DEVOPS: SOFTWARE ARCHITECTURE

LABORATORY FILE

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF

BACHELOR OF TECHNOLOGY

(Information Technology)

SUBMITTED BY SUBMITTED TO

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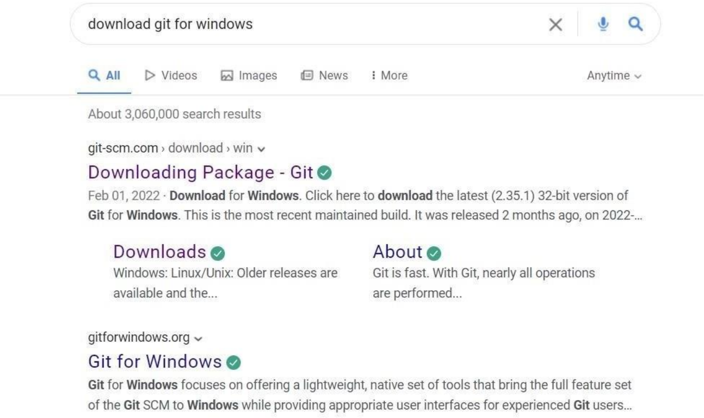
Practical 1: Install git

Git is software for tracking changes in any set of files, sually used for coordinating work among programmers collaboratively developing source code during software development. Its goals include speed, data integrity, and support for distributed, non-linear workflows (thousands of parallel branches running on different systems)

Steps to install git

1. Browse to the official Git website:https://gitforwindows.org/



download git for windows

About 3,060,000 search results

git-scm.com › download › win

Downloading Package - Git

Feb 01, 2022 · **Download** for **Windows**. Click here to **download** the latest (2.35.1) 32-bit version of **Git** for **Windows**. This is the most recent maintained build. It was released 2 months ago, on 2022-...

Downloads

Windows: Linux/Unix: Older releases are available and the...

About

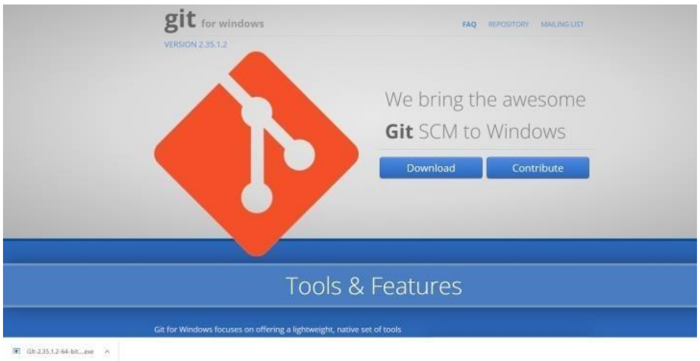
Git is fast. With Git, nearly all operations are performed...

gitforwindows.org

Git for Windows

Git for **Windows** focuses on offering a lightweight, native set of tools that bring the full feature set of the **Git** SCM to **Windows** while providing appropriate user interfaces for experienced **Git** users...

Fig 1.1: browse git



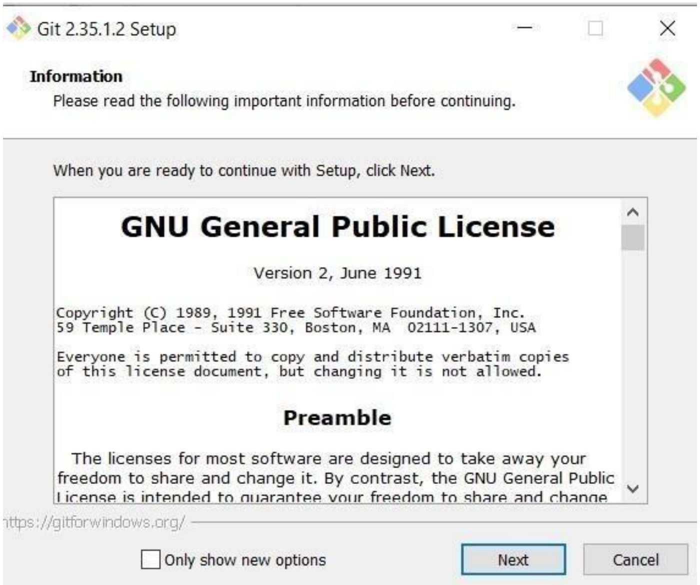
We bring the awesome **Git** SCM to Windows

Git for Windows focuses on offering a lightweight, native set of tools

Fig 1.2: install git

2. Allow the app to make changes to your device by clicking Yes on the User Account Control dialog that opens.

3. Review the GNU General Public License, and when you’re ready to install, click Next.



Information

Please read the following important information before continuing.

When you are ready to continue with Setup, click Next.

GNU General Public License

Version 2, June 1991

```
Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place - Suite 330, Boston, MA  02111-1307, USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.
```

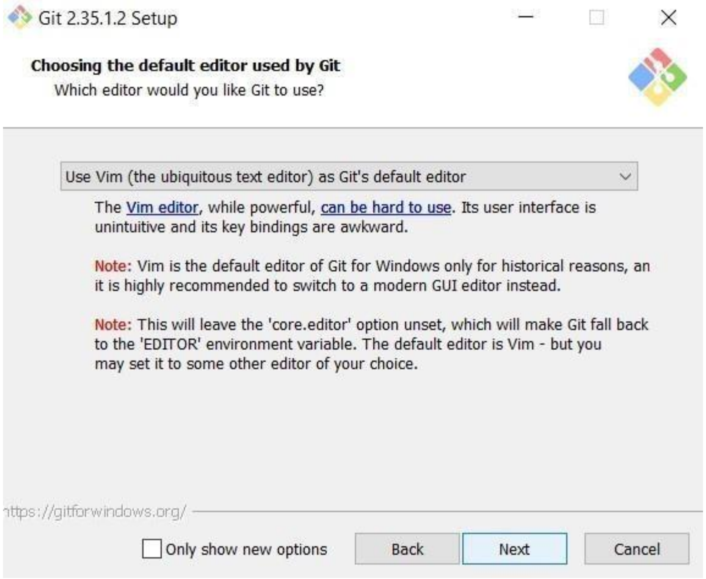
Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change

https://gitforwindows.org/

Fig 1.3: public license

4. A component selection screen will appear. Leave the defaults unless you have a specific need to change them and click Next.



Choosing the default editor used by Git

Which editor would you like Git to use?

Use Vim (the ubiquitous text editor) as Git's default editor

The Vim editor, while powerful, can be hard to use. Its user interface is unintuitive and its key bindings are awkward.

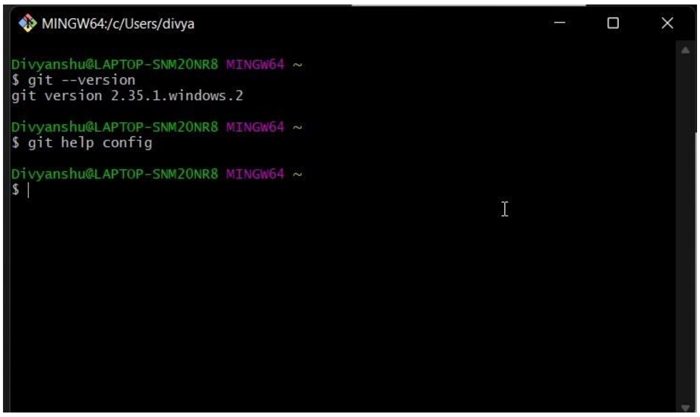
Note: Vim is the default editor of Git for Windows only for historical reasons, an it is highly recommended to switch to a modern GUI editor instead.

Note: This will leave the 'core.editor' option unset, which will make Git fall back to the 'EDITOR' environment variable. The default editor is Vim - but you may set it to some other editor of your choice.

https://gitforwindows.org/

Fig 1.4: installation going on

5. Run git version and git help command in bash editor



```
Divyanshu@LAPTOP-SNM20NR8 MINGW64 ~
$ git --version
git version 2.35.1.windows.2

Divyanshu@LAPTOP-SNM20NR8 MINGW64 ~
$ git help config

Divyanshu@LAPTOP-SNM20NR8 MINGW64 ~
$ |
```

Fig 1.5: git commands

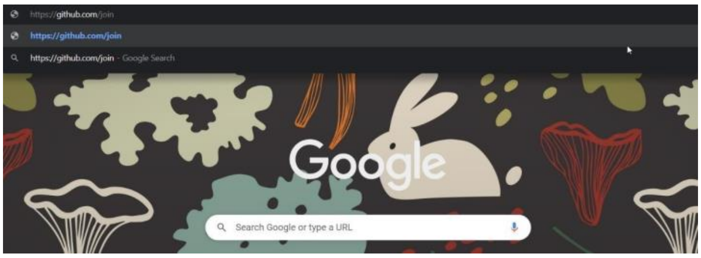
Practical 2: Create account on github

GitHub is an open-source repository hosting service, sort of like a cloud for code. It hosts your source code projects in a variety of different programming languages and keeps track of the various changes made to every iteration. Other GitHub users can review your code and propose changes.

Steps to create an account on github

1. Go to https://github.com/join in a web browser. You can use any web browser on your computer, phone, or tablet to join.

Some ad blockers, including uBlock Origin, prevent GitHub's verification CAPTCHA puzzle from appearing. For best results, disable your web browser's ad blocker when signing up for GitHub.



https://github.com/join

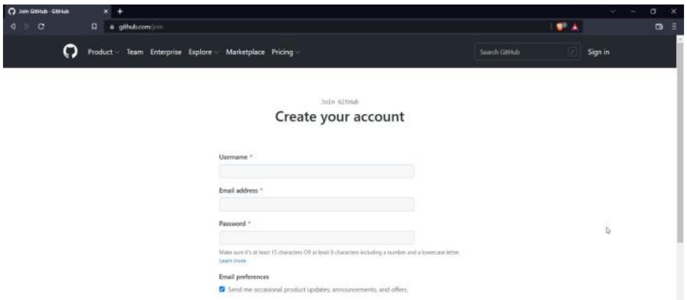
https://github.com/join

https://github.com/join - Google Search

Fig 2.1: browse github

2. Enter your personal details. In addition to creating a username and entering an email address, you'll also have to create a password. Your password must be at least 15 characters in length or at least 8 characters with at least one number and lowercase letter.

Carefully review the Terms of Service at https://help.github.com/en/articles/github-terms-of-service and the Privacy Statement at https://help.github.com/en/articles/github-privacy-statement before you continue. Continuing past the next step confirms that you agree to both documents.



Join GitHub

Create your account

Username *

Email address *

Password *

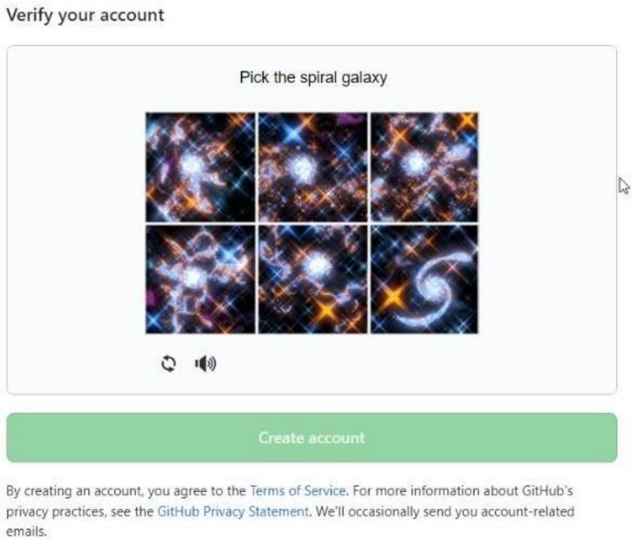
Make sure it's at least 15 characters OR at least 8 characters including a number and a lowercase letter. Learn more.

Email preferences

☑ Send me occasional product updates, announcements, and offers.

Fig 2.2: sign up on github

3. Complete the CAPTCHA puzzle. The instructions vary by puzzle, so just follow the on-screen instructions to confirm that you are a human.



Verify your account

Pick the spiral galaxy

By creating an account, you agree to the Terms of Service. For more information about GitHub's privacy practices, see the GitHub Privacy Statement. We'll occasionally send you account-related emails.

Fig 2.3: solve captcha

If you see an error that says "Unable to verify your captcha response," it’s because your web browser’s ad blocking extension prevented the CAPTCHA puzzle from appearing. Disable all ad-blocking extensions, refresh the page, and then click VERIFY to start the CAPTCHA.

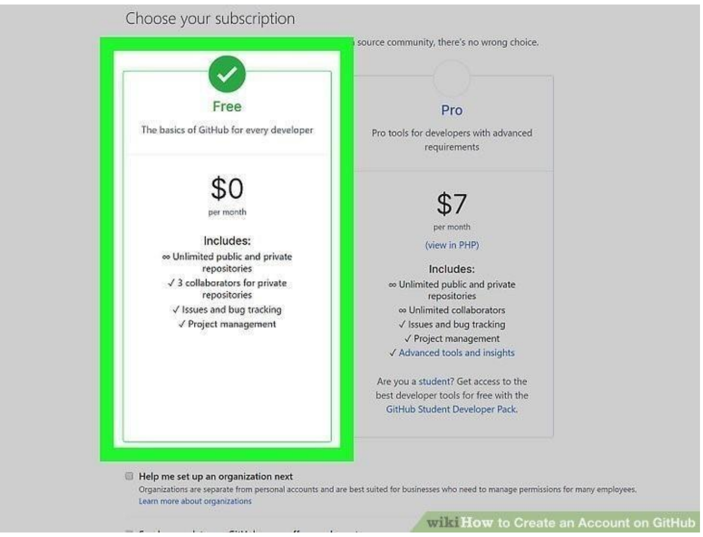
4. Click the Choose button for your desired plan. Once you select a plan, GitHub will send an email confirmation message to the address you entered. The plan options are:

Free: Unlimited public and private repositories, up to 3 collaborators, issues and bug tracking, and project management tools.

Pro: Unlimited access to all repositories, unlimited collaborators, issue bug tracking, and advanced insight tools.

Team: All of the aforementioned features, plus team access controls and user management.

Enterprise: All of the features of the Team plan, plus self-hosting or cloud hosting, priority support, single sign-on support, and more



Choose your subscription

source community, there's no wrong choice.

Free

The basics of GitHub for every developer

$0

per month

Includes:

∞ Unlimited public and private repositories

✓ 3 collaborators for private repositories

✓ Issues and bug tracking

✓ Project management

Pro

Pro tools for developers with advanced requirements

$7

per month

(view in PHP)

Includes:

∞ Unlimited public and private repositories

∞ Unlimited collaborators

✓ Issues and bug tracking

✓ Project management

✓ Advanced tools and insights

Are you a student? Get access to the best developer tools for free with the GitHub Student Developer Pack.

□ Help me set up an organization next

Organizations are separate from personal accounts and are best suited for businesses who need to manage permissions for many employees.

Learn more about organizations

wiki How to Create an Account on GitHub

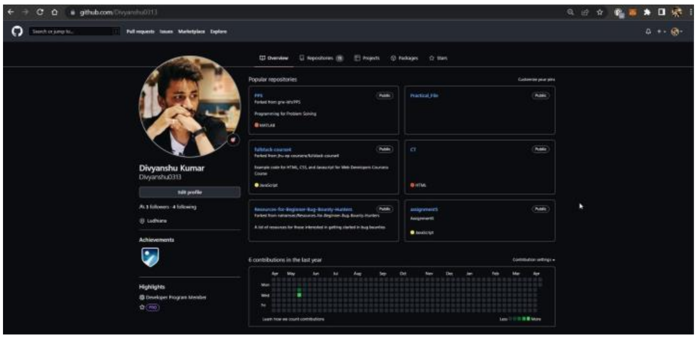
Fig 2.4: choose plan

5. Click the Verify email address button in the message from GitHub. This confirms your email address and returns you to the sign-up process.

6. Review your plan selection and click Continue. You can also choose whether you want to receive updates from GitHub via email by checking or unchecking the "Send me updates" box.

If you chose a paid plan, you’ll have to enter your payment information as requested before you can continue.

7. Use your github account



github.com/Divyanshu0313

Divyanshu Kumar

Divyanshu0313

Ludhiana

Popular repositories

PPS

Forked from gne-lets/PPS

Programming for Problem Solving

MATLAB

Practical_File

CT

HTML

Resources-for-Beginner-Bug-Bounty-Hunters

A list of resources for those interested in getting started in bug bounties

assignment5

JavaScript

6 contributions in the last year

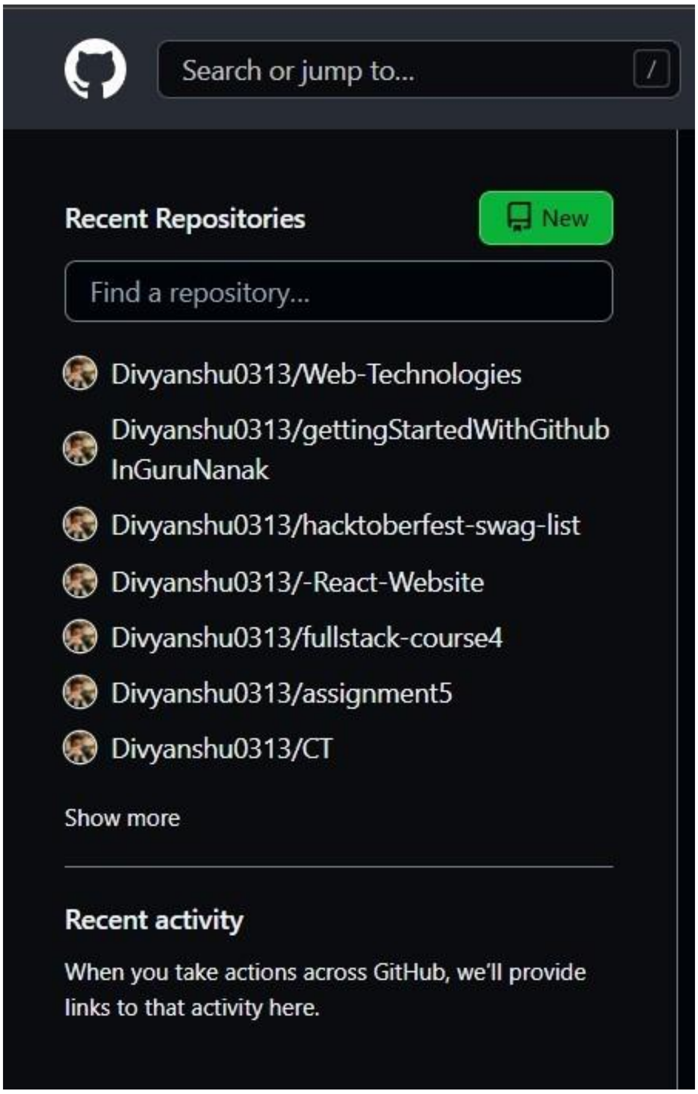
Fig 2.5: github account

Practical 3 : Create repository using GIT/GITHUB

Repositories in GIT contain a collection of files of various different versions of a Project. These filesare imported from the repository into the local server of the user for further updations and modificationsin the content of the file. A VCS or the Version Control System is used to create these versions and store them in a specific place termed as a repository. The process of copying the content from an existing Git Repository with the help of various Git Tools is termed as cloning. Once the cloning process is done, the user gets the complete repository on his local machine. Git by default assumes the work to be done on the repository is as a user, once the cloning is done.

Steps to create a repository on github

1. In the upper-right corner of any page, use the drop-down menu, and select New repository.



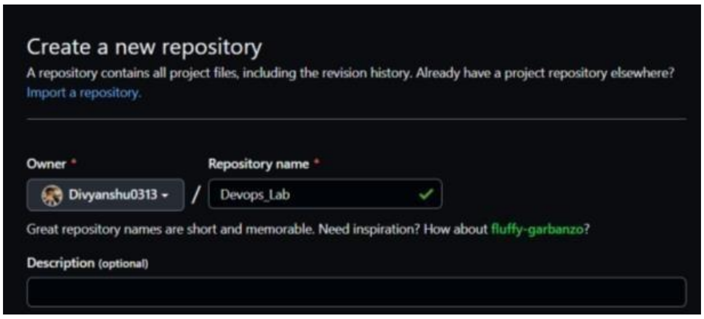
Recent Repositories

Divyanshu0313/Web-Technologies
Divyanshu0313/gettingStartedWithGithubInGuruNanak
Divyanshu0313/hacktoberfest-swag-list
Divyanshu0313/-React-Website
Divyanshu0313/fullstack-course4
Divyanshu0313/assignment5
Divyanshu0313/CT

Recent activity

When you take actions across GitHub, we'll provide links to that activity here.

Fig 3.1: 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.

Owner * Repository name *

Divyanshu0313 / Devops_Lab

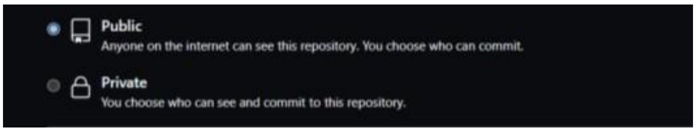
Great repository names are short and memorable. Need inspiration? How about fluffy-garbanzo?

Description (optional)

Fig 3.2: Name the repository

2. Type a name for your repository, and an optional description.

3. Choose a repository visibility.



● 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.

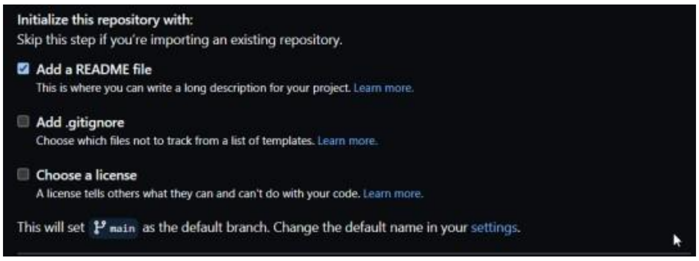
Fig 3.3: repository visibility

4. If you’re not using a template, there are a number of optional items you can pre-populate your repository with. If you’re importing an existing repository to GitHub, don’t choose any of these options, as you may introduce a merge conflict. You can add or create new files using the user interface or choose to add new files using the command line later. For more information, see "Importing a Git repository using the command line," "Adding a file to a repository," and "Addressing merge conflicts."

You can create a README, which is a document describing your project. For more information, see "About READMEs."

You can create a .gitignore file, which is a set of ignore rules. For more information, see "Ignoring files."

You can choose to add a software license for your project. For more information, see "Licensing a repository."



Initialize this repository with:
Skip this step if you're importing an existing repository.

☑ Add a README file
This is where you can write a long description for your project. Learn more.

□ Add .gitignore
Choose which files not to track from a list of templates. Learn more.

□ Choose a license
A license tells others what they can and can't do with your code. Learn more.

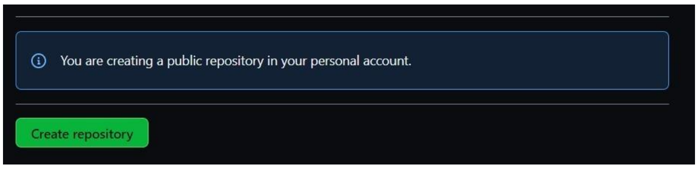
This will set main as the default branch. Change the default name in your settings.

Fig 3.4: pre-populate repository

5.Optionally, if the personal account or organization in which you’re creating uses any GitHub Apps from GitHub Marketplace, select any apps you’d like to use in the repository.

6. Review your plan selection and click Continue. You can also choose whether you want to receive updates from GitHub via email by checking or unchecking the "Send me updates" box.
If you chose a paid plan, you’ll have to enter your payment information as requested before you can continue.

7. Click Create repository.



You are creating a public repository in your personal account.

Fig 3.5: repository created

Practical 4: Create/Delete/Merge Branches

Git branching allows developers to diverge from the production version of code to fix a bug or add a feature. Developers create branches to work with a copy of the code without modifying the existing version. You create branches to isolate your code changes, which you test before merging to the main branch (more on this later). Creation of subbranch

1. You can create a new branch directly from the GitHub website. First, open any browser, go to GitHub, and then open the repository that you'd like to create a branch in.

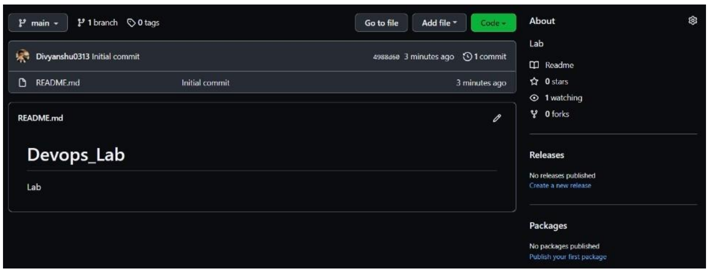


Fig 4.1: subbranch creation

2. Once you've accessed the repository, you'll automatically be in the "Code" tab. A bit below this, click the button that says "Main."

3. A small window will appear. Give your branch a name by typing it in the text box and pressing the Enter or Return key.

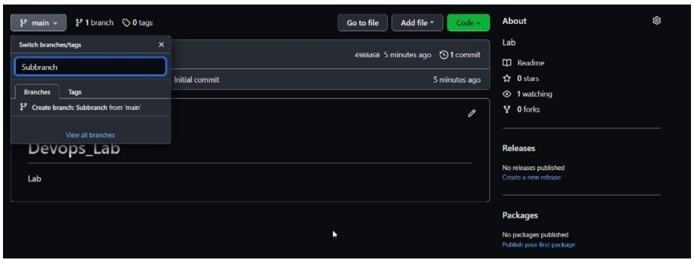
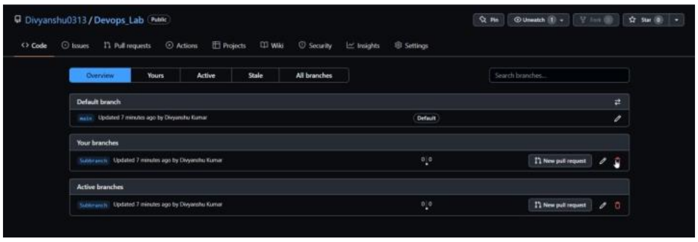


Fig 4.2: subbranch created

Deletion of branch

The GitHub.com browser interface allows you to delete (and create) remote branches. To do this, you need to navigate to the main page of the repository in your browser and then click the " branches" link. On the branches overview page, you can then choose a branch to delete:



Divyanshu0313 / Devops_Lab

Default branch

main Updated 7 minutes ago by Divyanshu Kumar Default

Your branches

Subbranch Updated 7 minutes ago by Divyanshu Kumar 0 | 0 New pull request

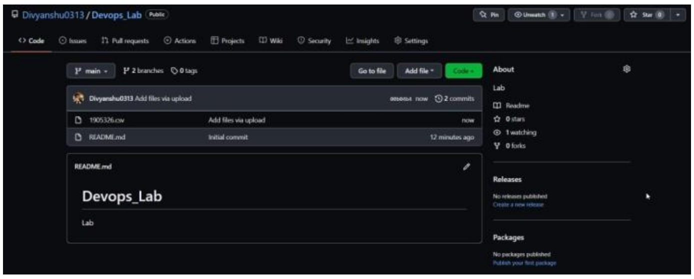
Active branches

Subbranch Updated 7 minutes ago by Divyanshu Kumar 0 | 0 New pull request

Fig 4.3: branch deleted

Merge of branches

1. Add one file in the default “master” branch



Divyanshu0313 / Devops_Lab

Divyanshu0313 Add files via upload now 2 commits

1905326.csv	Add files via upload	now
README.md	Initial commit	12 minutes ago

README.md

Devops_Lab

Lab

About

Lab

Readme

0 stars

1 watching

0 forks

Releases

No releases published

Create a new release

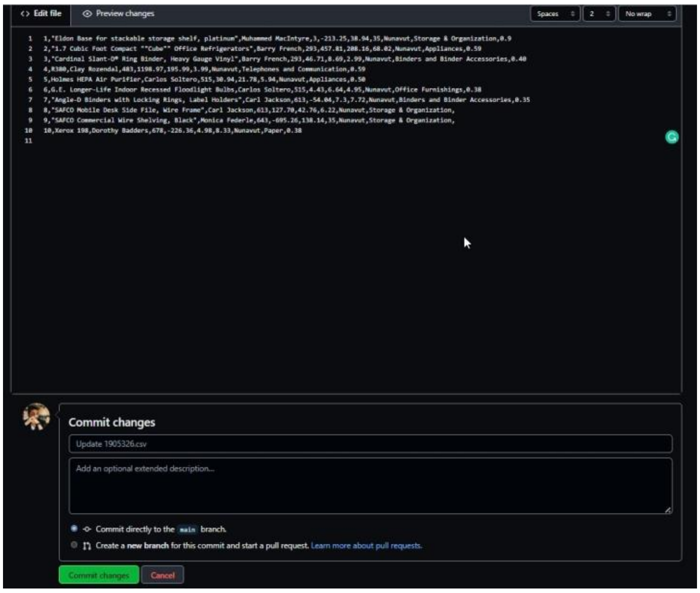
Packages

No packages published

Publish your first package

Fig 4.4: branch edited

2. Make some changes in the content and the Github client will automatically pick it up. Click Commit and Sync feature-1 button. You can continue making changes to the feature till you think it is ready to be merged into the master branch.



```
1,"Eldon Base for stackable storage shelf, platinum",Muhammed MacIntyre,3,-213.25,38.94,35,Nunavut,Storage & Organization,0.9
2,"1.7 Cubic Foot Compact ""Cube"" Office Refrigerators",Barry French,293,457.81,208.16,68.02,Nunavut,Appliances,0.59
3,"Cardinal Slant-D® Ring Binder, Heavy Gauge Vinyl",Barry French,293,46.71,8.69,2.99,Nunavut,Binders and Binder Accessories,0.40
4,R380,Clay Rozendal,483,1198.97,195.99,3.99,Nunavut,Telephones and Communication,0.59
5,Holmes HEPA Air Purifier,Carlos Soltero,515,30.94,21.78,5.94,Nunavut,Appliances,0.50
6,G.E. Longer-Life Indoor Recessed Floodlight Bulbs,Carlos Soltero,515,4.43,6.64,4.95,Nunavut,Office Furnishings,0.38
7,"Angle-D Binders with Locking Rings, Label Holders",Carl Jackson,613,-54.04,7.3,7.72,Nunavut,Binders and Binder Accessories,0.35
8,"SAFCO Mobile Desk Side File, Wire Frame",Carl Jackson,613,127.70,42.76,6.22,Nunavut,Storage & Organization,
9,"SAFCO Commercial Wire Shelving, Black",Monica Federle,643,-695.26,138.14,35,Nunavut,Storage & Organization,
10,Xerox 198,Dorothy Badders,678,-226.36,4.98,8.33,Nunavut,Paper,0.38
```

Commit changes

Update 1905326.csv

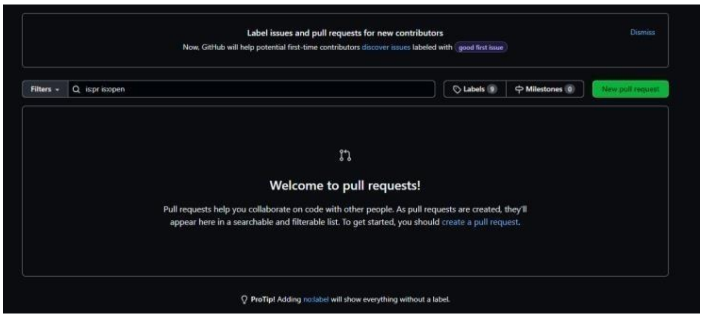
Add an optional extended description...

● Commit directly to the main branch.

○ Create a new branch for this commit and start a pull request. Learn more about pull requests.

Fig 4.5: branch edited

3. Create Pull Request : Pull request is created



Label issues and pull requests for new contributors

Now, GitHub will help potential first-time contributors discover issues labeled with good first issue

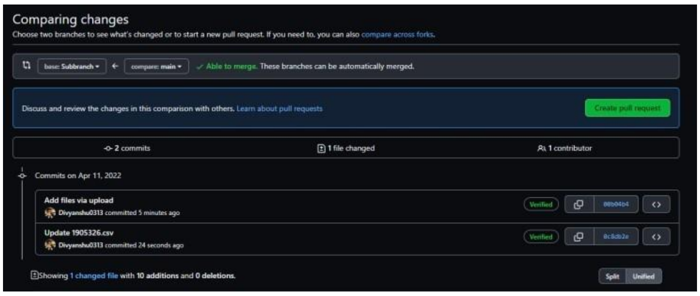
Welcome to pull requests!

Pull requests help you collaborate on code with other people. As pull requests are created, they'll appear here in a searchable and filterable list. To get started, you should create a pull request.

ProTip! Adding no:label will show everything without a label.

Fig 4.6: pull request

4. Merge Changes : Changes made are merged in main/other branch



Comparing changes

Choose two branches to see what's changed or to start a new pull request. If you need to, you can also compare across forks.

✓ Able to merge. These branches can be automatically merged.

Discuss and review the changes in this comparison with others. Learn about pull requests

Commits on Apr 11, 2022

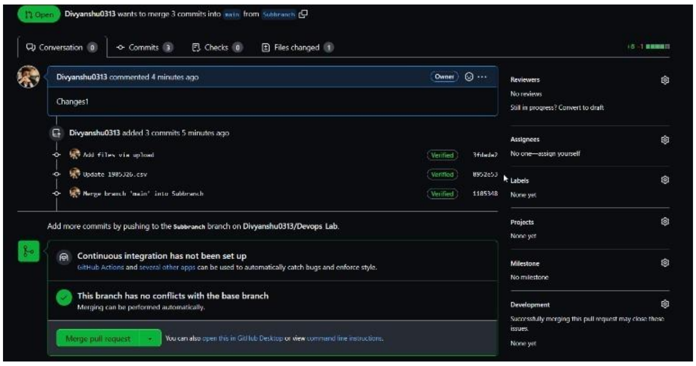
Add files via upload
Divyanshu0313 committed 5 minutes ago

Update 1905326.csv
Divyanshu0313 committed 24 seconds ago

Showing 1 changed file with 10 additions and 0 deletions.

Fig 4.7: merge changes

5. Merge pull request : Pull for merge request is made in this step



Divyanshu0313 wants to merge 3 commits into main from Subbranch

Divyanshu0313 commented 4 minutes ago

Changes1

Divyanshu0313 added 3 commits 5 minutes ago

```
Add files via upload              Verified  3fdada2
Update 1905326.csv                Verified  8952e53
Merge branch 'main' into Subbranch  Verified  1185348
```

Add more commits by pushing to the Subbranch branch on Divyanshu0313/Devops Lab.

Continuous integration has not been set up
GitHub Actions and several other apps can be used to automatically catch bugs and enforce style.

This branch has no conflicts with the base branch
Merging can be performed automatically.

You can also open this in GitHub Desktop or view command line instructions.

Reviewers
No reviews
Still in progress? Convert to draft

Assignees
No one—assign yourself

Labels
None yet

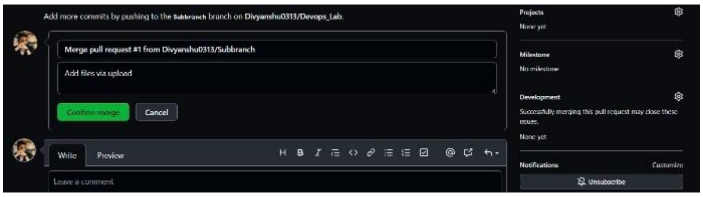
Projects
None yet

Milestone
No milestone

Development
Successfully merging this pull request may close these issues.
None yet

Fig 4.8: merge pull request

6. Confirm merge : Click the confirm merge option to merge the changes in branches



Add more commits by pushing to the Subbranch branch on Divyanshu0313/Devops_Lab.

Merge pull request #1 from Divyanshu0313/Subbranch

Add files via upload

Leave a comment

Successfully merging this pull request may close these issues.

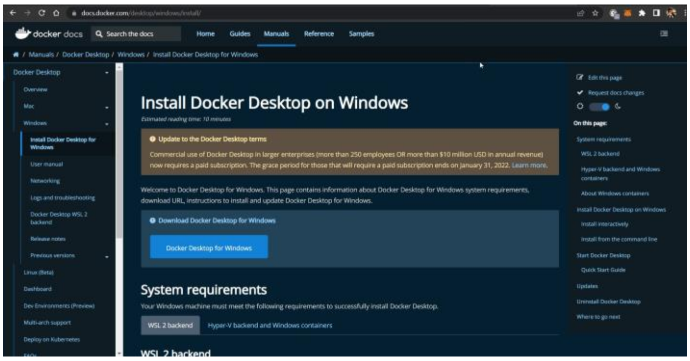
Fig 4.9: confirm merge

Practical 5: Install docker

Docker is an open-source project for automating the deployment of applications as portable, self-sufficient containers that can run on the cloud or on-premises. Docker is also a company that promotes and evolves this technology, working in collaboration with cloud, Linux, and Windows vendors, including Microsoft.

Steps to install docker

1. Double-click Docker Desktop Installer.exe to run the installer. If you haven't already downloaded the installer (Docker Desktop Installer.exe), you can get it from Docker Hub. It typically downloads to your Downloads folder, or you can run it from the recent downloads bar at the bottom of your web browser.



docs.docker.com/desktop/windows/install/

Install Docker Desktop on Windows

Estimated reading time: 10 minutes

Update to the Docker Desktop terms

Commercial use of Docker Desktop in larger enterprises (more than 250 employees OR more than $10 million USD in annual revenue) now requires a paid subscription. The grace period for those that will require a paid subscription ends on January 31, 2022. Learn more.

Welcome to Docker Desktop for Windows. This page contains information about Docker Desktop for Windows system requirements, download URL, instructions to install and update Docker Desktop for Windows.

Download Docker Desktop for Windows

System requirements

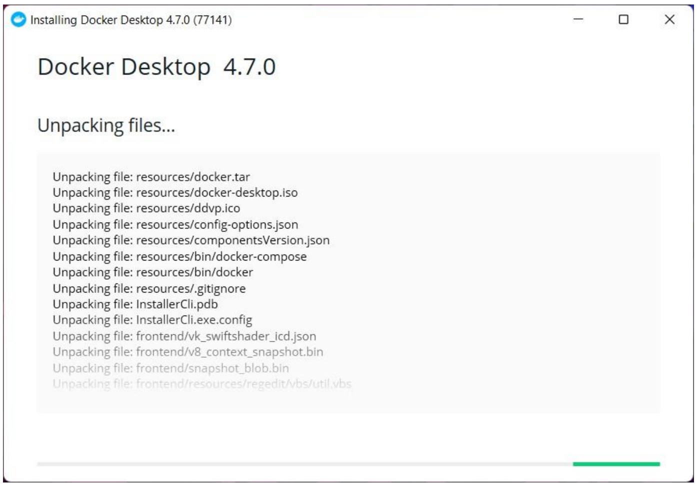
Your Windows machine must meet the following requirements to successfully install Docker Desktop.

WSL 2 backend

Fig 5.1: install docker desktop installer.exe file

2. When prompted, ensure the Use WSL 2 instead of Hyper-V option on the Configuration page is selected or not depending on your choice of backend.

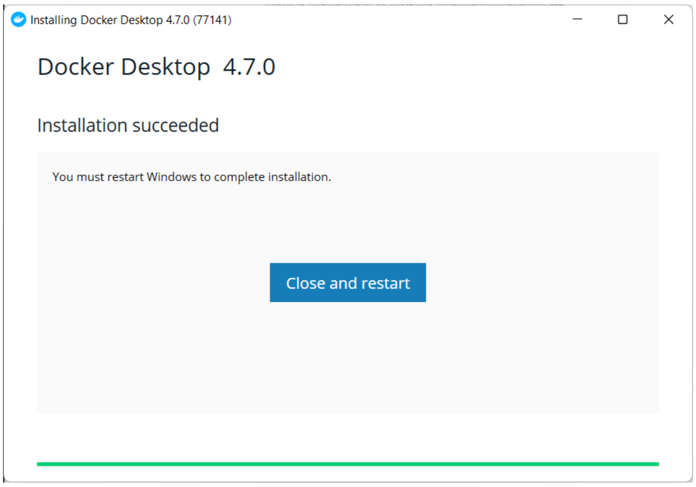
3. Follow the instructions on the installation wizard to authorize the installer and proceed with the install.



```
Unpacking file: resources/docker.tar
Unpacking file: resources/docker-desktop.iso
Unpacking file: resources/ddvp.ico
Unpacking file: resources/config-options.json
Unpacking file: resources/componentsVersion.json
Unpacking file: resources/bin/docker-compose
Unpacking file: resources/bin/docker
Unpacking file: resources/.gitignore
Unpacking file: InstallerCli.pdb
Unpacking file: InstallerCli.exe.config
Unpacking file: frontend/vk_swiftshader_icd.json
Unpacking file: frontend/v8_context_snapshot.bin
Unpacking file: frontend/snapshot_blob.bin
Unpacking file: frontend/resources/regedit/vbs/util.vbs
```

Fig 5.2: unpacking files

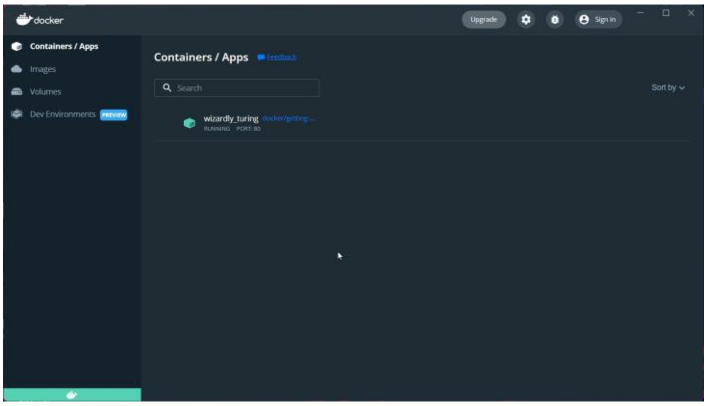
4.When the installation is successful, click Close to complete the installation process.



You must restart Windows to complete installation.

Fig 5.3: click close to complete installation

5.If your admin account is different to your user account, you must add the user to the docker-users group. Run Computer Management as an administrator and navigate to Local Users and Groups > Groups > docker-users. Right-click to add the user to the group. Log out and log back in for the changes to take effect.



wizardly_turing docker/getting-...
RUNNING PORT: 80

Fig 5.4: use docker