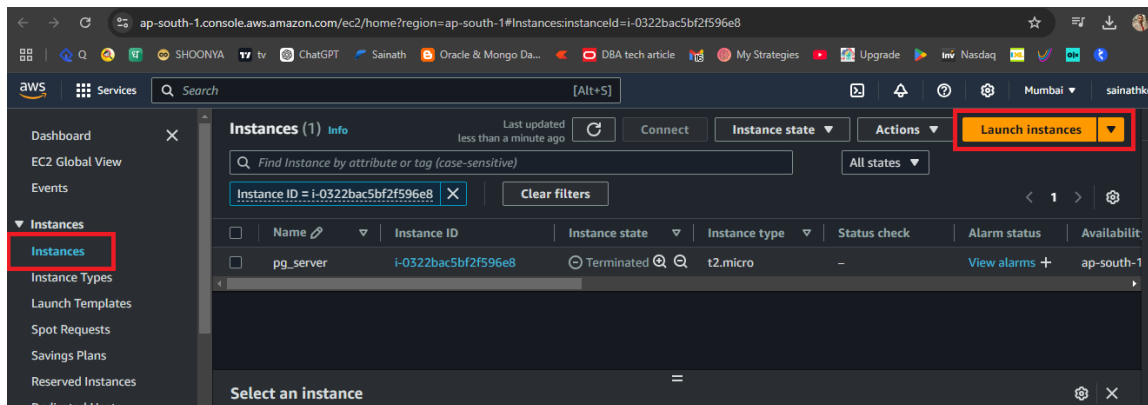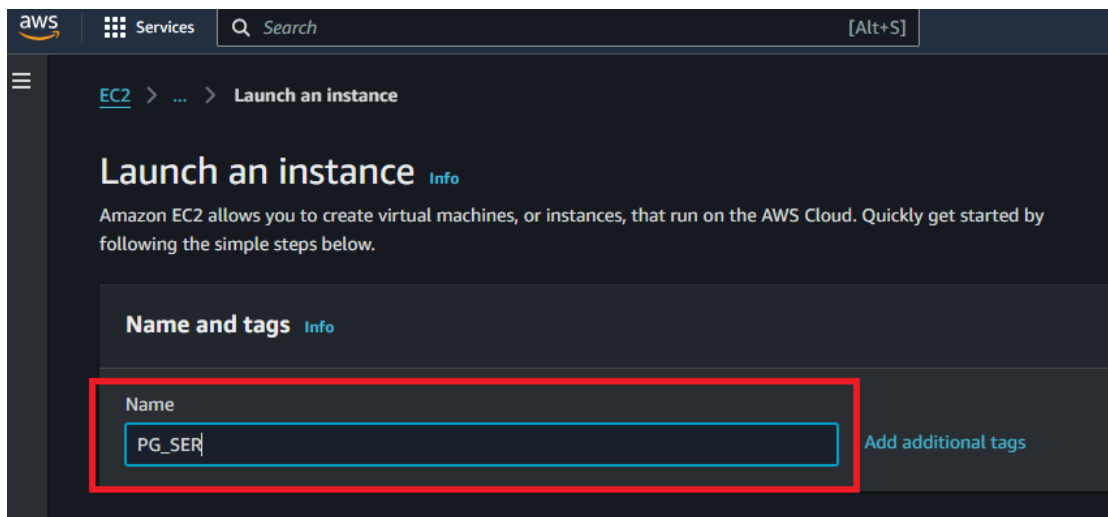## Steps for installing PostgreSQL 15 on an AWS EC2 instance with Amazon Linux 2023:

Creat Your EC2 Instance
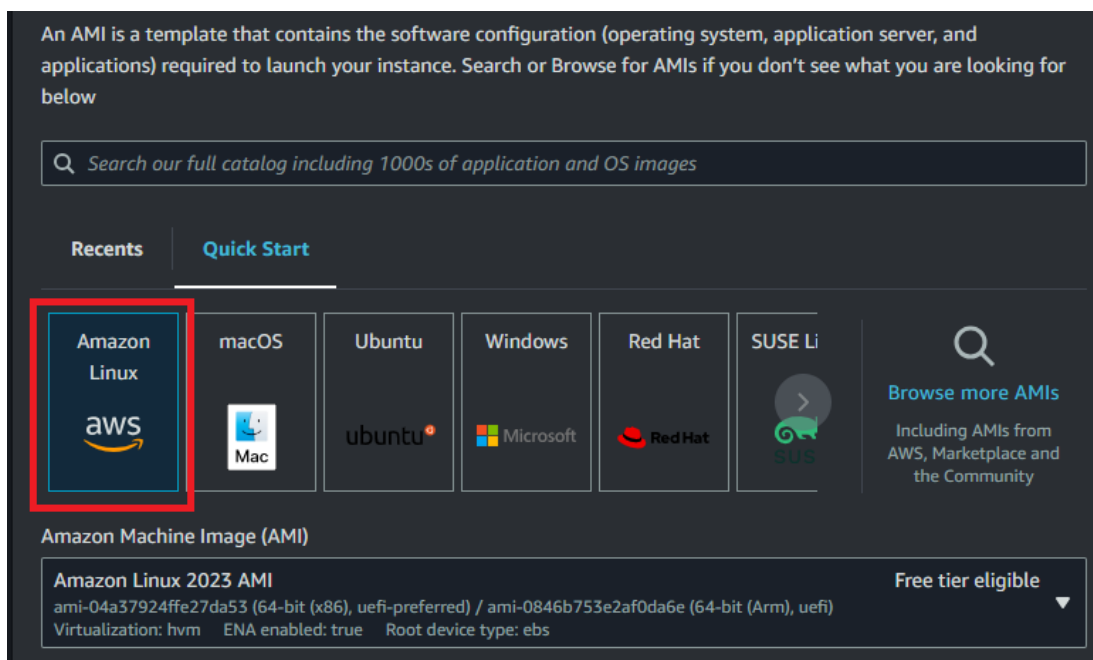
Click on launch instance

Give any name for the instance

Select Amazon Linux

Create new key pair for remote connectivity.

It will down the key to connect to the server from putty.
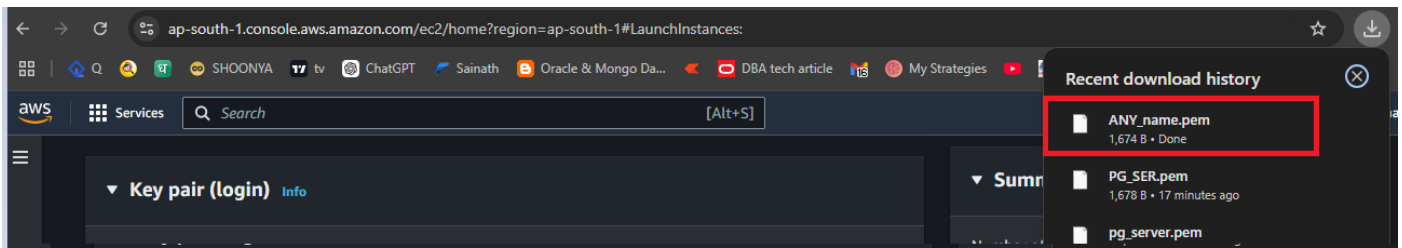
Launch the instance creation
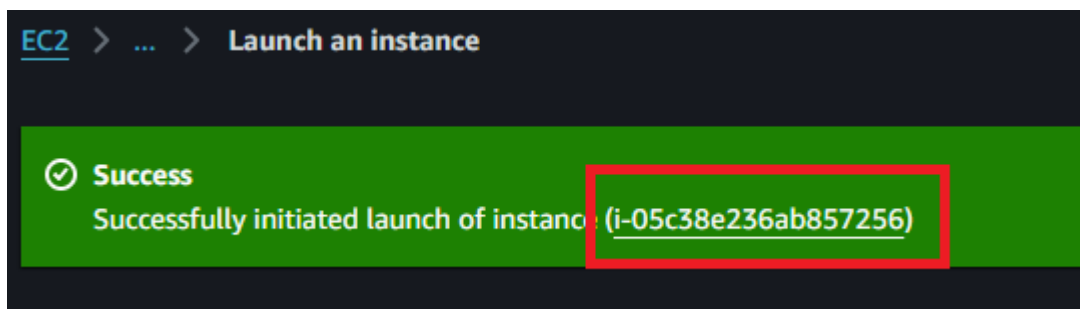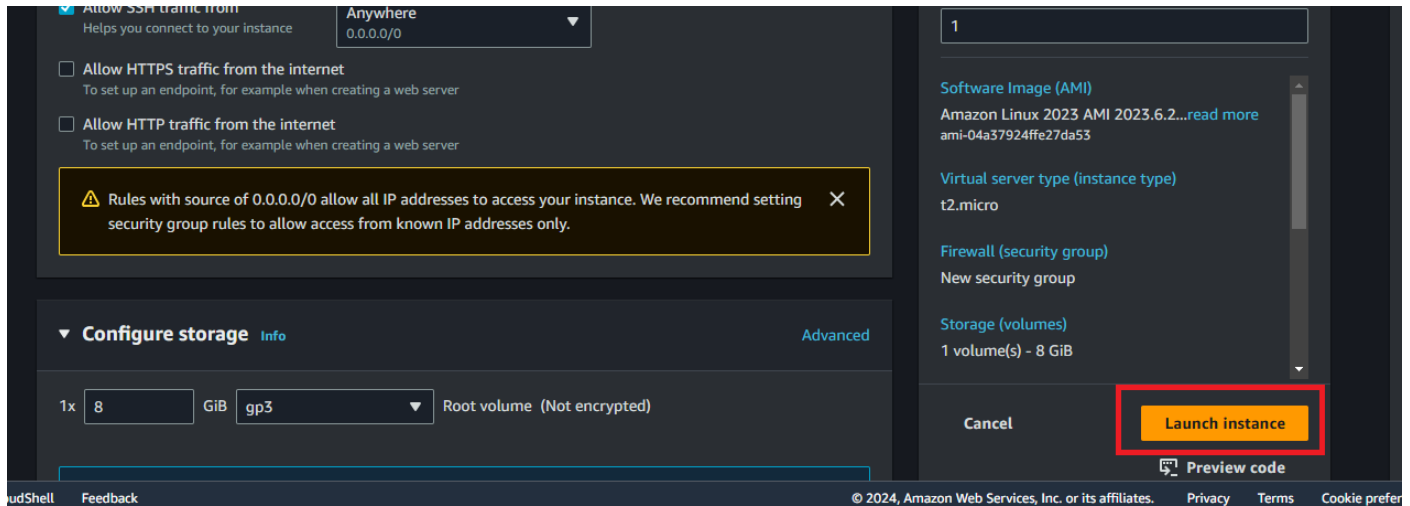
Initializing
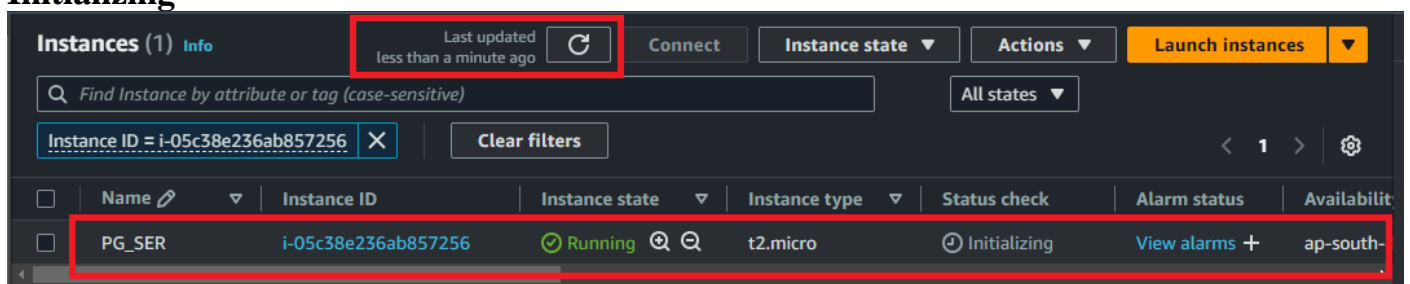
Ready to use
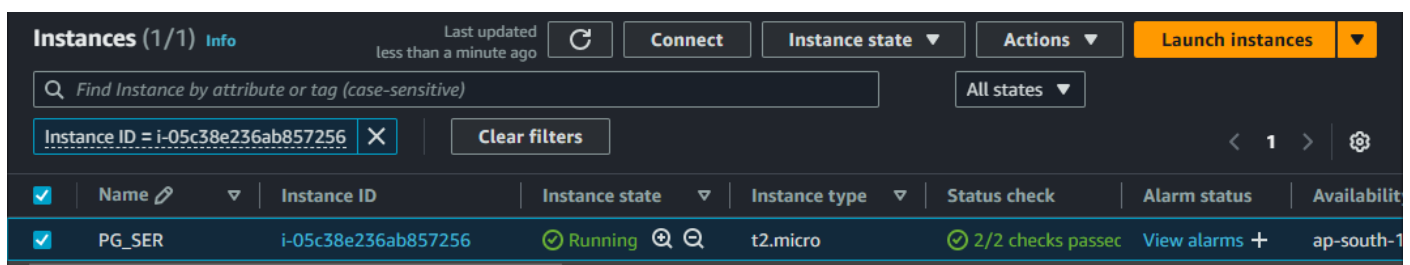
- **Use SSH to connect to your EC2 instance. This example uses `ec2-user` as the default user.**

MobaXterm to connect:
Use the below link to download MoboXterm

https://mobaxterm.mobatek.net/download-home-edition.html
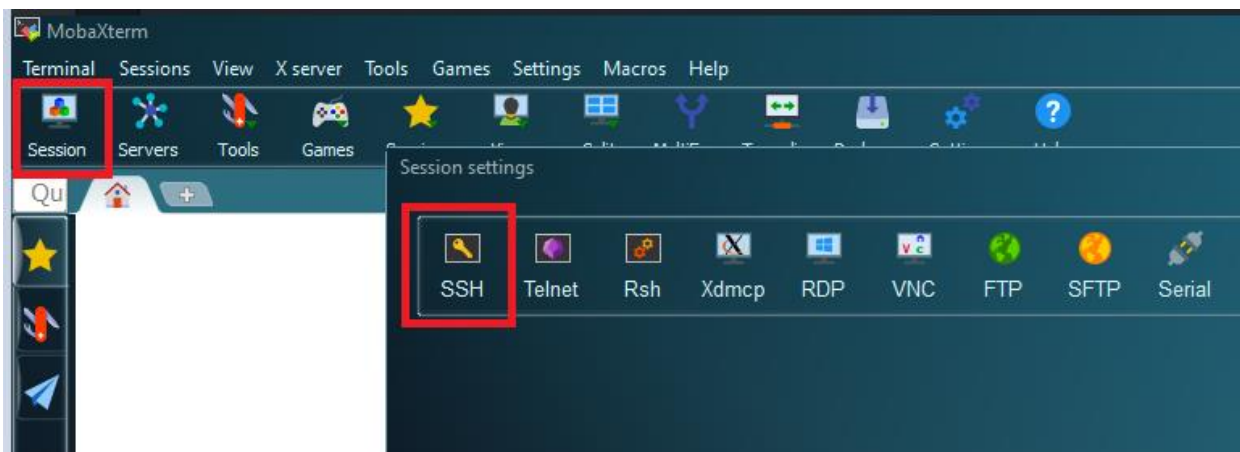
IP Addess : Pubilc IPv4 address
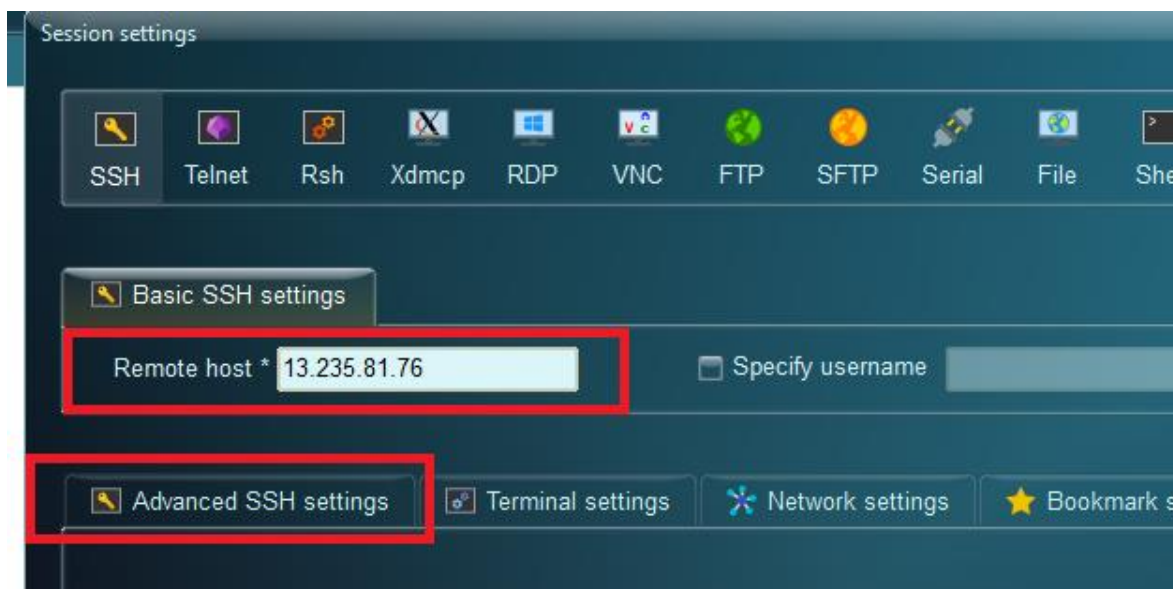
Browse the key location and select the key which we have downloaded

Postgresql Installation:

Check for Available Updates

- Run the `dnf update` command `to` ensure all installed packages are up-to-date. It's also useful to check if there are newer releases of Amazon Linux 2023 available.

  `sudo dnf update`
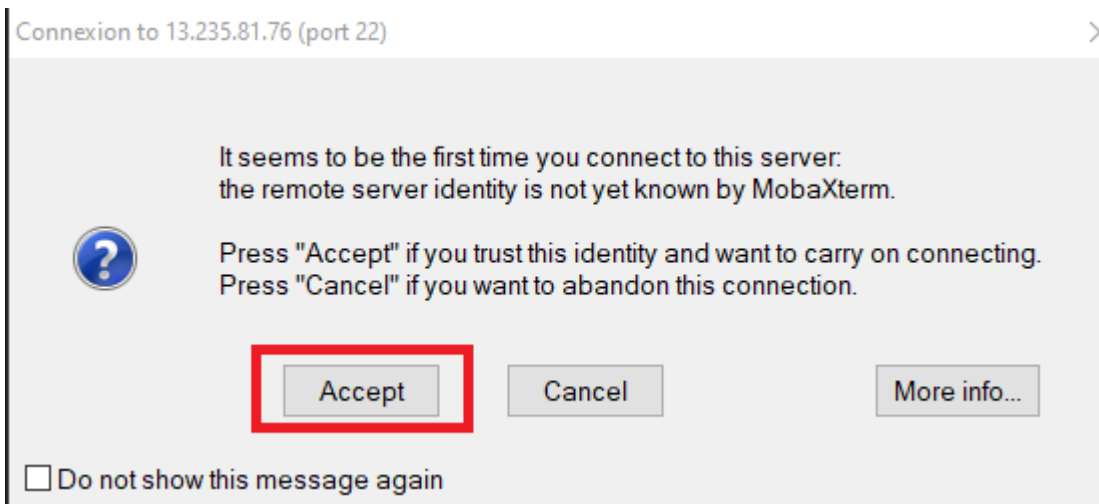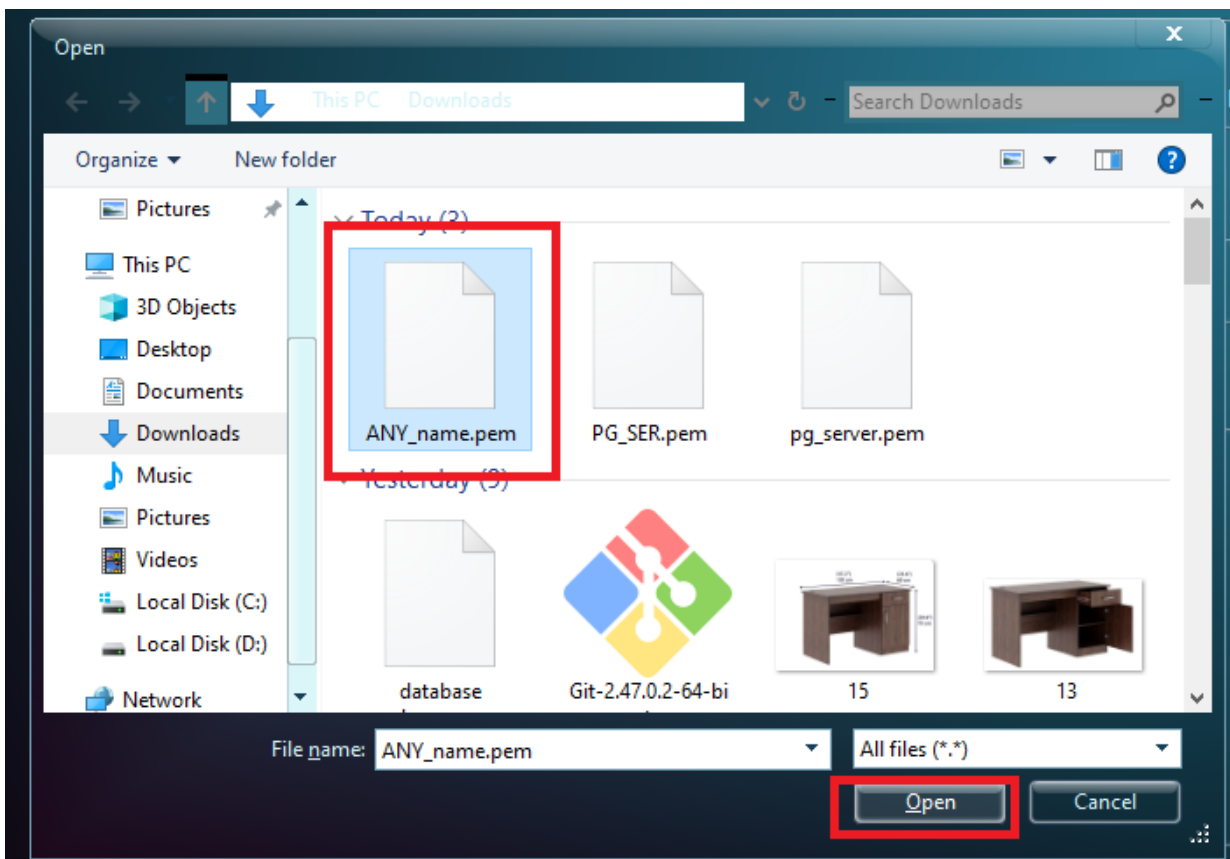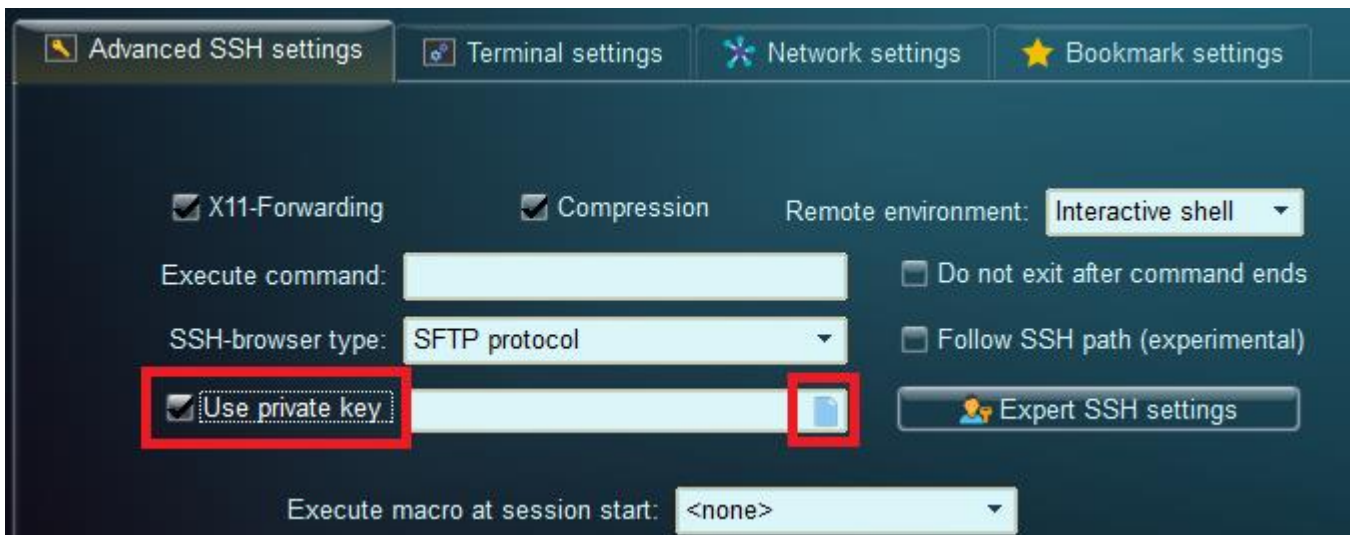
Install PostgreSQL 15 and

Server Packages

- Install PostgreSQL 15 along with the required server packages using `dnf`. This command will also pull in necessary dependencies.

```
sudo dnf install -y postgresql15.x86_64 postgresql15-server
```

```
[ec2-user@ip-172-31-1-19 ~]$ sudo dnf install -y postgresql15.x86_64 postgresql15-server
Last metadata expiration check: 0:04:16 ago on Fri Nov  1 07:02:45 2024.
Dependencies resolved.
================================================================================================================
 Package                        Architecture        Version                    Repository            Size
================================================================================================================
Installing:
 postgresql15                   x86_64              15.8-1.amzn2023.0.1         amazonlinux          1.6 M
 postgresql15-server            x86_64              15.8-1.amzn2023.0.1         amazonlinux          6.3 M
Installing dependencies:
 libicu                         x86_64              67.1-7.amzn2023.0.3         amazonlinux          9.6 M
 postgresql15-private-libs      x86_64              15.8-1.amzn2023.0.1         amazonlinux          145 k

Transaction Summary
================================================================================================================
Install  4 Packages

Total download size: 18 M
Installed size: 65 M
Downloading Packages:
(1/4): postgresql15-private-libs-15.8-1.amzn2023.0.1.x86_64.rpm              1.4 MB/s | 145 kB     00:00
(2/4): postgresql15-15.8-1.amzn2023.0.1.x86_64.rpm                          9.3 MB/s | 1.6 MB     00:00
(3/4): libicu-67.1-7.amzn2023.0.3.x86_64.rpm                                 35 MB/s | 9.6 MB     00:00
(4/4): postgresql15-server-15.8-1.amzn2023.0.1.x86_64.rpm                    17 MB/s | 6.3 MB     00:00
----------------------------------------------------------------------------------------------------------------
Total                                                                        34 MB/s |  18 MB     00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing        :                                                                                    1/1
  Installing       : postgresql15-private-libs-15.8-1.amzn2023.0.1.x86_64                                1/4
  Installing       : postgresql15-15.8-1.amzn2023.0.1.x86_64                                             2/4
  Installing       : libicu-67.1-7.amzn2023.0.3.x86_64                                                   3/4
  Verifying        : postgresql15-server-15.8-1.amzn2023.0.1.x86_64                                      4/4
================================================================================================================
WARNING:
 A newer release of "Amazon Linux" is available.

 Available Versions:

 Version 2023.6.20241028:
   Run the following command to upgrade to 2023.6.20241028:

     dnf upgrade --releasever=2023.6.20241028

   Release notes:
     https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.6.20241028.html

 Version 2023.6.20241031:
   Run the following command to upgrade to 2023.6.20241031:

     dnf upgrade --releasever=2023.6.20241031

   Release notes:
     https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.6.20241031.html

================================================================================================================
Installed:
  libicu-67.1-7.amzn2023.0.3.x86_64                  postgresql15-15.8-1.amzn2023.0.1.x86_64          postgresql15-private-libs-15.8-1.amzn2023.0.1.x86_64
  postgresql15-server-15.8-1.amzn2023.0.1.x86_64

Complete!
```

Initialize the PostgreSQL Database

- After installation, initialize the database by running the PostgreSQL setup command. This will create the necessary data directory for PostgreSQL.

```
sudo postgresql-setup --initdb
```

```
[ec2-user@ip-172-31-1-19 ~]$ sudo postgresql-setup --initdb
 * Initializing database in '/var/lib/pgsql/data'
 * Initialized, logs are in /var/lib/pgsql/initdb_postgresql.log
```

Start and Enable PostgreSQL Service

- Start the PostgreSQL service and enable it to start automatically on boot.

```
sudo systemctl start postgresql
sudo systemctl enable postgresql
```

```
[ec2-user@ip-172-31-1-19 ~]$ sudo systemctl start postgresql
[ec2-user@ip-172-31-1-19 ~]$ sudo systemctl enable postgresql
Created symlink /etc/systemd/system/multi-user.target.wants/postgresql.service → /usr/lib/systemd/system/postgresql.service.
```

- Check the status to confirm it's running:

```
sudo systemctl status postgresql
```

```
[ec2-user@ip-172-31-1-19 ~]$ sudo systemctl status postgresql

● postgresql.service - PostgreSQL database server
     Loaded: loaded (/usr/lib/systemd/system/postgresql.service; enabled; preset: disabled)
     Active: active (running) since Fri 2024-11-01 07:07:18 UTC; 14s ago
   Main PID: 23911 (postgres)
      Tasks: 7 (limit: 1112)
     Memory: 17.0M
        CPU: 36ms
     CGroup: /system.slice/postgresql.service
             ├─23911 /usr/bin/postgres -D /var/lib/pgsql/data
             ├─23933 "postgres: logger "
             ├─23954 "postgres: checkpointer "
             ├─23955 "postgres: background writer "
             ├─23961 "postgres: walwriter "
             ├─23962 "postgres: autovacuum launcher "
             └─23963 "postgres: logical replication launcher "

Nov 01 07:07:17 ip-172-31-1-19.ap-south-1.compute.internal systemd[1]: Starting postgresql.service - PostgreSQL database se
Nov 01 07:07:18 ip-172-31-1-19.ap-south-1.compute.internal postgres[23911]: 2024-11-01 07:07:18.033 UTC [23911] LOG:  redir
Nov 01 07:07:18 ip-172-31-1-19.ap-south-1.compute.internal postgres[23911]: 2024-11-01 07:07:18.033 UTC [23911] HINT:  Futu
Nov 01 07:07:18 ip-172-31-1-19.ap-south-1.compute.internal systemd[1]: Started postgresql.service - PostgreSQL database ser
lines 1-20/20 (END)
```

Switch to the PostgreSQL User

- Switch to the `postgres` system user to configure and manage the PostgreSQL database.

```
su – postgres
sudo passwd postgres
```

```
[ec2-user@ip-172-31-1-19 ~]$ su - postgres
Password:
su: Authentication failure
[ec2-user@ip-172-31-1-19 ~]$ sudo passwd postgres
Changing password for user postgres.
New password:
BAD PASSWORD: The password contains the user name in some form
Retype new password:
passwd: all authentication tokens updated successfully.
[ec2-user@ip-172-31-1-19 ~]$ su - postgres
Password:
Last failed login: Fri Nov  1 07:08:17 UTC 2024 on pts/0
There was 1 failed login attempt since the last successful login.
[postgres@ip-172-31-1-19 ~]$ psql
psql (15.8)
Type "help" for help.

postgres=# \l+
```

Verify Database Installation

- Use the `\l+` command in `psql` to list available databases and verify the installation.

```sql
\l+
```

```
postgres=# \l+
                                                                     List of databases
    Name    |  Owner   | Encoding | Collate |  Ctype  | ICU Locale | Locale Provider |    Access privileges     |  Size   | Tablespace |              Description
------------+----------+----------+---------+---------+------------+-----------------+--------------------------+---------+------------+--------------------------------------
 postgres   | postgres | UTF8     | C.UTF-8 | C.UTF-8 |            | libc            |                          | 7669 kB | pg_default | default administrative connec
tion database
 template0  | postgres | UTF8     | C.UTF-8 | C.UTF-8 |            | libc            | =c/postgres             +| 7513 kB | pg_default | unmodifiable empty database
            |          |          |         |         |            |                 | postgres=CTc/postgres    |         |            |
 template1  | postgres | UTF8     | C.UTF-8 | C.UTF-8 |            | libc            | =c/postgres             +| 7609 kB | pg_default | default template for new data
bases
            |          |          |         |         |            |                 | postgres=CTc/postgres    |         |            |
(3 rows)

postgres=#
```