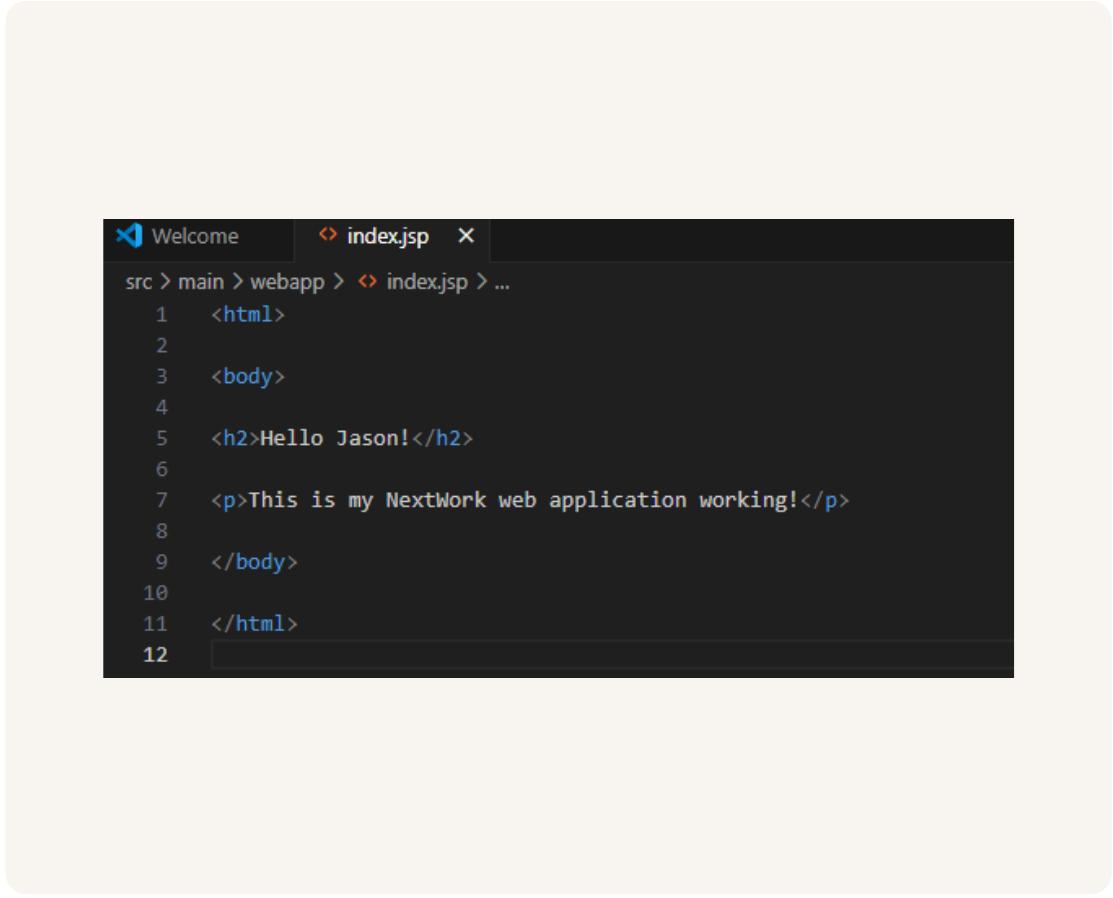


# Set Up a Web App in the Cloud



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

# Introducing Today's Project!

## What is VSCode and why is it useful?

VSCode was used in this project to configure the EC2 through the terminal as well as download applications like Maven and Java onto the instance. VSCode was then used to create a SSH connection.

## How I'm using VSCode in this project

VSCode was used in this project to configure the EC2 through the terminal as well as download applications like Maven and Java onto the instance. VSCode was then used to create a SSH connection.

## One thing I didn't expect...

In this project I didn't expect to be faced with any problems, however I faced an issue securing a SSH connection. After some troubleshooting I was able to resolve the issue.

## This project took me...

This project took me around 2 hours to complete.

# Launching an EC2 instance

Launching an EC2 instance creates a virtual computer/server that can be customized to meet CPU, memory, storage, etc, specifications.

## I also enabled SSH

SSH/Secure Shell is a protocol to ensure only authorized users can access a remote server. SSH verifies that the user has the correct private key that matches the public key of the server. Once SSH has authorized you, it'll set up a secure connection

## Key pairs

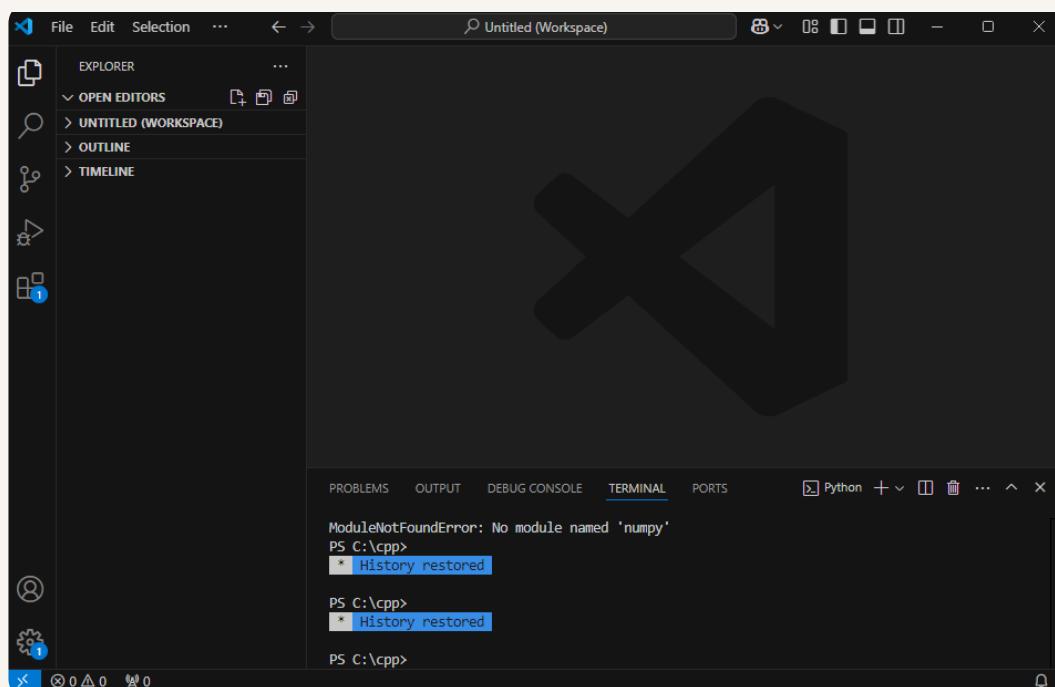
A key pair in EC2 is like the keys to your virtual computer. Just like you need a key to unlock and start your car, a key pair lets you securely access your EC2 instance. It's made of two halves: a public key that AWS keeps, and a private key.

Once I set up my key pair, AWS automatically downloaded the private key onto my PC.

# Set up VSCode

VSCode is an IDE that allows users to create, test, and run code.

I installed VSCode to edit code that will be used to communicate with the EC2 instance.



# My first terminal commands

A terminal is where you send instructions to your computer using text instead of clicks. The first command I ran for this project is cd ~/Desktop/DevOps.

I also updated my private key's permissions by using the icacls commands such as reset, grant, and inheritance.

```
PS C:\DevOps> icacls "network-keypair.pem" /reset
processed file: network-keypair.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\DevOps> icacls "network-keypair.pem" /grants:r "jasons-desktop\jason:R"
processed file: network-keypair.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\DevOps> icacls "network-keypair.pem" /inheritance:r
processed file: network-keypair.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\DevOps> []
```

# SSH connection to EC2 instance

To connect to my EC2 instance, I ran the command ssh -i C:\DevOps\network-keypair.pem ec2user@18.218.225.177, where the third argument is the directory and the fourth is the IPV4 DNS.

## This command required an IPv4 address

A server's IPV4 DNS is a public address and in this case it is the address of the EC2 server. This address is going to be used by my local PC to find and connect to the EC2.

```
The authenticity of host '18.218.225.177 (18.218.225.177)' can't be established.
ED25519 key fingerprint is SHA256:Jw2KAdDtSYbK7YHEFUis/f6Thm3ck6UgC1EA0sCaV
kk.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '18.218.225.177' (ED25519) to the list of known
hosts.
,      #
~\ #####
~~\#####
~~\###|
~~\#/   ____>
~~\v-' .->
~~\ /   /
~~\ /   / \
~~\ /   / \
[ec2-user@ip-172-31-1-142 ~]$
```

# Maven & Java

Apache Maven is a tool that helps developers build and organize Java software projects. It's also a package manager, which means it automatically download any external pieces of code your project depends on to work.

Maven is required in this project because it's really useful for kick-starting web projects. It uses archetypes, which are templates to lay out the foundations for different types of projects e.g. web apps.

Java is a popular programming language used to build different types of applications, from mobile apps to large enterprise systems.

Java is required in this project because of Maven. Maven is a tool that requires Java to operate, so if we don't install Java, I won't be able to use Maven to generate/build the web app.

# Create the Application

I generated a Java web app using the command mvn. Specifically, I utilized the archetype:generate, DartifactId, and DarchetypeArtifactId commands as well as others.

I installed Remote - SSH, which is connect directly via SSH to another computer securely over the internet. I installed it to work on files and run programs on the server as if I were doing it on my own computer.

Configuration details required to set up a remote connection include the Host Name (IPv4 DNS), directory, and the user.

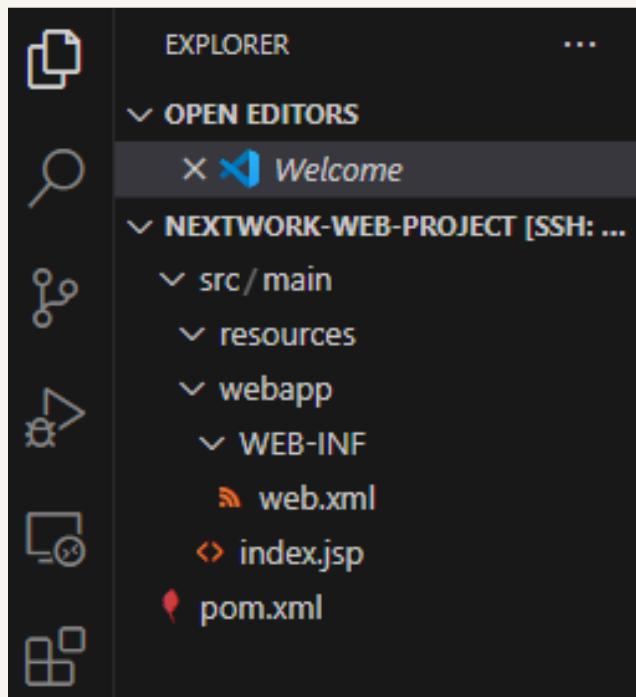
```
[INFO] Parameter: basedir, value: /home/ec2-user
[INFO] Parameter: package, Value: com.nextwork.app
[INFO] Parameter: groupId, Value: com.nextwork.app
[INFO] Parameter: artifactId, Value: nextwork-web-project
[INFO] Parameter: packageName, Value: com.nextwork.app
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] project created from Old (1.x) Archetype in dir: /home/ec2-user/next
work-web-project
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 11.320 s
[INFO] Finished at: 2025-02-05T04:55:46Z
[INFO] Final Memory: 18M/82M
[INFO] -----
```

[ec2-user@ip-172-31-1-142 ~]\$ ]

# Create the Application

Using VSCode's file explorer, I could see the nextwork-web-project which are parts of the web app. Since Maven's taken care of the basic structuring and setup, I can start implementing the content displayed on the web app.

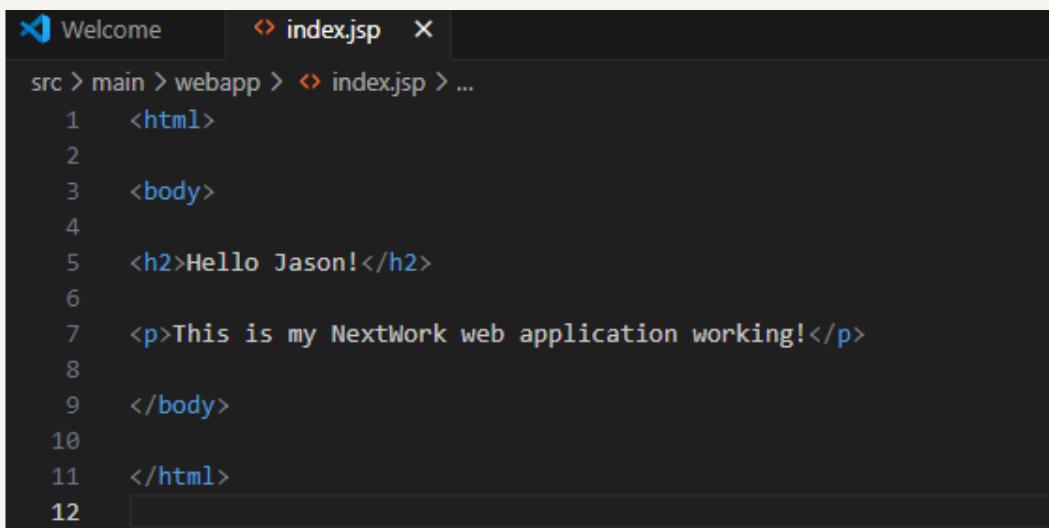
Two of the project folders created by Maven are src and webapp, which holds source code files. src is divided into webapp which holds the web app's files (HTML, CSS, JavaScript, etc.), and resources which are the configuration files.



# Using Remote - SSH

index.jsp is a file used in Java web apps. It's similar to an HTML file because it contains markup to display web pages. However, index.jsp can also include Java code, which lets it generate dynamic content.

I edited index.jsp by changing the placeholder code to display my name and a message.



The screenshot shows a code editor window with the title bar "Welcome" and the tab "index.jsp". The file path "src > main > webapp > index.jsp" is visible above the code area. The code itself is a JSP file with the following content:

```
1 <html>
2
3 <body>
4
5 <h2>Hello Jason!</h2>
6
7 <p>This is my NextWork web application working!</p>
8
9 </body>
10
11 </html>
```



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