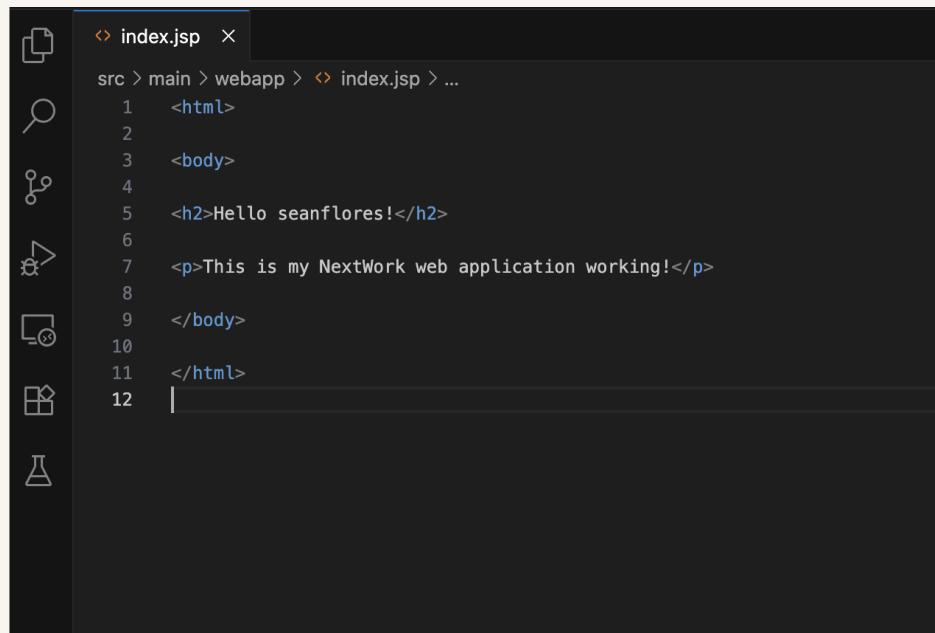




# Set Up a Web App Using AWS and VS Code



Sean Carlo G. Flores



```
<%@ page language="java" %>
<html>
<head>
<title>Hello World!</title>
</head>
<body>
<h1>Hello World!</h1>
<p>This is my NextWork web application working!</p>
</body>
</html>
```



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# Introducing Today's Project!

In this project, we're going to set up the foundations of a CI/CD pipeline by creating a web app from scratch. I'll need to launch an EC2 instance and connect to the instance using VSCode to generate a web app inside.

## Key tools and concepts

Services I used were AWS EC2, SSH, VS Code, Maven, and Java. Key concepts I learned include cloud server setup, remote development through secure connections, building a Java web app with Maven, and the importance of IDEs for efficient coding.

## Project reflection

I didn't expect that it will take me quite long to do this project.

Start your answer with 'This project took me approximately 1hr The most challenging part was before maven and connecting EC2 to VSCode. It was most rewarding to accomplish this task and find everything working.'



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Start your answer with '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 the next day!



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# Launching an EC2 instance

I started this project by launching an EC2 instance because EC2 instances are like virtual computers that live in the cloud! I want my web app to live entirely in the cloud, so I'm launching an EC2 instance to even develop my web app's code.

## I also enabled SSH

SSH (Secure Shell) is a network protocol used to securely access and manage remote computers over an unsecured network. I enabled SSH instance so I can securely connect it to my EC2 instance later and I made sure that it only allows SSH traffic.

## Key pairs

A key pair is a set of two cryptographic keys used in asymmetric encryption: a public key, which is shared, and a private key, which is kept secret.

Once I set up my key pair, AWS automatically downloaded the private key file called nextwork-keypair.pem for safekeeping, I moved that private key file into a folder called "DevOps" in my Desktop.

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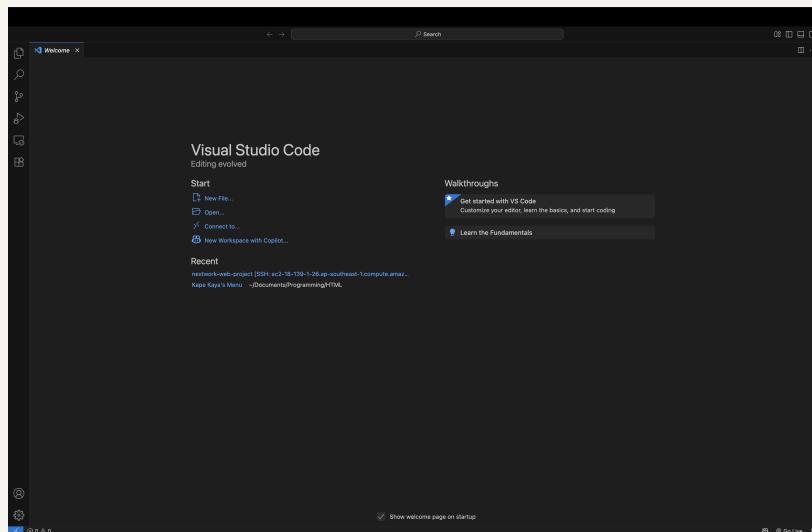
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# Set up VS Code

VS Code is one of the most popular IDEs in the world; as an IDE, engineers use it to write code and manage their coding projects. It also has handy extensions that let us directly connect to an EC2 instance.

I installed VS Code to write and edit our web app's code. We're also going to make the most out of the ability to connect directly with an EC2 instance!





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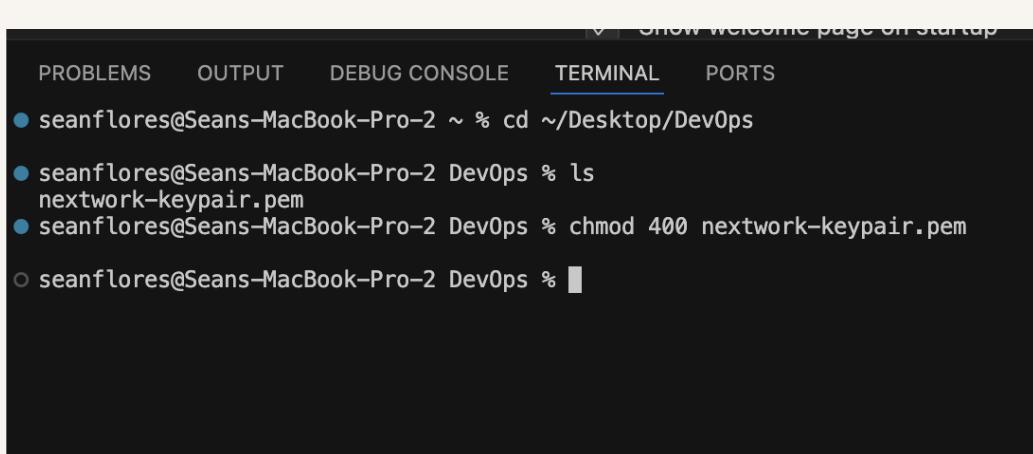
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# My first terminal commands

A terminal is a place for us to send commands to our computer i.e. tell it what we want it to do. The first command I ran for this project is cd ~/Desktop/DevOps where it navigates the terminal to the DevOps folder.

I also updated my private key's permissions by running command 'chmod 400 nextwork-keypair.pem'. This command gives ourselves access to use this file so we can connect to an EC2 Instance later.



The screenshot shows a terminal window with the following command history:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS
● seanflores@Seans-MacBook-Pro-2 ~ % cd ~/Desktop/DevOps
● seanflores@Seans-MacBook-Pro-2 DevOps % ls
  nextwork-keypair.pem
● seanflores@Seans-MacBook-Pro-2 DevOps % chmod 400 nextwork-keypair.pem
○ seanflores@Seans-MacBook-Pro-2 DevOps % █
```

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# SSH connection to EC2 instance

To connect to my EC2 instance, I ran the command 'ssh -i[path to private key] ec2-user@[ipv4 address of EC2 instance]'. This command sets up an SSH connection directly between our local computer and the instance.

## This command required an IPv4 address

A server's IPV4 DNS is like its public address that identifies where the server lives in the cloud. In our case, an EC2 instance's IPv4 DNS is a useful information to give our local computer and it tells our computer where to find the EC2 instance.

```
The authenticity of host 'ec2-3-0-96-168.ap-southeast-1.compute.amazonaws.com' can't be established.
ED25519 key fingerprint is SHA256:ahpzTkjaSuEbARi6nyZ+Tvjnsb8+g/tzZJY0eh...
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-0-96-168.ap-southeast-1.compute.amazonaws.com' (ED25519) to the list of known hosts.
,      #
~\---#####
~~ \####\      Amazon Linux 2023
~~ \##|
~~ \#/   --> https://aws.amazon.com/linux/amazon-linux-2023
~~ \~\_
~~ .~\_
~~ /~\_
[ec2-user@ip-172-31-17-170 ~]$ █
```



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## Maven & Java

Apache Maven is a build automation and project management tool primarily used for Java projects. It helps developers manage a project's dependencies, build process, and documentation through a standard file called pom.xml.

We are using Maven in this project to simplify and automate the build process, dependency management, and project configuration. Maven helps ensure that all required libraries and plugins are consistently managed through the pom.xml file.

Java is a high-level, object-oriented programming language known for its portability, reliability, and security. It follows the principle of "write once, run anywhere," meaning code written in Java can run on any device with a Java Virtual Machine.

We are using Java in this project because it is a reliable, scalable, and platform-independent programming language, ideal for building robust applications.

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# Create the Application

I generated a Java web app using the command 'mvn archetype:generate' This command tells Maven to generate a web app using an existing template that it has also tells Maven to call the generated web app project 'nextwork-webapp-project'.

I installed Remote SSH, which is an extension withing VS Code. This extension let us connect VS Code directly to a remote server, like an EC2 instance!

Configuration details required to set up a remote connection include the host [i.e the EC2 instance's address], the identity file [i.e. the location of our private key] and the user [i.e. the user that I'm logging into for my instance].

```
10.0 kB at 1.1 MB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/3/apache-3.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/3/apache-3.pom (3.4 kB at 490 kB/s)
)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-webapp/1.0/maven-archetype-webapp-1.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-webapp/1.0/maven-archetype-webapp-1.0.jar (3.9 kB at 359 kB/s)
[INFO] _____
[INFO] Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-webapp:1.0
[INFO] _____
[INFO] Parameter: basedir, Value: /home/ec2-user
[INFO] Parameter: package, Value: com.nextwork.app
[INFO] Parameter: groupId, Value: com.nextwork.app
[INFO] Parameter: artifactId, Value: nextwork-web-project
[INFO] Parameter: packageName, Value: com.nextwork.app
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] project created from Old (1.x) Archetype in dir: /home/ec2-user/nextwork-web-project
[INFO] _____
[INFO] BUILD SUCCESS
[INFO] _____
[INFO] Total time: 10.717 s
[INFO] Finished at: 2025-07-16T06:08:56Z
[INFO] Final Memory: 19M/86M
[INFO] _____
```

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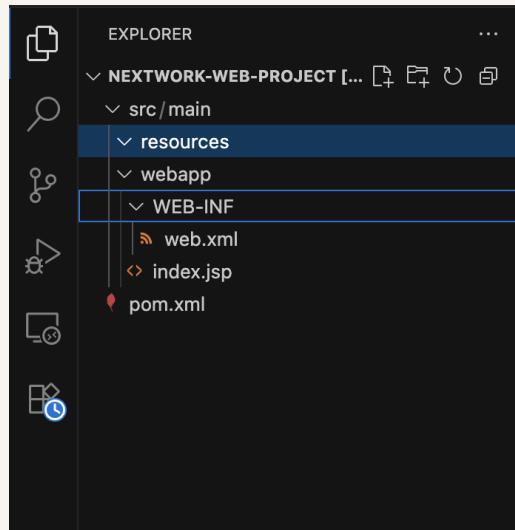
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# Create the Application

Using VS Code's file explorer, I could see a bunch of folders and subfolders that define my web app. These folders organize different parts of the web app; for ex. the resources sub-folder store connection details.

These two folders organize different parts of the wen app, for example, the resources sub-folder store that store connection details.



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# Using Remote - SSH

index.jsp is the file in our web app that defines both HTML content as well as any code for generating dynamic contents.

I edited index.jsp by updateing the HTML code to also say Hello[YOUR NAME]! We also added a paragraph i.e. some text that says 'this is my webapp working'.

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



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