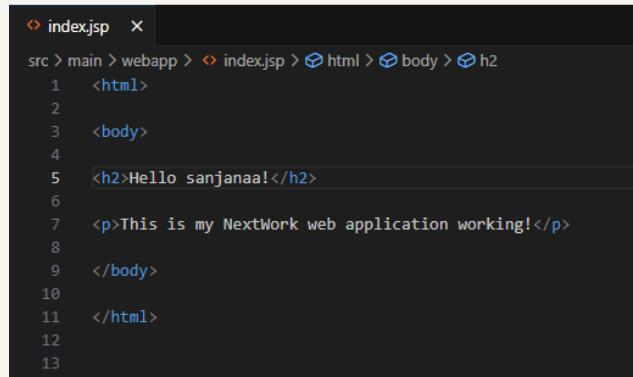




Set Up a Web App Using AWS and VS Code



Sanjana Tripathy



A screenshot of the VS Code code editor. The active file is 'index.jsp'. The code displays a simple HTML structure with a greeting message:

```
index.jsp  X
src > main > webapp > index.jsp > html > body > h2
1  <html>
2
3  <body>
4
5  <h2>Hello sanjanaa!</h2>
6
7  <p>This is my NextWork web application working!</p>
8
9  </body>
10 </html>
11
12
13
```



Introducing Today's Project!

"In this project, I demonstrate the basics of building a web app on AWS using VS Code, EC2, Maven, and Java. I'm doing this to strengthen my DevOps skills and lay the foundation for automating builds and deployments through CI/CD."

Key tools and concepts

The key services and concepts I learnt in this project include using EC2 to host a web app, connecting securely via SSH with a key-pair, editing and managing files in VS Code, building the project with Maven, running Java 8 on Amazon Corretto.

Project reflection

"One thing I didn't expect in this project was how much time and troubleshooting it would require, but I also didn't anticipate the joy of learning and solving issues along the way—it made the process both challenging and rewarding."

"This project took about 5 hours due to setup issues. The most challenging part was configuring Maven and Amazon Corretto correctly. It was rewarding because I applied my own understanding, not just following the project guide, to solve problems."



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"This project is part one of a DevOps series where I'm building a CI/CD pipeline. The first project took significant time, so I'm starting the next project soon to complete it efficiently, even if issues arise—delaying would only extend the timeline.

A circular profile picture of a young woman with dark hair, wearing a pink top and blue pants, sitting on a blue chair.

Sanjana Tripathy
NextWork Student

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Launching an EC2 instance

I started this project by launching an EC2 instance because it provides a secure, scalable, and dedicated cloud environment to host files, manage configurations, and serve as the foundation for building and running the web application.

I also enabled SSH

SSH is a secure protocol that allows encrypted remote access to servers because it ensures data confidentiality and integrity during communication. I enabled SSH so that I can securely connect to and manage my EC2 instance from my local machine.

Key pairs

A key pair is a security credential consisting of a public key and a private key because it enables secure SSH access to your EC2 instance, ensuring only authorized users can connect and manage the server.

Once I set up my key pair, AWS automatically downloaded the private key file (.pem) because it is required for secure SSH access to the EC2 instance, ensuring encrypted communication and authorized management of the server.

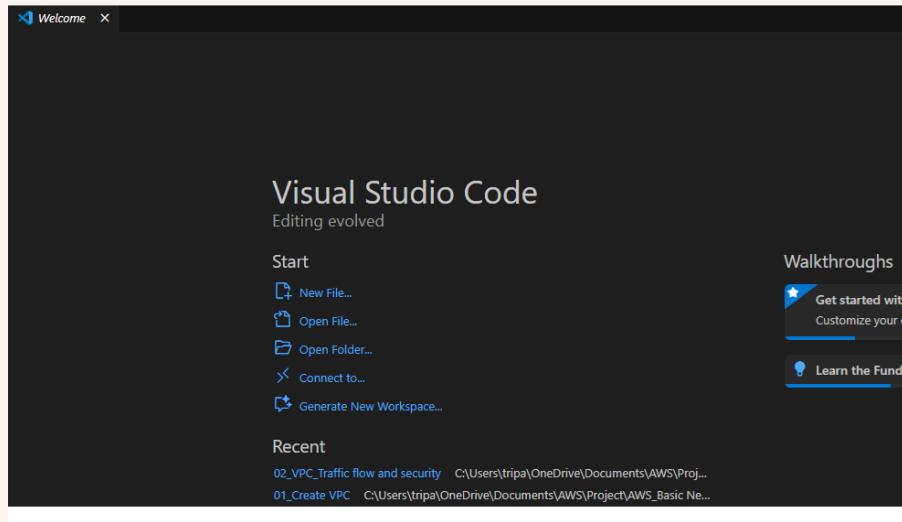
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Set up VS Code

VS Code is a lightweight yet powerful source code editor developed by Microsoft because it supports multiple programming languages, integrated terminals, and extensions, making it ideal for writing, editing, and managing code efficiently.

I installed VS Code to write, edit, and manage my web app's code efficiently because it offers an integrated terminal, debugging tools, and extensions that streamline development, simplify connecting to my EC2 instance.





My first terminal commands

A terminal is a command-line interface that allows direct interaction with your system because it helps execute commands efficiently. The first command I ran for this project is cd DevOps because that folder contains my downloaded .pem file.

I also updated my private key's permissions using terminal commands (chmod on Mac/Linux or icacls on Windows) because this restricts access to only me, keeping my .pem file secure while enabling a safe connection to my EC2 instance.

```
● PS C:\Users\tripa\OneDrive\Desktop\Devops> whoami  
p2468anda\tripa  
● PS C:\Users\tripa\OneDrive\Desktop\Devops> icacls "nextwork-keypair.pem" /reset  
processed file: nextwork-keypair.pem  
Successfully processed 1 files; Failed processing 0 files  
PS C:\Users\tripa\OneDrive\Desktop\Devops> icacls "nextwork-keypair.pem" /grant:r "p2468anda\tripa:r"  
● processed file: nextwork-keypair.pem  
Successfully processed 1 files; Failed processing 0 files  
○ PS C:\Users\tripa\OneDrive\Desktop\Devops> icacls "nextwork-keypair.pem" /inheritance:r
```

SSH connection to EC2 instance

To connect to my EC2 instance, I ran the command `ssh -i PATH_TO_PEM_FILE ec2-user@YOUR_PUBLIC_IPV4_DNS` because this establishes a secure SSH connection, allowing me to access and manage my server directly from the terminal.

This command required an IPv4 address

A server's IPv4 DNS is the public IP address or domain name assigned to the server because it allows devices and applications to locate and communicate with the server over the internet securely.

```
PS C:\Users\tripa> ssh -i C:\Users\tripa\OneDrive\Desktop\DevOps\NextWork-keypair.pem ec2-user@ec2-13-281-69-87.ap-south-1.compute.amazonaws.com
Last login: Sun Aug 31 16:43:27 2023  from 223.233.88.9
[ec2-user@ip-172-31-37-217 ~]$
```

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Maven & Java

Apache Maven is a build automation and project management tool for Java because it simplifies compiling, testing, and packaging applications while managing dependencies and project configurations efficiently.

Maven is required in this project because it automates building and organizing the Java web app, manages dependencies, and uses archetypes to quickly set up the project structure, allowing me to focus on developing the web application efficiently.

Java is a high-level, object-oriented programming language because it enables developers to write platform-independent, secure, and robust applications, making it ideal for building scalable web and enterprise solutions.

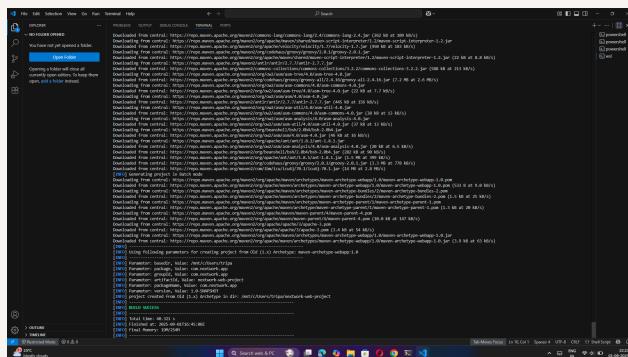
Java is required in this project because...

Create the Application

I generated a Java web app using the command `mvn archetype:generate` because it creates the project structure, downloads necessary dependencies, and sets up a ready-to-use Java web application framework for development.

"I installed Remote - SSH, which is a VS Code extension that enables secure SSH connections to remote servers. I installed it to directly access and edit my EC2 instance's files in VS Code, unlocking full IDE features for smoother development."

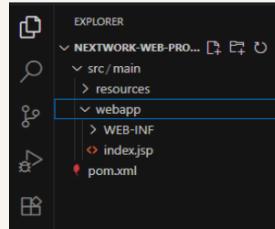
"The configuration file contains the details VS Code needs to connect to my EC2 instance via SSH. It includes the Host (my EC2's public IPv4 DNS), the IdentityFile (path to my .pem key), and the User (ec2-user) to establish a secure connection."



Create the Application

Using VS Code's file explorer, I could see my nextwork-web-project folder along with all its subfolders and files. This includes the src folder with web app source code, resources for configuration, and pom.xml, which Maven uses to build the project

"The src folder contains all the source code for my web app. Inside src, the webapp folder holds the web app's front-end files—HTML, CSS, JavaScript, and JSP—while the resources folder stores configuration files needed for the app to run properly."



Using Remote - SSH

"The index.jsp is the main JavaServer Page of my web app. It's like an HTML file because it defines the structure and content of the web page, but it can also include Java code to generate dynamic, interactive content based on user input or data."

I edited index.jsp using VS Code's editor view. I replaced the placeholder code with my custom HTML content, adding my name and a greeting, which allowed me to directly see and modify the web page structure within the IDE instead of using the terminal

```
index.jsp
src > main > webapp > index.jsp > html > body > h2
1  <html>
2
3  <body>
4
5  <h2>Hello sanjanaa!</h2>
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