DevOps Tools You Should Know: Git and GitHub

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In this tutorial, we'll create a simple repository, make changes, create branches, and merge changes using GitHub.

Background

A GitHub workflow allows you to understand fundamental concepts like repository management, version control, branching, and collaboration.

GitHub is a platform that hosts Git repositories and provides tools for collaboration and version control. It allows users to store their Git repositories in the cloud, making it easier to manage projects, collaborate with others, and contribute to open-source projects.

Git is a distributed version control system used for tracking changes in source code. It allows multiple developers to collaborate on projects by managing different versions of files, merging changes, and maintaining a history of revisions.

DevOps Project Outline

In this short tutorial, you will create a simple repository, make changes, create branches, and merge changes using GitHub.

Prerequisite

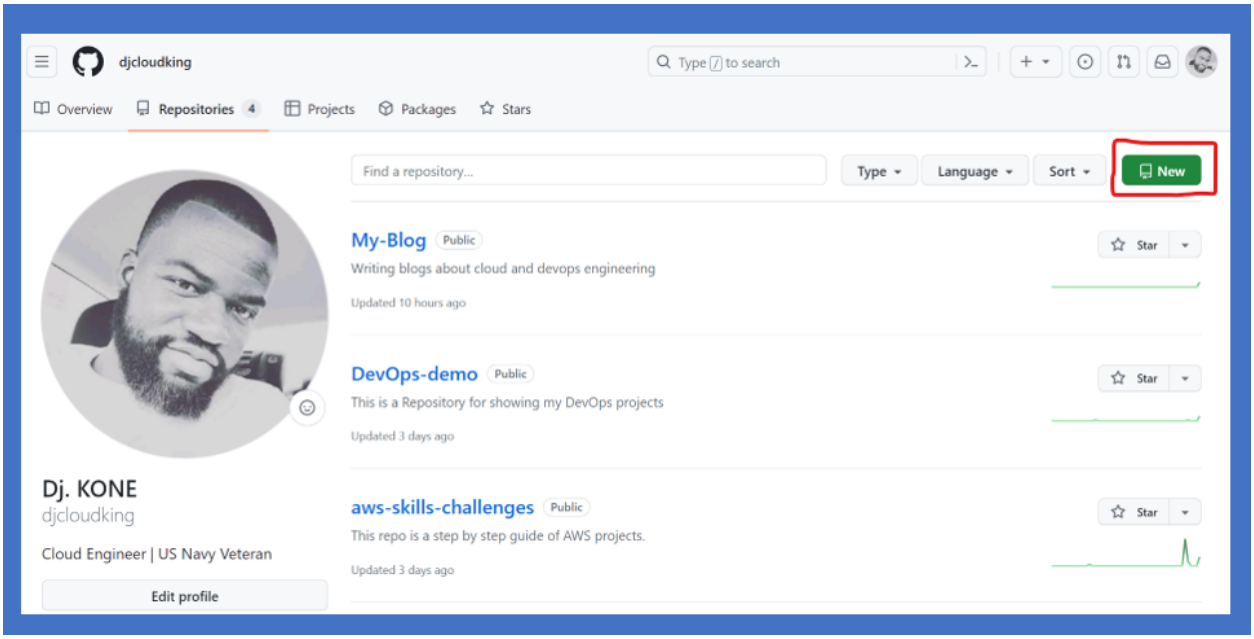
- Basic bash scripting knowledge.
- Basic Git Knowledge.
- Access to Git Bash, Command Prompt, or Terminal.
- Access to a GitHub account.

Let's have fun.

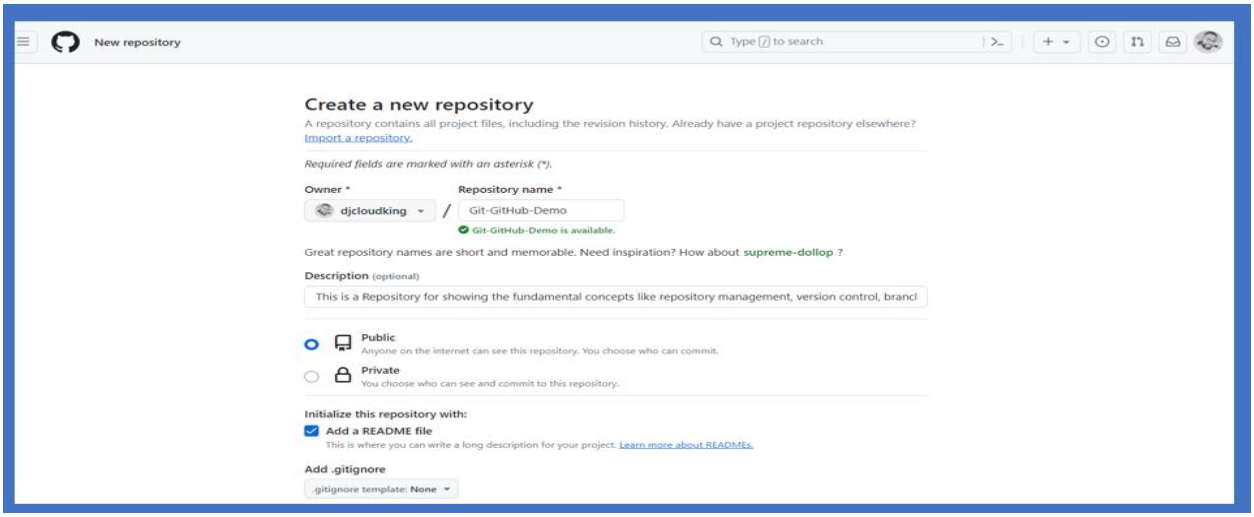
1- Create a GitHub Repository.

- Log in to your GitHub account.

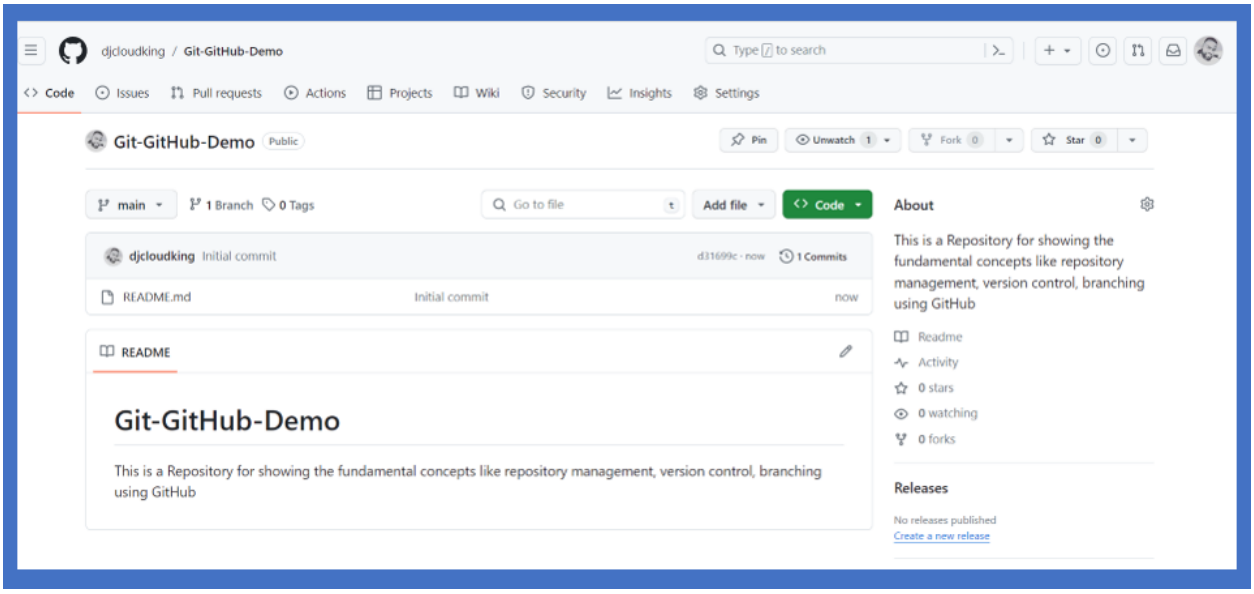
- Go to the Repositories tab, and click on the “New” button to create a new repository.



- Name your repository and add a brief description. I will name mine Git-GitHub-Demo.



- Choose the visibility (public or private) and initialize with a README file by selecting *Add a README file*.
- Click on the green button *Create Repository*.



Great job! You created a repository workflow on GitHub.

2- Clone the Repository

Cloning a repository is to create a local copy of an existing repository and sync both of them on your local computer. To do that:

- First, open your Git Bash, Command Prompt, or Terminal.
- Then, create a local directory for your repository using the command line `mkdir <name of directory>`. In our case, we will make a directory called **newbox.** Finally, change into the

directory we created using `cd newbox`. *Note: Using `ls`command shows that you created an empty directory named newbox.*

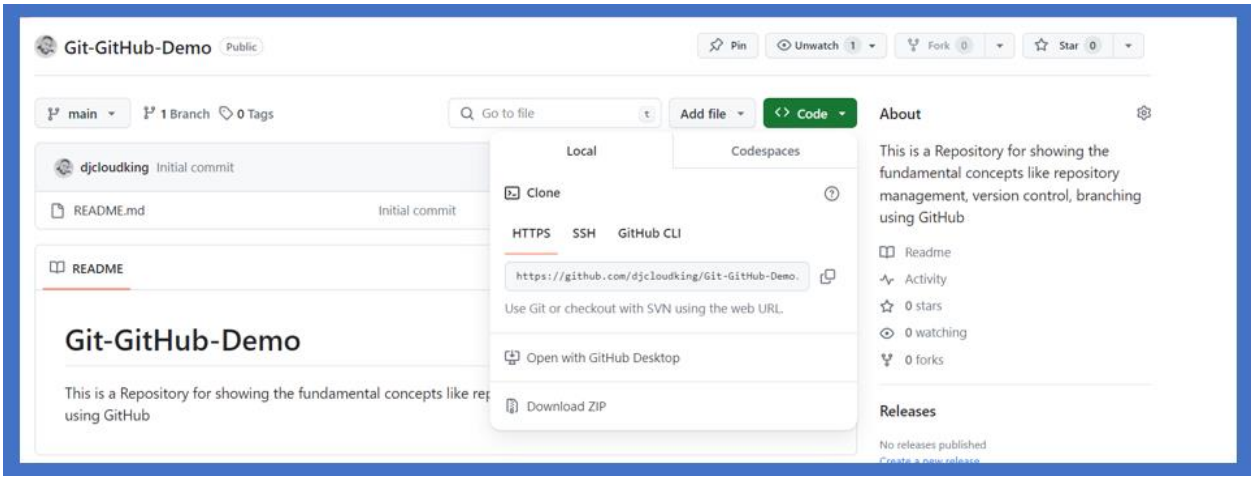
```
djkon@FahmaCloudPc MINGW64 ~
$ pwd
/c/Users/djkon

djkon@FahmaCloudPc MINGW64 ~
$ mkdir newbox

djkon@FahmaCloudPc MINGW64 ~
$ cd newbox

djkon@FahmaCloudPc MINGW64 ~/newbox
$ ls
```

- Now, go to the right side of your repository dashboard. Click the down arrow of the green *Code* button, and you will see an HTTPS clone address. Copy that address.



- Use the `git clone` command to clone your repository to your local machine: **git clone <repository_url copied>**

```
djkon@FahmaCloudPc MINGW64 ~/newbox
$ git clone https://github.com/djcloudking/Git-GitHub-Demo.git
Cloning into 'Git-GitHub-Demo'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.
```

Clap for yourself! You have created a directory **newbox** with a clone of the Git-GitHub-Demo repository in it.

3- Make Changes and Commit

*Any time you need to update, add, delete, or modify files within your project, you're **making changes**.*

For our tutorial, let's:

- First, modify the README file using a text editor or terminal commands.

```
djkon@FahmaCloudPc MINGW64 ~/newbox
$ cd Git-GitHub-Demo

djkon@FahmaCloudPc MINGW64 ~/newbox/Git-GitHub-Demo (main)
$ ls
README.md
```

- Open README.md in Nano and edit it.

```
djkon@FahmaCloudPc MINGW64 ~/newbox/Git-GitHub-Demo (main)
$ nano README.md
```

- Check the status of changes using `git status` command.

```
djkon@FahmaCloudPc MINGW64 ~/newbox/Git-GitHub-Demo (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   README.md

no changes added to commit (use "git add" and/or "git commit -a")
```

*Changes are staged before committing. **Staging** means preparing specific changes to be included in the next commit. It allows you to commit only certain changes rather than everything that's been modified.*

- Add the changes to the staging area using `git add` command.

```
djkon@FahmaCloudPc MINGW64 ~/newbox/Git-GitHub-Demo (main)
$ git add README.md
```

Commits *allow you to maintain different versions of your project. If something goes wrong or you need to revert to an earlier state, you can easily reference previous commits.*

- Commit the changes using`git commit -m “modified file name”`.

```
djkon@FahmaCloudPc MINGW64 ~/newbox/Git-GitHub-Demo (main)
$ git commit -m "Modified README.md"
[main a7f0ad3] Modified README.md
 1 file changed, 1 insertion(+), 1 deletion(-)
```

Kudos to you. You have made changes to your copy (or clone) of the repository, committed those changes.

4- Create and Switch Branches

- Create a new branch using`git branch new-feature`.

```
djkon@FahmaCloudPc MINGW64 ~/newbox/Git-GitHub-Demo (main)
$ git branch test
```

- Switch to the new branch using`git checkout new-feature`.

```
djkon@FahmaCloudPc MINGW64 ~/newbox/Git-GitHub-Demo (main)
$ git checkout test
Switched to branch 'test'
```

5- Merge Changes

- Switch back to the main branch using`git checkout main`.

```
djkon@FahmaCloudPc MINGW64 ~/newbox/Git-GitHub-Demo (test)
$ git checkout main
Switched to branch 'main'
Your branch is ahead of 'origin/main' by 1 commit.
  (use "git push" to publish your local commits)

djkon@FahmaCloudPc MINGW64 ~/newbox/Git-GitHub-Demo (main)
$
```

- Merge changes from the “test” branch to the main branch using`git merge new-feature`.

6- Push Changes to GitHub

- Now you are ready to push your commits back to GitHub. Push your changes to the remote repository using`git push origin main`.

```
djkon@FahmaCloudPc MINGW64 ~/newbox/Git-GitHub-Demo (main)
$ git push origin main
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 12 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 280 bytes | 280.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/djcloudking/Git-GitHub-Demo.git
   d31699c..a7f0ad3  main -> main
```

Well done! It's time to go back to your GitHub account and in the Git-GitHub-Demo repository that you have been working with.

- Refresh the website and see the changes.
- Explore the commits, branches, and compare changes made in different branches.
- Observe the updated files and commit history.

Voilà! You now know how to use git branching. This was a short tutorial on how to create a simple repository, make changes, create branches, and merge changes using GitHub.

Thank you for reading and/or following along! Leave us a clap or a comment. Please stay tuned for all my upcoming projects.

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