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# **Roll No: 242466**

Practical No: 9

Date Of Performance: 10/09/2025

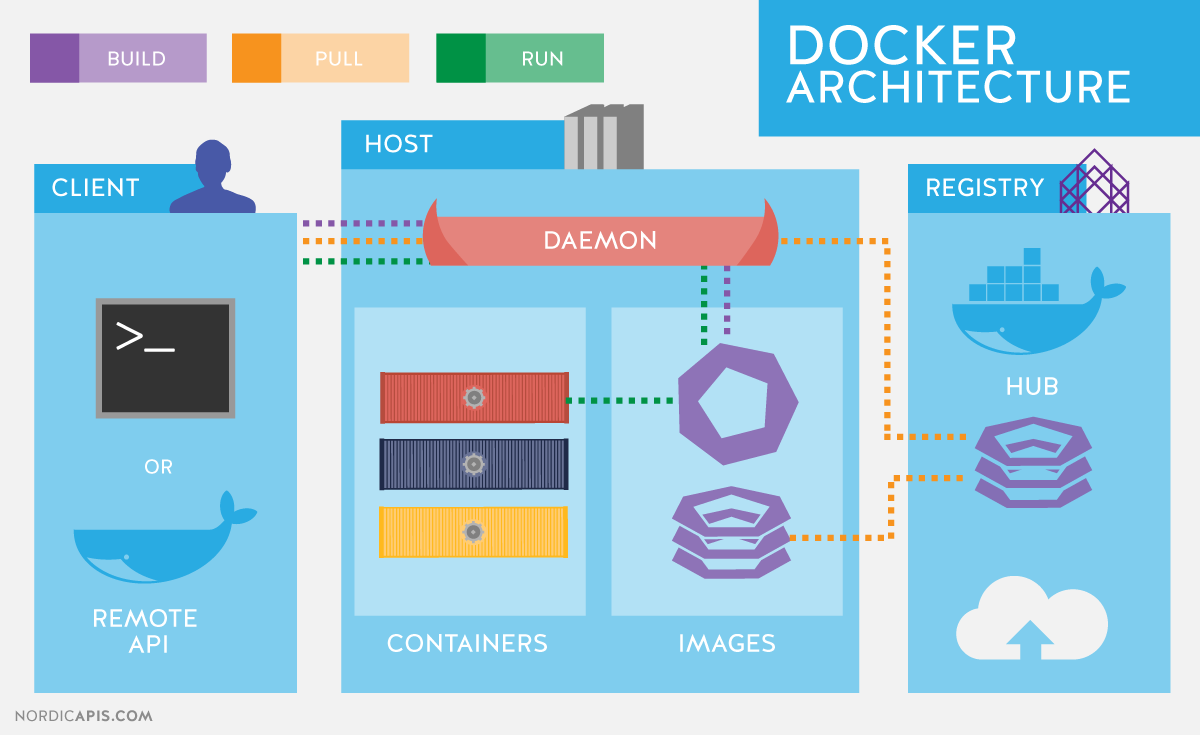
Aim: To understand containerization by deploying a lightweight Nginx web server using Docker on an EC2 instance, demonstrating the practical advantages of containers over traditional virtual machines.

1. What is Containerization / Docker? Explain Docker Architecture with the help of diagram
2. Compare Containers vs VMs
3. Why are Containers lightweight?
4. Deploy a containerized web Application on AWS EC2 Linux. [install Docker, pull nginx image and run it]. Pull python images and run the command to list all the locally stored docker images.

 [Terminate the resources after performing the practical- terminate environment and application both]

****ANS.1:****

**Containerization** is a lightweight form of virtualization that packages an application and its dependencies (libraries, config files, etc.) into an isolated, portable unit called a **container**.  
**Docker** is the most popular platform that enables developers to build, ship, and run containers consistently across different environments.



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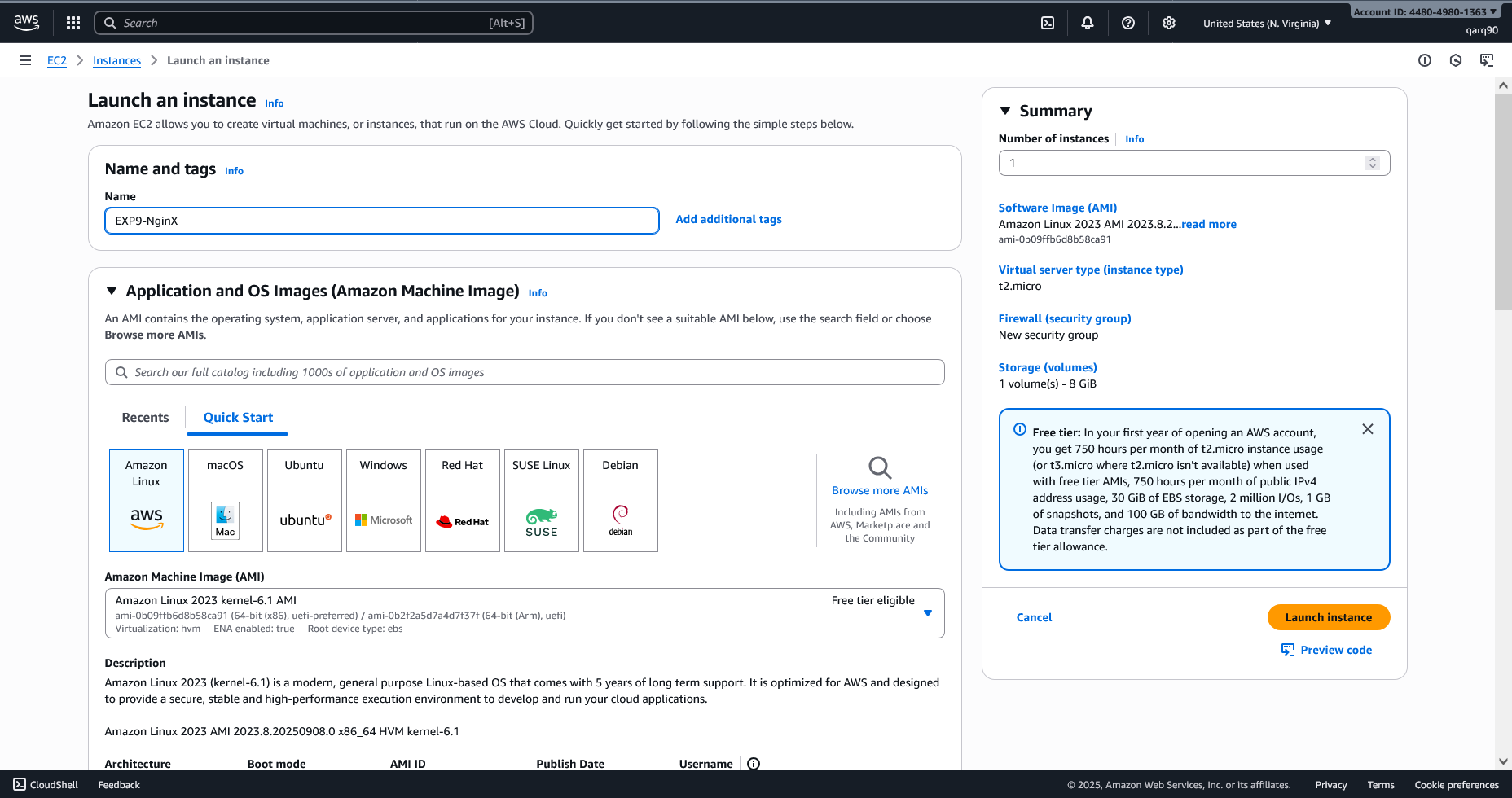
****ANS.2:****

|  |  |
| --- | --- |
| Containers | Virtual Machines (VMs) |
| Share the host OS kernel | Each VM has its own full OS |
| Lightweight, fast boot-up | Heavy, slower boot-up |
| Less resource overhead | High resource overhead |
| Portable and consistent | Less portable due to size |
| Isolated at process level | Fully isolated hardware virtualization |

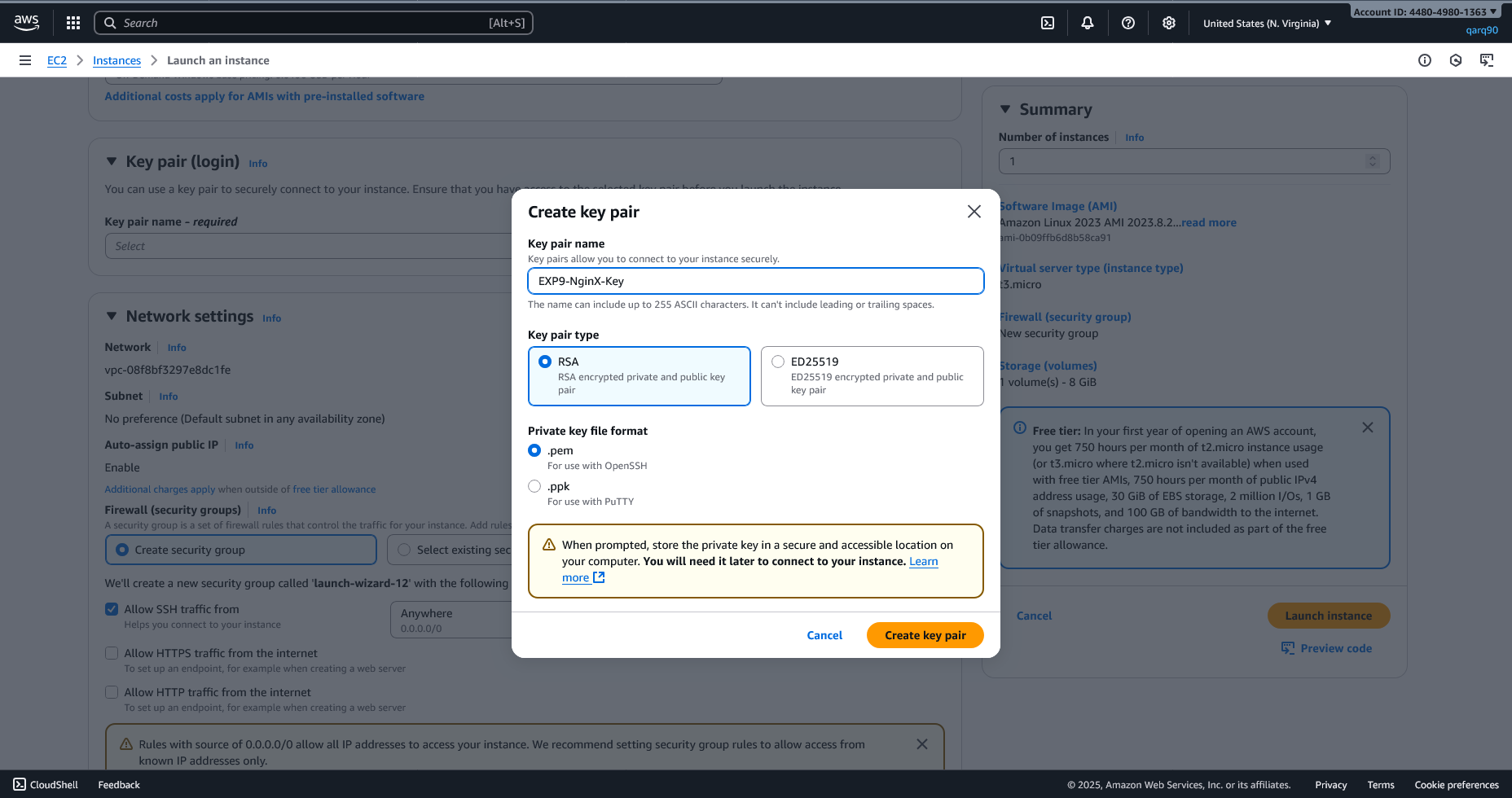
****ANS.3:****

Containers are lightweight because they **share the host operating system's kernel** and do not require a full operating system for each instance. Only the application, its dependencies, and a minimal runtime are packaged, eliminating the overhead of multiple guest OSes.

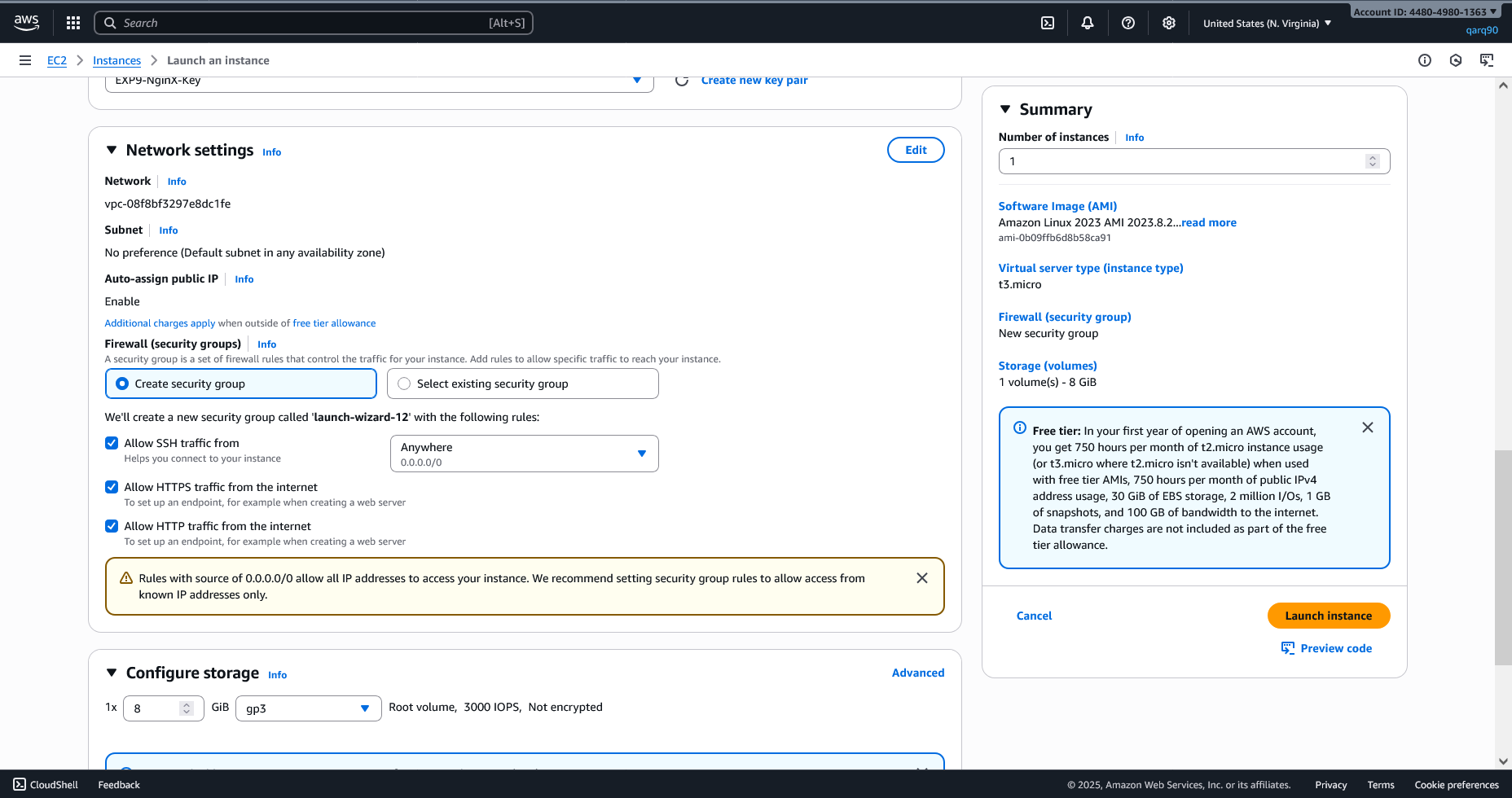
****ANS.4:****



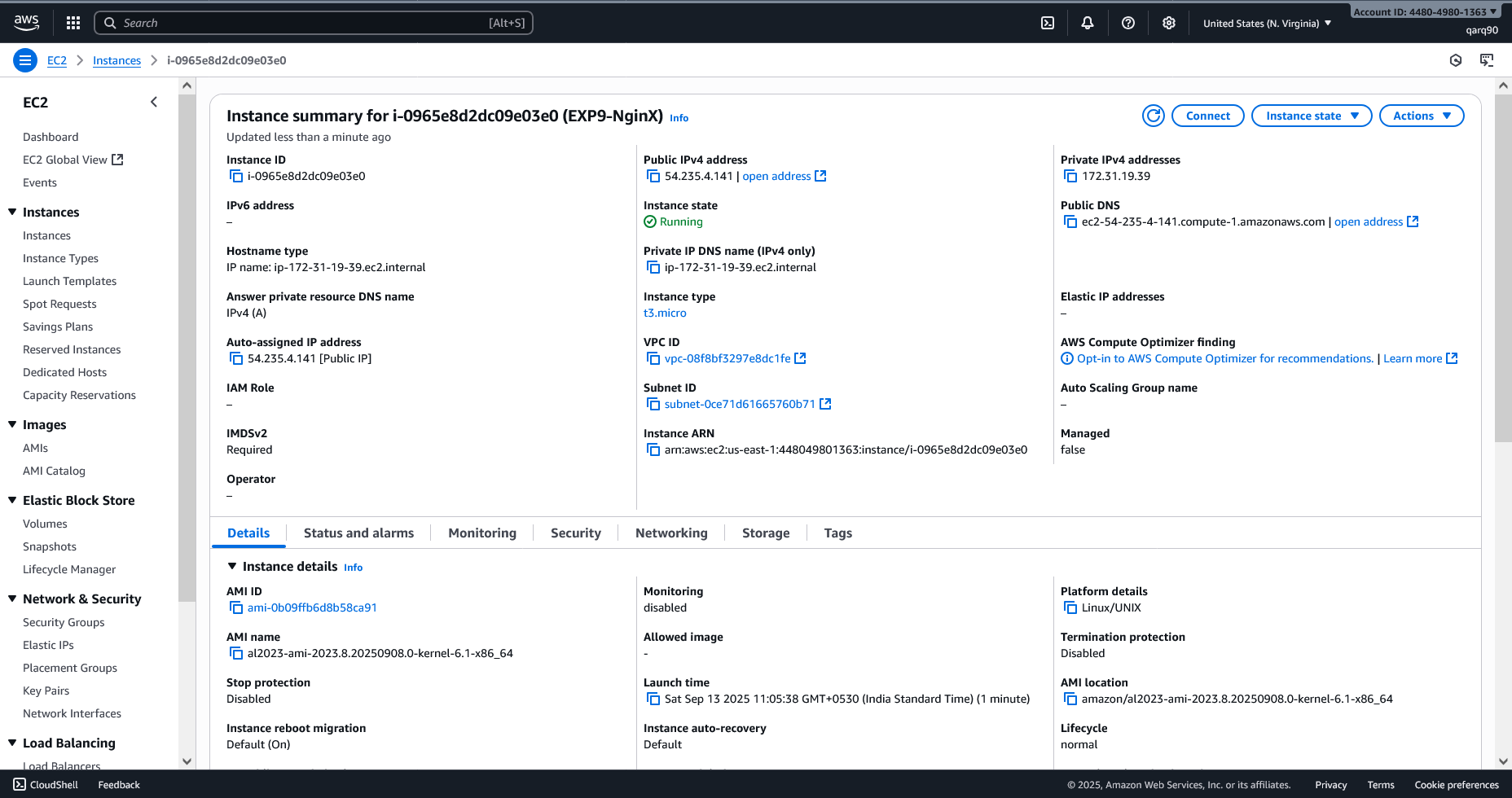
Creating a new Instance



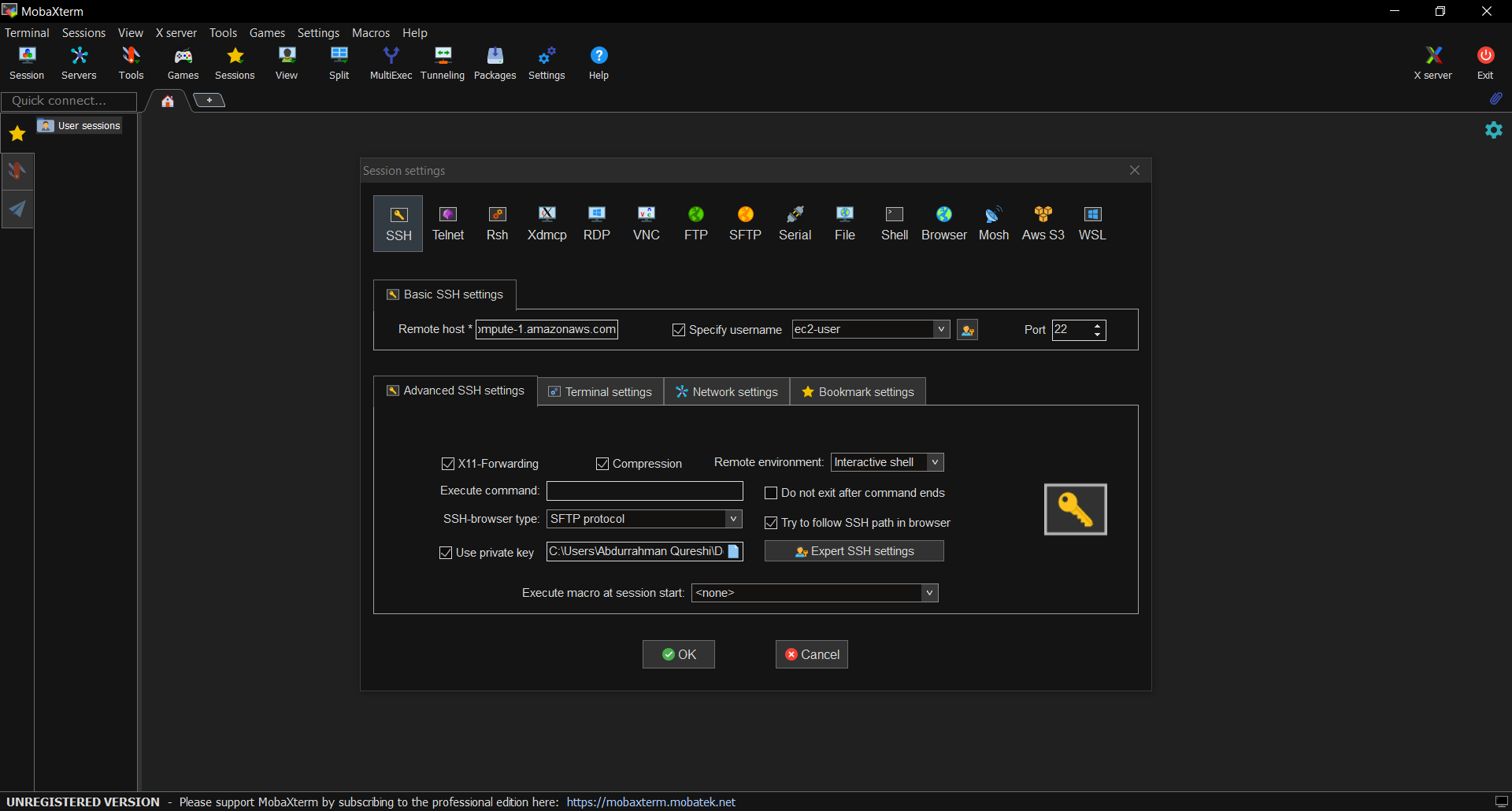
Creating Key Pair



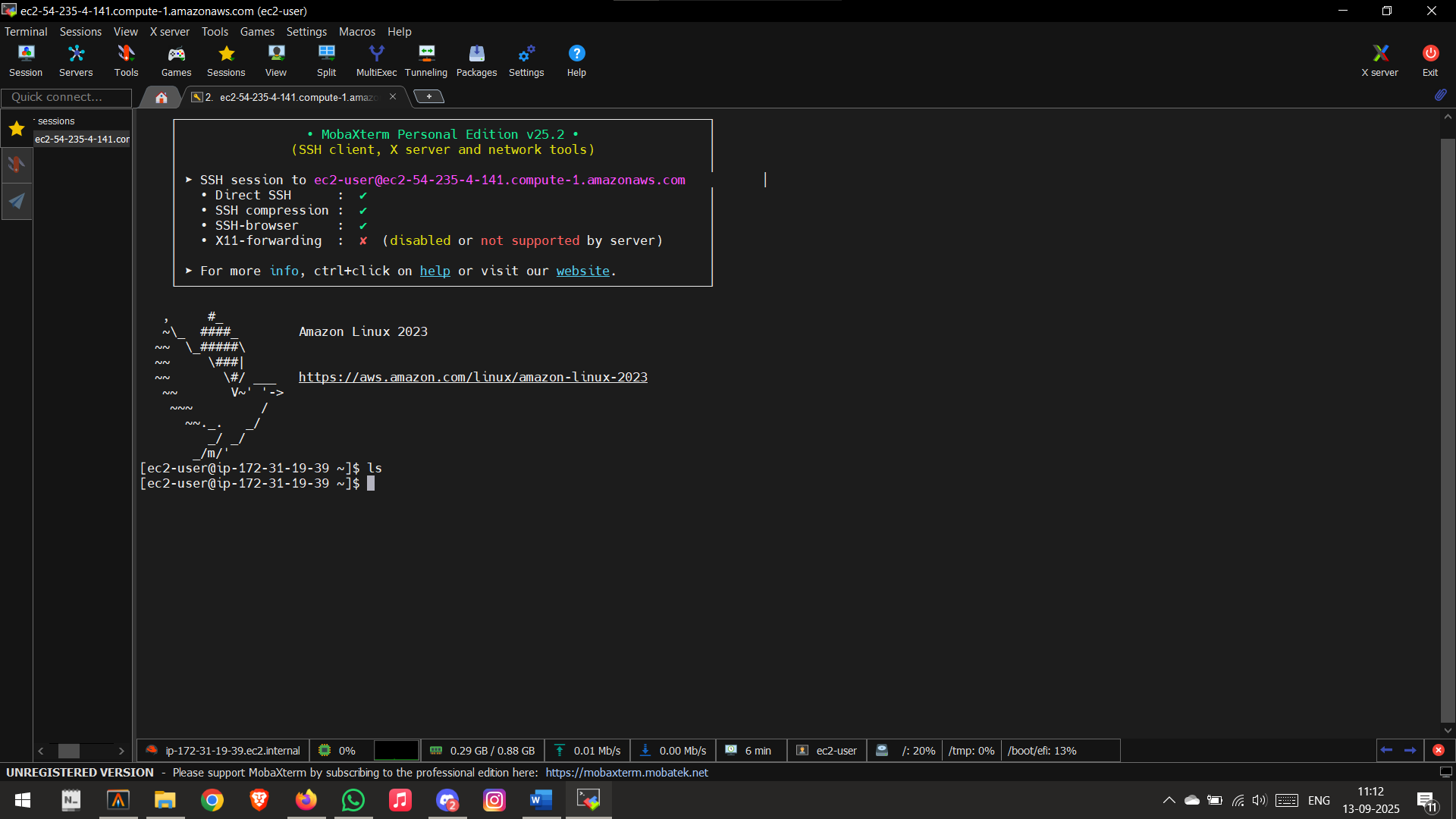
Configuring Network Settings



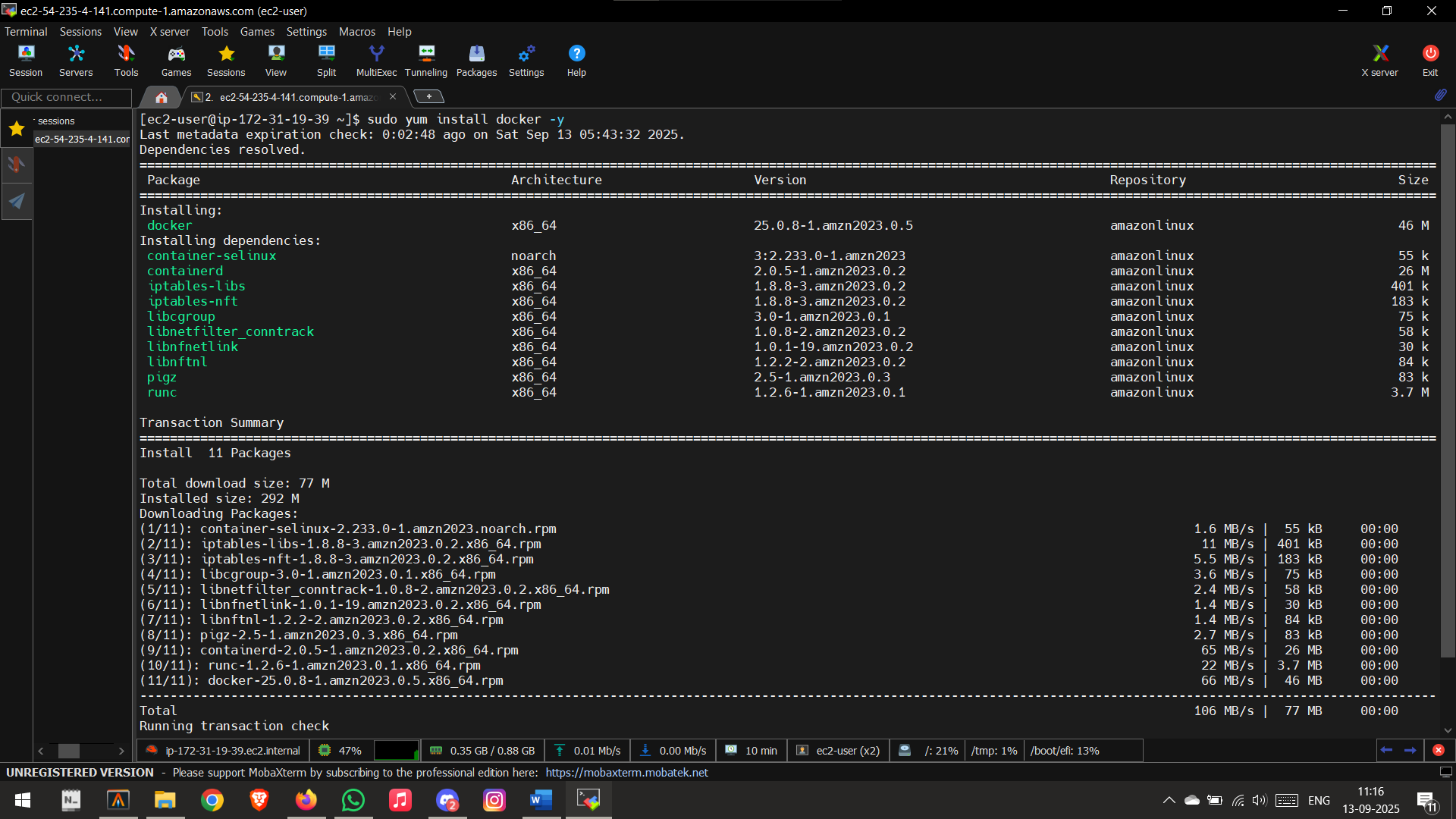
Instance Details



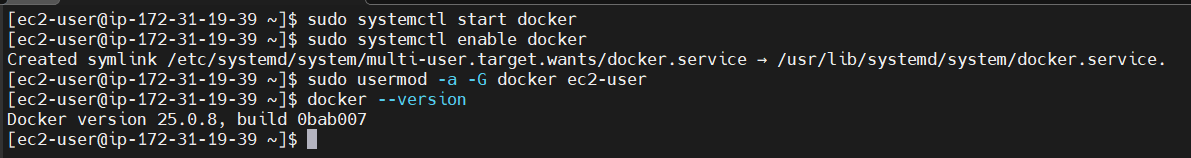
Connecting to Instance on MobaXterm



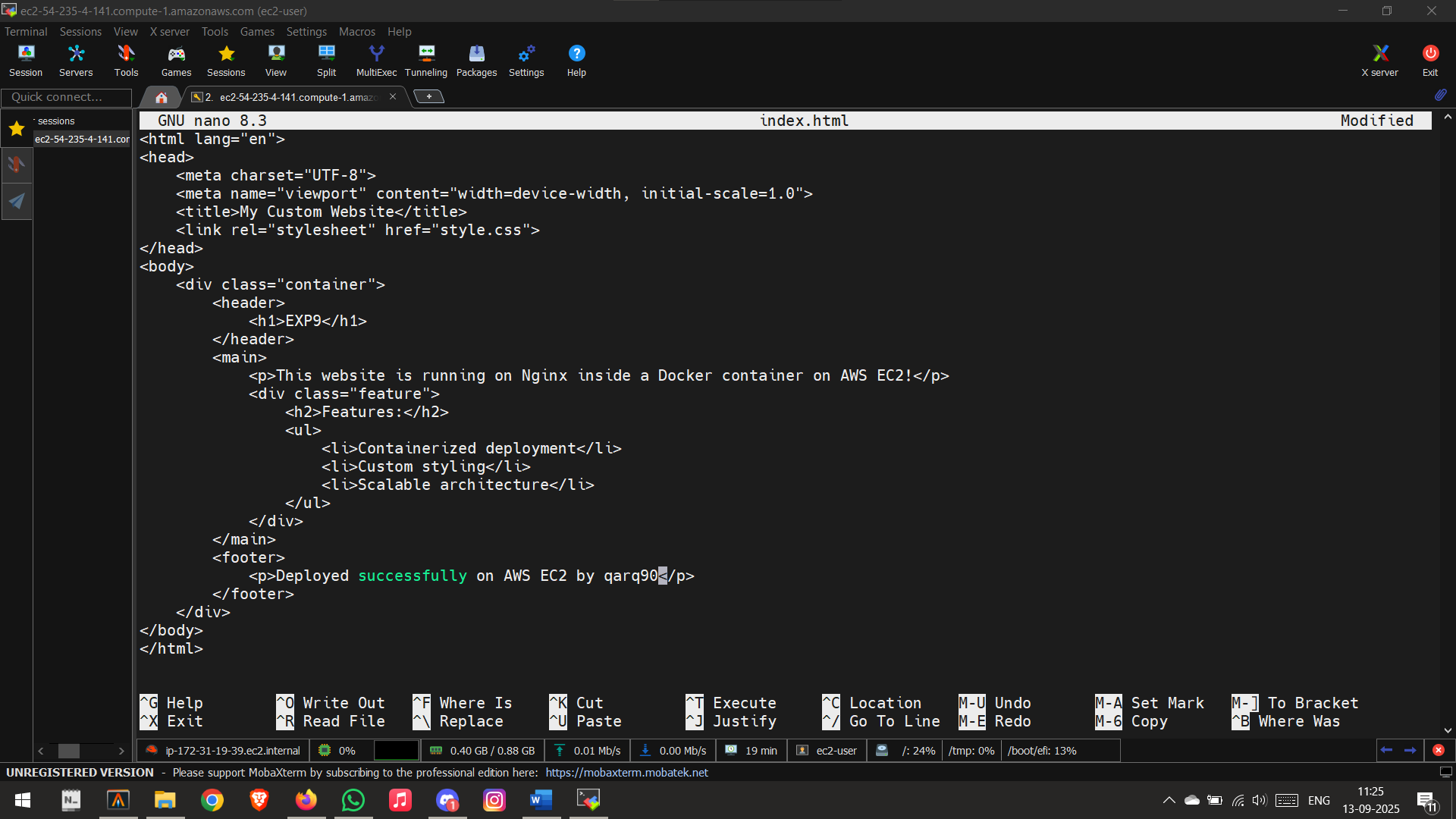
Connected to Instance

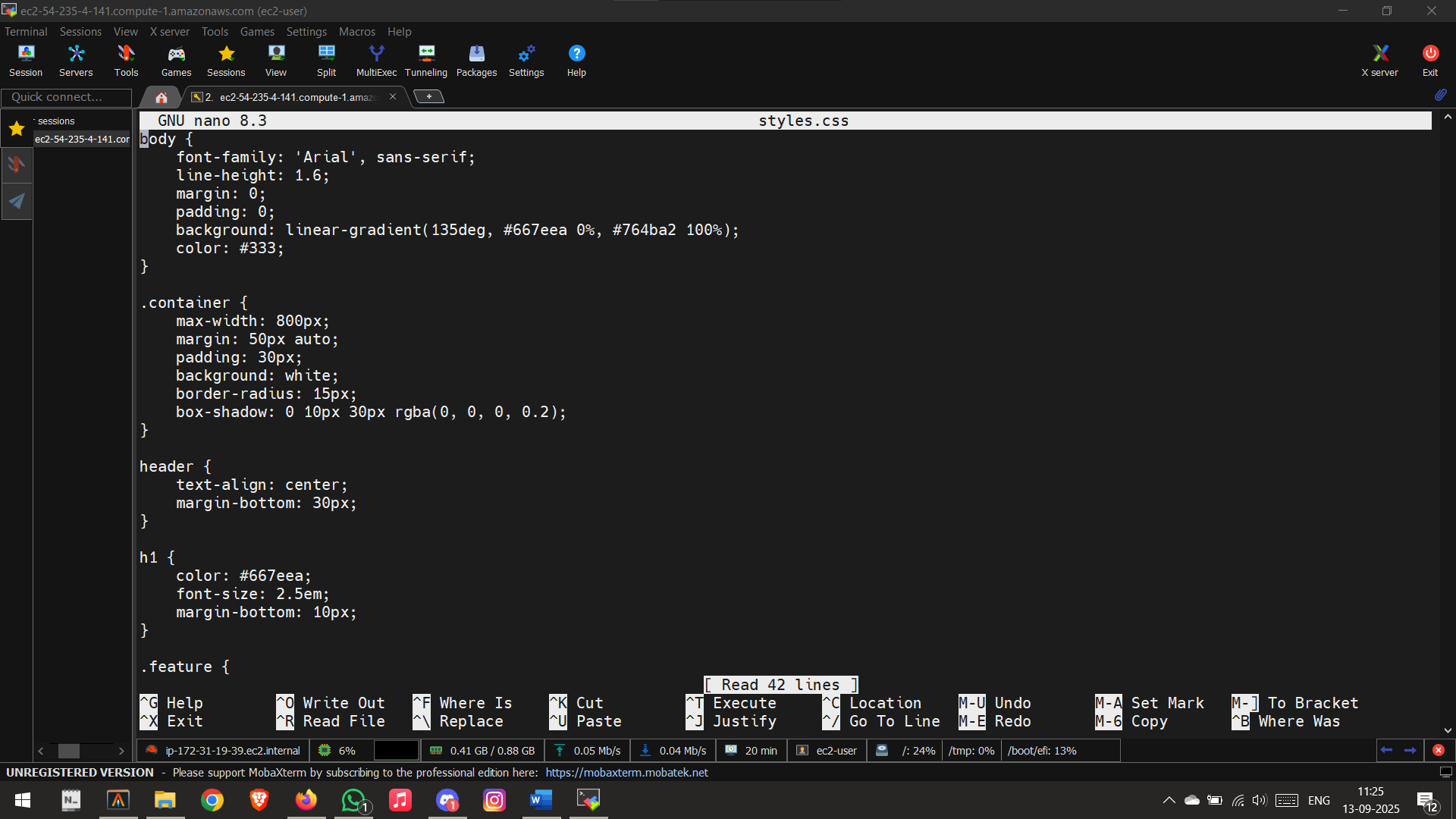


Installing Docker

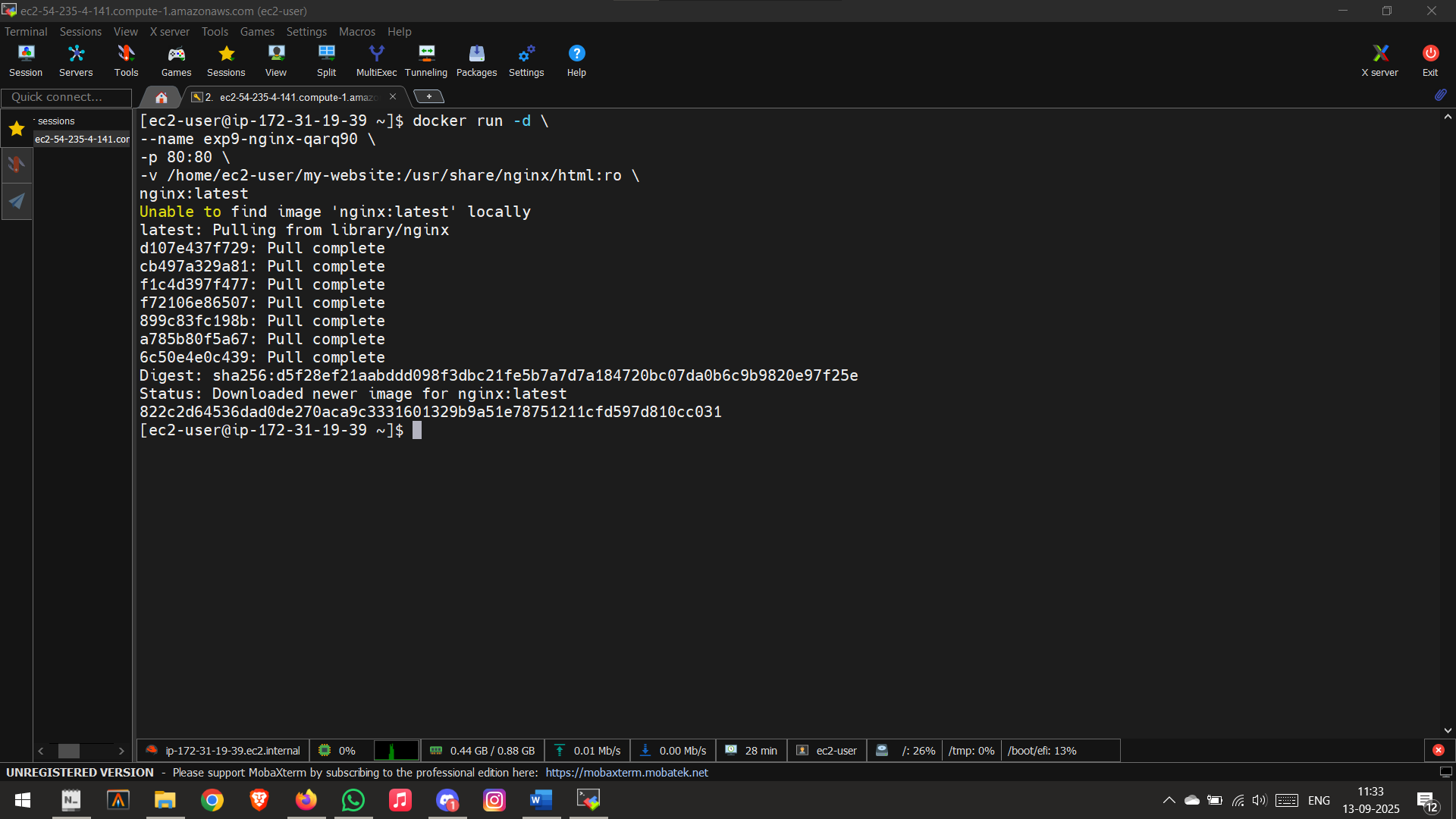


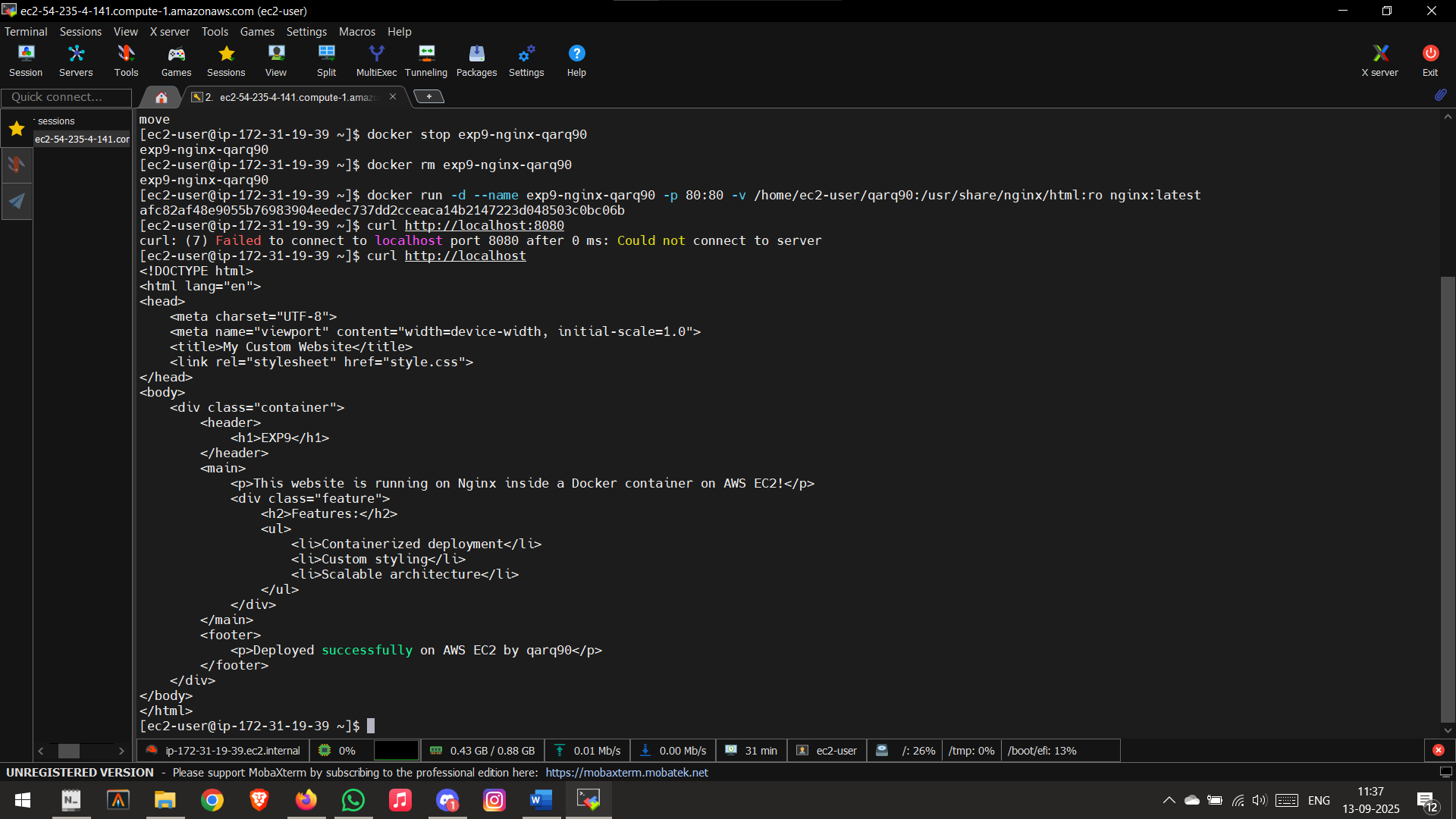
Docker Installed





Created Sample html and CSS file to deploy

  
Deploying Container



Output of Deployed Container