



# Set Up a Web App in the Cloud



ajv.singh3107@gmail.com

```
File Edit Selection View Go Run Terminal Help < -> WEB-INF [SSH: EC2-16-171-181-47.EU-NORTH-1.COMPUTE.AWS...]
EXPLORER
WEB-INF [SSH: EC2-16-171-181-47.EU-NORTH-1.COMPUTE.AWS...]
index.jsp
web.xml

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

# Introducing Today's Project!

## What is VSCode and why is it useful?

I used VSCode in today's project to connect to my EC2 instance via SSH, explore and edit my Java web app's files, and streamline the development process. It allowed me to work directly on the server and efficiently manage my project files.

## How I'm using VSCode in this project

I used VSCode in today's project to connect to my EC2 instance via SSH, explore and edit my Java web app's files, and streamline the development process. It allowed me to work directly on the server and efficiently manage my project files.

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

One thing I didn't expect in this project was how seamless the integration between VSCode and the EC2 instance would be. The Remote - SSH extension made it easy to edit files directly on the server, which streamlined the development process.

## This project took me...

This project took me about 2 hours. It involved setting up the EC2 instance, configuring SSH access, installing necessary tools, and developing a basic Java web app, all while ensuring everything was running smoothly on the server.

# Launching an EC2 instance

I started this project by launching an EC2 instance because it provides a scalable, cloud-based server where I can set up and test my web app development environment securely and efficiently.

## I also enabled SSH

SSH is a secure protocol for accessing and managing remote servers over an encrypted connection. I enabled SSH so that I can securely connect to my EC2 instance, execute commands, and configure it for app development directly from my local machine.

## Key pairs

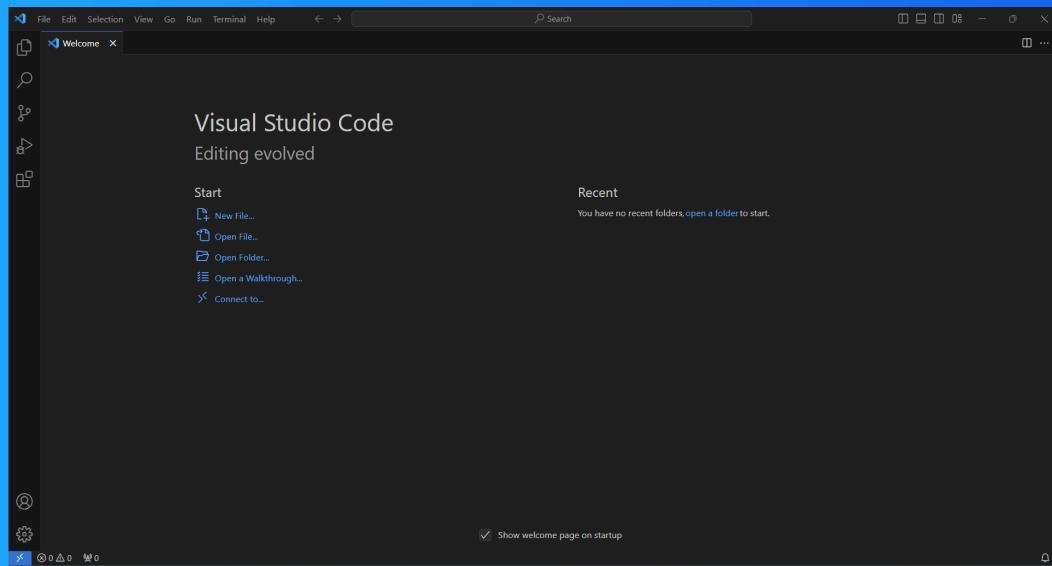
A key pair is a set of cryptographic keys (private and public) used to securely access an EC2 instance via SSH. The private key stays with you, while the public key is stored on the instance for authentication.

Once I set up my key pair, AWS automatically downloaded a ` `.pem` file to my local computer. This private key file is essential for securely accessing the EC2 instance via SSH.

# Set up VSCode

VSCode is a lightweight, powerful code editor from Microsoft, offering features like debugging, Git integration, and extensions. It's perfect for managing remote servers, writing code, and streamlining development workflows.

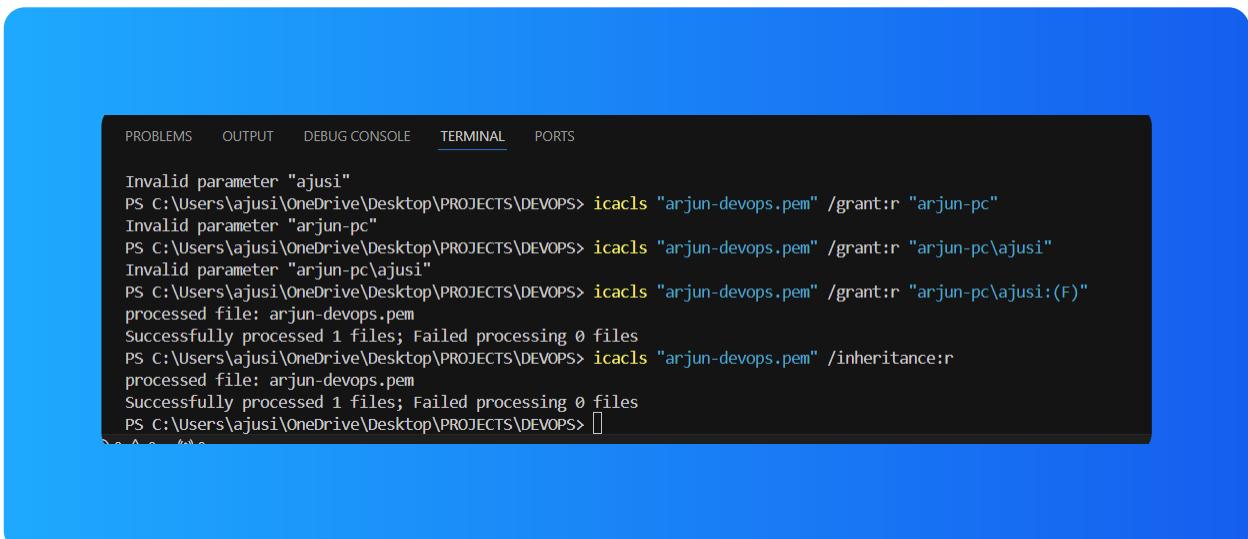
I installed VSCode to set up a terminal for securely connecting to my EC2 instance, manage files remotely, write and debug code, and streamline the development process for creating and testing the web app.



# My first terminal commands

```
cd .\OneDrive\
```

I also updated my private key's permissions by using the `chmod 400` command, which restricts access to the key file, ensuring it is secure and only readable by me for SSH authentication.



The screenshot shows a terminal window with a dark theme. At the top, there are tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (which is underlined), and PORTS. The main area of the terminal displays the following PowerShell session:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

Invalid parameter "ajusi"
PS C:\Users\ajusi\OneDrive\Desktop\PROJECTS\DEVOPS> icacls "arjun-devops.pem" /grant:r "arjun-pc"
Invalid parameter "arjun-pc"
PS C:\Users\ajusi\OneDrive\Desktop\PROJECTS\DEVOPS> icacls "arjun-devops.pem" /grant:r "arjun-pc\ajusi"
Invalid parameter "arjun-pc\ajusi"
PS C:\Users\ajusi\OneDrive\Desktop\PROJECTS\DEVOPS> icacls "arjun-devops.pem" /grant:r "arjun-pc\ajusi:(F)"
processed file: arjun-devops.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\Users\ajusi\OneDrive\Desktop\PROJECTS\DEVOPS> icacls "arjun-devops.pem" /inheritance:r
processed file: arjun-devops.pem
Successfully processed 1 files; Failed processing 0 files
PS C:\Users\ajusi\OneDrive\Desktop\PROJECTS\DEVOPS> █
```

# SSH connection to EC2 instance

To connect to my EC2 instance, I ran the command `ssh -i /path/to/key.pem ec2-user@<EC2\_PUBLIC\_IP>`, replacing `<EC2\_PUBLIC\_IP>` with the instance's public IP address and `/path/to/key.pem` with the location of my private key file.

## This command required an IPv4 address

A server's IPV4 DNS is its unique address that allows it to be accessed over the internet. It translates human-readable domain names into IP addresses, enabling secure communication between your local machine and the server.

```
PS C:\Users\ajus1\OneDrive\Desktop\PROJECTS\DEVOPS> ssh -i C:\Users\ajus1\OneDrive\Desktop\PROJECTS\DEVOPS\arjun-devops.pem ec2-user@ec2-16-171-181-47.eu-north-1.compute.amazonaws.com
A newer release of "Amazon Linux" is available.
Version 2023.6.20241028;
Version 2023.6.20241031;
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
   V_.'_.>
  ~~~_/_/
   ~~~_/_/
    /_/
   /m/_/
[ec2-user@ip-172-31-43-85 ~]$
```

# Maven & Java

Apache Maven is a build automation tool used primarily for Java projects. It simplifies the process of managing dependencies, building, and deploying applications by using a project object model (POM) to define project structure and configurations.

Maven is required in this project because it automates the build process, manages dependencies, and simplifies the deployment of Java applications, ensuring that all necessary libraries and configurations are handled efficiently.

Java is a high-level, object-oriented programming language known for its portability, security, and performance. It's widely used for building cross-platform applications, from web and mobile apps to large-scale enterprise systems.

Java is required in this project because it is a widely used, reliable language for building scalable web applications. With its strong ecosystem and support for tools like Maven, it ensures efficient development, building, and deployment of the app.

# Create the Application

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

I installed Remote - SSH, which is a VSCode extension that allows secure remote access to servers. I installed it to connect to my EC2 instance, enabling me to explore, edit, and manage my Java web app files directly from VSCode.

Configuration details required to set up a remote connection include the EC2 instance's public IP as the hostname, the username (e.g., 'ec2-user'), and the path to the private key file ('.pem'). These allow secure SSH access for remote management.

```
downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-1.0/maven-archetype-1.0-1.zip
downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-1.0-1.zip
[INFO] ...
[INFO] Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-webapp:1
[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: 8.835 s
[INFO] Finished at: 2024-11-01T10:37:34Z
[INFO] Final Memory: 18M/99M
[INFO]
```

# Create the Application

Using VSCode's file explorer, I could see the directory structure of my Java web app, including files like `src`, `pom.xml`, and `webapp`. It allowed me to navigate, open, and edit files directly on the EC2 instance.

Two of the project folders created by Maven are `src` and `webapp`, which hold the source code and web application files. The `src` folder contains Java code, while the `webapp` folder holds HTML, JSP, and other web resources for the app.

```
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-1.0.10
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-1.0.10.pom
[INFO] -----
[INFO] Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-webapp:1.0.10
[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: 8.835 s
[INFO] Finished at: 2024-11-01T10:37:34Z
[INFO] Final Memory: 18M/99M
[INFO]
```

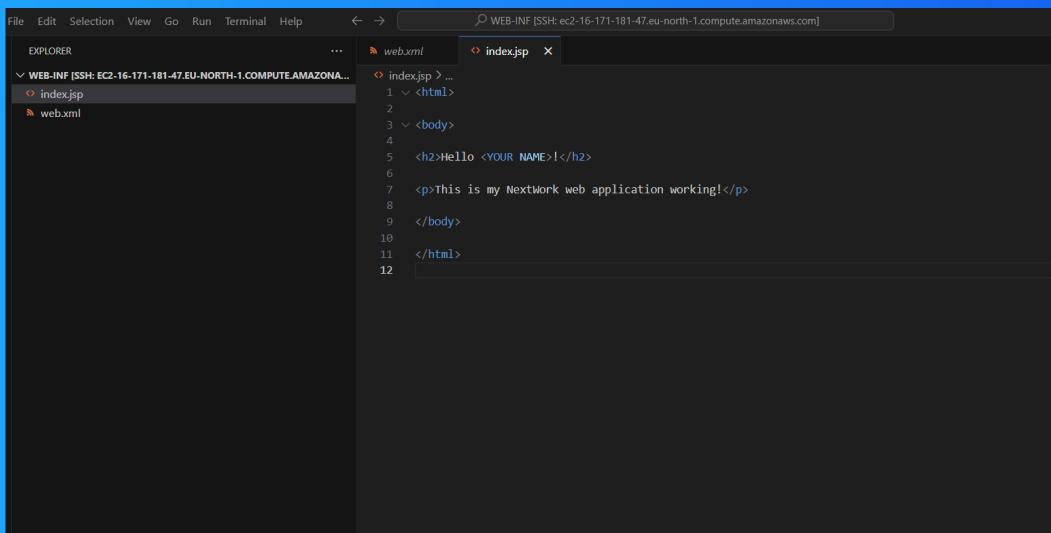
# Using Remote - SSH

index.jsp is the default JavaServer Pages (JSP) file used as the entry point for a web application. It typically contains HTML and Java code to render dynamic content, and is displayed when a user visits the root URL of a web app.

I edited index.jsp by adding the following code:

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

This displays a greeting with my name and confirms the app is running successfull



```
File Edit Selection View Go Run Terminal Help ← → WEB-INF [SSH: ec2-16-171-181-47.eu-north-1.compute.amazonaws.com]
EXPLORER ... web.xml index.jsp
WEB-INF [SSH: EC2-16-171-181-47.EU-NORTH-1.COMPUTE.AMAZON...
index.jsp
web.xml

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



NextWork.org

# Everyone should be in a job they love.

Check out nextwork.org for  
more projects

