



# Set Up a Web App Using AWS and VS Code

A

Ashmit Rajput

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

- File Explorer:** Shows the project structure: `ASHMIT-WEB-PROJECT [SSH]` containing `src/main/webapp/index.jsp`, `WEB-INF/web.xml`, and `pom.xml`.
- Editor:** The `index.jsp` file is open, displaying the following code:

```
1 <html>
2 <body>
3 <h2>Hello Viewer!</h2>
4 <p>This is my NextWork web application working!</p>
5 </body>
6 </html>
```
- Copilot Sidebar:** A Copilot AI interface is visible on the right, with the message "Welcome to Copilot" and "Let's get started". It includes buttons for "Add context (#), extensions (@), comm" and "Build workspace", along with a note to "Review AI output carefully before use."
- Bottom Status Bar:** Shows the connection status as "SSH: ec2-13-127-49-43.ap-south-1.compute.amazonaws.com", file statistics ("In 11, Col 8, Spaces: 4, UTF-8"), and a "HTML" tab.

# Introducing Today's Project!

In this project, I will demonstrate how to host a Web App using amazon services, I am doing this project to better my understanding of EC2 instances and how to create SSH connection using VS code. I will be using Maven and Java for the Web App.

## Key tools and concepts

Services I used were AWS IAM to create a user, EC2 to create an EC2 instance, VS Code to connect to our EC2 instance and manage code of our web App, Apache Maven and Java to build our Web App, I also learnt about SSH and how to connect to it.

## Project reflection

One thing I didn't expect in this project was to run into various errors while connecting to EC2 instance in the terminal, as changing permissions to our key file has many factors to it. But at the end it is worth it to figure out things on your own.

This project took me approximately 2 days to complete as i got stuck at various step, figuring out bash and terminal commands on my own. But It's most rewarding to learn so much, and then complete this project and learn so many useful concepts.

A

**Ashmit Rajput**  
NextWork Student

[nextwork.org](http://nextwork.org)

---

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 soon and learn more about new concepts, and complete the 7-day Devops challenge, build a complete CI/CD pipeline.

# Launching an EC2 instance

I started this project by launching an EC2 instance because we will need online computation servers to handle the code and access to our Web app, and an EC2 instance is the best possible computation service we can get, we will allow SSH traffic here.

## I also enabled SSH

SSH is a protocol used to make sure only authorized users can access a remote server. When we connect to our EC2 instance later in this project, SSH verifies we have the correct private key that matches the public key on the server.

## Key pairs

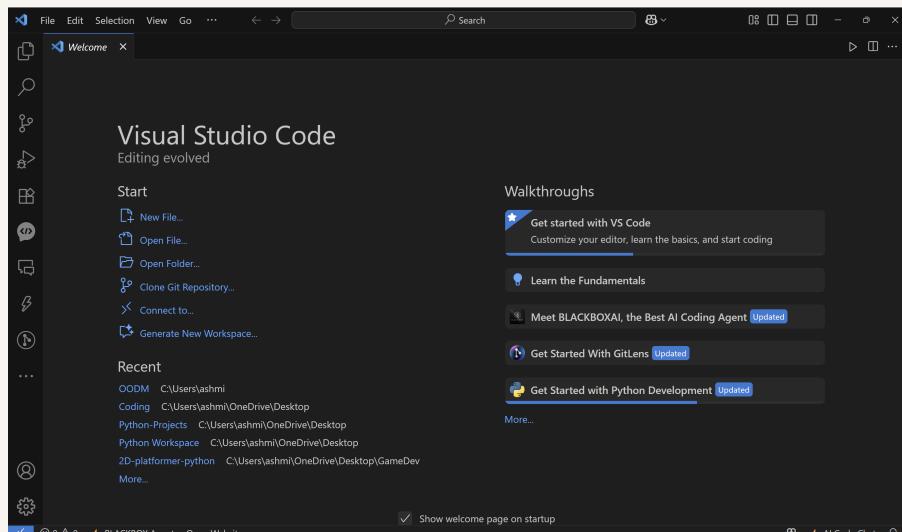
A key pair is a way to securely access our EC2 instance, We use RSA (Rivest-Shamir-Adleman), which is one of the most common cryptographic algorithms used due to its strength and security. The .pem format stands for Privacy Enhanced Mail.

Once I set up my key pair, AWS automatically downloaded .pem file to my device and ready to use later to access my EC2 instance.Just like how documents can be saved in different formats, key pair can be saved in different formats based on requirement

# Set up VS Code

Visual Studio Code (VS Code) is one of the most popular tools for creating and managing coding projects. You'll often hear people call VS Code an IDE which means it helps edit and run code in different languages, also points out and helps omit errors

I installed VS Code to manage the JAVA code of my Web app and also use the terminal to access my EC2 instance and use it to host my Web App. VS code is used for various purposes and is useful to us in this context.





# My first terminal commands

A terminal is where you send instructions to your computer using text instead of clicks. It's like sending messages to your OS to do tasks. My first command was to change the directory in the terminal to my devops folder where I have stored pem file

I also updated my private key's permissions by using terminal commands icacls and the functions in it like, reset, grant, inheritance:r to change the permissions of my key and grant all access to myself as a user.

The screenshot shows a terminal window within a Blackbox AI interface. The terminal output is as follows:

```
PS C:\Users\ashmi\OneDrive\Desktop\Devops> dir

Directory: C:\Users\ashmi\OneDrive\Desktop\Devops

Mode LastWriteTime Length Name
-- -a--- 25-08-2025 11:01 1674 devops-keypair.pem

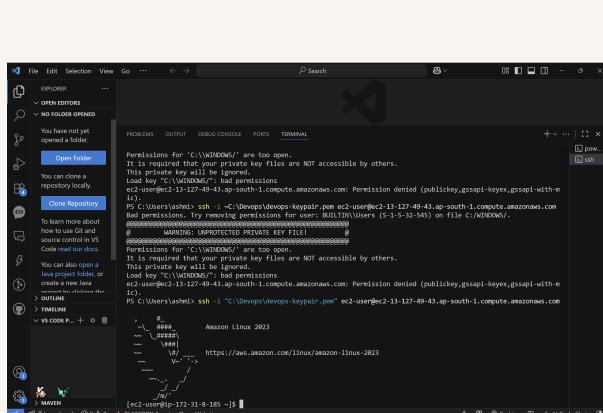
PS C:\Users\ashmi\OneDrive\Desktop\Devops> icacls "devops-keypair.pem" /reset
processed file: devops-keypair.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\Users\ashmi\OneDrive\Desktop\Devops> icacls "devops-keypair.pem" /grant:r "ashmi:R"
processed file: devops-keypair.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\Users\ashmi\OneDrive\Desktop\Devops> whoami
ashmi
PS C:\Users\ashmi\OneDrive\Desktop\Devops> icacls "devops-keypair.pem" /inheritance:r
processed file: devops-keypair.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\Users\ashmi\OneDrive\Desktop\Devops>
```

# SSH connection to EC2 instance

To connect to my EC2 instance, I ran the command `icacls` to change the permissions of my `.pem` file

## This command required an IPv4 address

A Public IPv4 DNS is the public address for our EC2 server that the internet uses to find and connect to it. The local computer we're using to do this project will find and connect to our EC2 instance through this IPv4 DNS.



```
File Edit Selection View Go ... Search

PROBLEMS OUTPUT DEBUG CONSOLE POWER TERMINAL

You have not yet opened a folder.
Open Folder ...
You can clone a repository locally.
Clone Repository ...
To learn more about how to use Git and source control in VS Code, visit https://aka.ms/vscodegit.
You can also open a Java project folder, or create a new Java project by clicking "Create New".
VS CODE F... + o ...
MAVEN

C:\Users\ashmit> ssh -i "C:\DevOps\devops-keypair.pem" ec2-user@ec2-11-127-49-43.ap-south-1.compute.amazonaws.com
Permissions for 'C:\DevOps' are too open.
It is required that your private key files are NOT accessible by others.
This private key will be ignored.
Lost permission to C:\DevOps\devops-keypair.pem
ec2-user@ec2-11-127-49-43.ap-south-1.compute.amazonaws.com: Permission denied (publickey,gssapi-keyex,gssapi-with-mic).
[EC2-USER@EC2-11-127-49-43 ~]$

C:\Users\ashmit> ssh -i "C:\DevOps\devops-keypair.pem" ec2-user@ec2-11-127-49-43.ap-south-1.compute.amazonaws.com
Bad permissions. Try removing permissions for user: BUILTIN\Users (S-1-5-32-545) on file C:\Windows\.
=====
# WARNING: UNPROTECTED PRIVATE KEY FILE!
=====

Permissions for 'C:\Windows' are too open.
It is required that your private key files are NOT accessible by others.
This private key will be ignored.
Lost permission to C:\Windows
ec2-user@ec2-11-127-49-43.ap-south-1.compute.amazonaws.com: Permission denied (publickey,gssapi-keyex,gssapi-with-mic).
[EC2-USER@EC2-11-127-49-43 ~]$

C:\Users\ashmit> ssh -i "C:\DevOps\devops-keypair.pem" ec2-user@ec2-11-127-49-43.ap-south-1.compute.amazonaws.com
Amazon Linux 2023
[EC2-USER@EC2-11-127-49-43 ~]$
```

## 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.

We're also using Maven today because it's really useful for kick-starting web projects. It uses something called archetypes, which are like templates, to lay out the foundations for different types of projects eg. web apps. We use it to organise also

Java is a popular programming language used to build different types of applications, from mobile apps to large enterprise systems. Maven, which we just downloaded, is a tool that NEEDS Java to operate. so we installed JAVA, to buils our web app.

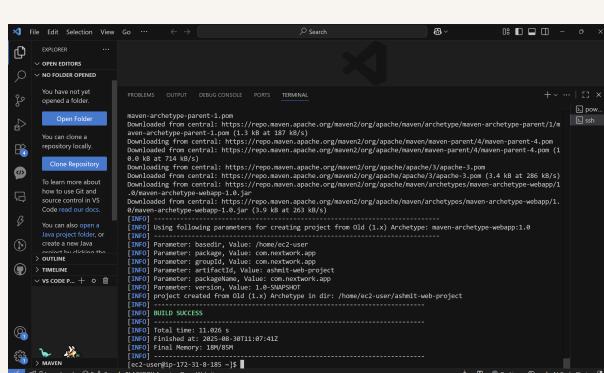
Java is required in this project because we need it to operate Maven which we will use to code our web app and lay its structure, so, we use amazon corretto 8, a version of java provided by amazon for our ec2 instance.

# Create the Application

I generated a Java web app using the command `DarchtypepeartifactID` and few others to specify details like project name and type. Without any user interaction (not asking permission) it directly creates the layout of a web app in JAVA.

I installed Remote - SSH, which is a VS Code extension used to connect our SSH host to VS Code by using the location of our .pem file, and public IPv4 address given by AWS of our EC2 instance. It helps in overall handling of our code and hosting it.

Configuration details required to set up a remote connection include `ssh -i "location of .pem file" ec2-user@"our ec2 instance public ipv4 address"`, which puts our host name and address in the file, which is the link to our EC2 instance and username.



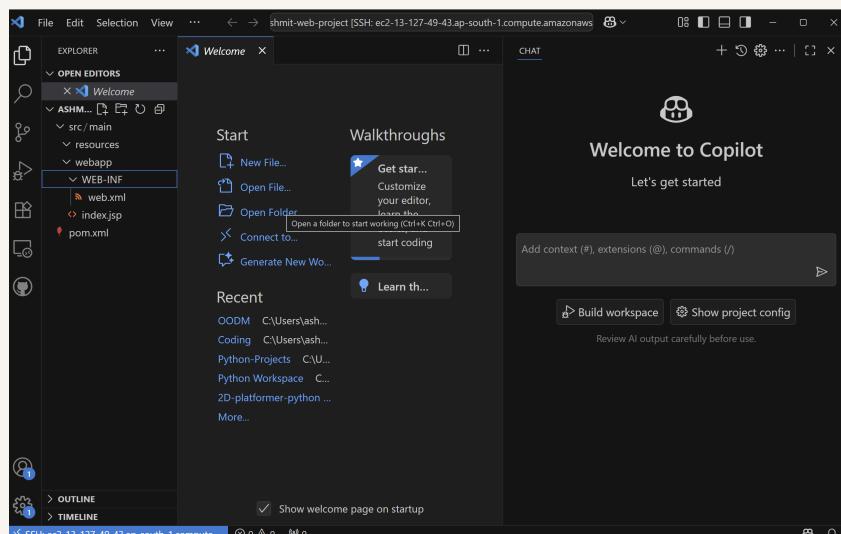
The screenshot shows the VS Code interface with the Maven terminal tab selected. The output of the Maven command to generate a Java web application is displayed:

```
maven-archetype-parent-1.4.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetype/maven-archetype-parent/1.4/
maven-archetype-parent-1.4.pom (1.3 kB at 187 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/4/maven-parent-4.pom
8.6 kB at 714 kB/s
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/7/maven-parent-7.pom
8.6 kB at 714 kB/s
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/3/apache-3.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/3/apache-3.pom (3.4 kB at 286 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-webapp/1.0/maven-archetype-webapp-1.0.jar (5.9 kB at 363 kB/s)
INFO [main] org.apache.maven.archetype.lifecycle.DefaultArchetypeLifecycleUsingFileBasedArchetypeRepository Using following parameters for creating project from file: /home/ec2-user/.m2/archetype-catalog.xml
INFO [main] org.apache.maven.archetype.lifecycle.DefaultArchetypeLifecycleUsingFileBasedArchetypeRepository Parameter: basedir, Value: /home/ec2-user
INFO [main] org.apache.maven.archetype.lifecycle.DefaultArchetypeLifecycleUsingFileBasedArchetypeRepository Parameter: groupId, Value: com.nextwork.app
INFO [main] org.apache.maven.archetype.lifecycle.DefaultArchetypeLifecycleUsingFileBasedArchetypeRepository Parameter: artifactId, Value: nextwork-project
INFO [main] org.apache.maven.archetype.lifecycle.DefaultArchetypeLifecycleUsingFileBasedArchetypeRepository Parameter: version, Value: 1.0-SNAPSHOT
INFO [main] org.apache.maven.archetype.lifecycle.DefaultArchetypeLifecycleUsingFileBasedArchetypeRepository project created from file! Archetype in dir: /home/ec2-user/.m2/archetype-catalog.xml
INFO [main] org.apache.maven.lifecycle.Maven Maven version: 3.6.3
INFO [main] org.apache.maven.lifecycle.Maven Total time: 11.826 s
INFO [main] org.apache.maven.lifecycle.Maven Final Memory: 18M/85M
INFO [main] org.apache.maven.lifecycle.Maven
[ec2-user@ip-172-31-8-35 ~]$
```

# Create the Application

Using VS Code's file explorer, I could see that all the folders for our web app that have javascript files, xml files, html, css and other resources are already categorized neatly inside a main/source folder, a basic layout has already been laid out.

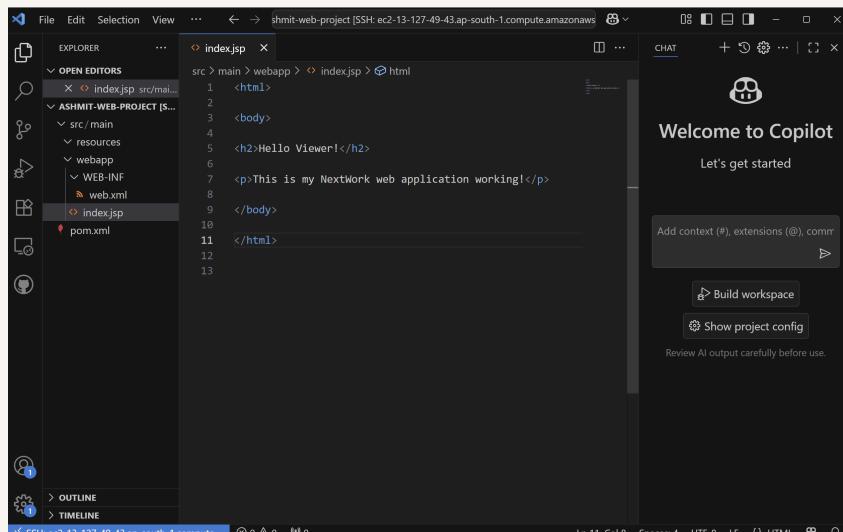
Two of the project folders created by Maven are src and webapp, source is the main folder that contains all the files and its subfolder webapp contains all the code files, where we will write the code of our webapp in different languages and edit it.



# Using Remote - SSH

The index.jsp is used in java web apps and it is like an HTML file but it can also include java code inside it which helps making the project dynamic, whereas html only makes static websites. That's why we installed java and maven in our ec2 instance

I edited index.jsp using vs code as our IDE and added a heading in it stating "Hello viewers" and also a body with a simple statement, this is just to begin modifying our index.jsp in our ec2 instance, so we can start building our web app.



The screenshot shows a dark-themed instance of Visual Studio Code running via SSH. The left sidebar displays the project structure under 'ASMIT-WEBSITE [SSH]'. The 'index.jsp' file is open in the center editor, showing the following code:

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

The right panel features the 'Welcome to Copilot' interface, which includes a 'Welcome' message, a 'Let's get started' button, and two buttons for 'Build workspace' and 'Show project config'. A note at the bottom of the Copilot panel says 'Review AI output carefully before use.'



[nextwork.org](https://nextwork.org)

# The place to learn & showcase your skills

Check out [nextwork.org](https://nextwork.org) for more projects

