



Connect a GitHub Repo with AWS



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Introducing Today's Project!

What is GitHub?

GitHub is a cloud-based platform that allows developers to store, share, and collaborate on code. It serves as a Git repository. We used it to store and push changes to a file.

One thing I didn't expect...

I didn't expect to create a token.

This project took me...

hour



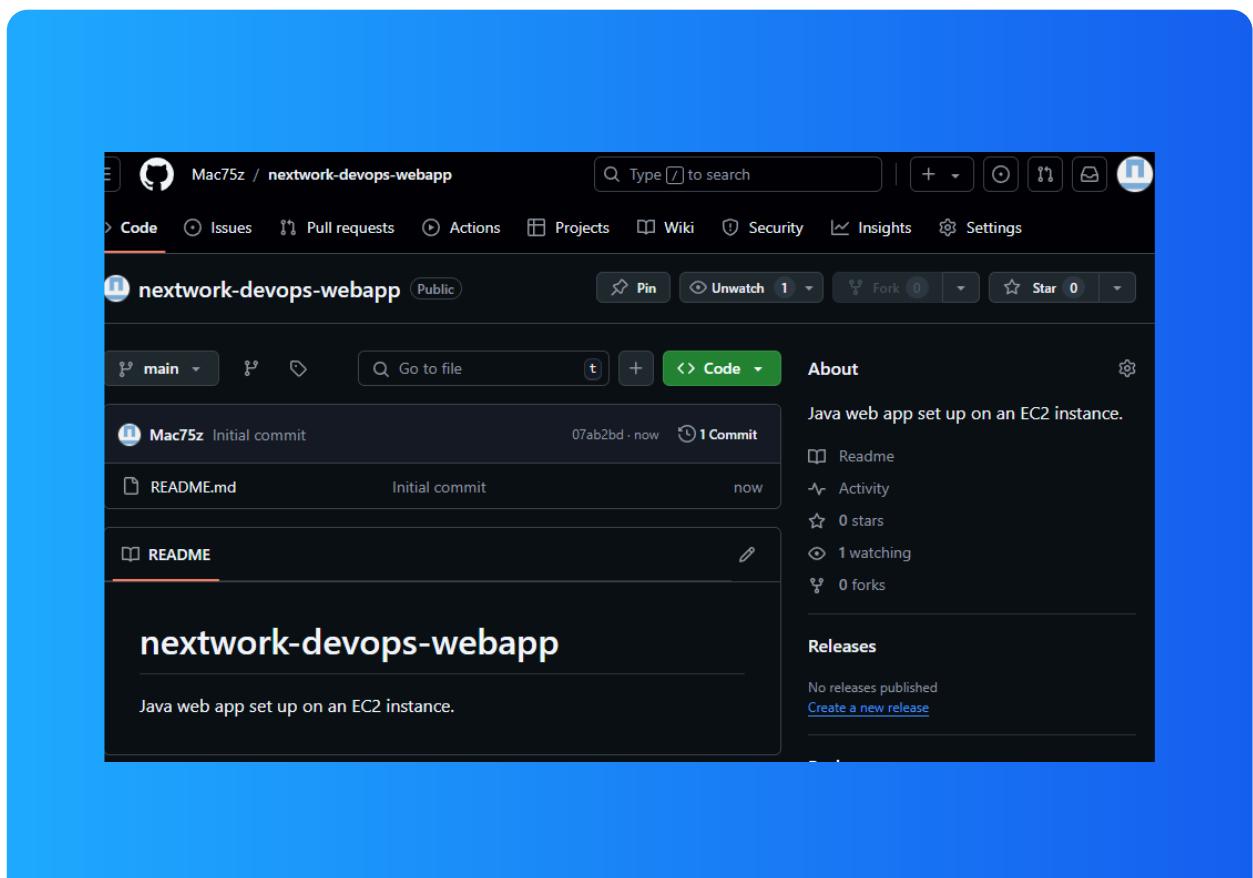
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Git and GitHub

Git is a version control system which helps us with tracking changes and who made those changes. We installed Git using the command 'sudo dnf install git -y'. Using -y means we automatically say yes to every time our terminal asks conformation.

GitHub is a cloud storage space for us to keep source code for our projects. GitHub uses Git to track changes in our code, and comes with different tools that help with collaboration. I'm using GitHub in this project to interact with Git visually.





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My local repository

A Git repository is a folder in Git that holds the source codes of our application or object files and their entire version history. If Git is a tool for version control, A Git repository is a folder containing code or files being track with Git

git init is a command that initializes a local repository. We ran git init in our EC2 instance's nextwork-web-project folder.

After running `git init`, the response from the terminal is that a master branch has been created. A branch Git is a parallel version of our code. Usually it's a parallel version of the master branch itself (not other branches).

```
TERMINAL PROBLEMS OUTPUT DEBUG CONSOLE PORTS bash - nextwork-web-project + ⌂ ⌂ ⌂ ⌂ ... ^

Complete!
● [ec2-user@ip-172-31-91-203 nextwork-web-project]$ git --version
git version 2.40.1
● [ec2-user@ip-172-31-91-203 nextwork-web-project]$ pwd
/home/ec2-user/nextwork-web-project
● [ec2-user@ip-172-31-91-203 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-172-31-91-203 nextwork-web-project]$
```



To push local changes to GitHub, I ran three commands

git add

The first command I ran was git add.. which puts all our changes into a staging area. A staging area is a spot for Git to collect/highlight changes made so that they can be reviewed together which helps us catch bugs

git commit

The second command we ran was git commit -m "Updated index.jsp.." using -m means we can leave a message about the work we've just saved into our Git history.

git push

The third command I ran was git push -u origin master. Using '-u' means upstream, so we're getting Git to remember that any 'git push' run should automatically push local changes into the master branch of our 'origin' GitHub repo.



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Authentication

When I commit changes to GitHub, Git asks for my credentials because it wants to know that we have authority to push changes to the GitHub repo we're using.

Local Git identity

Git needs my name and email because it needs to assign the change I've made to the local repo with a name and email address.

Running git log showed my previous commit, which revealed the author name has been set to EC2 Default User by default.

```
Password for 'https://Mac75z@github.com':  
Enumerating objects: 9, done.  
Counting objects: 100% (9/9), done.  
Compressing objects: 100% (6/6), done.  
Writing objects: 100% (9/9), 1.07 KiB | 1.07 MiB/s, done.  
Total 9 (delta 0), reused 0 (delta 0), pack-reused 0  
remote:  
remote: Create a pull request for 'master' on GitHub by visiting:  
remote:     https://github.com/Mac75z/nextwork-devops-webapp/pull/new/master  
remote:  
To https://github.com/Mac75z/nextwork-devops-webapp.git  
 * [new branch]      master -> master  
branch 'master' set up to track 'origin/master'.  
[ec2-user@ip-172-31-91-203 nextwork-web-project]$ git log  
commit fe07723b84042de38f3004266529fbfaa6866f (HEAD -> master, origin/master)  
Author: EC2 Default User <ec2-user@ip-172-31-91-203.ec2.internal>  
Date:   Mon Nov 25 00:54:30 2024 +0000  
  
        Updated index.jsp with new content  
[ec2-user@ip-172-31-91-203 nextwork-web-project]$ █
```



GitHub tokens

GitHub authentication failed when I entered my password because password authentication is no longer supported. We need to use tokens instead.

A GitHub token is a replacement for passwords in terms of authentication. I'm using one in this project because we can't get our EC2 instance access to our GitHub account until we give a valid non-password authorization method.

I could set up a GitHub token by visiting the developer settings in my GitHub account

The screenshot shows the GitHub 'Personal Tokens' creation interface. It includes fields for a note ('Generated for EC2 Instance Access. NextWork DevOps project serie'), expiration ('30 days'), and a list of OAuth scopes. The 'repo' scope is selected, granting full control of private repositories. Other available scopes include 'repo:status', 'repo_deployment', 'public_repo', 'repo:invite', 'security_events', 'workflow', 'write:packages', and 'read:packages'. A note at the bottom states that scopes define access for personal tokens and links to 'Read more about OAuth scopes'.

Scope	Description
<input checked="" type="checkbox"/> repo	Full control of private repositories
<input checked="" type="checkbox"/> repo:status	Access commit status
<input checked="" type="checkbox"/> repo_deployment	Access deployment status
<input checked="" type="checkbox"/> public_repo	Access public repositories
<input checked="" type="checkbox"/> repo:invite	Access repository invitations
<input checked="" type="checkbox"/> security_events	Read and write security events
<input 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



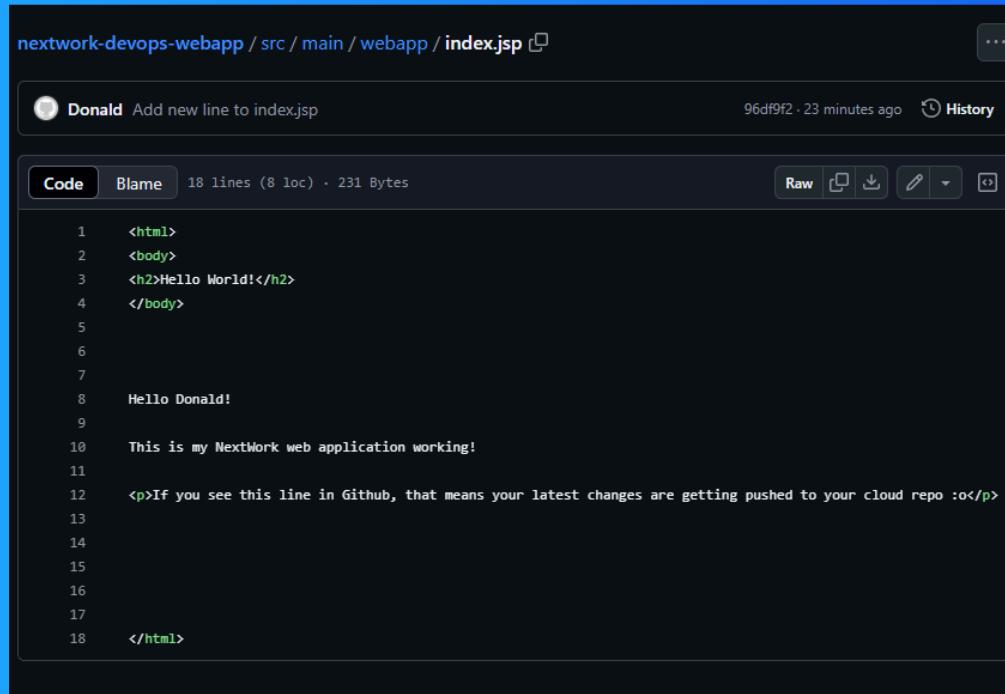
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Making changes again

Wanted to see Git working in action, so we updated index.jsp... We couldn't see our changes in my GitHub repo initially because we hadn't committed and pushed those changes yet.

We finally saw the changes in my GitHub repo after we ran git add, git commit and git push again. We also had to enter our user name and personal access token to push changes upstream



A screenshot of a GitHub commit page for the file index.jsp. The commit message is "Add new line to index.jsp" by Donald, made 23 minutes ago. The code tab shows the following content:

```
1 <html>
2 <body>
3 <h2>Hello World!</h2>
4 </body>
5
6
7
8 Hello Donald!
9
10 This is my NextWork web application working!
11
12 <p>If you see this line in Github, that means your latest changes are getting pushed to your cloud repo :o</p>
13
14
15
16
17
18 </html>
```



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