



Guided LAB - 302.1.2 - Hands-on Activity Git and GitHub

Introduction:

While Git is a tool that's used to manage multiple versions of source code edits that are then transferred to files in a Git repository, GitHub serves as a location for uploading copies of a Git repository.

Lab Objective:

In this lab, we will demonstrate how to create a local repository for the project using Git, and how to push the project on github from the local repository.

Learning Objective:

By the end of this lab, learners will be able to use Git and GitHub with the Project.

Instructions:

Part 1: Local repository

1. Create a local Git repository

When creating a new project on your local machine using Git, you will first create a new repository (or often, 'repo', for short).

To initialize a git repository in the root of the folder, run the git init command.

git init

2. Create a new file in the repo

Create a new file for the project using any text editor. Let's just create and save a blank file named newfile.txt.

Once you have created or modified files in a folder containing a git repo, git will notice that the file exists inside the repo. But git will not track the file unless you explicitly tell it



to. Git only saves/manages changes to files that it tracks, so we will need to send a command to confirm that yes, we want git to track our new file.

3. Add files to the staging area.

To add a file to a commit, you must first add it to the staging area/environment. To do this, you can use the **git add <filename>** command.

git add newfile.txt

After creating the new file, you can use the **git status** command to see which files Git knows are in existence.

git status

or

git log – oneline

```
MINGW64:/c/Users/_Leon_/Desktop/my_project
_Leon_@Leon MINGW64 / (master)
$ cd C:/Users/_Leon_/Desktop/my_project
_Leon_@Leon MINGW64 ~/Desktop/my_project
$ git init
Initialized empty Git repository in C:/Users/_Leon_/Desktop/my_project/.git/
_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git add newfile.txt
_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   newfile.txt
_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ |
```

There are several commands that you can choose from. As always, it is important to know what you are staging and committing.



“**git add -A**” stages all files, including new, modified, and deleted files, as well as files in the current directory and in higher directories that still belong to the same git repository.

“**git add .**” adds the entire directory recursively, including files whose names begin with a dot(.).

“**git add -u**” stages new and modified files only; it does NOT stage deleted files.

For more: <https://github.com/git-guides/git-add>

4. Create a commit

It is time to create your first commit! Run the command below:

git commit -m "Your message about the commit"

```
MINGW64:/c/Users/_Leon_/Desktop/my_project
Initialized empty Git repository in C:/Users/_Leon_/Desktop/my_project/.git/

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git add newfile.txt

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   newfile.txt

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git commit -m "This is my first commit :)"
[master (root-commit) 94f9309] This is my first commit :)
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 newfile.txt

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$
```

Run the command below to see a list of all of the commits made to a repository.

git log



5. Make changes in newfile.txt

Let's add new content, or some lines in the newfile.txt, and then try to commit new content to the git repository.

git commit -m "Your 2nd message about the commit"

You will get an error if you run the above command because you have to put your file on the staging area first. Then you will be able to run the commit command. To do so, run the below commands:

git add newfile.txt

git commit -m "Your 2nd message about the commit"

Or

Git commit -a -m "Your 2nd message about the commit" → This option allows you to skip the staging phase. The addition of ***-a*** will automatically stage any files that are already being tracked by Git (changes to files that you have committed before).

6. Create a new branch and switch to a new branch

git branch my-new-branch // create a new branch

git branch // show all list of branches

git checkout my-new-branch // switch master branch to new branch



git branch

// show all list of branches

```
MINGW64:/c/Users/_Leon_/Desktop/my_project
modified:  newfile.txt

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

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git branch new-branch

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git branch
* master
  new-branch

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git checkout new-branch
Switched to branch 'new-branch'
M   newfile.txt

_Leon_@Leon MINGW64 ~/Desktop/my_project (new-branch)
$ git branch
  master
* new-branch

_Leon_@Leon MINGW64 ~/Desktop/my_project (new-branch)
$
```

7. Make changes in newfile.txt

Let's add new content or some lines in the newfile.txt, and then try to commit new content on the git repository; however, this time, all changes will be saved on the new branch.

git add newfile.txt

git commit -m "add changes in txt file and commit in new branch"

8. Switch back to the master branch.

git checkout main

9. Merging branches

git merge <branch Name> command is responsible for merging two branch

git merge my-new-branch



10. Delete newly created branch.

git branch -d my-new-branch

```
MINGW64:/c/Users/_Leon_/Desktop/my_project
[new-branch 3fcd56d] add changes in txt file and commit in new branch
1 file changed, 1 insertion(+)

_Leon_@Leon MINGW64 ~/Desktop/my_project (new-branch)
$ git checkout main
error: pathspec 'main' did not match any file(s) known to git

_Leon_@Leon MINGW64 ~/Desktop/my_project (new-branch)
$ git checkout master
Switched to branch 'master'

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git merge new-branch
Updating 94f9309..3fcd56d
Fast-forward
 newfile.txt | 1 +
1 file changed, 1 insertion(+)

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git branch -d new-branch
Deleted branch new-branch (was 3fcd56d).

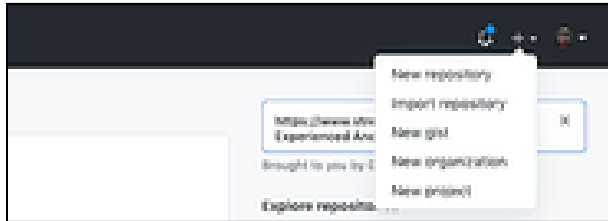
_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$
```

Part 2: Remote Repository

1. Create a new repository on GitHub

If you only want to keep track of your code locally, you do not need to use GitHub. But if you want to work with a team, you can use GitHub to collaboratively modify the project's code.

To create a new repo on GitHub, log in and go to the GitHub home page. You can find the **“New repository”** option under the **“+”** sign next to your profile picture in the top-right corner of the navigation bar:



After clicking the button, GitHub will ask you to name your repo and provide a brief description:

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

dfryer1193

/

newrepo

Great repository names are short and memorable. Need inspiration? How about [jubilant-memory?](#)

Description (optional)

My new repo!

☒

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:

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.](#)

Create repository

When you finish filling out the information, press the **'Create repository'** button to create your new repository.

2. Push a branch to GitHub

```
git remote add origin https://github.com/Username/demoforexercise.git
```

```
git push -u origin main
```

Username:

password

```
git remote add origin https://github.com/UserAccountName/demoforexercise.git -
```

The above command tells our local repository about a remote repository located somewhere. The location of our remote repository is <https://github.com/UserAccountName/demoforexercise.git>. Now, if we want to send our code to GitHub, we can just type in `git push`

<https://github.com/UserAccountName/demoforexercise.git> `main` - but typing that whole URL can be difficult. Instead, it would be better if we could give the URL a nickname (also called an alias) - that is what "origin" is! By setting up the alias, we can simply type `git push origin main` to send the code from our `main` branch to this remote repository.

So going back, `git remote add` is how we tell our local repository about a remote repository (that we can send/retrieve code from). `origin` is a nickname for where the repository is actually located (at

<https://github.com/UserAccountName/demoforexercise.git>).

To see your remotes locally, you can type `git remote -v`. If you need to remove a remote, you can use `git remote rm NAME_OF_REMOTE`.

`git push -u origin main` - Now, we can send our code from a local repository to a remote repository (which we aliased to `origin` in the previous command). The `-u` flag allows us in the future to only have to type `git push` instead of `git push origin main`.

Let's review this command: `git push` is how we send code from a local repository to a remote repository. `origin` is where we are sending it (specifically to `origin/main`, which is the master branch of our remote repository). `main` is the local branch from which we are sending our code.



3. Get changes on GitHub back to your computer.

git pull origin main

Or

git pull

Submission Requirements:

Prior to beginning this guided lab, download a copy for yourself and save to your desktop/laptop, Google Drive, or Microsoft OneDrive. Throughout the lab, you will be required to take screenshots of your progress, and insert the screenshots in the designated areas.

After completing the guided lab, submit your copy of the document on Canvas. You will be prompted to complete a file upload. By uploading the document with the required screenshots, the guided lab can be reviewed by the instructor and marked as completed.

Take a screenshot of the report appearing in the test results, and enter the image below.



```
MINGW64:/c/Users/_Leon_/Desktop/my_project
_Leon_@Leon MINGW64 / (master)
$ git config --global user.name "roronoasoma"
_Leon_@Leon MINGW64 / (master)
$ git config --global user.email "olb085@gmail.com"
_Leon_@Leon MINGW64 / (master)
$ cd C:/Users/_Leon_/Desktop/my_project
_Leon_@Leon MINGW64 ~/Desktop/my_project
$ git init
Initialized empty Git repository in C:/Users/_Leon_/Desktop/my_project/.git/
_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git add newfile.txt
_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   newfile.txt

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git commit -m "This is my first commit :)"
[master (root-commit) 94f9309] This is my first commit :)
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 newfile.txt

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git log
commit 94f93096f6e66997b04ce08f75b2b2d8e37db92e (HEAD -> master)
Author: roronoasoma <olb085@gmail.com>
Date:   Wed Mar 13 12:45:14 2024 -0700

    This is my first commit :)

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git command -m "This is my second commit :)"
git: 'command' is not a git command. See 'git --help'.

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git commit -m "This is my second commit :)"
On branch master
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:   newfile.txt

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

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git branch new-branch

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git branch
* master
  new-branch

_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git checkout new-branch
Switched to branch 'new-branch'
M       newfile.txt

_Leon_@Leon MINGW64 ~/Desktop/my_project (new-branch)
$ git branch
* master
  new-branch
```



```
MINGW64~/c/Users/_Leon_/Desktop/my_project
* new-branch
_Leon_@Leon MINGW64 ~/Desktop/my_project (new-branch)
$ git add newfile.txt
_Leon_@Leon MINGW64 ~/Desktop/my_project (new-branch)
$ git commit -m "add changes in txt file and commit in new branch"
[new-branch 3fcd56d] add changes in txt file and commit in new branch
1 file changed, 1 insertion(+)
_Leon_@Leon MINGW64 ~/Desktop/my_project (new-branch)
$ git checkout main
error: pathspec 'main' did not match any file(s) known to git
_Leon_@Leon MINGW64 ~/Desktop/my_project (new-branch)
$ git checkout master
Switched to branch 'master'
_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git merge new-branch
Updating 94f9309..3fcd56d
Fast-forward
 newfile.txt | 1 +
1 file changed, 1 insertion(+)
_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git branch -d new-branch
Deleted branch new-branch (was 3fcd56d).
_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git remote add origin https://github.com/olb085/test-repo.git
_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git push -u origin main
error: src refspec main does not match any
error: failed to push some refs to 'https://github.com/olb085/test-repo.git'
_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git push -u origin master
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 16 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (6/6), 488 bytes | 488.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote:
remote: Create a pull request for 'master' on GitHub by visiting:
remote:   https://github.com/olb085/test-repo/pull/new/master
remote:
To https://github.com/olb085/test-repo.git
 * [new branch]   master -> master
branch 'master' set up to track 'origin/master'.
_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git pull
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
Unpacking objects: 100% (3/3), 916 bytes | 83.00 KiB/s, done.
From https://github.com/olb085/test-repo
 * [new branch]   main -> origin/main
Already up to date.
_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ git test
git: 'test' is not a git command. See 'git --help'.

The most similar command is
    reset
_Leon_@Leon MINGW64 ~/Desktop/my_project (master)
$ |
```