GIT & GITHUB- HAND NOTE

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Git & GitHub-Key Concepts & Commands!

I. Git

Git is a tool that helps you track changes in your code. It allows multiple people to work on the same project without messing things up. You can also go back to previous versions if needed.

- It allows developer to collaborate and track the code history.

In short: Git is a tool that helps us to track changes in your code. Git is a Version Control System. Which is:

- **Most popular among the version control tools**
- **Free & Open Source.**
- **Fast & Scalable.**

Setting Up Git on Your Local Machine 🚀

To start using Git on your computer, you'll need to install the following tools:

1.Visual Studio Code

Visual Studio Code (VS Code) as it provides a great environment for working with git
Download VS Code: https://code.visualstudio.com/

2. install Git

For Windows Users:

- Download and install **Git Bash** from https://git-scm.com/downloads.
- Git Bash provides a command-line interface like Linux/Mac for running Git commands.

For Mac Users:

- **No need to install Git separately!** Mac already comes with Git preinstalled.
- You can check if Git is available by running this command in **Terminal**:

```
git --version
```

If Git is missing install it using Homebrew (For Mac only)

```
brew install git
```

After installation, check if Git is working correctly or not by running "git – version" command.

Next, Configure Git with your information:

- Before we start using Git, set up your name and email which will helps track commits

```
git config --global user.name "Your Name"
git config --global user.email "your-email@example.com"
```

To check if updated or not, run:

git config --list (It will give username and email if setup successfully!)

With this, Git is successfully set up on our machine.

II. GitHub

GitHub is a website where you can store and share your code. It works with Git to keep your project safe, help you collaborate with others, and track changes easily.

- In short, it is a website that allows dev's to store and manage code using Git.
- You can think of it like Google Drive but for Coding!

Note: Git and GitHub are not the same!

Git – Is like a notebook where you can write and track your work

GitHub-Is like Google Drive where you can store and share your notebook with others.

They work together; however, they are not the same!

GitHub Repository or GitHub Repo:

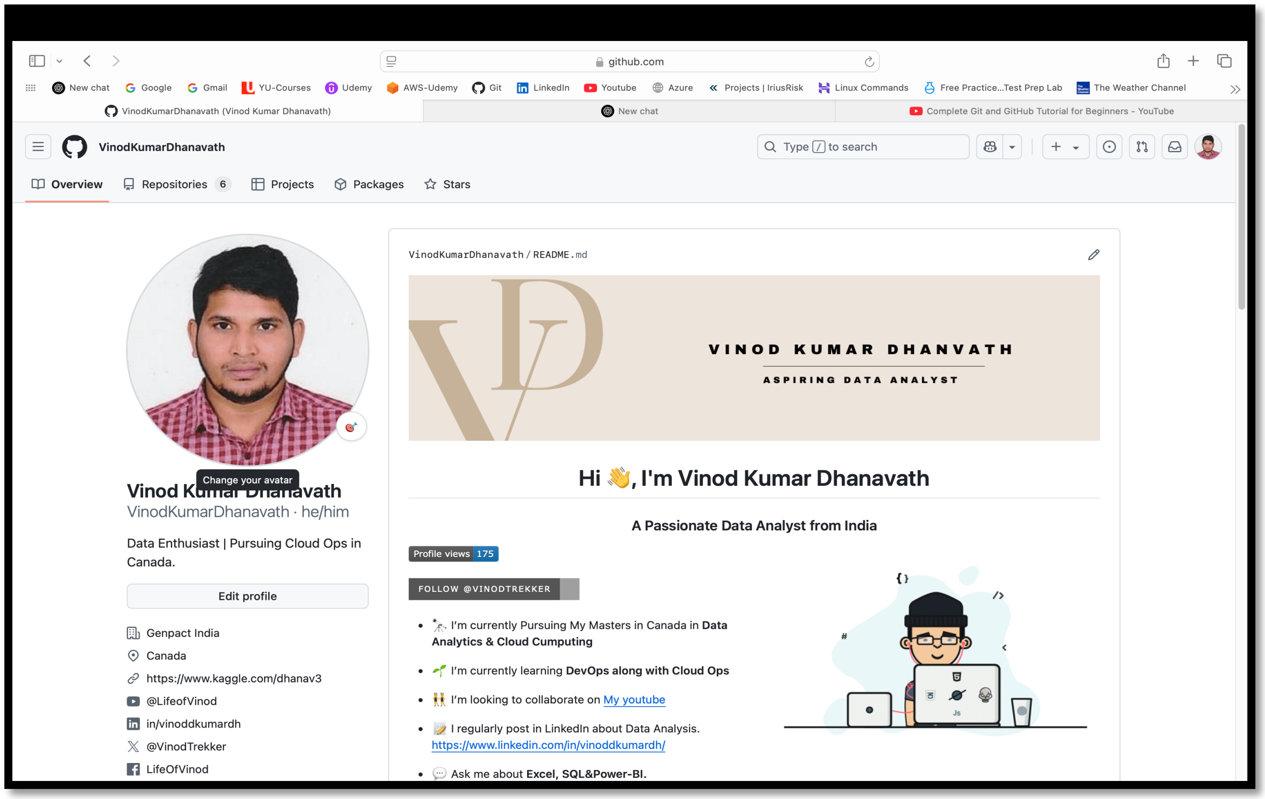
A GitHub repository (repo) is like a folder where your project files, code, and history can be stored on GitHub. It helps you organize and share your work with others.

Types of Repositories:

a) Public Repository – Anyone can see the code
b) Private Repository – Only you (or Invited People) Can see it.

We can create GitHub account and repository from the following link
https://github.com

Your GitHub account may look like below, once it is customized with required details.



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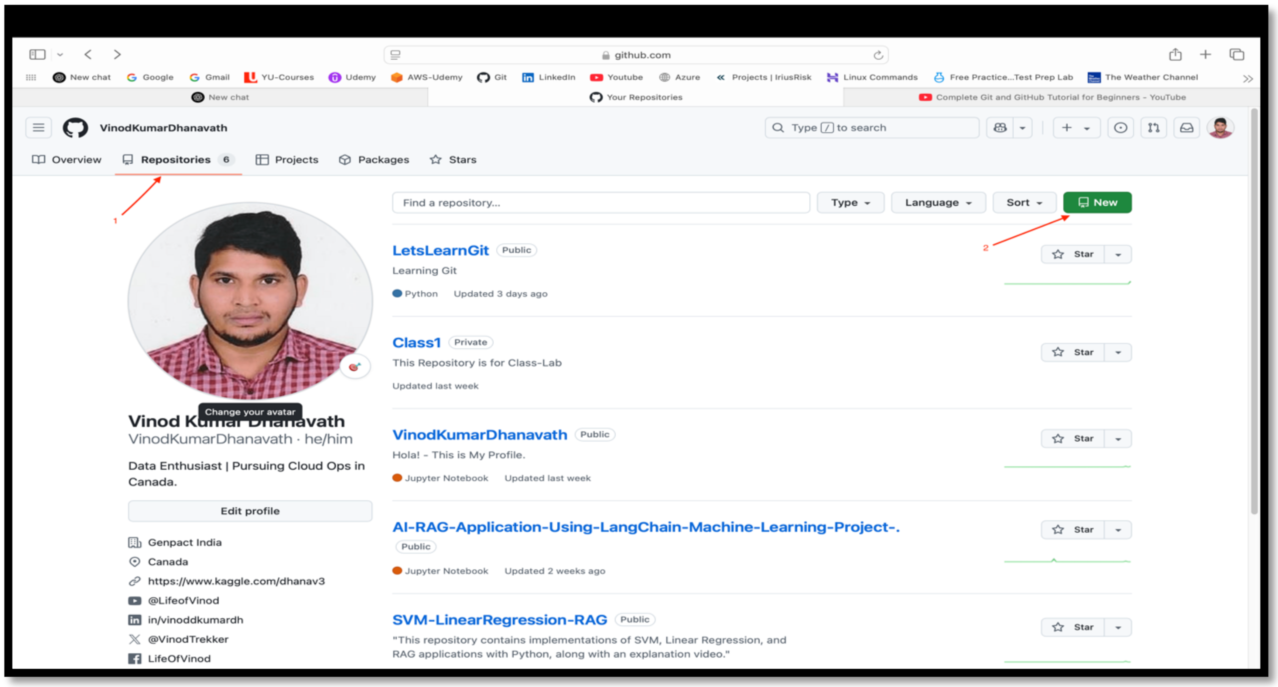
Hi 👋, I'm Vinod Kumar Dhanavath

A Passionate Data Analyst from India

- 🔭 I'm currently Pursuing My Masters in Canada in **Data Analytics & Cloud Computing**
- 🌱 I'm currently learning **DevOps along with Cloud Ops**
- 👯 I'm looking to collaborate on My youtube
- 📝 I regularly post in LinkedIn about Data Analysis. https://www.linkedin.com/in/vinoddkumardh/
- 💬 Ask me about **Excel, SQL&Power-BI.**

One can create repository on the GitHub profile clicking on the Repositories tab and give basic details like repo name description etc. Follow the below image.

Click on the Repositories then click on New as shown with arrows below



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Overview | Repositories 6 | Projects | Packages | Stars

1

Find a repository... | Type | Language | Sort | New

2

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@VinodTrekker
LifeOfVinod

LetsLearnGit Public
Learning Git
Python Updated 3 days ago

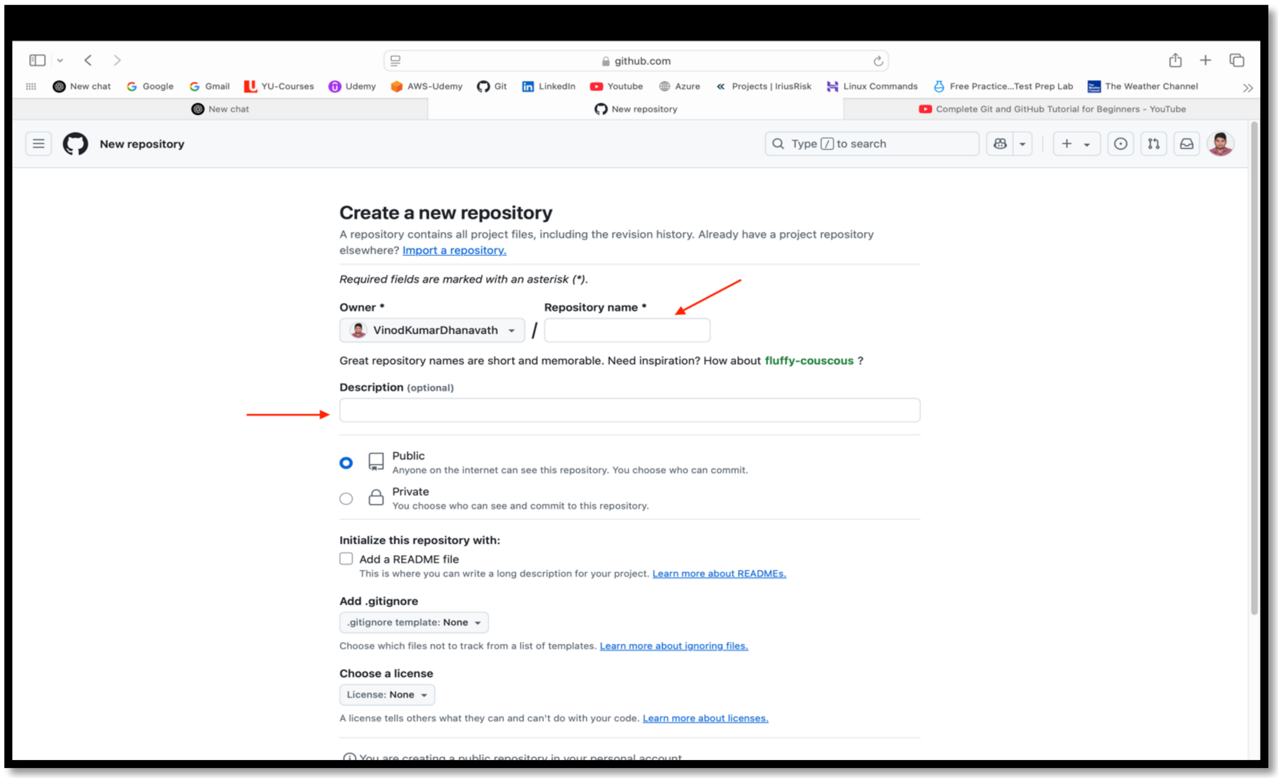
Class1 Private
This Repository is for Class-Lab
Updated last week

VinodKumarDhanavath Public
Hola! - This is My Profile.
Jupyter Notebook Updated last week

AI-RAG-Application-Using-LangChain-Machine-Learning-Project-. Public
Jupyter Notebook Updated 2 weeks ago

SVM-LinearRegression-RAG Public
"This repository contains implementations of SVM, Linear Regression, and RAG applications with Python, along with an explanation video."

Enter the basic details



New repository

Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? Import a repository.

Required fields are marked with an asterisk (*).

Owner * | Repository name *
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Great repository names are short and memorable. Need inspiration? How about fluffy-couscous ?

Description (optional)

Public
Anyone on the internet can see this repository. You choose who can commit.

Private
You choose who can see and commit to this repository.

Initialize this repository with:
Add a README file
This is where you can write a long description for your project. Learn more about READMEs.

Add .gitignore
.gitignore template: None
Choose which files not to track from a list of templates. Learn more about ignoring files.

Choose a license
License: None
A license tells others what they can and can't do with your code. Learn more about licenses.

You are creating a public repository in your personal account.

There is option "Initialize this repository with: If you want you can click the add a README file.

Add a README File: A **README** file is a text file (usually named README.md) that gives information about your project. It is the first thing that we see when we visit our GitHub repository.

Key Command: "Commit"

Once we create a repository which is a change can be committed with Commit Command.

A **commit** is like a **saving the changes** in our project. Every time that we make any changes need to commit them; Git stores a snapshot of your project at that moment.

Syntax

To commit changes, use:

git commit -m "Our Commit Message"

"-m", stands for message and the message should briefly say about changes that we made or stage of the project.

III. How to work with Git on GitHub Repositories (Basic Work Flow)

a) Cloning a Repository:

What It Does: This command copies a repository (a project) from GitHub to your computer. You'll get all the files and the project history.

Syntax; **git clone <repository-url>**

b) Checking the Status:

What It Does: displays the current state of the code
Syntax; **git status**

c) Create a New Branch:

Before making changes, it's best practice to create a new branch to keep your work organized:
Syntax: **git checkout -b <new-branch-name>**
Make Changes: Edit the files in your local repository using your preferred code editor.

d) Stage Changes:

After making changes, you need to stage them before committing:

Syntax: **git add <File name>** **(**We can stage all changes by using "git add. ", command. This command stages all modified and new files.)

e) Commit Changes:

Once your changes are staged, commit them with a descriptive message:
Syntax: **git commit -m "Your commit message describing the changes"**

f) Pull Latest Changes:

Before pushing your changes, it's a good idea to pull the latest changes from the remote repository to avoid conflicts:

Syntax: **git pull origin <branch-name>**

Example: git pull origin main

This command fetches and merges changes from the specified branch.

g) Push Changes:

After ensuring your branch is up to date, you can push your commits to the remote repository.

Syntax: **git push origin <new-branch-name>**

Example: git push origin main. (This command uploads your local commits to the remote repository.)

h) Merge Changes:

This step is optional. (If you're ready to add/integrate your changes into the main branch, you can create a pull request (PR) on platforms like GitHub. Alternatively, if you're working locally, switch to the main branch and merge:

Syntax: **git checkout main**

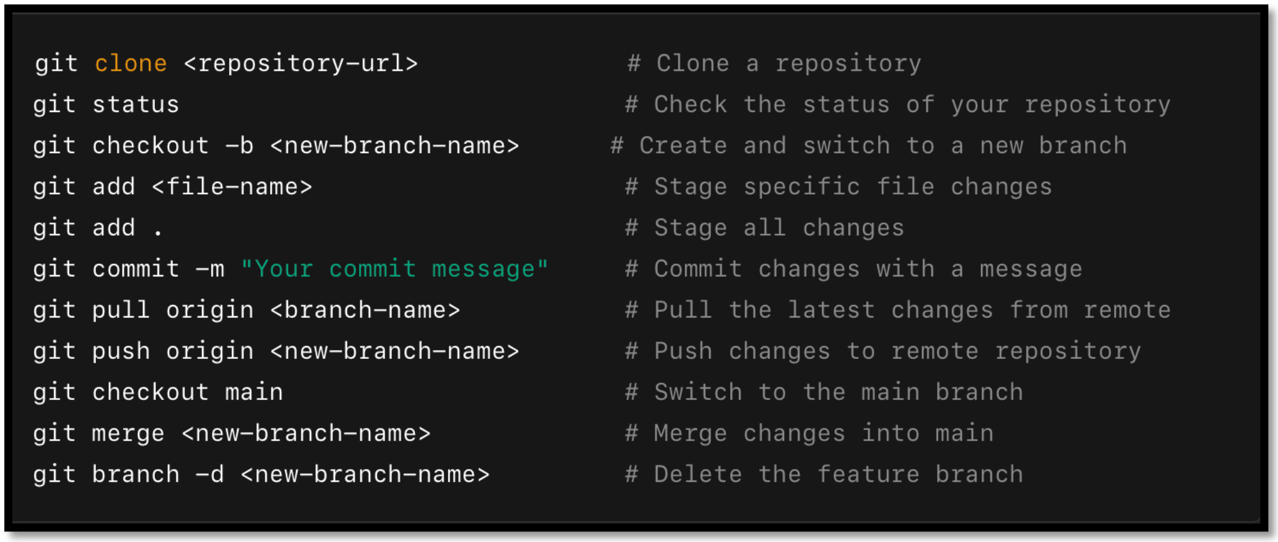
Syntax: **git merge <new-branch-name>**

i) **Delete the Branch (Optional Step) :**

Once your changes are merged, you can delete your feature branch.

Syntax: **git branch -d <new-branch-name>**

Summary of Commands of Basic Workflow:



```
git clone <repository-url>                  # Clone a repository
git status                                  # Check the status of your repository
git checkout -b <new-branch-name>          # Create and switch to a new branch
git add <file-name>                         # Stage specific file changes
git add .                                   # Stage all changes
git commit -m "Your commit message"         # Commit changes with a message
git pull origin <branch-name>               # Pull the latest changes from remote
git push origin <new-branch-name>           # Push changes to remote repository
git checkout main                           # Switch to the main branch
git merge <new-branch-name>                 # Merge changes into main
git branch -d <new-branch-name>             # Delete the feature branch
```

Thank you .

Git Resources

1. **Pro Git Book**
   https://git-scm.com/book/en/v2
2. **Git Official Documentation**
   https://git-scm.com/doc
3. **Git Tutorial by Atlassian**
   https://www.atlassian.com/git/tutorials
4. **Learn Git Branching**
   https://learngitbranching.js.org/

GitHub Resources

1. **GitHub Guides**
   https://guides.github.com/
2. **GitHub Learning Lab**
   https://lab.github.com/
3. **GitHub Docs**
   https://docs.github.com/en
4. **Introduction to GitHub (Video Series)**
   https://www.youtube.com/playlist?list=PLg7yL1J2U2d_8G9t7l4I0n6hxQpF-5bQO

Additional Resources

1. **Codecademy: Learn Git Course**
   https://www.codecademy.com/learn/learn-git
2. **Git Cheat Sheet**
   https://education.github.com/git-cheat-sheet-education.pdf

Reference List

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