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Set Up a Web App Using AWS and VS Code



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```
File Edit Selection View Go Run Terminal Help < - > network-web-project [SSH: 3.12.74.210] 88 00 100 ...  
File Edit Selection View Go Run Terminal Help < - > network-web-project [SSH: 3.12.74.210] 88 00 100 ...  
NEXTWORK-WEBSITE-PROJECT [SSH: 3.12.74.210] ...  
src/main/resources  
src/main/webapp  
src/main/webapp/WEB-INF  
index.jsp  
pom.xml  
index.jsp x  
src/main/webapp/index.jsp > index.jsp > html > body > p  
1. <html>  
2.   <body>  
3.     <h2>Hello World!</h2>  
4.     <p>This is my nextwork web application working!</p>  
5.     <p>This is one cool experiment for Deployment.</p>  
6.   </body>  
7. </html>  
8.
```

Introducing Today's Project!

Today, we'll launch an EC2 instance on AWS, connect to it via VS Code, install Java and Maven, and create a simple web app — laying the groundwork for our DevOps CI/CD pipeline journey.

Key tools and concepts

Services I used were AWS EC2 for hosting, VS Code for remote editing, and Maven for build automation. Key concepts I learnt include SSH access, remote development, Java and Maven setup, and managing web app files on the cloud.

Project reflection

One thing I didn't expect was how seamlessly VS Code integrates with an EC2 instance, letting me edit files remotely with full IDE features. It made cloud development feel as easy as working locally.

This project took me approximately 2 hours. The most challenging part was configuring secure SSH access. It was most rewarding to connect VS Code remotely and edit my web app directly on the EC2 instance.



MO

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NextWork Student

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This project is part one of a series of DevOps projects where I'm building a CI/CD pipeline! I'll be working on the next project in the coming days to continue enhancing my cloud and DevOps skills.

Launching an EC2 instance

I started this project by launching an EC2 instance because it provides a virtual server in the cloud where I can install tools, write code, and run my web app, making it accessible and manageable from anywhere.

I also enabled SSH

SSH is a secure network protocol used to access and manage remote servers. I enabled SSH so that I can safely connect to my EC2 instance from my local machine and run commands remotely.

Key pairs

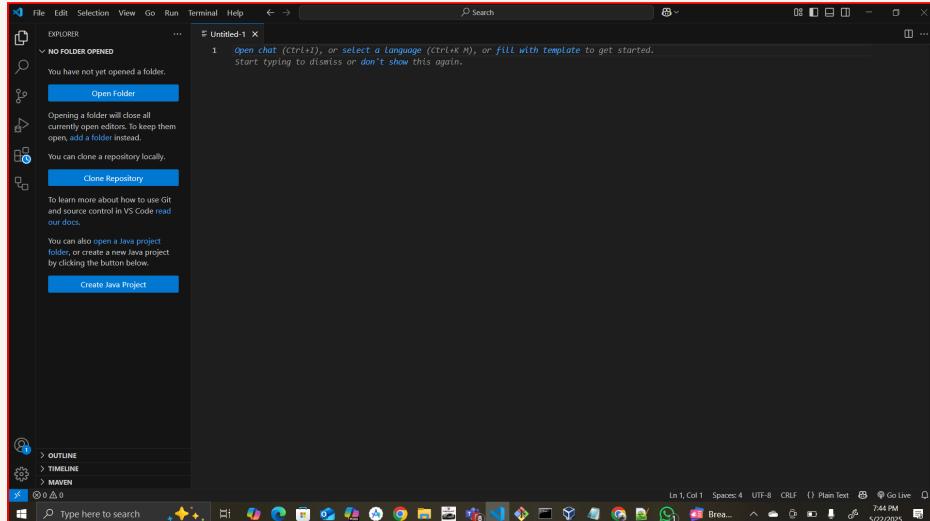
A key pair is a set of two cryptographic keys—one public and one private—that is used to securely connect to your EC2 instance. The private key lets you SSH into the server without using a password.

Once I set up my key pair, AWS automatically downloaded a ` `.pem` file to my local computer. This file contains my private key, which I'll use to securely SSH into my EC2 instance from VS Code.

Set up VS Code

VS Code is a lightweight, open-source code editor developed by Microsoft. It supports many programming languages and features like syntax highlighting, extensions, and an integrated terminal for remote server access.

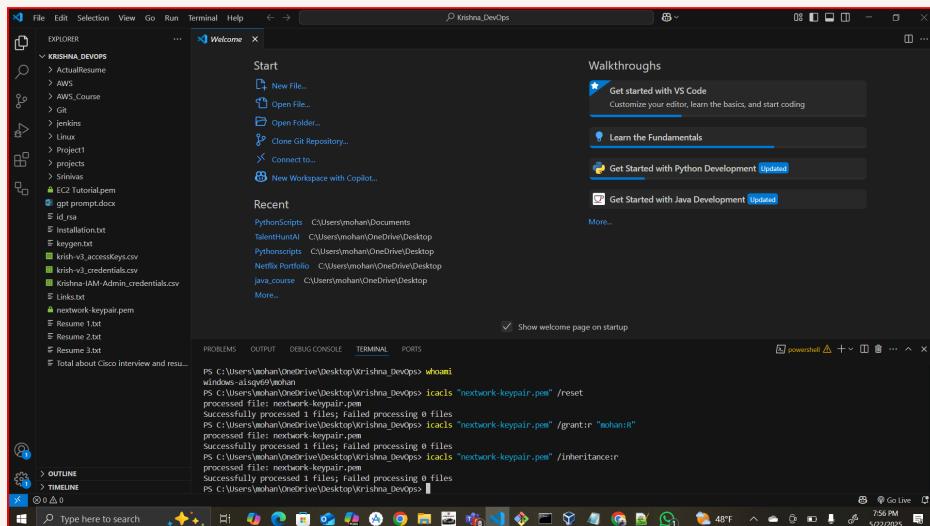
I installed VS Code to write and edit my web app's code, connect securely to my EC2 instance via SSH, and run commands directly on the remote server using the integrated terminal.



My first terminal commands

A terminal lets you send text commands to your computer. Navigating it with `cd ~/Desktop/DevOps` moves to the DevOps folder where your `.pem` file is stored to connect to your EC2 instance.

chmod changes file permissions, making the .pem file readable only by you to keep it secure. On Windows, icacls sets similar permissions. This ensures only you can access the key to connect via SSH.



```
PS C:\Users\Yahan\OneDrive\Desktop\Krishna_DeVops> whoami
whoami: invalid argument
PS C:\Users\Yahan\OneDrive\Desktop\Krishna_DeVops> icacls "nextwork-keypair.pem" /reset
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\Users\Yahan\OneDrive\Desktop\Krishna_DeVops> icacls "nextwork-keypair.pem" /grant:r "YahanR"
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\Users\Yahan\OneDrive\Desktop\Krishna_DeVops> icacls "nextwork-keypair.pem" /inheritance:r
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\Users\Yahan\OneDrive\Desktop\Krishna_DeVops>
```

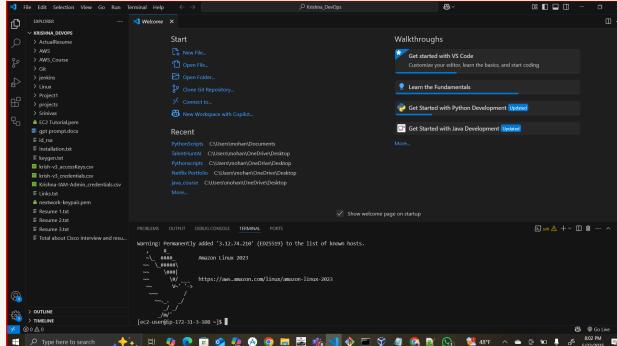


SSH connection to EC2 instance

To connect to my EC2 instance, I ran the command `ssh -i nextwork-keypair.pem ec2-user@<EC2-public-IP>` in the VS Code terminal. This used my private key to securely log into the remote server via SSH.

This command required an IPv4 address

A server's IPV4 DNS is the public address that maps a human-readable domain name to the server's numerical IPv4 address. It allows users and devices to find and connect to the server over the internet easily.



Maven & Java

Apache Maven is a build automation tool used primarily for Java projects. It manages project dependencies, compiles code, runs tests, and packages applications, simplifying and standardizing the build process for developers.

Maven is required in this project because it automates building, testing, and packaging the Java web app. It manages dependencies and ensures the app compiles and runs smoothly, streamlining development on the EC2 instance.

Java is a popular, high-level programming language known for its portability and reliability. It allows developers to write code once and run it anywhere, making it ideal for building web apps, mobile apps, and large-scale enterprise software.

Java is required in this project because it's the programming language used to build the web app. Installing Amazon Corretto 8 ensures the environment can compile, run, and support the Java-based application smoothly on EC2.

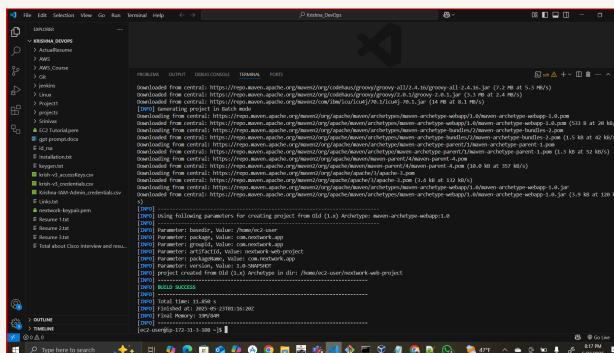


Create the Application

I generated a Java web app using the command `mvn archetype:generate` in the EC2 terminal. This Maven command created a project skeleton with the necessary files and folders to start developing the app.

I installed Remote - SSH, which is a VS Code extension that lets me connect and work directly on my EC2 instance. I installed it to edit and manage files remotely with full IDE features.

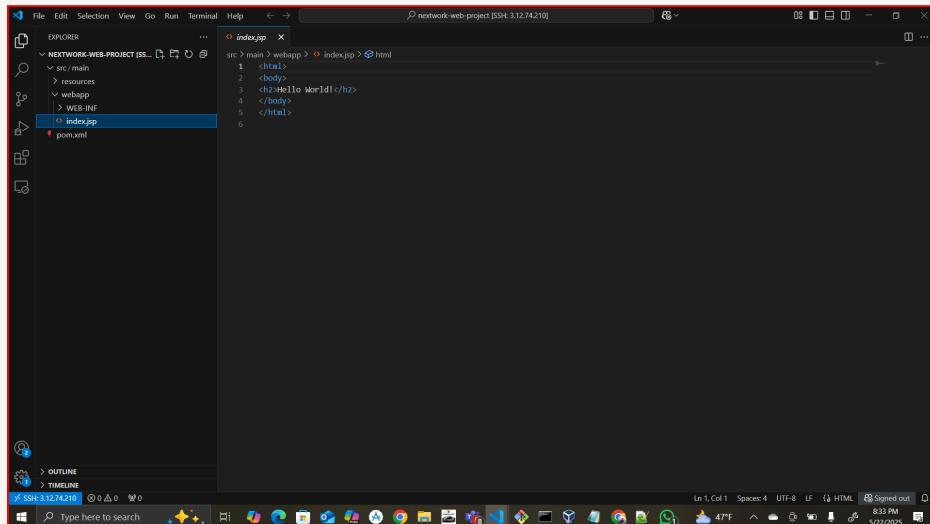
Configuration details required to set up a remote connection include the EC2 instance's public IP or DNS, the SSH username, and the path to the `*.pem` private key file for secure authentication and connection.



Create the Application

Using VS Code's file explorer, I could see the full structure of my Java web app, including folders like `src` for source code, `webapp` for frontend files, and configuration files such as `pom.xml` for Maven settings.

Two of the project folders created by Maven are `src` and `webapp`, which hold the source code and web resources, respectively. `src` contains Java files, while `webapp` stores HTML, CSS, and other frontend assets.



The screenshot shows the VS Code interface with the following details:

- File Explorer:** Shows the project structure: `NEXTWORK-WEB-PROJECT` (SSH 3.12.7/4.210). Inside `src/main/webapp`, there is an `index.jsp` file selected. The content of `index.jsp` is displayed in the editor:

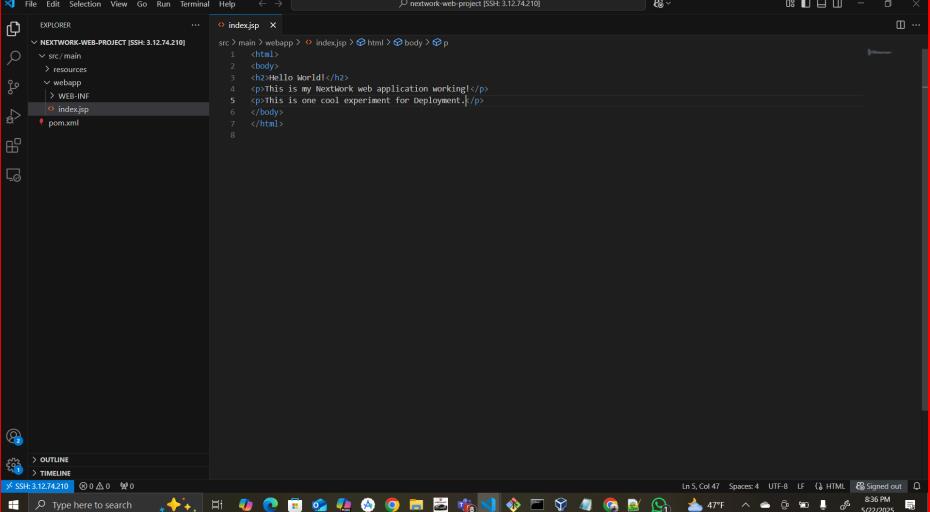
```
1 <html>
2 <body>
3 <h2>Hello World!</h2>
4 </body>
5 </html>
```

- Editor:** The `index.jsp` file is open in the main editor area.
- Terminal:** At the bottom, it shows `SSH 3.12.7/4.210`.
- Taskbar:** Shows various application icons.

Using Remote - SSH

index.jsp is a Java Server Page file that acts as the main entry point for a Java web app. It contains HTML and Java code to dynamically generate web pages when users visit the app in their browsers.

I edited index.jsp by opening it in VS Code's file explorer connected to my EC2 instance. Using the IDE's editor, I modified the HTML and Java code directly, then saved changes to update the web app instantly.



```
index.jsp
src > main > webapp > index.jsp > html > body > p
1 <html>
2   <body>
3     <h2>Hello World!</h2>
4     <p>This is my nextWork web application working!</p>
5     <p>This is one cool experiment for deployment!</p>
6   </body>
7 </html>
8
```



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