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Connect a GitHub Repo with AWS



dineshrajdhanapathy@gmail.com

```
Complete!  
[ec2-user@ip-172-31-80-96 nextwork-web-project]$ git --version  
git version 2.40.1  
[ec2-user@ip-172-31-80-96 nextwork-web-project]$ █
```



DI

dineshrajdhanapathy@g...

NextWork Student

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Introducing Today's Project!

What is GitHub?

GitHub is a platform for hosting and managing Git repositories. In today's project, I used GitHub to store my web app code, track changes, and sync updates between my local repo and the remote repository.

One thing I didn't expect...

One thing I didn't expect in this project was needing a GitHub personal access token instead of a password for authentication. This added an extra step but improved security for pushing changes.

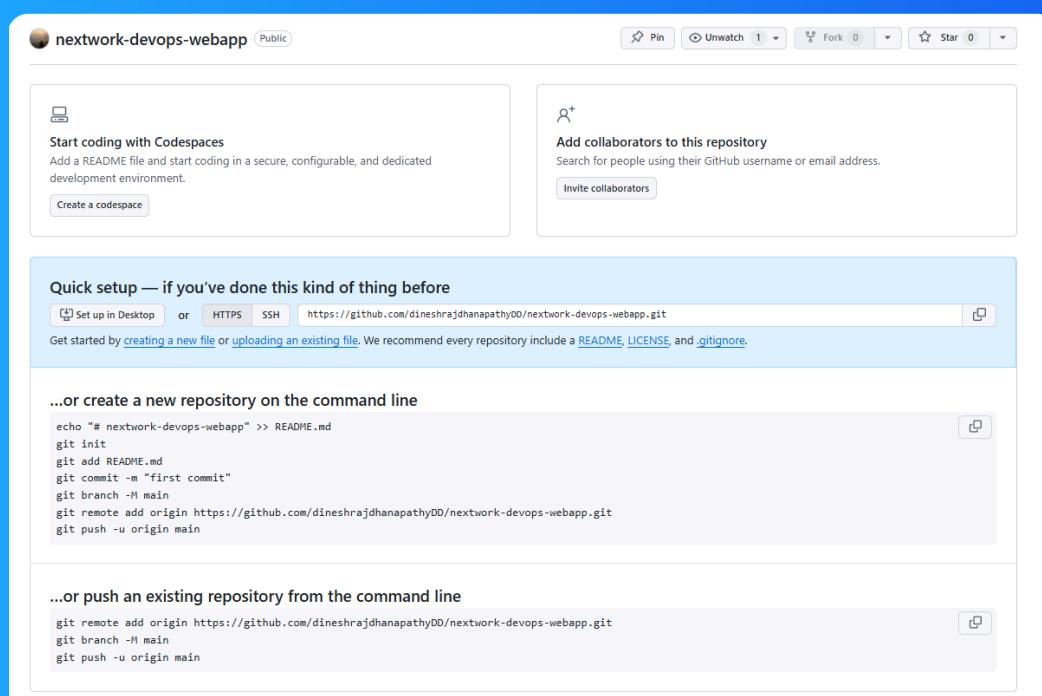
This project took me...

This project took me about 2 hours. It involved setting up Git and GitHub, initializing the repository, making changes to the web app, and pushing them to GitHub while learning about version control.

Git and GitHub

Git is a version control system that tracks changes in code and enables collaboration. I installed Git using the commands: 'sudo yum update -y' (or apt for Ubuntu) and 'sudo yum install git -y'.

GitHub is a platform for hosting and managing Git repositories. I'm using GitHub in this project to store code, track changes, collaborate efficiently, and ensure version control for seamless development.



My local repository

A Git repository is a storage space that tracks and manages code changes. It allows developers to version control their projects, collaborate, and revert to earlier versions when needed for efficient development.

'git init' is a command that initializes a new Git repository in a folder, enabling version control. I ran 'git init' in my web app folder to start tracking code changes locally for the project.

After running 'git init', the response from the terminal was that the repository was initialized. A branch in Git is a separate line of development, allowing you to work on features or fixes without affecting the main code.

```
/home/ec2-user/nextwork-web-project
● [ec2-user@ip-172-31-80-96 nextwork-web-project]$ git init
hint: Using 'master' as the name for the initial branch. This default branch name
hint: is subject to change. To configure the initial branch name to use in all
hint: of your new repositories, which will suppress this warning, call:
hint:
hint:   git config --global init.defaultBranch <name>
hint:
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this command:
hint:
hint:   git branch -m <name>
Initialized empty Git repository in /home/ec2-user/nextwork-web-project/.git/
○ [ec2-user@ip-172-31-80-96 nextwork-web-project]$ █
```

To push local changes to GitHub, I ran three commands

git add

The first command I ran was 'git add' . A staging area is where changes are collected before being committed. It allows me to select which files to include in the next commit, ensuring precise version control.

git commit

The second command I ran was 'git commit -m "message"'. Using -m means I can add a commit message directly in the command, describing the changes made, making it easier to track and understand updates in the project.

git push

The third command I ran was 'git push -u origin main'. Using -u means I'm setting the upstream reference, which links my local branch to the remote one on GitHub, allowing easier future pushes without specifying the branch.

Authentication

When I commit changes to GitHub, Git asks for my credentials because it needs to authenticate my identity to ensure I have permission to push changes to the repository. This ensures secure access to my GitHub account.

Local Git identity

Git needs my name and email because they are used to identify the author of each commit. This information is stored in the commit history, allowing others to track changes and attribute them correctly.

Running `git log` showed me that it displays the commit history, including each commit's unique hash, author, date, and message. This allows me to review the changes made and track the project's progress over time.

```
● [ec2-user@ip-172-31-80-96 nextwork-web-project]$ git log  
commit 464aff1370f17708fcbb0bd400873e66e6c6664ca (HEAD -> master, origin/master)  
Author: EC2 Default User <ec2-user@ip-172-31-80-96.ec2.internal>  
Date:   Thu Jan 9 09:43:11 2025 +0000  
  
        Updated index.jsp with new content
```

GitHub tokens

GitHub authentication failed when I entered my password because GitHub no longer supports password-based authentication for Git operations. Instead, I need to use a personal access token for secure access.

A GitHub token is a secure authentication method that replaces passwords for Git operations. I'm using one in this project because GitHub no longer supports password-based authentication for enhanced security

I could set up a GitHub token by going to Settings > Developer settings > Personal access tokens on GitHub. I generated a new token, selected the necessary scopes, and then used it for authentication.

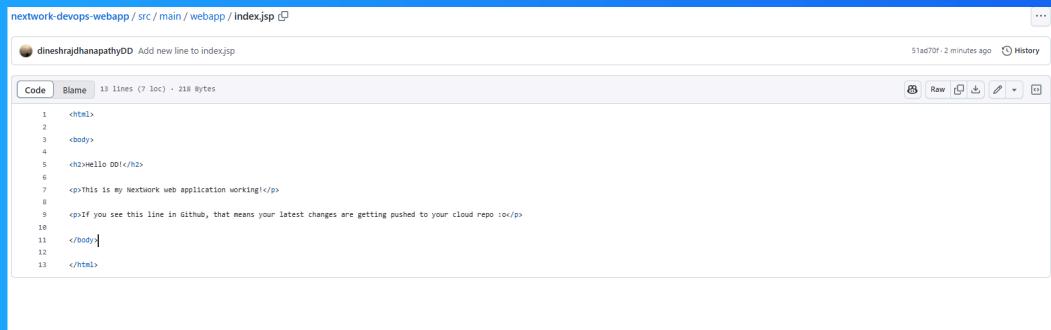
The screenshot shows the "Select scopes" section of the GitHub token generation form. It includes an "Expiration" dropdown set to "30 days" (with a note that the token will expire on Sat, Feb 8 2025) and a "Select scopes" heading. Below this, a table lists various OAuth scopes with their descriptions. The "repo" scope is checked, while others like "workflow", "admin:org", and "admin:public_key" are also listed with their descriptions.

Scope	Description
<input checked="" type="checkbox"/> repo	Full control of private repositories
<input type="checkbox"/> repo:status	Access commit status
<input type="checkbox"/> repo_deployment	Access deployment status
<input type="checkbox"/> public_repo	Access public repositories
<input type="checkbox"/> repo:invite	Access repository invitations
<input type="checkbox"/> security_events	Read and write security events
<input checked="" type="checkbox"/> workflow	Update GitHub Action workflows
<input type="checkbox"/> write:packages	Upload packages to GitHub Package Registry
<input type="checkbox"/> read:packages	Download packages from GitHub Package Registry
<input type="checkbox"/> delete:packages	Delete packages from GitHub Package Registry
<input type="checkbox"/> admin:org	Full control of orgs and teams, read and write org projects
<input type="checkbox"/> write:org	Read and write org and team membership, read and write org projects
<input type="checkbox"/> read:org	Read org and team membership, read org projects
<input type="checkbox"/> manage_runners:org	Manage org runners and runner groups
<input type="checkbox"/> admin:public_key	Full control of user public keys
<input type="checkbox"/> write:public_key	Write user public keys
<input type="checkbox"/> read:public_key	Read user public keys
<input type="checkbox"/> admin:repo_hook	Full control of repository hooks
<input type="checkbox"/> write:repo_hook	Write repository hooks
<input type="checkbox"/> read:repo_hook	Read repository hooks

Making changes again

I wanted to see Git working in action, so I updated the index.jsp file in the nextwork-web-project. I couldn't see the changes in my GitHub repo initially because I hadn't committed and pushed them yet.

I finally saw the changes in my GitHub repo after committing the updates with git commit -m "Updated index.jsp" and pushing them with git push. This synchronized my local changes with the remote repository.



A screenshot of a GitHub code editor interface. The title bar says "nextwork:devops-webapp / src / main / webapp / index.jsp". The commit history shows a single entry from "dineshrajdhanapathyDD" with the message "Add new line to index.jsp" and a timestamp of "51ad70f · 2 minutes ago". The code editor displays the following JavaServer Pages (JSP) code:

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <title>Hello World</title>
    </head>
    <body>
        <h2>Hello DDI!</h2>
        <p>This is my NextWork web application working!</p>
        <p>If you see this line in Github, that means your latest changes are getting pushed to your cloud repo :o</p>
    </body>
</html>
```



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