



Set Up a Web App in the Cloud



Tony Winterz

The screenshot shows a terminal window with two tabs: "Welcome" and "index.jsp". The "index.jsp" tab is active, displaying the following code:

```
src > main > webapp > index.jsp > html
1  <html>
2  <body>
3  <h2>Hello World!</h2>
4  </body>
5
6
7
8  Hello Donald!
9
10 This is my NextWork web application working!
11
12
13
14
15
16 </html>
```



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Introducing Today's Project!

What is VSCode and why is it useful?

I used VSCode to connect a project to my computer and AWS instance to make a web app and easily make changes.

How I'm using VSCode in this project

I used VSCode to connect a project to my computer and AWS instance to make a web app and easily make changes.

One thing I didn't expect...

I didnt expect this to be simple.

This project took me...

This project took about 2 hours.



Launching an EC2 instance

I started this project by launching an EC2 instance because it will be used to house my web app's files. Without launching an EC2 instance first, I would not have a location for setting up my web app for the rest of this project.

I also enabled SSH

SSH is Secure Shell, which a protocol that makes sure communication between servers (connected remotely) is authorized and secure i.e. encrypted. I enabled SSH traffic just from my IP address so that I can connect to my EC2 instance in the next step.

Key pairs

A key pair is like a lock and key for our EC2 instance. It is used for authentication i.e. for us to securely get access to our EC2 instance. It works by having two halves i.e. a private and public key that must match up for you to get access.

Once I set up my key pair, AWS automatically downloaded a file called nextwork keypair.pem. This file is my private key i.e. my half of the key pair that I will need to use to access my EC2 instance later in this project.

A circular portrait of a man with dark hair and sunglasses, wearing a white shirt, resting his chin on his hand.

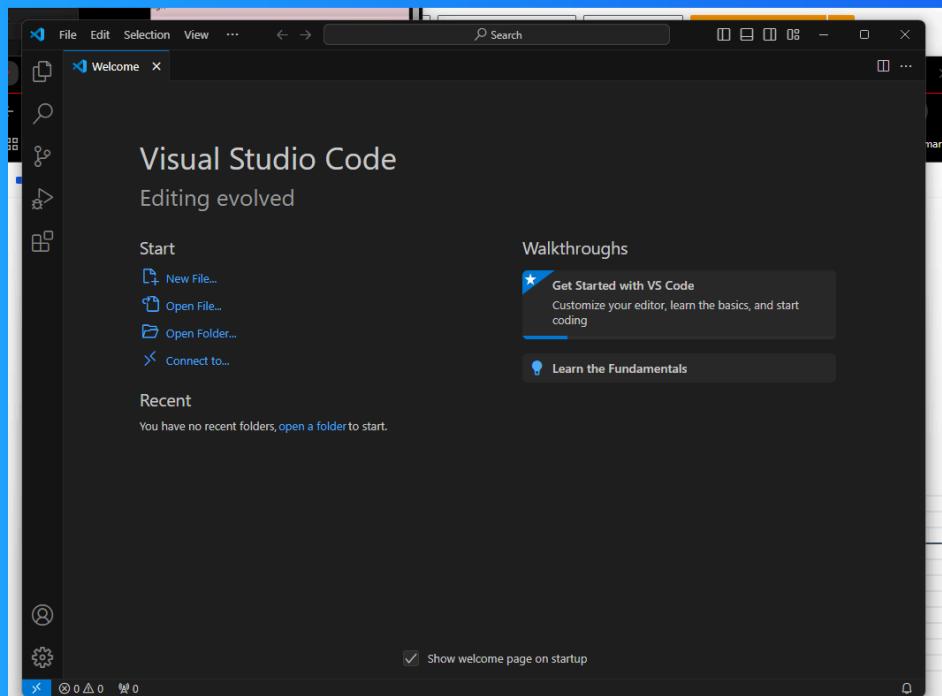
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Set up VSCode

VSCode is an IDE (software for editing and creating code) and is also one of the most popular editors as it comes with a massive library of extensions and is compatible with different languages and use cases.

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





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My first terminal commands

A terminal is a space for us to send text based commands to control and create actions with our computer / server. Using a terminal replaces using clicks and drags, and every computer has one (including EC2 instances)

I also updated my private key's permissions by running `icacls` command to reset default permissions and give current user read permission to that file, and block out access for other user's and groups.

```
ps C:\Users\Donald\Desktop\devops> icacls "nextwork-keypair.pem" /reset
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
ps C:\Users\Donald\Desktop\devops> icacls "nextwork-keypair.pem" /grant:r "Donald:R"
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
ps C:\Users\Donald\Desktop\devops> icacls "nextwork-keypair.pem" /inheritance:r
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
ps C:\Users\Donald\Desktop\devops> icacls "nextwork-keypair.pem" /reset
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
ps C:\Users\Donald\Desktop\devops> icacls "nextwork-keypair.pem" /grant:r "Donald:R"
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
ps C:\Users\Donald\Desktop\devops> icacls "nextwork-keypair.pem" /inheritance:r
```



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SSH connection to EC2 instance

To connect to our EC2 instance we ran the command SSH -i (Path to Pem file) ec2 -user@(IPV4 DNS of the EC2 instance) This command setup 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 it's public address. Computer's/servers connected to the internet can use public IPV4 DNS to find and locate another server.

```
ED25519 key fingerprint is SHA256:iMtmd1wGn0zpjXyEI49wf69Ek7zbkzE7GfwICodujAOI.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-95-137-201.compute-1.amazonaws.com' (ED25519) to the list of known hosts.

A newer release of "Amazon Linux" is available.
Version 2023.6.20241121:
Run "/usr/bin/dnf check-release-update" for full release and version update info
# Amazon Linux 2023
# https://aws.amazon.com/linux/amazon-linux-2023
[ec2-user@ip-172-31-91-203 ~]$
```



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Maven & Java

Apache Maven is a tool/package manager for the building process of software. The building process of software. The building process involves compiling and packaging code so that it can be hosted on the server.

Maven is required in this project because it brings in packages into our application(i.e. any external software/tools) and for packaging up our own web app once we developed it.

Java is a programming language used to develop all kinds of applications. We downloaded Amazon Corretto 8, which is a specific version of Java that's managed by Amazon AWS.

Java is required in this project because we want to build a java web app and we will need to install it first in order 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 app (using Maven's archetype template)

We installed the Remote - SSH extension to connect VSCode directly to our EC2 instance. Doing this means we can later use VSCode as an IDE for the Java web app files in our EC2 instance. This makes editing our web app much simpler and more efficient

Configuration details required to set up a remote connection include the host name (i.e. the IPV4 DNS of our EC2 instance) the location also included our private key in our local computer, and the SSH host user we are connected to

```
netty-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: 8.961 s
[INFO] Finished at: 2024-11-24T15:15:48Z
[INFO] Final Memory: 17M/97M
[INFO] -----
```



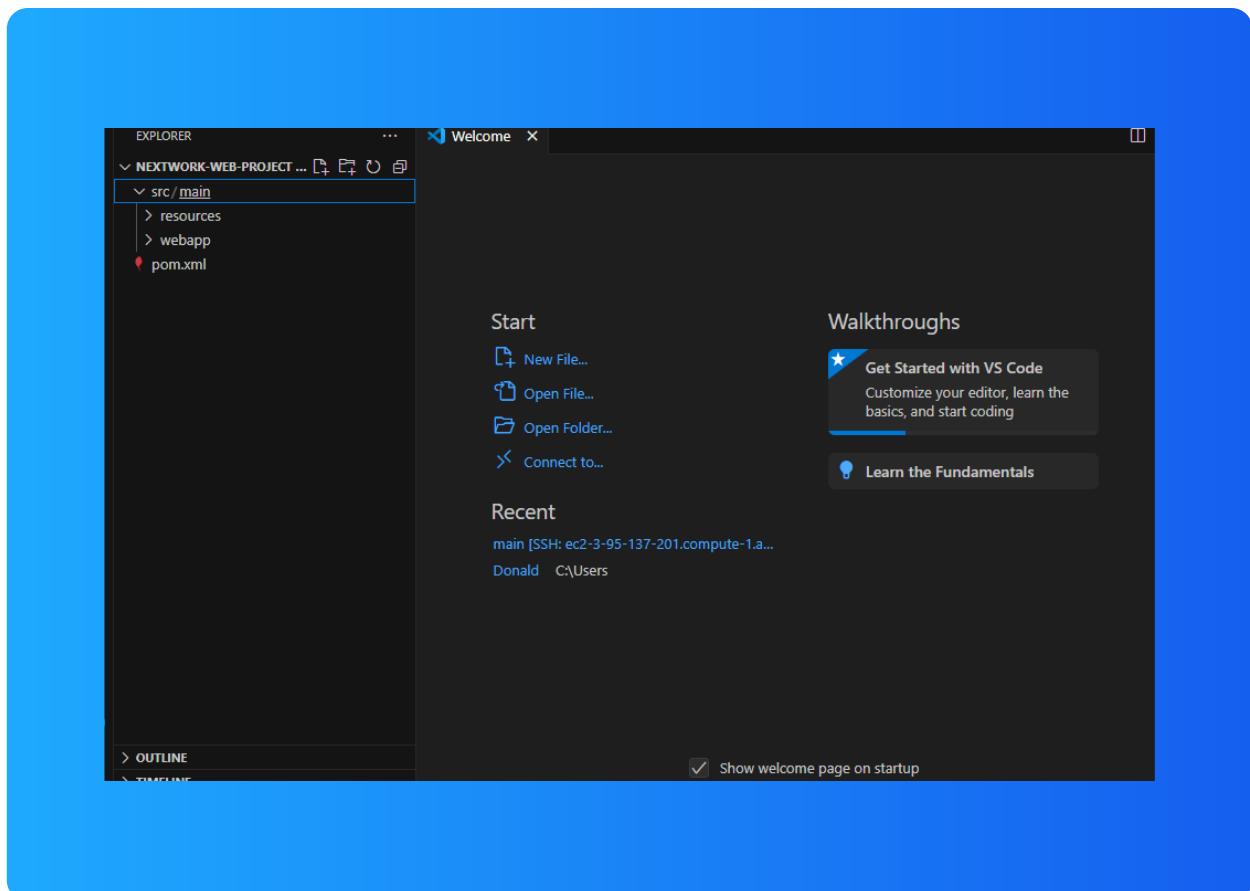
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Create the Application

Using VSCode's file explorer, I could see at a glance a file tree that makes up the nextwork project folder

Two of the project folders created by Maven are src and webapp, src contains all of the web app's source code (i.e. the code that defines the web app look and feel), whereas webapp is a subfolder of src that focuses on what the user would see.

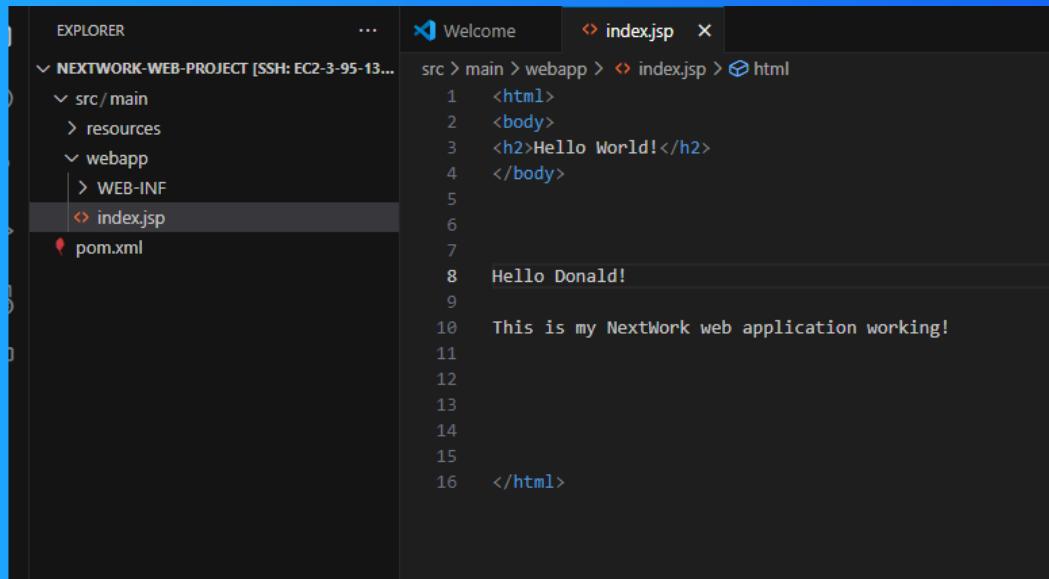




Using Remote - SSH

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

I edited index.jsp by using VSCode even though index.jsp is stored remotely in my EC2 instance, because i set up a remote ssh connection between VSCode and my the instance, we can use VSCode like a local IDE for our instance.



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



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