



# Set Up a Web App in the Cloud



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The screenshot shows a Java-based web application project named "NEXTWORK-WEB-PROJECT". The project structure in the Explorer view includes a "src" folder containing "main" and "resources", and a "webapp" folder containing "WEB-INF" (with "web.xml") and "index.jsp". The "index.jsp" file is open in the editor, displaying the following code:

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

The code is annotated with line numbers from 1 to 13. The IDE interface includes tabs for "OUTLINE" and "TIMELINE", and a status bar at the bottom showing system information like battery level, network, and date.

# Introducing Today's Project!

## What is VSCode and why is it useful?

Remote SSH Connection: Using the Remote - SSH extension, you can directly connect to your AWS EC2 instance from within VSCode. This enables you to edit files on the server as if they were local.

## How I'm using VSCode in this project

Remote SSH Connection: Using the Remote - SSH extension, you can directly connect to your AWS EC2 instance from within VSCode. This enables you to edit files on the server as if they were local.

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

One thing that I didn't expect in this project was the ability to use VS code like a local IDE for a remote server. Downloading a Remote-SSH is again a game changer though.

## This project took me...

This project took me around 2 hours however this includes 1 hour of practical hands-on and the another hour to complete the documentation.

# Launching an EC2 instance

I started this project by launching an EC2 instance because it will be used to host 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

Having said that somehow your private key and public key will get matched up so that we can access our EC2 instance. Who is actually doing that. There comes SSH! A verification party that is actually doing that matching for us. Isn't it Cool :)

## Key pairs

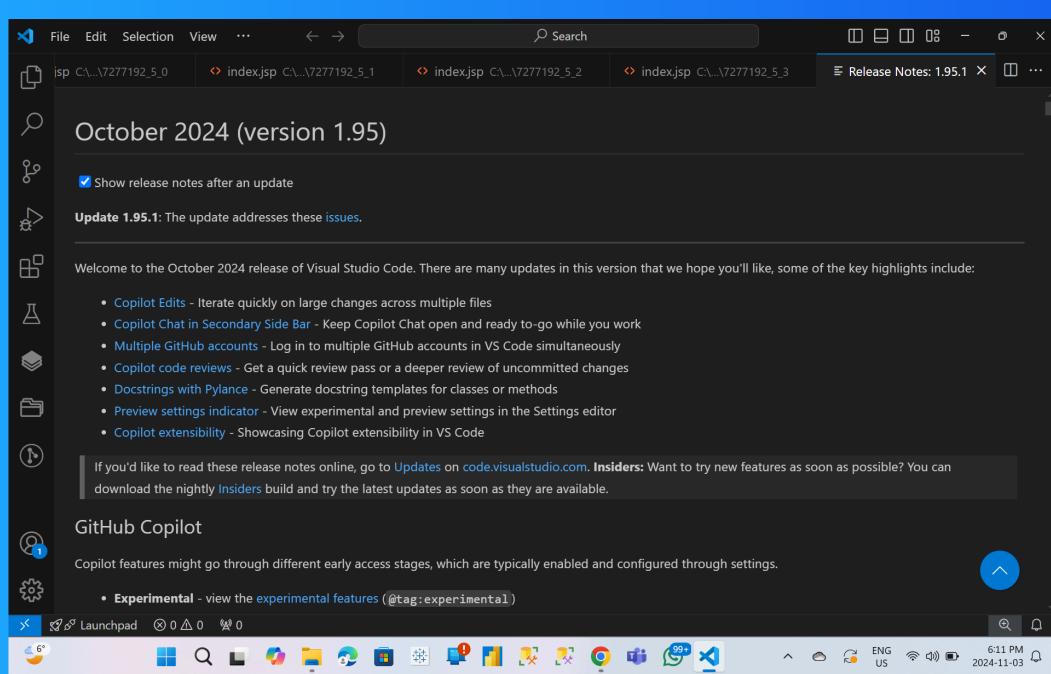
A key pair is like a lock and key for our EC2 instance. It is used for authentication i.e for us to securely get access to our EC2 instance. It works by having two halves i.e private and public key that must match up.

Once I setup my key-pair AWS automatically downloaded .pem file. This file is my private key i.e my half of the key pair I will need to use to access my EC2 instance.

# Set up VSCode

An IDE software for editing and creating code with massive library of extensions which works with a myriad variety of programming languages. We can create and edit web app files on this.

I installed VS code to connect to our EC2 instance and then edit my web app files on that instance.



# My first terminal commands

A terminal is a space for us to send text based commands to control and create actions.

I also updated my private key's permissions by the windows commands mentioned.  
icacls "nextwork-keypair.pem" /reset >> icacls "nextwork-keypair.pem" /grant:r "vaish:R" >> icacls "nextwork-keypair.pem" /inheritance:r

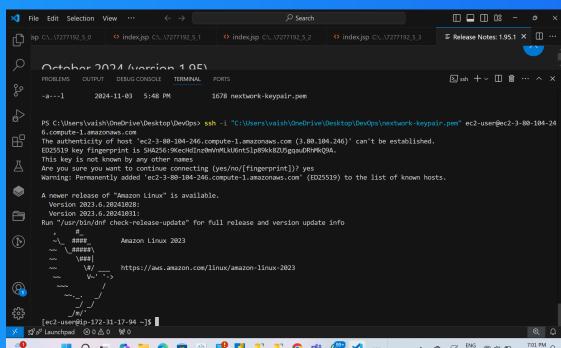
```
PS C:\Users\vaish\OneDrive\Desktop\DevOps> icacls "nextwork-keypair.pem" /reset
>> icacls "nextwork-keypair.pem" /grant:r "vaish:R"
>> icacls "nextwork-keypair.pem" /inheritance:r
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
processed file: nextwork-keypair.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\Users\vaish\OneDrive\Desktop\DevOps> █
```

# SSH connection to EC2 instance

I ran the command `ssh -i [PATH TO YOUR .PEM FILE] ec2-user@[YOUR PUBLIC IPV4 DNS]`

## This command required an IPv4 address

A server's IPV4 DNS is its public address, computers connected to the internet can use public IPV4 DNS to find and locate another server.



The screenshot shows a terminal window titled "October 2023 Amazon Linux 1.15.1" running on an Amazon Linux 2023 instance. The user has run the command `ssh -i 'C:\Users\vaish\Desktop\DevOps\NextWork-keypair.pem' ec2-user@ec2-3-88-104-246.compute-1.amazonaws.com`. The terminal displays a warning message about the host key fingerprint:

```
PS C:\Users\vaish\Desktop\DevOps> ssh -i 'C:\Users\vaish\Desktop\DevOps\NextWork-keypair.pem' ec2-user@ec2-3-88-104-246.compute-1.amazonaws.com
The authenticity of host 'ec2-3-88-104-246.compute-1.amazonaws.com (3.88.104.246)' can't be established.
It is recommended to add the key to the list of known hosts.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-88-104-246.compute-1.amazonaws.com' (ED55519) to the list of known hosts.

A new release of "Amazon Linux" is available.
Version 2023.6.20240828
Version 2023.6.20240831
Run "/usr/bin/dnf check-release-updates" for full release and version update info
[ec2-user@ip-172-31-17-94 ~]$
```

# Maven & Java

Apache Maven is a package manager for the building process of a software.

Maven is required in this project because It is extremely helpful for bringing in packages into the web application . The building process involves compiling and packaging of the code so that it can be hosted on a server.

Java is a programming language used to develop applications.We downloaded Amazon Correto 8 which is a version of java that is managed by AWS.

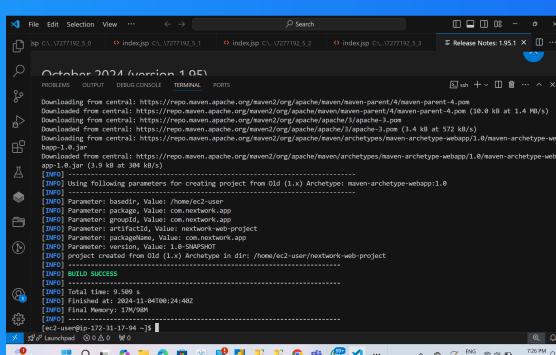
Java is required in this project because we want to build a java web app and we will need to install it first in order to run any java commands.

# Create the Application

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

I installed Remote - SSH, which is to connect VS code to the EC2 instance doing this means we can later use VS code as an IDE for the Java web files in an EC2 instance.

Configuration details required to set up a remote connection include the host name i.e IPV4 DNS and the location of our private key in our local computer and the user .



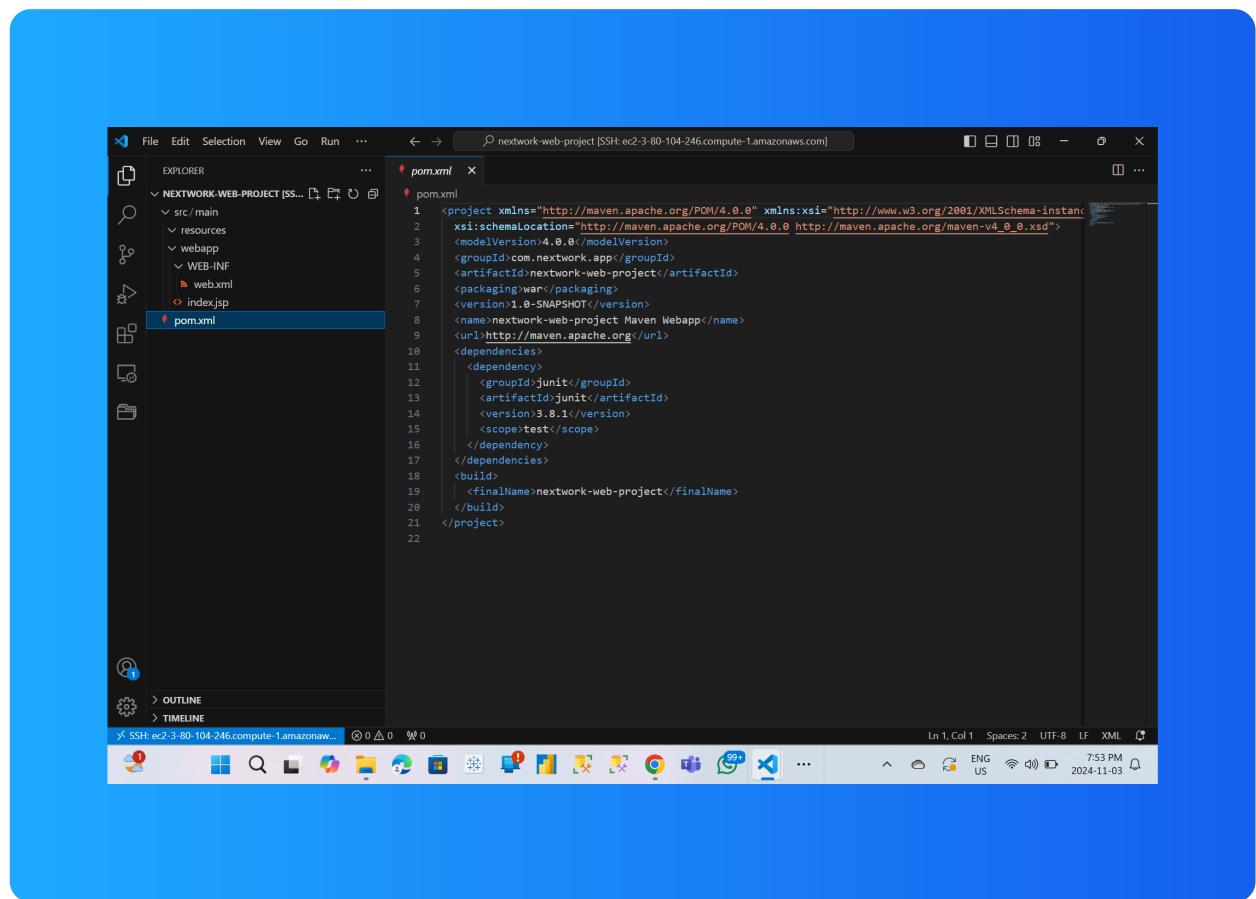
The screenshot shows a terminal window titled "Terminal" with the following output:

```
mvn archetype:generate \ -DgroupId=com.nextwork.app \ -DartifactId=nextwork-web-project \ -DarchetypeArtifactId=maven-archetype-webapp \ -DinteractiveMode=false
[INFO] Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-webapp:1.0
[INFO] Parameter: basedir, Value: /home/ec2-user
[INFO] Parameter: groupId, Value: com.nextwork.app
[INFO] Parameter: artifactId, Value: nextwork-web-project
[INFO] Parameter: archetypeArtifactId, Value: maven-archetype-webapp
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] project created from Old (1.x) Archetype in dir: /home/ec2-user/nextwork-web-project
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 9.599 s
[INFO] Finished at: 2024-11-04T08:24:48Z
[INFO] Final Memory: 179/MEM
[INFO]
[INFO] [ec2-user@ip-172-31-17-94 ~]$
```

# Create the Application

Using VSCode's file explorer, I could see the source files that make up the web project folder.

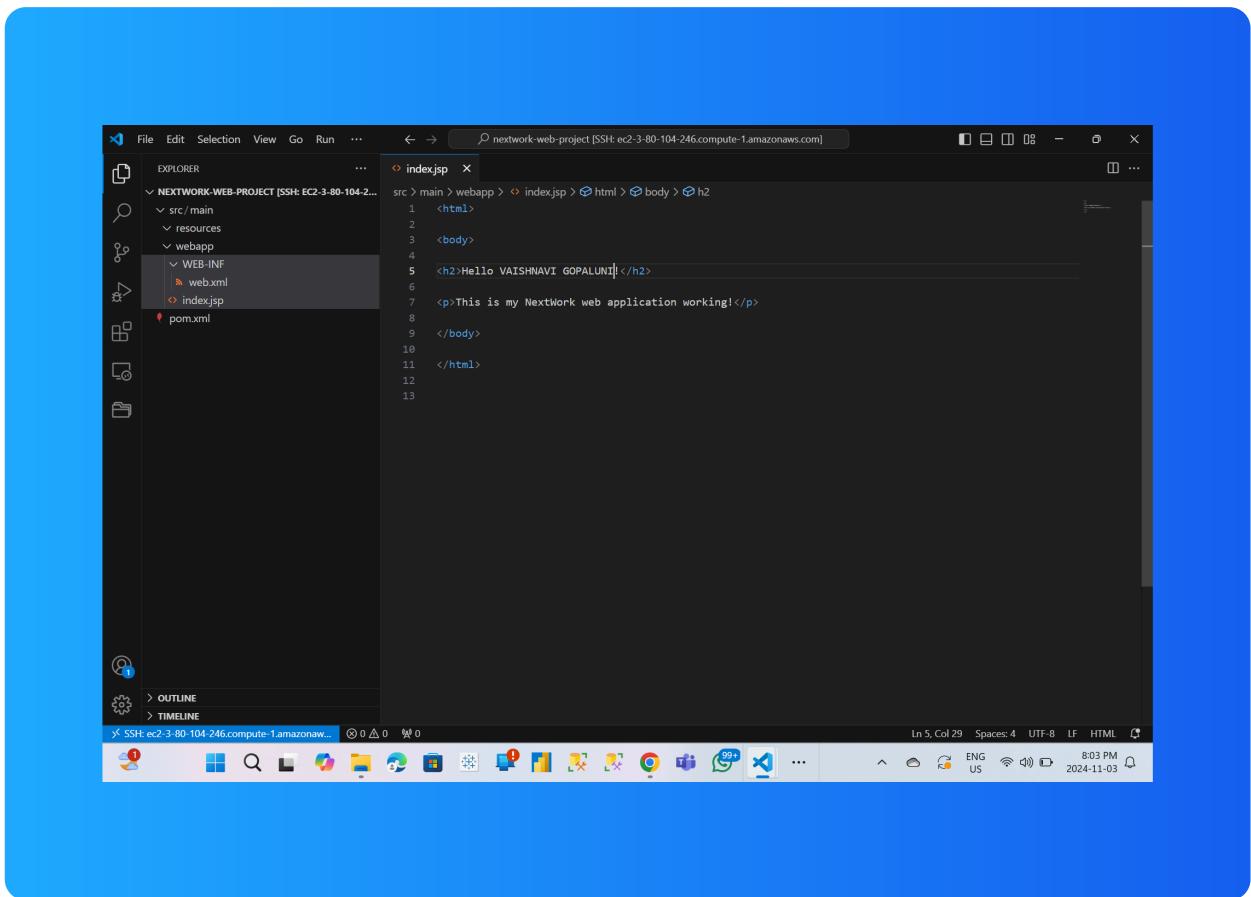
Two of the project folders created by Maven are src and webapp, which src contains all of the web-app's source code which tells the look and feel of the app whereas the web app is the sub folder created under source code folder.



# Using Remote - SSH

'index.jsp is file within the web app folder it defines the UI code of our Java web app.

I edited index.jsp by using the VS code.Even though the file is stored remotely ,because I setup a remote SSH connection between VS code and my EC2 instance I would be able to edit my file in the VS code local IDE.





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