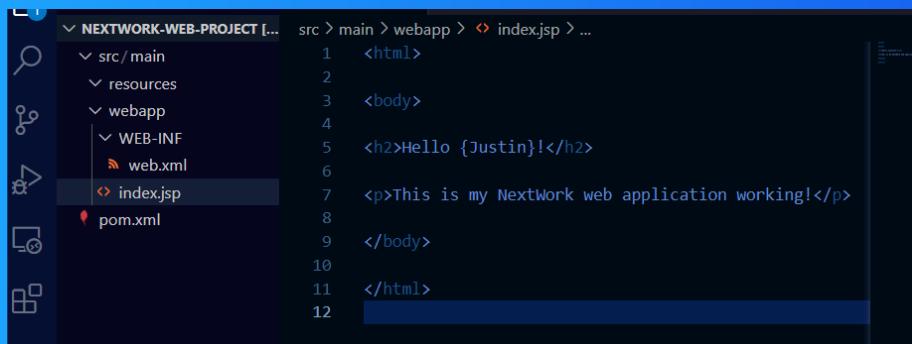




Set Up a Web App in the Cloud



Justin haynes



The screenshot shows a code editor interface with a dark theme. On the left is a file tree for a project named "NEXTWORK-WEB-PROJECT". The tree includes "src/main/resources", "src/main/webapp/WEB-INF/web.xml", and "src/main/webapp/index.jsp". The "index.jsp" file is currently selected and its content is displayed on the right. The code in "index.jsp" is:

```
1 <html>
2   <body>
3     <h2>Hello {Justin}!</h2>
4     <p>This is my NextWork web application working!</p>
5   </body>
6 </html>
```

Introducing Today's Project!

What is VSCode and why is it useful?

VSCode was used to edit code files, manage configurations, and interact with my EC2 instance. Its terminal allowed seamless execution of SSH commands, and extensions enhanced productivity by providing syntax highlighting and code completion.

How I'm using VSCode in this project

VSCode was used to edit code files, manage configurations, and interact with my EC2 instance. Its terminal allowed seamless execution of SSH commands, and extensions enhanced productivity by providing syntax highlighting and code completion.

One thing I didn't expect...

One thing I did not expect was to use VSCode as a local IDE for a remote server. Downloading Remote- SSH was a game changer.

This project took me...

Due to connection errors, this project took me 5 hours to finally complete, it was worth every frustration and effort.

Launching an EC2 instance

I started this project by launching an EC2 instance because it would be used to house my Web Application's files. If I had not launched my EC2 first I would not have a location for setting up my Web Application for the duration of this project.

I also enabled SSH

SSH (Secure Shell) is a protocol used to ensure only authorized users can access a remote server. I enabled SSH from my IP Address only so I can connect to my EC2 Instance in the next step

Key pairs

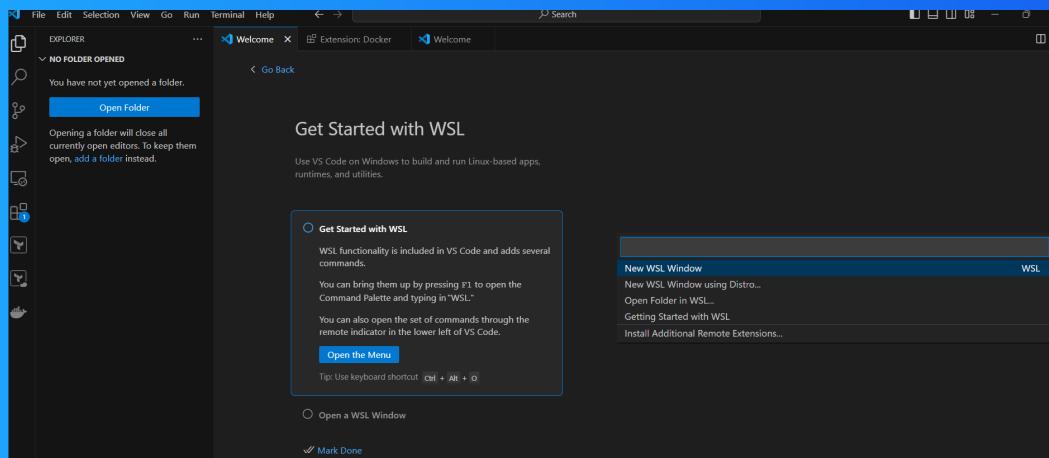
A key pair is like the keys to your virtual computer. For example, if you need a key to unlock and start your car, a key pair lets you securely access your EC2 instance. It's used for authentication connect securely to the instance.

Once I set up my key pair, AWS automatically downloaded a file called nextwork-keypair.pem. This file is my private key that is required to access my EC2 instance later in this project.

Set up VSCode

VSCode is one of the most popular tools for creating and managing coding projects. People call VSCode an IDE (Integrated Development Environment), which means software that helps you write and edit code.

I installed VSCode to connect to my EC2 and create and edit my Web Application files on the Instance.



My first terminal commands

A terminal is where you send text-based commands to your computer using instead of clicks. The first command I ran for this project was 'cd ~/Desktop/DevOps'. This changes our directory to the home directory into our DevOps folder.

I also updated my private key's permissions by running the Icacls command (which stands for Integrity Control Access Control Lists) this is a tool for Windows that lets you decide who can open or change the files on your system.

```
PS C:\Users\bip10\Desktop\DevOps> icacls "nextwork-keypair.pem" /reset
>> icacls "nextwork-keypair.pem" /grant:r justin_probook
>> icacls "nextwork-keypair.pem" /inheritance:r
>> icacls "nextwork-keypair.pem" /reset
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
Invalid parameter "justin_probook"
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
```

SSH connection to EC2 instance

To connect to my EC2 instance, I ran the command 'ssh -i [PATH TO .PEM FILE] ec2-user@[IPV4 DNS of the EC2 INSTANCE]. This command sets up an ssh connection that uses the .pem file (our private key) and the public address of our EC2 instance.

This command required an IPv4 address

A server's IPV4 DNS is the public address. Computers or servers connected to the internet can use the IPV4 DNS to find and locate another server.

```
PS C:\Users\diplo\Desktop\DevOps> icacls "nextwork-keypair.pem" /grant:r "Ajustin_proboldi":R
Invalid parameter: "Ajustin_proboldi"
PS C:\Users\diplo\Desktop\DevOps> icacls "nextwork-keypair.pem" /reset
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\Users\diplo\Desktop\DevOps> icacls "nextwork-keypair.pem" /grant:r "diplo:R"
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\Users\diplo\Desktop\DevOps> icacls "nextwork-keypair.pem" /inheritance:r
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\Users\diplo\Desktop\DevOps> ssh -i "C:\Users\diplo\Desktop\DevOps\nextwork-keypair.pem" ec2-user@ec2-3-94-121-140.compute-1.amazonaws.com
Permission denied (publickey).
Warning: Permanently added 'ec2-3-94-121-140.compute-1.amazonaws.com' (ED25519) to the list of known hosts.
This host key is known by the following other names/addresses:
  C:\Users\diplo\.ssh\known_hosts#5: 54.205.85.185
  C:\Users\diplo\.ssh\known_hosts#5: ec2-54-205-85-185.compute-1.amazonaws.com
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-94-121-140.compute-1.amazonaws.com' (ED25519) to the list of known hosts.

Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023
[ec2-user@ip-172-31-80-27 ~]$
```

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 I manage dependencies and automate the build process. It ensures a consistent project structure, simplifies compiling, testing, and packaging, improving development efficiency.

Java is a programming language used to build various applications, from mobile apps to large enterprise systems.

Java is required in this project because I want to build a Java Web Application and install it to run any Java commands.

Create the Application

I generated a Java web app using the command 'mvn archetype:generate' which is a Maven command that sets up a basic Web Application using Maven's archetype template.

I installed Remote - SSH extension to connect VSCode directly to my EC2 Instance, later we can use VSCode IDE for the Java web Application files in my EC2. This allows me to edit files more efficiently.

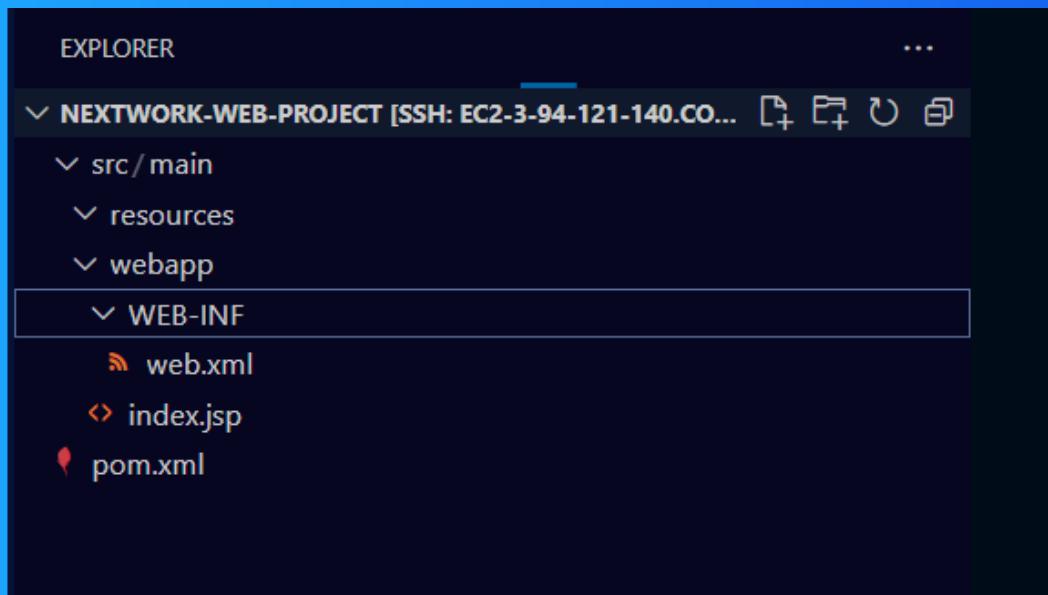
Configuration details required to set up a remote connection include the SSH hostname (IPV4 DNS), the location of our Private Key in our Local computer and SSH host user I am establishing a connection.

```
[INFO] -----  
-[INFO] BUILD SUCCESS  
[INFO] -----  
-[INFO] Total time: 9.189 s  
[INFO] Finished at: 2024-11-24T21:03:30Z  
[INFO] Final Memory: 17M/96M  
[INFO] -----
```

Create the Application

Using VSCode's file explorer, I could see a file tree of all the subfolders and files that make up the project folder for my Java Web Application.

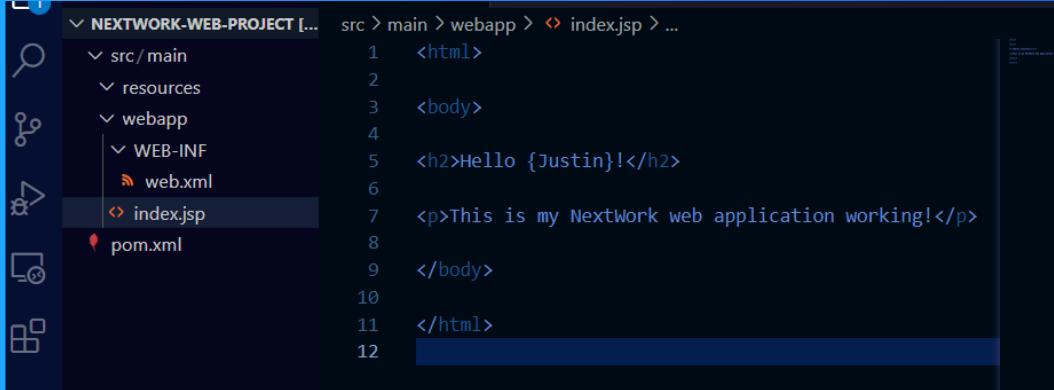
Two of the project folders created by Maven are 'src' and 'webapp', 'src' contains all the Web Application's Source Code. 'webapp' is a subfolder of 'src' that focuses on what the user will see.



Using Remote - SSH

index.jsp is a file within the 'webapp' folder and it defines the look of a Java Web Application.

I edited index.jsp by using VSCode, even though it is stored remotely in my EC2 Instance, I have set up a Remote- SSH connection between VSCode and my Instance so I can use it like a local IDE for the EC2.



The screenshot shows the VSCode interface with a dark theme. On the left is the Explorer sidebar displaying the project structure:

```
NEXTWORK-WEB-PROJECT [...]
  src/main/
    resources/
    webapp/
      WEB-INF/
        web.xml
      index.jsp
    pom.xml
```

The 'index.jsp' file is selected in the sidebar. On the right is the Editor pane showing the code content:

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



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