



# Connect a GitHub Repo with AWS

VE

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```
Transaction test succeeded.
Running transaction
Preparing :
Installing : git-core-2.47.1-1.amzn2023.0.3.x86_64
Installing : git-2.47.1-1.amzn2023.0.3.x86_64
Installing : perl-lib-B-0.65-477.amzn2023.0.7.x86_64
Installing : perl-TermReadkey-2.38-9.amzn2023.0.2.x86_64
Installing : perl-File-Find-1.37-477.amzn2023.0.7.x86_64
Installing : perl-File-List-1.32-477.amzn2023.0.2.x86_64
Installing : perl-Git-2.47.1-1.amzn2023.0.3.noarch
Installing : perl-Git-2.47.1-1.amzn2023.0.3.x86_64
Installing : perl-2.47.1-1.amzn2023.0.3.x86_64
Running scriptlets:
www-data@ip-172-31-40-178:~$ sudo apt update
www-data@ip-172-31-40-178:~$ apt update
Verifying : git-core-2.47.1-1.amzn2023.0.3.x86_64
Verifying : git-2.47.1-1.amzn2023.0.3.x86_64
Verifying : perl-lib-B-0.65-477.amzn2023.0.7.x86_64
Verifying : perl-TermReadkey-2.38-9.amzn2023.0.2.x86_64
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Verifying : perl-Git-2.47.1-1.amzn2023.0.3.noarch
Verifying : perl-Git-2.47.1-1.amzn2023.0.3.x86_64
Verifying : perl-2.47.1-1.amzn2023.0.3.x86_64
Verifying : www-data@ip-172-31-40-178:~$ git --version
git version 2.47.1
www-data@ip-172-31-40-178:~$ git -v
git version 2.47.1
www-data@ip-172-31-40-178:~$
```

# Introducing Today's Project!

First I will set up my Git and GitHub. Then I will connect my web app project to a GitHub repo. Next I will make changes to my web app code - and watch my GitHub repo update too. Finally I will set up a README file for my repo.

## Key tools and concepts

In today's project I installed git into my EC2 instance and using git and github, pushed all of web app documents and code into a newly created repository.

## Project reflection

This project took me an hour to complete from start to finish.

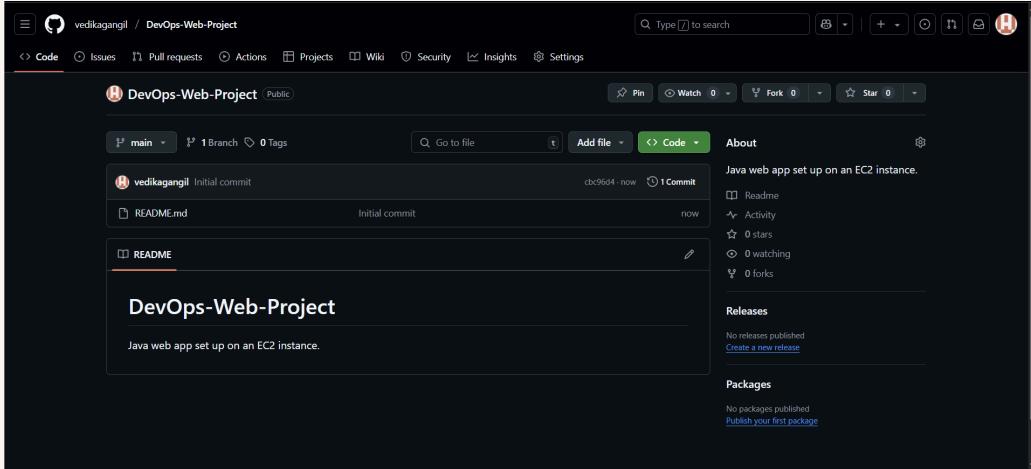
This project helped me gain a deeper understanding of git and github.

This project is part two of a series of DevOps projects where I'm building a CI/CD pipeline! I'll be working on the next project tomorrow with the same amount of enthusiasm.

# Git and GitHub

Git is a free, open-source distributed version control system used to track code changes and collaborate with others. It enables branching, merging, and remote repository hosting. I installed it on my instance using some commands.

GitHub is a cloud-based platform for hosting Git repositories and collaborating on code. It provides tools for version control, issue tracking, CI/CD (Actions), and team workflows. I am using it to help with Git and see my file changes.



# My local repository

A Git repository is a version-controlled project folder that tracks all changes to my files (code, docs, etc.) using Git. It stores full history of edits (who changed what & when), branches for parallel work and remote links.

git init initializes a new Git repository in my current directory by creating a hidden .git folder that stores all version control data. It enables Git tracking for the project but doesn't automatically add files.

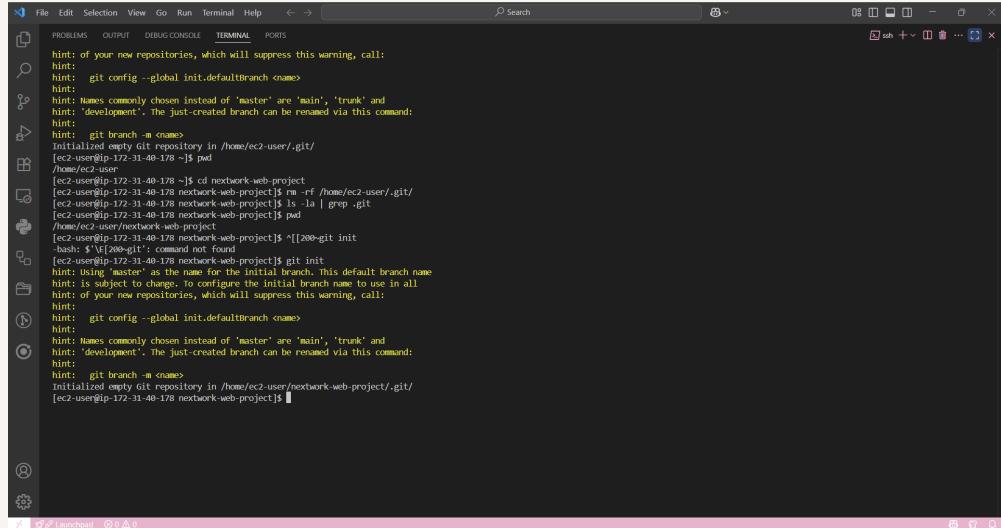
A branch in Git is a lightweight, movable pointer to a specific commit, allowing a person to work on different versions of your code simultaneously. Each branch represents an independent line of development.

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The screenshot shows a terminal window with the following session:

```
File Edit Selection View Go Run Terminal Help ← → Search
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
hint: of your new repositories, which will suppress this warning, call:
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/.git/
[ec2-user@ip-172-31-40-178 ~]$ cd nextwork-web-project
[ec2-user@ip-172-31-40-178 nextwork-web-project]$ rm -rf /home/ec2-user/.git/
[ec2-user@ip-172-31-40-178 nextwork-web-project]$ ls -la | grep .git
[ec2-user@ip-172-31-40-178 nextwork-web-project]$ pwd
/home/ec2-user/nextwork-web-project
[ec2-user@ip-172-31-40-178 nextwork-web-project]$ git init
[ec2-user@ip-172-31-40-178 nextwork-web-project]: command not found
[ec2-user@ip-172-31-40-178 nextwork-web-project]$ git init
hint: 'git init' is 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-172-31-40-178 nextwork-web-project]$
```

# To push local changes to GitHub, I ran three commands

## git add

git add . stages all (marked by the '!') files in nextwork-web-project to be saved in the next version of my project.

## git commit

git commit -m "Updated index.jsp with new content" saves the staged changes as a snapshot in my project's history. This means my project's version control history has just saved my latest changes in a new version.

## git push

git push -u origin master uploads i.e. 'pushes' my committed changes to origin, which I've bookmarked as my GitHub repo. 'master' tells Git that these updates should be pushed to the master branch of my GitHub repo.

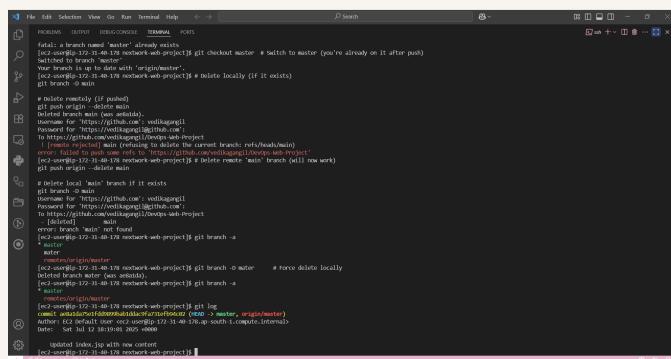
# Authentication

Git asked for my username and password to authenticate my identity when interacting with remote repositories. This verification ensures that I have permission to perform actions like pushing changes or accessing private repos.

## Local Git identity

Git asked for my name and email to label my commits in the project history. This helps track who made changes and when.

Running git log showed me where the commit was made(in which branch) as well as the author name and the date and time



```
File Edit Selection View Go Run Terminal Help ⌘ Search
[REDACTED] TERMINAL [PORTS]
git: 'checkout' is aliased to 'git switch'
git: A branch must be specified for 'switch' (you're already on it after 'push')
Switched to branch 'master'
You can now push or pull using:
  'git push origin master'
  'git pull origin master'

[REDACTED] # delete locally (if it exists)
git push origin --delete main
Username for https://github.com: vedikagangil
Password for https://vedikagangil@github.com:
[REDACTED] # remote rejected main (refusing to delete the current branch; refs/heads/main)
error: failed to push to ref 'refs/heads/main' (remote rejected)
[REDACTED] # delete remote 'main' branch (will now work)
git push origin --delete main
[REDACTED] # delete local 'main' branch if it exists
git branch -D main
Username for https://github.com: vedikagangil
Password for https://vedikagangil@github.com:
[REDACTED] To https://github.com/vedikagangil/nextwork-web-project
error: branch 'main' not found
[REDACTED] error: failed to push to ref 'refs/heads/main' (remote rejected)
[REDACTED] # force delete locally
git push origin --force-delete-local-branch main > master, origin/master
[REDACTED] # force delete locally
git push origin --force-delete-local-branch main > master, origin/master
[REDACTED] updated index_1sp with new content
[REDACTED]
```

# GitHub tokens

GitHub authentication failed when I entered my password because GitHub no longer accepts passwords for HTTPS. Since 2021, GitHub requires a personal access token (PAT) instead of account password for HTTPS operations.

A GitHub token (or Personal Access Token, PAT) is a secure alternative to passwords for authenticating with GitHub. It's a unique, revocable string of characters that grants specific permissions to your account (e.g., repo access, CI/CD workflows).

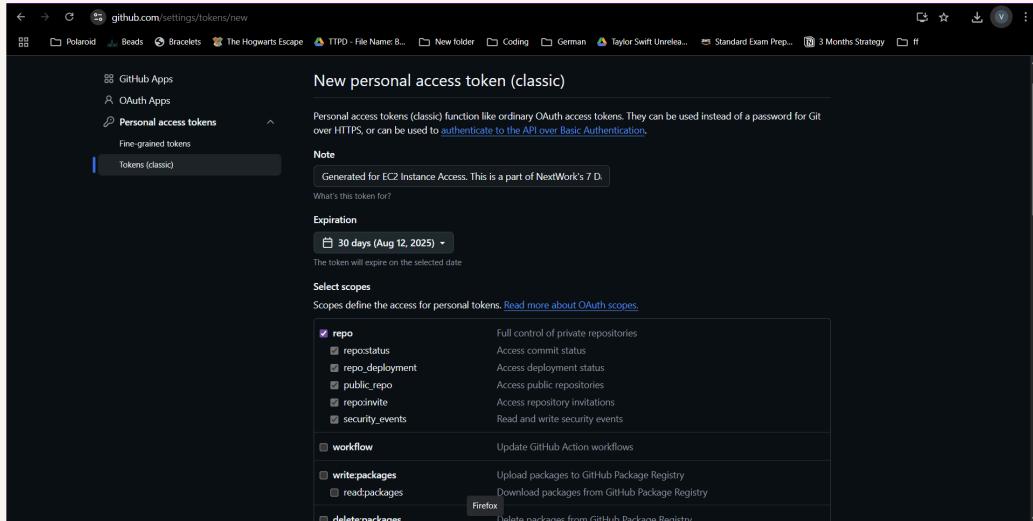
I generated my token by going to GitHub Settings → Developer Settings → Personal Access Tokens (Tokens Classic). Generating new token (classic). Adding a note. Setting expiration. Selecting permissions. And then Clicking Generate token.

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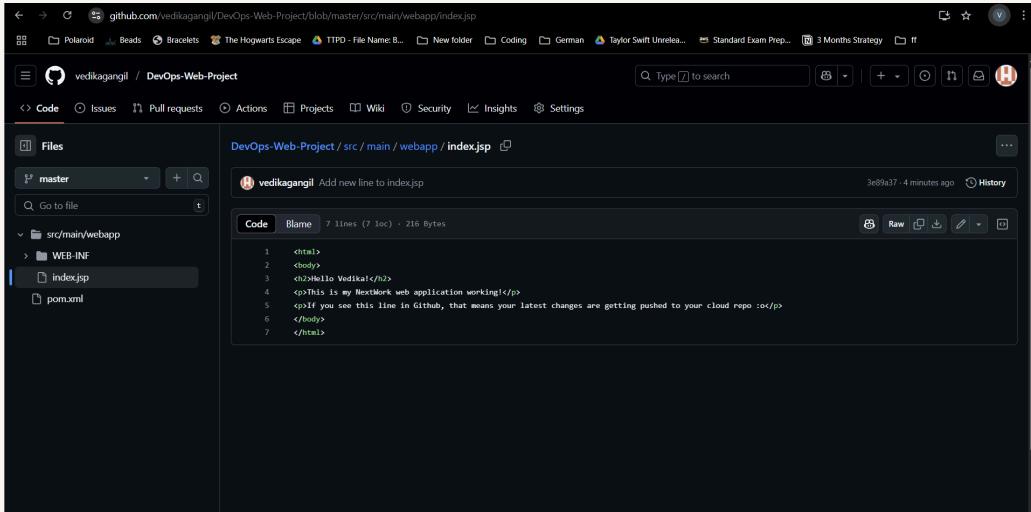
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# Making changes again

'I wanted to see Git working in action, so I added a new paragraph line to the index.jsp file. I couldn't see the changes in my GitHub repo initially because the change was made only locally. Later the change was made throughout.

I finally saw the changes in my GitHub repo after I committed the change and enter my username and token ID.



The screenshot shows a GitHub code editor interface. The URL in the address bar is `github.com/vedikagangil/DevOps-Web-Project/blob/master/src/main/webapp/index.jsp`. The repository name is `DevOps-Web-Project`. The file path is `/src/main/webapp/index.jsp`. A commit message from `vedikagangil` is visible, stating "Add new line to index.jsp". The commit was made 4 minutes ago. The code editor displays the following content:

```
1 <html>
2 <body>
3 <h2>Hello Vedika!</h2>
4 <p>This is my NextWork web application working!</p>
5 <p>If you see this line in GitHub, that means your latest changes are getting pushed to your cloud repo :)</p>
6 </body>
7 </html>
```



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