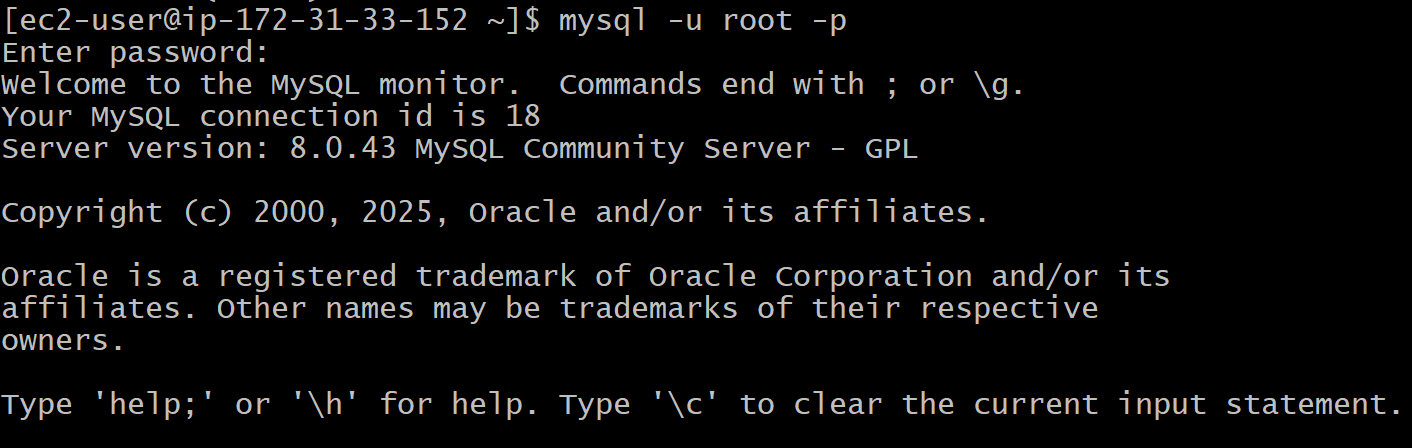
**Prompts:**

* **Enter the temporary password from Step 5.**
* **Set a new root password (choose a strong one, e.g., at least 8 characters with letters, numbers, and symbols).**
* **Validate password plugin? y (enable to enforce strong passwords; choose strength level, e.g., 1 for medium).**
* **Remove anonymous users? y**
* **Disallow root login remotely? y (recommended for security; change later if needed).**
* **Remove test database? y**
* **Reload privilege tables? y**

This removes insecure defaults and sets up a secure MySQL instance.

Step7) Log In to MySQL

Test the MySQL login with the new root password.



You should see the MySQL prompt (mysql>). Type EXIT; to quit.

Create a Database at the mysql prompt:

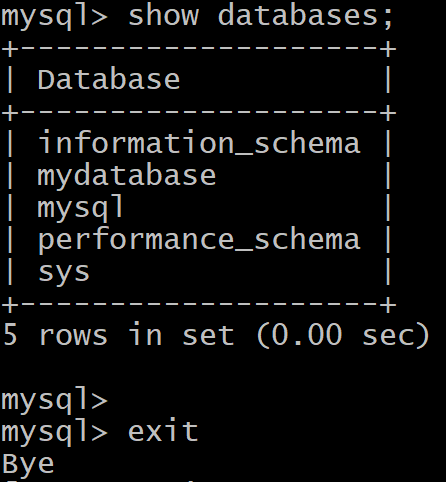
CREATE DATABASE mydatabase;

CREATE USER 'myuser'@'localhost' IDENTIFIED BY 'mypassword';

GRANT ALL PRIVILEGES ON mydatabase.\* TO 'myuser'@'localhost';

FLUSH PRIVILEGES;

EXIT;



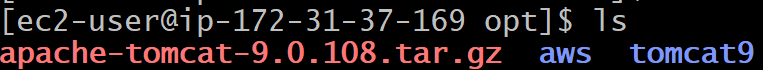
1. **Set up a Application Server (e.g.,Apache Tomcat)**

**Configured and installed Tomcat :**

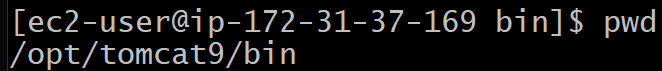
1. **Download tomcat binary in /opt/:**

**wget** [**https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.108/bin/apache-tomcat-9.0.108.tar.gz**](https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.108/bin/apache-tomcat-9.0.108.tar.gz)

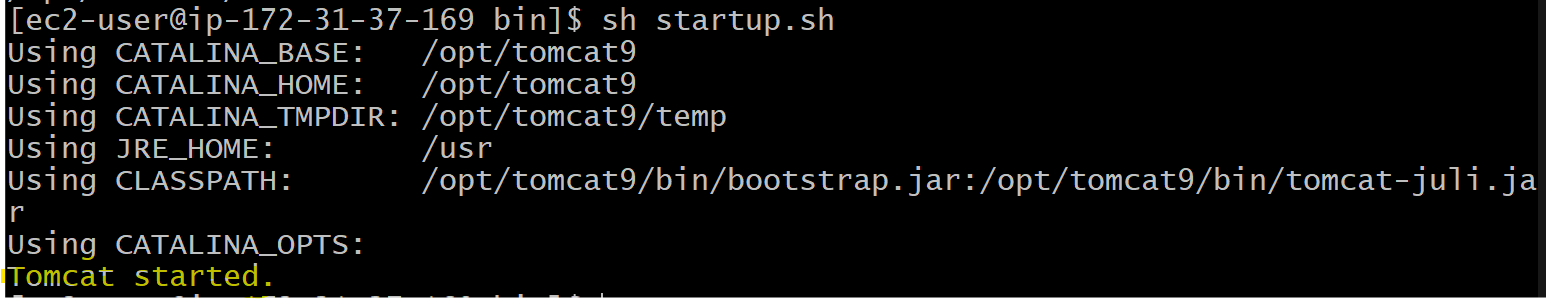
1. **Extract/untar using tar xvf apache-tomcat-9.0.108.tar.gz and rename it to tomcat9:**

****

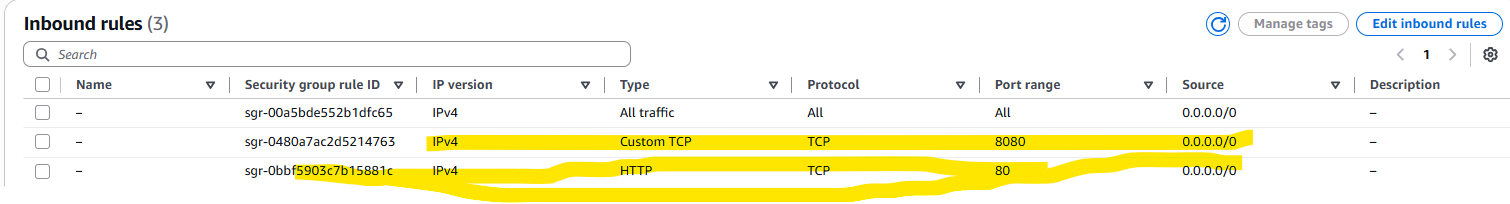
**3)then goto bin directory of tomcat**

****

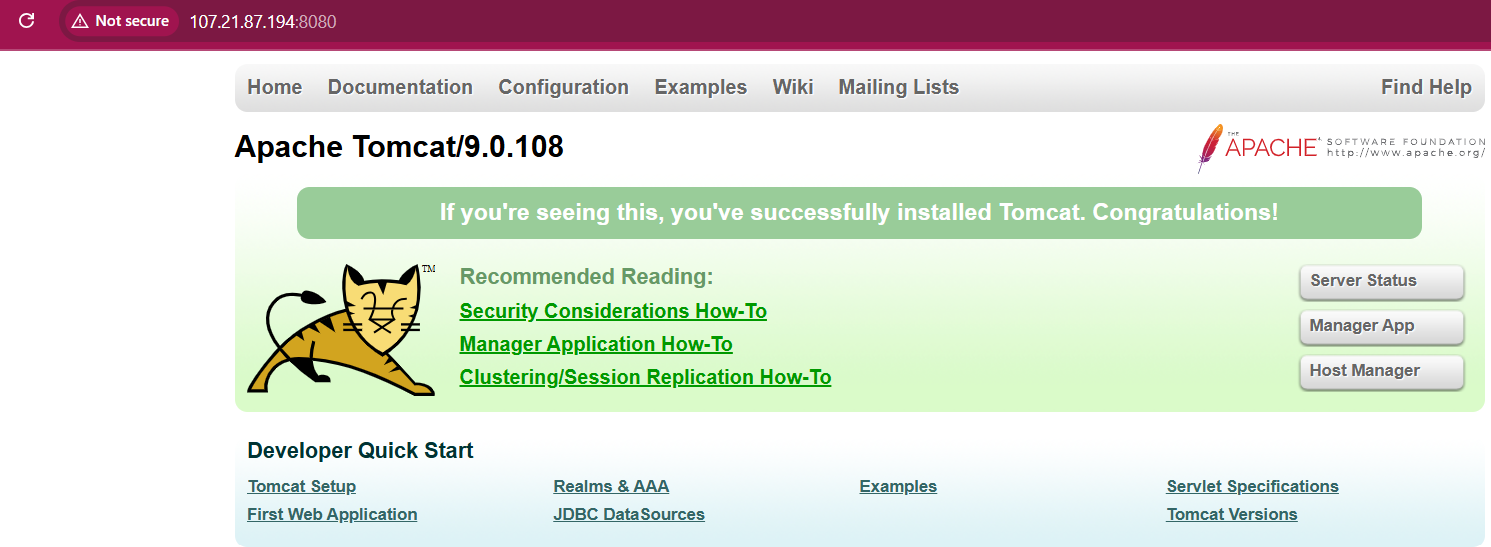
1. **And run/execute the start.sh file:**

****

1. **Then open the inbound rule of security group with 8080 and 80:**

****

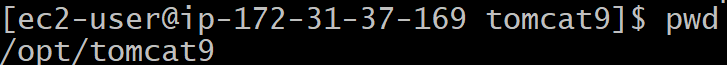
**Then open the ip with 8080 port in the url:**

****

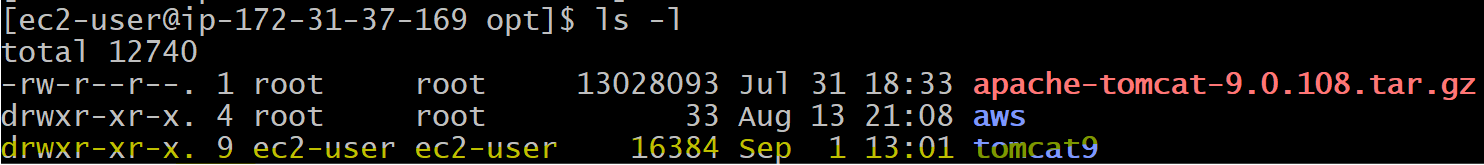
1. **create a service file for Apache Tomcat.(Should execute by using systemtctl command)**
2. **Download tomcat binary in /opt/:**

**wget** [**https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.108/bin/apache-tomcat-9.0.108.tar.gz**](https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.108/bin/apache-tomcat-9.0.108.tar.gz)

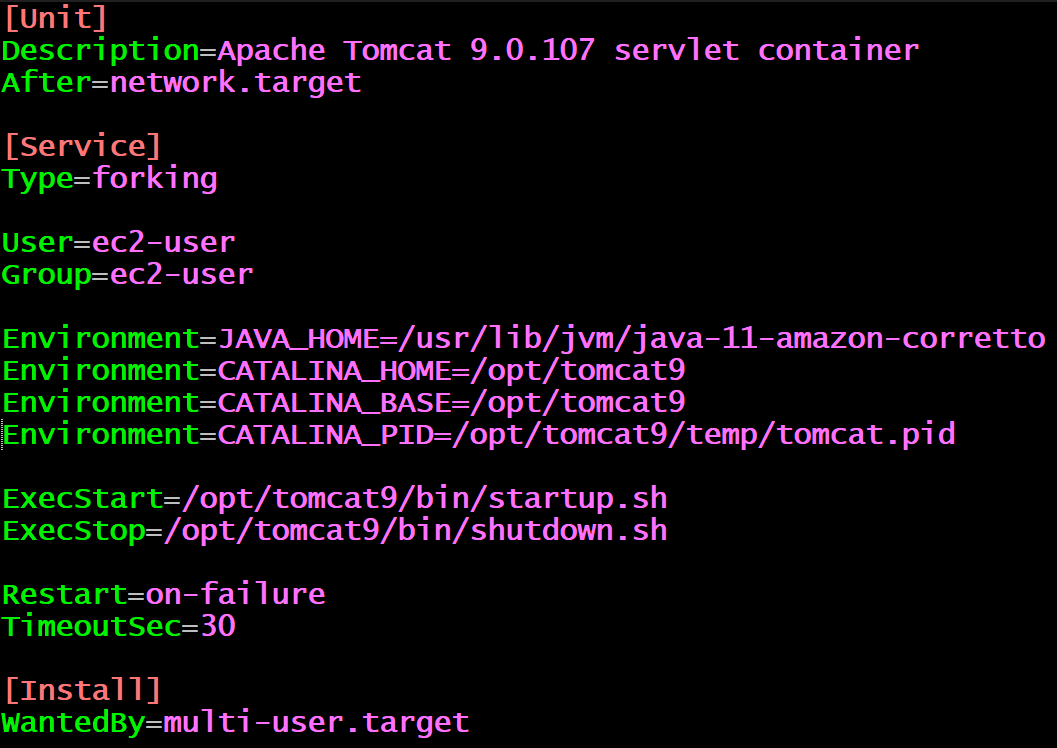
1. **Extract/untar using tar xvf apache-tomcat-9.0.108.tar.gz and rename it to tomcat9:**

****

1. **Change the owner to ec2-user and permission to chmod 777 tomcat9**

****

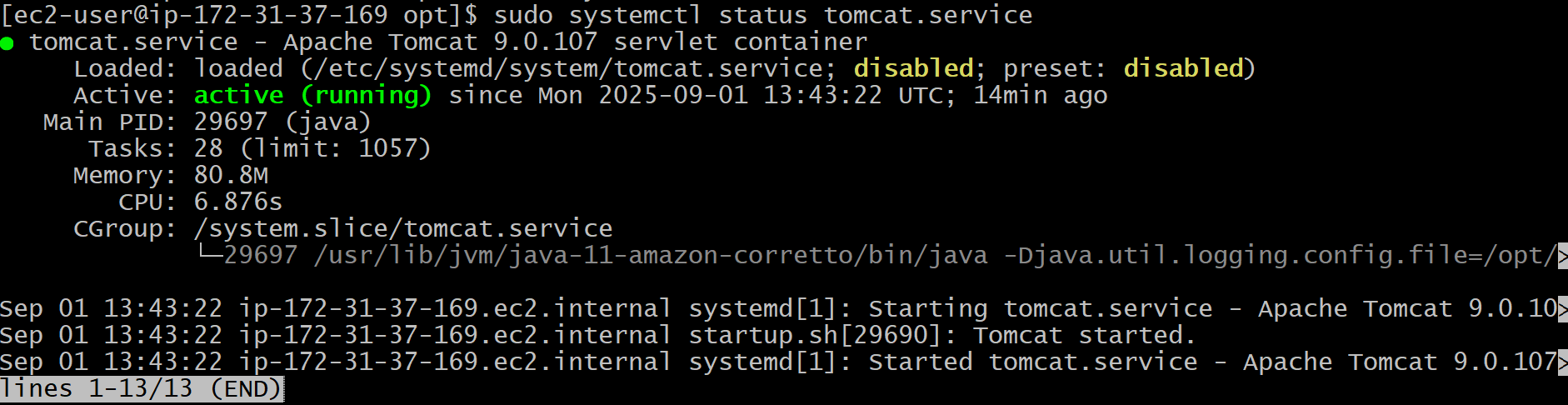
1. **Then create a service file /etc/system/system/tomcat.service**



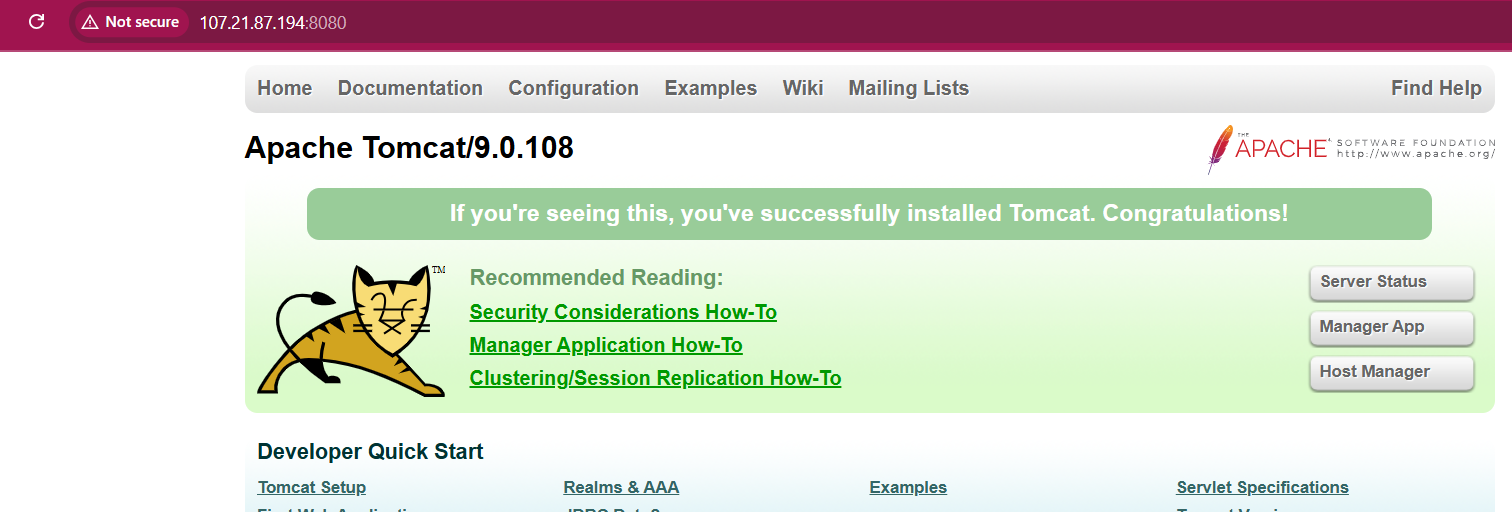
1. Next do the daemon-reload using systemctl:



1. Next start the tomcat : systemctl start tomcat.service
2. Next check the status : systemctl status tomcat.service

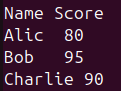


And open the security inbound port 8080 and 80 and access the tomcat on url:



1. **Calculate and print the average, sum, or other statistics of a column.**

**Create a file data.txt with contents:**

****

**Let’s calculate statistics for the second column (Score).**

1. **Using awk (Average, Sum, Min, Max, Count)**

**Using sum we calculate sum of all:**

****

**2. Next, calculating Average :**

****

1. **Next calculating Minimum:**

****

**NR>1: Skips the first row (header).**

**$2 != "": Ensures the field is not empty.**

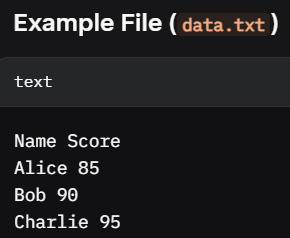
**NR==2 || $2<min: Sets min to the first valid value on the second row, then updates if a smaller value is found.**

**Output: Min: 80 (for your example data: 80, 95, 90).**

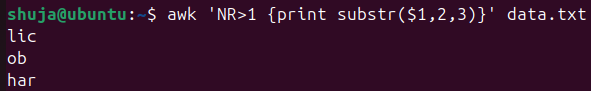
1. **Next Calculating Maximum Value.**

****

**33) Perform string manipulation, such as extracting substrings or changing case.**

****

**Extract a substring from Name column( e.g., characters 2 to 4):**

****

**NR>1: Skips the header.**

**substr($1, 2, 3): Extracts 3 characters starting from position 2 of the first column.**

**Output:**

**text**

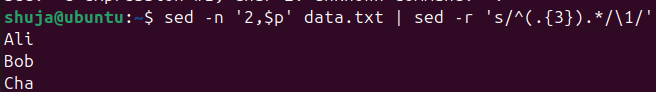
**lic**

**ob**

**har**

**Using sed**

Extract a substring using a regular expression (e.g., first 3 characters):



* sed -n '2,$p': Prints lines 2 onward (skips header).
* s/^(.{3}).\*/\1/': Captures the first 3 characters and discards the rest.
* **Output**:

text

Ali

Bob

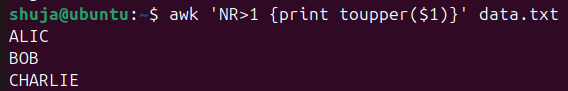
Cha

To extract a substring from a single string (e.g., HelloWorld):



**Using awk** Convert the Name column to uppercase or lowercase.

* **Uppercase**:



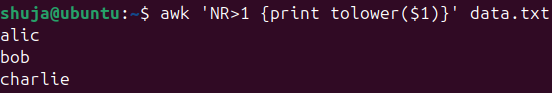
* + toupper($1): Converts the first column to uppercase.
  + **Output**:

ALICE

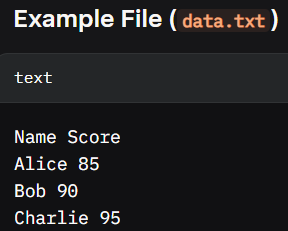
BOB

CHARLIE

Lowercase:



**35) Sort lines based on a specific field or column.**



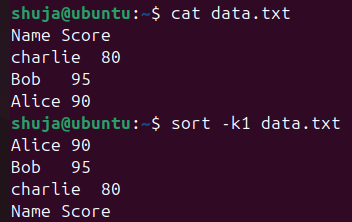
**Sort by Name (Column 1, Alphabetical)**

To sort alphabetically by the Name column in ascending order:

bash

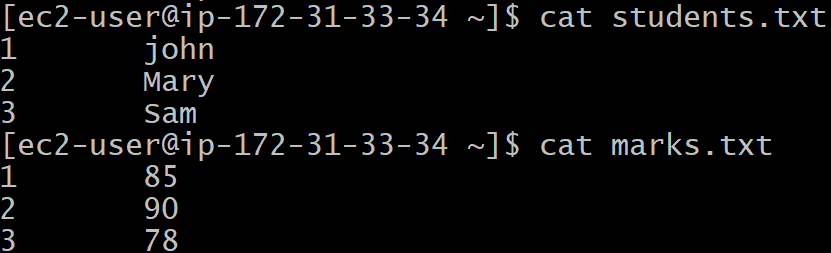
sort -k1 data.txt

* -k1: Sorts based on the first field (alphabetical by default).



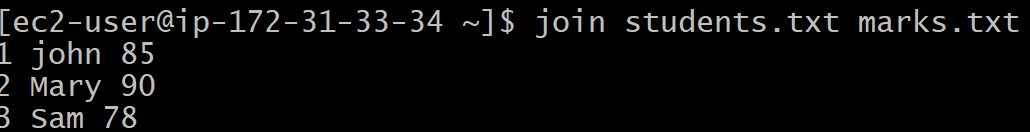
**36) Merge multiple files based on a common field or column.**

**=>Example1:create 2 files with contents**

****

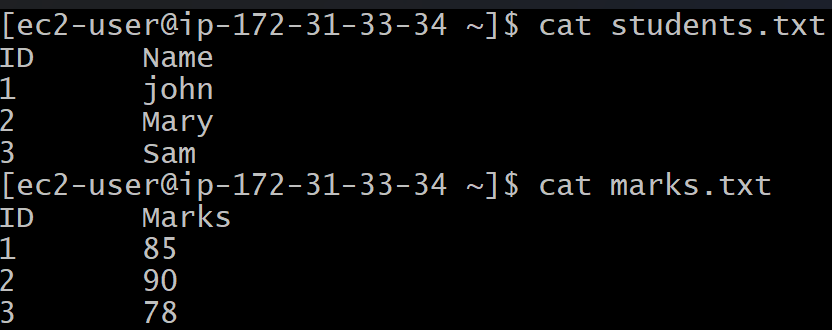
**Here the ID column is common in both the files.**

**Using join :**

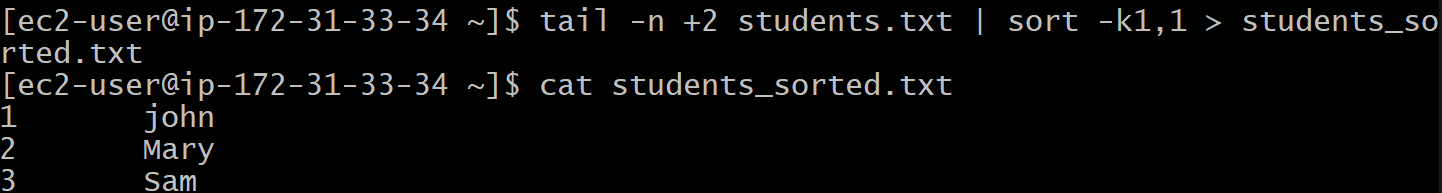
****

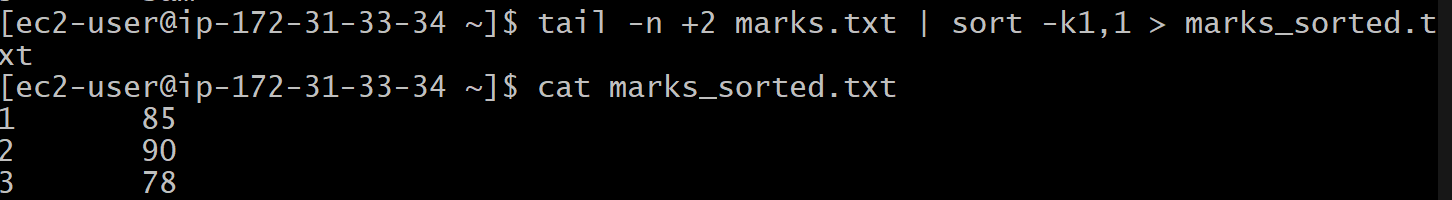
**Example2: file with Column Header:**

**Create 2 files with header:**

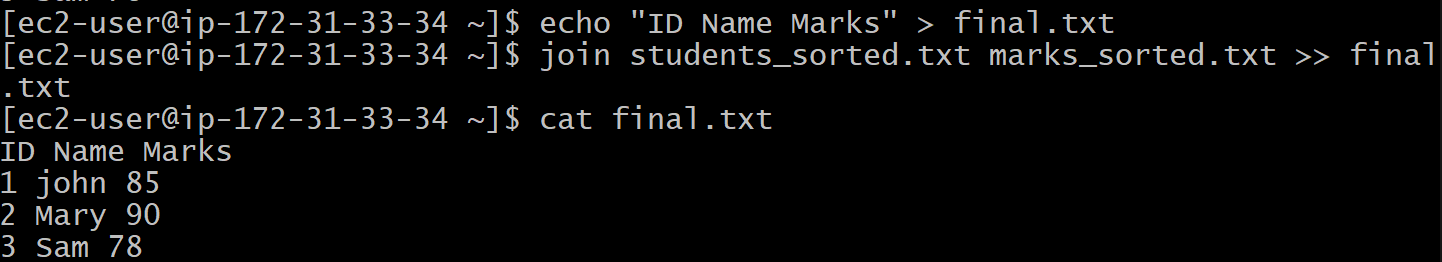
****

**Step 1: Remove headers and sort**

****

****

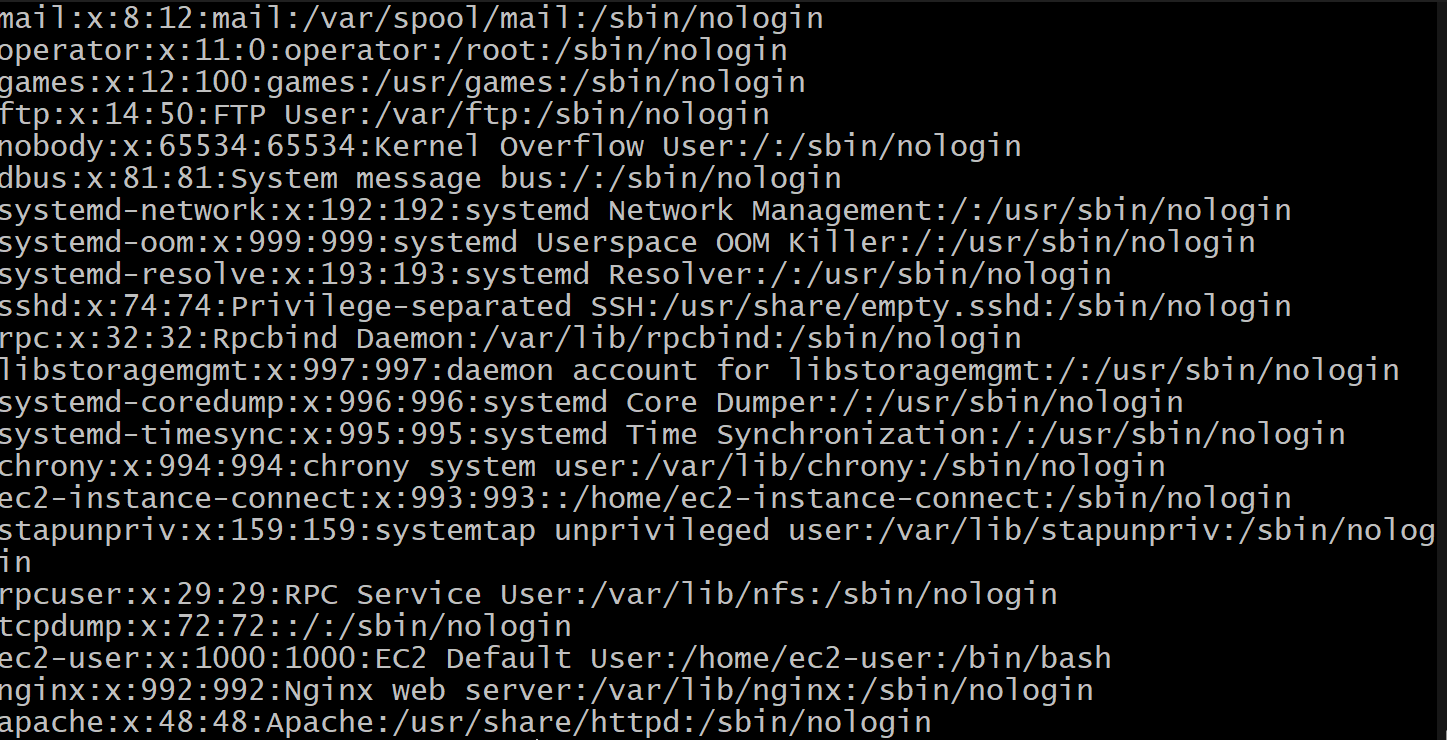
**Step 2: Use join**

****

**37) Substitute text in a file using search and replace.**

**Syntax: sed -I ‘s/search/replace/g’ file**

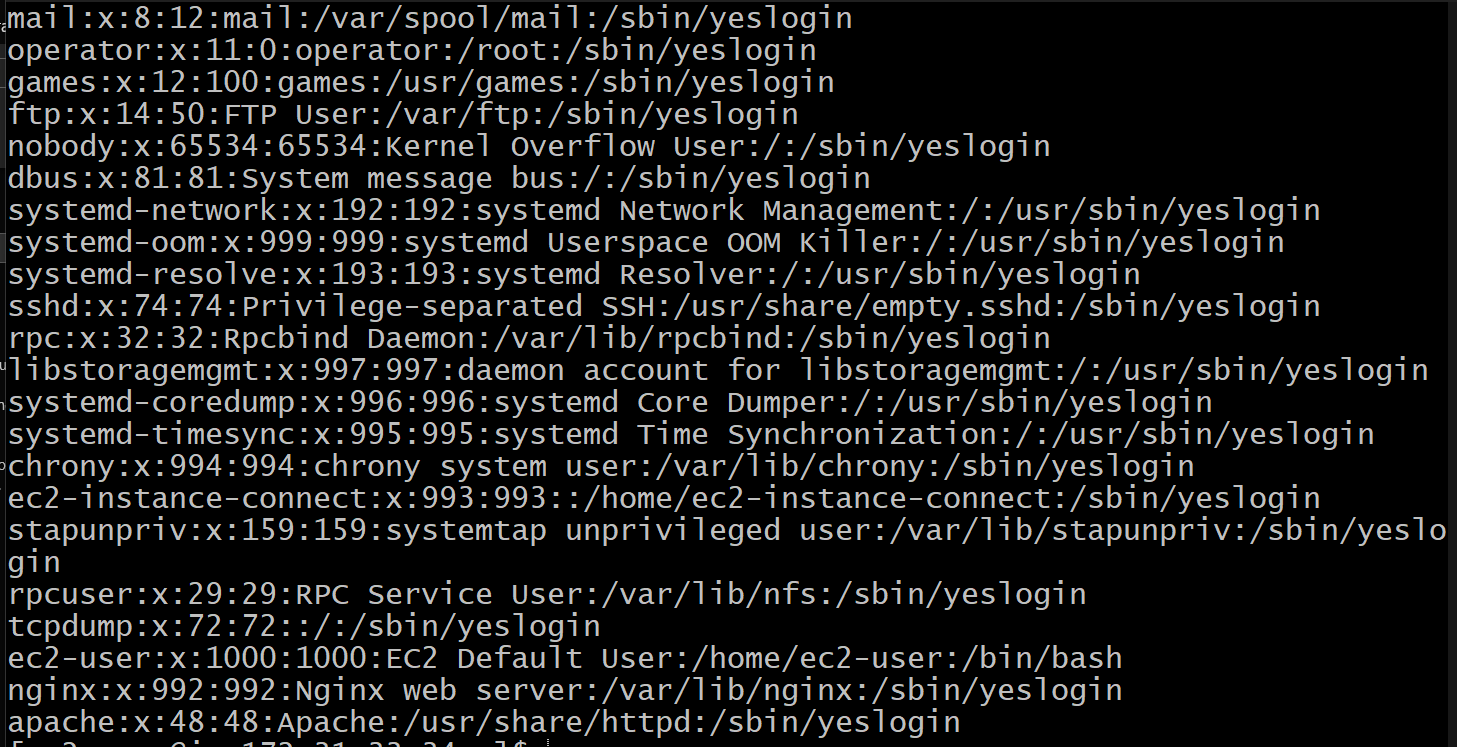
**Taking example in the following file:**

****

**Here I want to search for nologin and replace with yeslogin**

****

**Then output would be:**

****

**38) Delete specific lines based on a pattern or line number.**

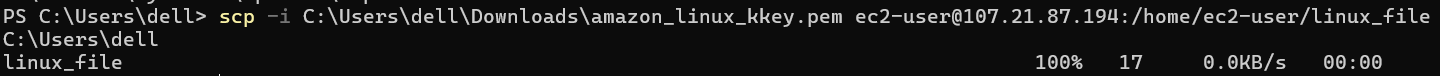
**39) Append or insert text before or after a specific pattern or line.**

**41)  Copy file from linux to windows machine**

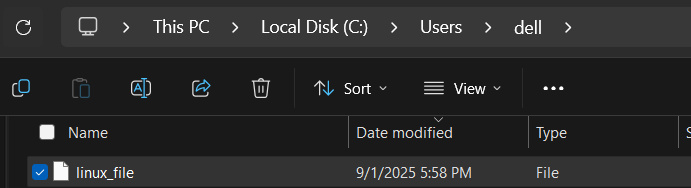
If the Windows machine has an SSH server (e.g., OpenSSH Server or a third-party server like Cygwin), you can push the file from Linux:

1. Ensure both Linux and Windows as open 22 port.
2. Then goto power shell in windows and give the details:
3. scp -i C:\Users\dell\Downloads\amazon\_linux\_kkey.pem ec2-user@107.21.87.194:/home/ec2-user/linux\_file C:\Users\dell

Note: In this example I have created a file in linux with name ‘linux\_file’ with some contents and then try to copy/send this file to windows:



Then check in the windows this file:



It will get copied here with the contents:

