

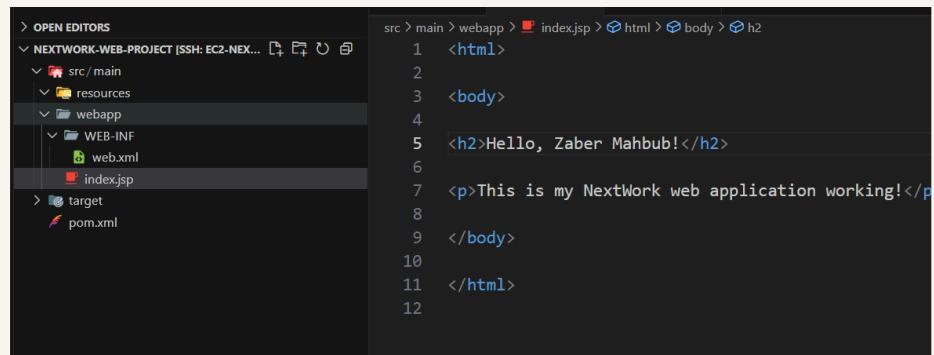


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Set Up a Web App Using AWS and VS Code



Zaber Mahbub



The screenshot shows the VS Code interface with the following details:

- OPEN EDITORS:** A tree view showing the project structure:
 - NEXTWORK-WEB-PROJECT (SSH: EC2-NEX...)
 - src/main
 - resources
 - webapp
 - WEB-INF
 - web.xml
 - index.jsp
 - target
 - pom.xml
- Code Editor:** The file `index.jsp` is open, displaying the following JavaServer Pages (JSP) code:

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



Zaber Mahbub
NextWork Student

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Introducing Today's Project!

Project 1 of the 7 Day DevOps Challenge - Kick off CI/CD pipeline with this foundational project!

Key tools and concepts

1. Launching an EC2 instance with SSH setup and also setting security group.
2. Setting up IAM user and user groups and user security groups.
3. Connect to remote machine via SSH and edit code.

Project reflection

I faced cpu full issue and vscode kept getting frozen and reconnecting. I resolved this by setting 2GB swap memory.

This project took me approximately 2 hours of trial and error to get things right. The most challenging part was solving the cpu issue (t2.micro) - vscode was freezing up and ssh getting stuck. It was most rewarding to solve this using swap memory.



Zaber Mahbub
NextWork Student

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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 tomorrow. I intend to do 7 projects in 7 days.



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NextWork Student

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Launching an EC2 instance

To deploy my codes in remote server machine that provides flexibility and availability.

I also enabled SSH

SSH is a protocol used to make sure only authorized users can access a remote server. I enabled SSH so that I can establish a secure connection between my device and the EC2 instance

Key pairs

A key pair is a set of cryptographoc files determining algorithm used for encryption.

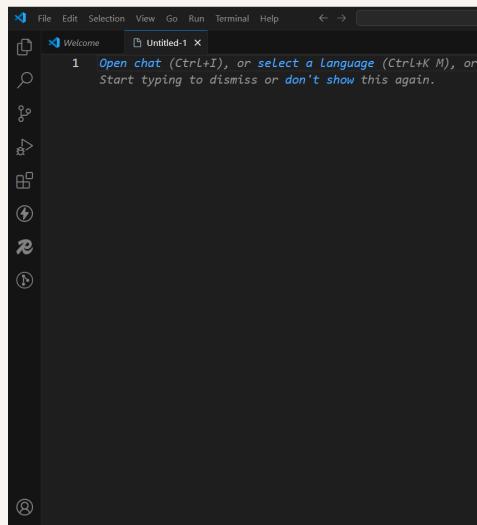
Once I set up my key pair, AWS automatically downloaded my public key. I used RSA.



Set up VS Code

VS code is an integrated development environment.

I installed VS Code to write codes.





My first terminal commands

A terminal is where we can send instructions to computer using text instead of clicks.
The first command I ran for this project is 'ls'

I also updated my private key's permissions by running - `chmod -R 400 nextwork-keypair.pem` in my git bash terminal.

```
Zaber Mahbub@Zaber04-HP MINGW64 /f/CodeBase/zaber04-workspace/DevOps
● $ chmod -R 400 nextwork-keypair.pem

Zaber Mahbub@Zaber04-HP MINGW64 /f/CodeBase/zaber04-workspace/DevOps
● $ ls -l
total 4
-r--r--r-- 1 Zaber Mahbub 197121 1678 Jun 14 17:29 nextwork-keypair.pem

Zaber Mahbub@Zaber04-HP MINGW64 /f/CodeBase/zaber04-workspace/DevOps
○ $ █
```



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SSH connection to EC2 instance

To connect to my EC2 instance, I ran the command - `ssh -i nextwork-keypair.pem ec2-user@ec2-3-86-147-234.compute-1.amazonaws.com`

This command required an IPv4 address

A server's IPV4 DNS is the public address for the EC2 server that the internet uses to find and connect to it.

```
The authenticity of host 'ec2-3-86-147-234.compute-1.amazonaws.com (3.86.147.234)' can't be established.  
ED25519 key fingerprint is SHA256:0MdapThIxoo7RB8jttMhMJA4Q9iU3vsK/0J79jcB+kc.  
This key is not known by any other names.  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added 'ec2-3-86-147-234.compute-1.amazonaws.com' (ED25519) to the list of known hosts.  
#  
~\--- #####  
~~ \#####  
~~ \###  
~~ \#/ .--> Amazon Linux 2023  
~~ \~/ .--/  
~~ \~/ .--/  
~/m/ .--/  
[ec2-user@ip-172-31-84-186 ~]$ ls  
[ec2-user@ip-172-31-84-186 ~]$ |
```



Maven & Java

Apache Maven helps developers build and organize Java software projects. It's also a package manager.

Maven is required in this project because to set up all the necessary web files to create a web app structure

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

Maven NEEDS Java to operate. So if we don't install Java, we won't be able to use Maven to generate/build our web app today.



Create the Application

I generated a Java web app using the command below `` mvn archetype:generate \ -DgroupId=com.nextwork.app \ -DartifactId=nextwork-web-project \ -DarchetypeArtifactId=maven-archetype-webapp \ -DinteractiveMode=false ``

I installed Remote - SSH, which is a VS CODE extension for remote SSH connection. I installed it to connect to my EC2 instance for the web app.

Configuration details required to set up a remote connection include - adding the remote host to ssh config file. It also requires to update the pem file security.

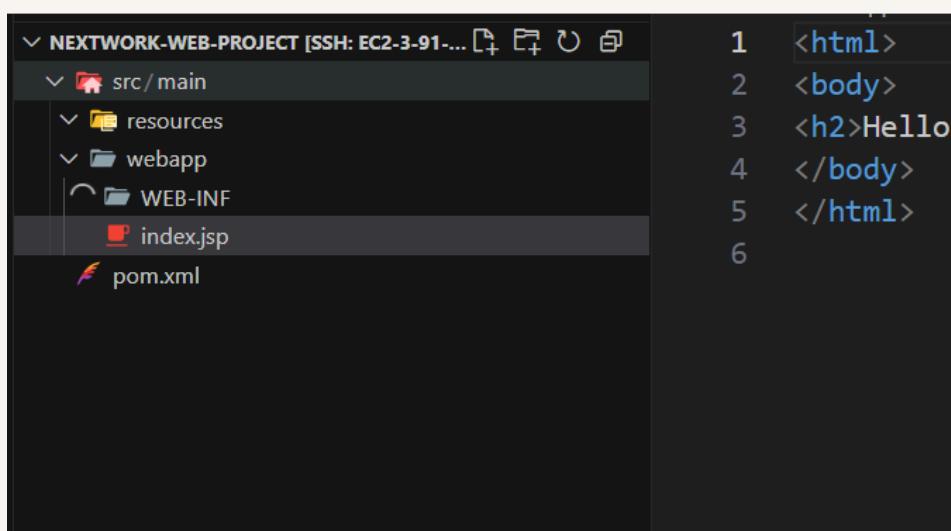
```
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/com/tcu/1cu4j//0.1.1/1cp4j-70
[INFO] Generating project in Batch mode
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-parent-3.0.3/maven-archetype-parent-3.0.3.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-parent-3.0.3/maven-archetype-parent-3.0.3.pom
[INFO] Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-quickstart
[INFO] Parameter: basedir, value: /home/ec2-user
[INFO] Parameter: artifactId, value: nextwork-web-project
[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: 11.399 s
[INFO] Finished at: 2023-06-14T14:55:21Z
[INFO] Final Memory: 18M/82M
[INFO]
```



Create the Application

Using VS Code's file explorer, I could see some project config files created by maven

Two of the project folders created by Maven are src and webapp, which will be used to write the codes for our web app.



The screenshot shows the VS Code interface with the project tree on the left and a code editor on the right. The project tree displays the following structure:

- NEXTWORK-WEB-PROJECT [SSH: EC2-3-91...]
 - src/main
 - resources
 - webapp
 - WEB-INF
 - index.jsp
 - pom.xml

The code editor on the right contains the following JavaServer Pages (JSP) code:

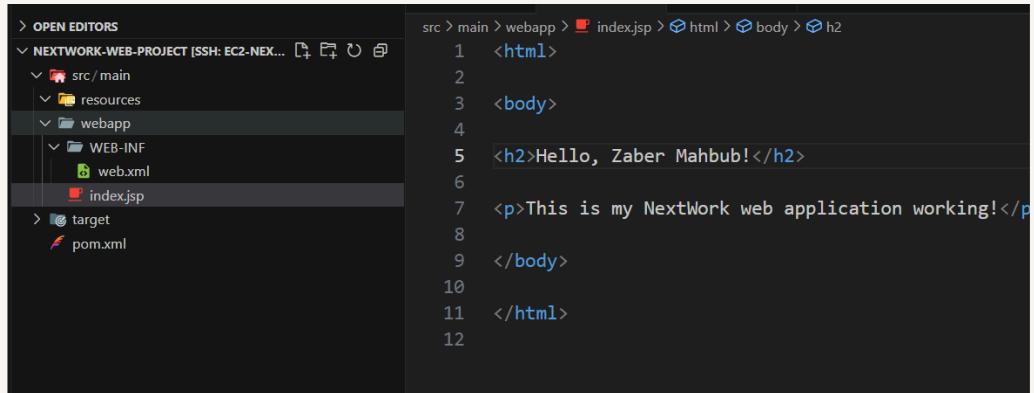
```
1 <html>
2 <body>
3 <h2>Hello
4 </body>
5 </html>
6
```



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 vscode.



The screenshot shows the VS Code interface with the following details:

- Open Editors:** A sidebar on the left lists the project structure:
 - src/main/webapp/index.jsp (selected)
 - src/main/resources
 - src/main/webapp/WEB-INF/web.xml
 - src/main/webapp/index.jsp
 - target
 - pom.xml
- Code Editor:** The main pane displays the content of index.jsp:

```
src > main > webapp > index.jsp > html > body > h2
1 <html>
2
3 <body>
4
5 <h2>Hello, Zaber Mahbub!</h2>
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