



Set Up a Web App in the Cloud



fxizxn.dev@gmail.com

The screenshot shows a code editor interface with a dark theme. On the left is the Explorer sidebar, which lists project files: src/main/resources, src/main/webapp/WEB-INF, and src/main/webapp/index.jsp. The right pane displays the content of index.jsp:

```
<html>
<body>
<h2>Hello Faizan Quazi!</h2>
<p>This is my NextWork web application working!</p>
</body>
</html>
```

Introducing Today's Project!

What is VSCode and why is it useful?

VSCode made this project more efficient by providing a Powershell Terminal (Windows) and Connecting EC2 instance remotely in VSCode. Using Remote - SSH extension, it becomes possible to access and edit files directly within the window.

How I'm using VSCode in this project

VSCode made this project more efficient by providing a Powershell Terminal (Windows) and Connecting EC2 instance remotely in VSCode. Using Remote - SSH extension, it becomes possible to access and edit files directly within the window.

One thing I didn't expect...

The challenge facing while connecting EC2 instance into VSCode. Though it seems easy, but being on a Windows machine it became quite difficult. I've learned to connect EC2 instance into VSCode.

This project took me...

It took me around 1.5 hours + some downtime when I faced EC2 instance breakdown and then recreating it over again.

Launching an EC2 instance

I launched this EC2 instance to host my web app for the devops project. This is the first step to initialise an EC2 instance in a region, which will be used for the rest of the project.

I also enabled SSH

SSH is a secure shell, which is a protocol that ensures communication between servers (connected remotely) is authorised and secure. I enabled SSH traffic so that I can connect to my EC2 instance in next step.

Key pairs

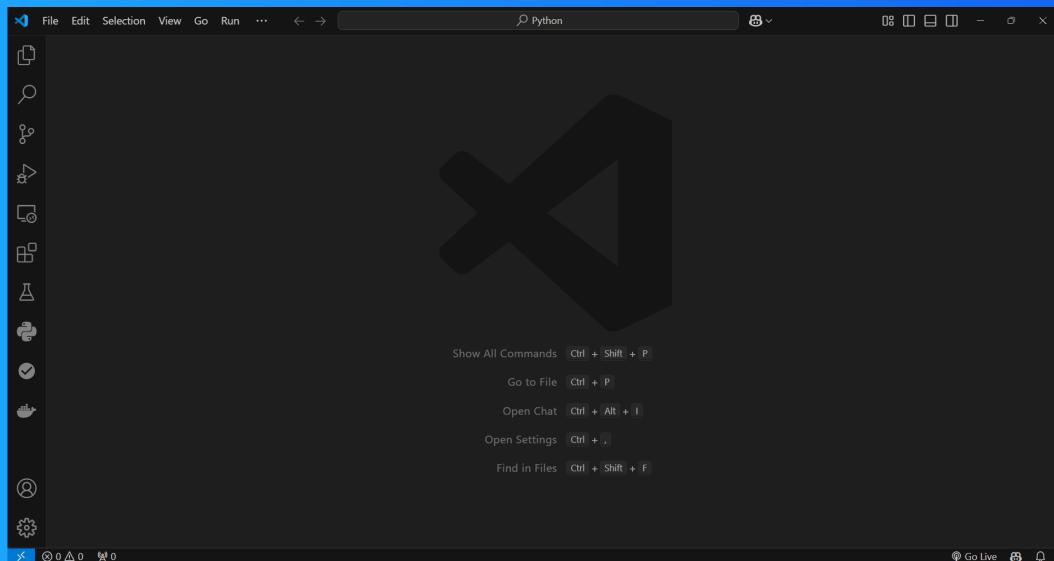
A key pair is like a lock and a key for our EC2 instance. It's used for authentication, i.e., for us to securely get access to the EC2 instance. The key pair is two halves, i.e., a public key and a private key, which should be matched.

Once I set up my key pair, AWS automatically downloaded a file called nextwork-keypair.pem. This file is a private key certificate, ie. first half of the key pair that will need to access EC2 instance

Set up VSCode

VSCode is an IDE (Integrated Development Environment). It's a software for editing and creating code.

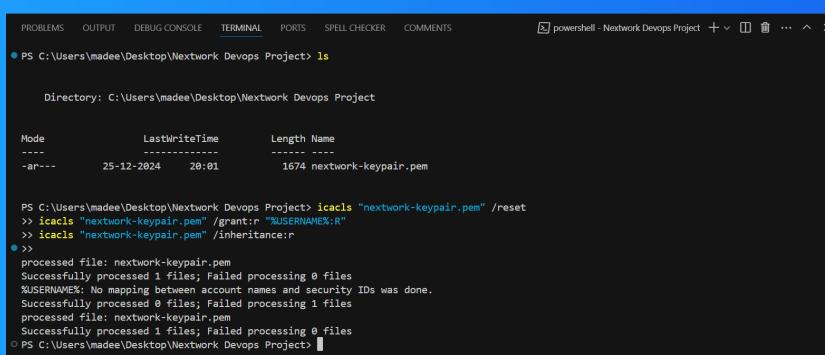
I installed VSCode to use to connect with the EC2 instance and then create and edit web app files on that EC2 instance.



My first terminal commands

A terminal is a space for us to communicate with the system using text-based commands to control and create action with our computer/server. Using terminal eliminates clicks and drags to perform tasks. The first command I ran for this project is "cd"

I also updated my private key's permissions by "icacls "nextwork-keypair.pem" /reset icacls "nextwork-keypair.pem" /grant:r "%USERNAME%:R" icacls "nextwork-keypair.pem" /inheritance:r"



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

```
PS C:\Users\madee\Desktop\Nextwork Devops Project> ls

Directory: C:\Users\madee\Desktop\Nextwork Devops Project

Mode                LastWriteTime     Length Name
----                -----          ---- 
-a---             25-12-2024    20:01      1674 nextwork-keypair.pem

PS C:\Users\madee\Desktop\Nextwork Devops Project> icacls "nextwork-keypair.pem" /reset
>> icacls "nextwork-keypair.pem" /grant:r "%USERNAME%:R"
>> icacls "nextwork-keypair.pem" /inheritance:r
>>
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
%USERNAME: No mapping between account names and security IDs was done.
Successfully processed 0 files; Failed processing 1 files
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\Users\madee\Desktop\Nextwork Devops Project>
```



fxizxn.dev@gmail.com

NextWork Student

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SSH connection to EC2 instance

To connect to my EC2 instance, I ran the command `ssh -i [path where nextwork-keypair.pem file is located] ec2-user@[Public IP DNS of EC2 instance]`. Ensure that the `keypair.pem` has read permission enabled.

This command required an IPv4 address

A server's IPv4 DNS is its public address. Computers/servers connected to the internet can use public IPv4 DNS to find and locate another server.

Maven & Java

One tool/package manager for the software development process is Apache Maven. When it comes to adding packages to our application, Maven is incredibly useful.

Because Maven is so useful for integrating packages into our application—that is, any software tools—and packaging our app after it has been developed, it is necessary for this project. It requires compiling and packaging code.

Numerous applications are made using a programming language called Java. We've downloaded Amazon Corretto 8, which is a specific version of Java that is managed by Amazon (AWS).

Because we intend to create a Java web application and must install Java before we can execute any Java commands, Java is necessary for this project.

Create the Application

I generated a Java web app using the command using the Maven command "mvn archetype:generate," which creates a simple web application using Maven's archetype template.

I set up the Remote-SSH extension so that I could connect VSCode to our EC2 instance directly. Doing this means we can later use VSCode as an IDE for Java web app files in our EC2 instance. This makes editing our web app much simpler/more efficient.

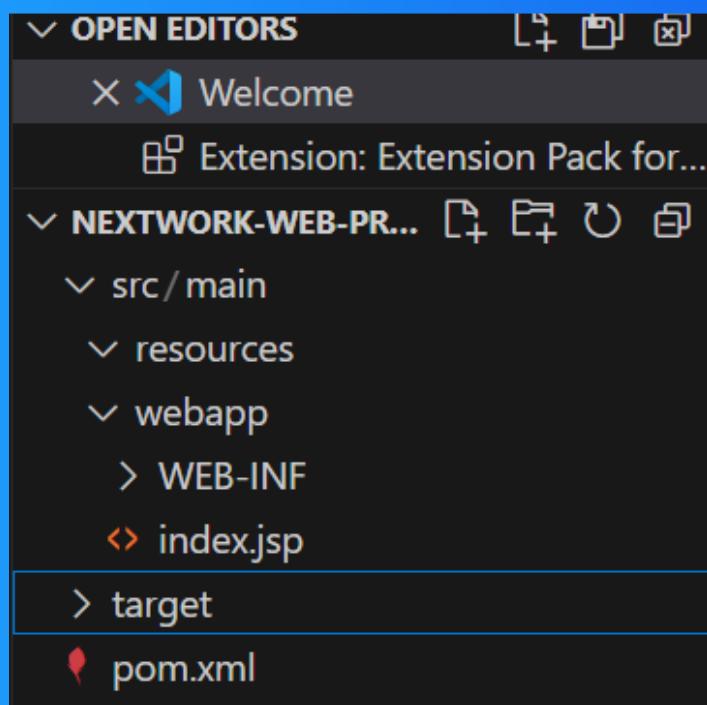
The host name (i.e., the IPV4 DNS of our EC2 instance), the location of our private key on our local computer, and the SSH host's user that we are connecting to are configuration details needed to establish a remote connection.

```
[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: 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: 8.576 s
[INFO] Finished at: 2024-12-26T09:45:42Z
[INFO] Final Memory: 19M/87M
[INFO] -----
[ec2-user@nextwork ~]$
```

Create the Application

Using VSCode's file explorer, I was able to quickly view a file tree of all the subfolders and files that comprise the nextwork-web-project folder for our Java web application by using VSCode's file explorer.

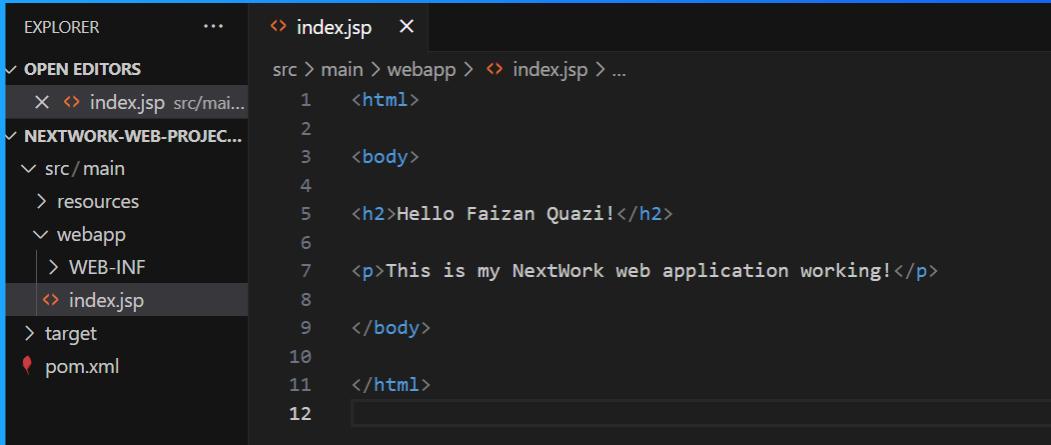
Two of the project folders created by Maven are src and webapp. While webapp is a subfolder of src that concentrates on what the user would see, src contains all of the web application's source code that determines the look and feel of the web app.



Using Remote - SSH

index.jsp is a file within the webapp folder, and it defines the look of a Java web app.

Even though index.jsp is stored remotely in my EC2 instance, I used VSCode to edit it because I had established a remote SSH connection between the instance and VSCode. We can use VSCode as a local IDE for our instance.



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



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