Git Lab Report

Youssef GUERAIRATE

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Contents

Chapter 1

Introduction

This report documents the Git lab exercises performed, from repository initialization to basic operations, stopping at the remote repository part. Each section provides explanations of the commands used, their purpose, and the observed results. Screenshots are included for clarity.

Chapter 2

Creating a Local Repository
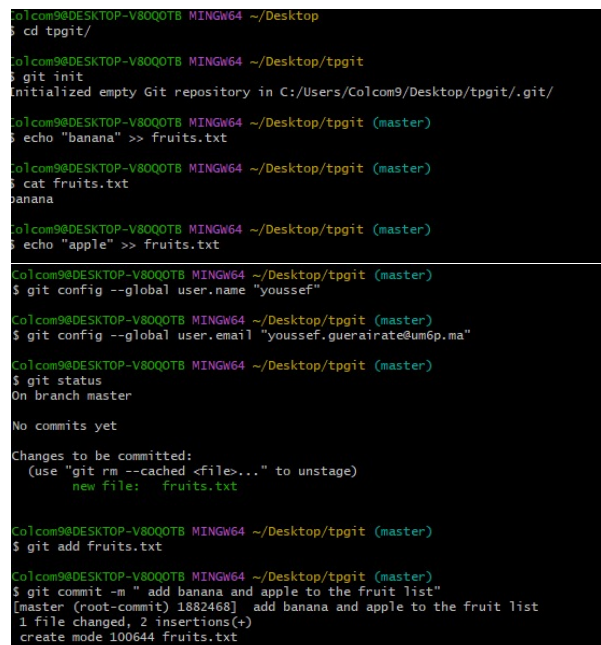
2.1 Initializing a Repository

```
git config --global user.name "Youssef"
git config --global user.email "youssef.guerairate@um6p.ma"
```

This gives Git a configuration to identify the future commits

```
git init
```

This creates a new empty Git repository in the current directory.

Screenshot

Chapter 3
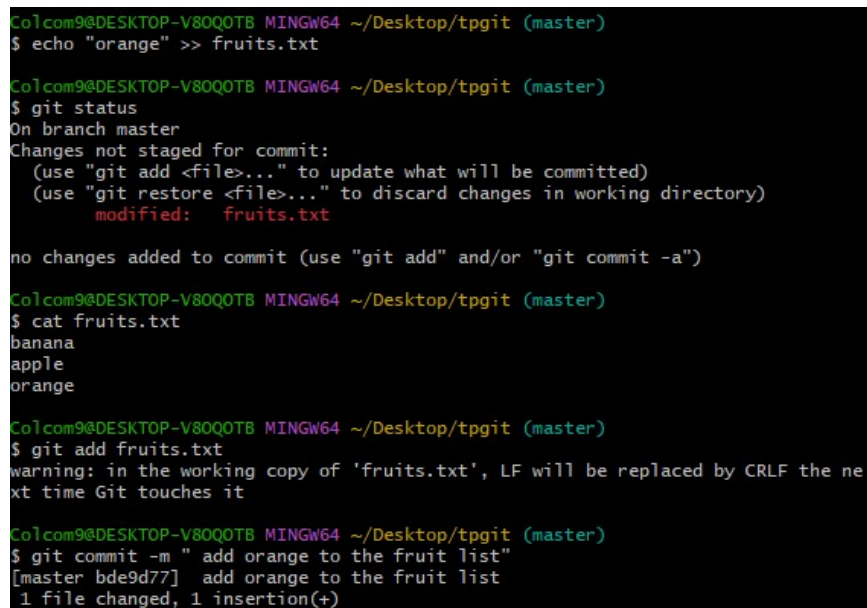
Basic Operations

3.1 Checking Repository Status

`git status`, used to show the state of my local repository, used after each commit to verify if all went as expected.

Screenshot

3.2 Adding Files to Staging Area Making a commit

Explain:

```
git add <filename>
git commit -m "Initial commit"
```

this commands prepare the files and commit the changes to the local repository.

Screenshot


```
Colcom9@DESKTOP-V8OQOTB MINGW64 ~/Desktop/tpgit (master)
$ echo "strawberry" >> fruits.txt

Colcom9@DESKTOP-V8OQOTB MINGW64 ~/Desktop/tpgit (master)
$ git status
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:   fruits.txt

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

Colcom9@DESKTOP-V8OQOTB MINGW64 ~/Desktop/tpgit (master)
$ git add fruits.txt
warning: in the working copy of 'fruits.txt', LF will be replaced by CRLF the next time Git
touches it

Colcom9@DESKTOP-V8OQOTB MINGW64 ~/Desktop/tpgit (master)
$ git commit -m " add strawberry to the fruit list"
[master 914ac37]  add strawberry to the fruit list
 1 file changed, 1 insertion(+)
```

```
C:\Users\Colcom9\Desktop\tpgit>git status
On branch master
nothing to commit, working tree clean

C:\Users\Colcom9\Desktop\tpgit>git log --graph --oneline --decorate --all
* 914ac37 (HEAD -> master)  add strawberry to the fruit list
* bde9d77  add orange to the fruit list
* 1882468  add banana and apple to the fruit list
```

```
git log --graph --oneline --decorate --all
```

this command summarizes the history of commiits done till now.

Chapter 4

Branching

4.1   Creating a Branch

Explain:
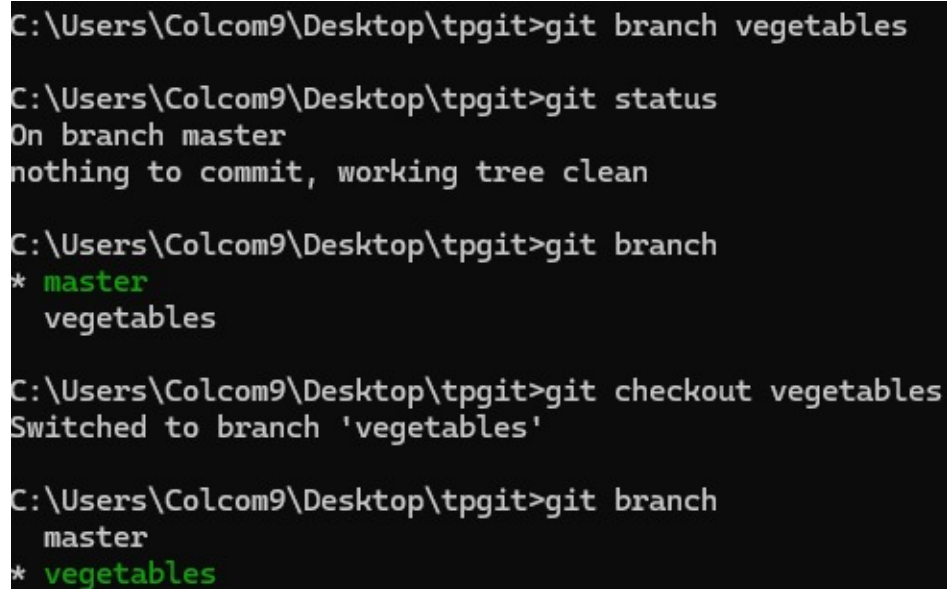
`git branch vegetables`

this creates our new branch

`git branch`

shows the branch we are currently working on.

Screenshot

4.2   Switching Branches

Explain:

`git checkout vegetables`

we switch to our new branch and start working.

Screenshot

`git checkout sauces`

we redo the same with the sauces branch.

Screenshot

Chapter 5

Merging Branches

5.1   Merge Operation

Explain:

```
git checkout master
git merge vegetables
git merge sauces
```

we first switch to master where we merge all what we have done n the three branches.

Screenshot

```
C:\Users\Colcom9\Desktop\tpgit>git checkout master
Switched to branch 'master'

C:\Users\Colcom9\Desktop\tpgit>git merge vegetables
Updating 914ac37..97f1d93
Fast-forward
 vegetables.txt | 3 +++
 1 file changed, 3 insertions(+)
 create mode 100644 vegetables.txt

C:\Users\Colcom9\Desktop\tpgit>git merge sauces
Merge made by the 'ort' strategy.
 sauces.txt | 2 ++
 1 file changed, 2 insertions(+)
 create mode 100644 sauces.txt

C:\Users\Colcom9\Desktop\tpgit>git status
On branch master
nothing to commit, working tree clean
```
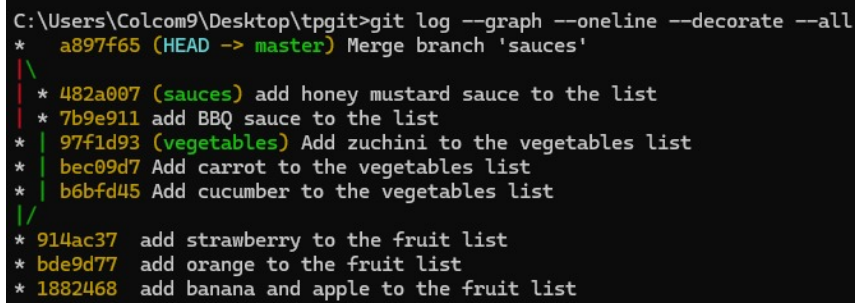
in the end, here is the complete log of the actions made till now ;
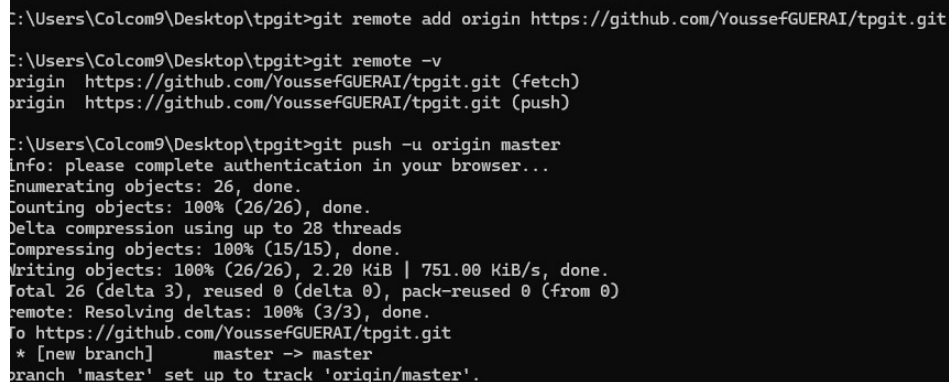
Screenshot

```
C:\Users\Colcom9\Desktop\tpgit>git log --graph --oneline --decorate --all
*   a897f65 (HEAD -> master) Merge branch 'sauces'
|\
| * 482a007 (sauces) add honey mustard sauce to the list
| * 7b9e911 add BBQ sauce to the list
* | 97f1d93 (vegetables) Add zuchini to the vegetables list
* | bec09d7 Add carrot to the vegetables list
* | b6bfd45 Add cucumber to the vegetables list
|/
* 914ac37  add strawberry to the fruit list
* bde9d77  add orange to the fruit list
* 1882468  add banana and apple to the fruit list
```

5.2   Push to remote repository

Now, I want to save my changes into a remote repo in Github.Following the commands, add a remote connection named origin, and then push my local master branch to Github.

```
git remote add origin https://giithub.com/YoussefGUERAI/tpgit.git
git remote -v
git push -u origin master
```

Screenshot

```
C:\Users\Colcom9\Desktop\tpgit>git remote add origin https://github.com/YoussefGUERAI/tpgit.git

C:\Users\Colcom9\Desktop\tpgit>git remote -v
origin  https://github.com/YoussefGUERAI/tpgit.git (fetch)
origin  https://github.com/YoussefGUERAI/tpgit.git (push)

C:\Users\Colcom9\Desktop\tpgit>git push -u origin master
info: please complete authentication in your browser...
Enumerating objects: 26, done.
Counting objects: 100% (26/26), done.
Delta compression using up to 28 threads
Compressing objects: 100% (15/15), done.
Writing objects: 100% (26/26), 2.20 KiB | 751.00 KiB/s, done.
Total 26 (delta 3), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (3/3), done.
To https://github.com/YoussefGUERAI/tpgit.git
* [new branch]      master -> master
branch 'master' set up to track 'origin/master'.
```

here's what my remote repository looks like.

Screenshot

Chapter 6

Work in pairs

6.1 Merge Operation
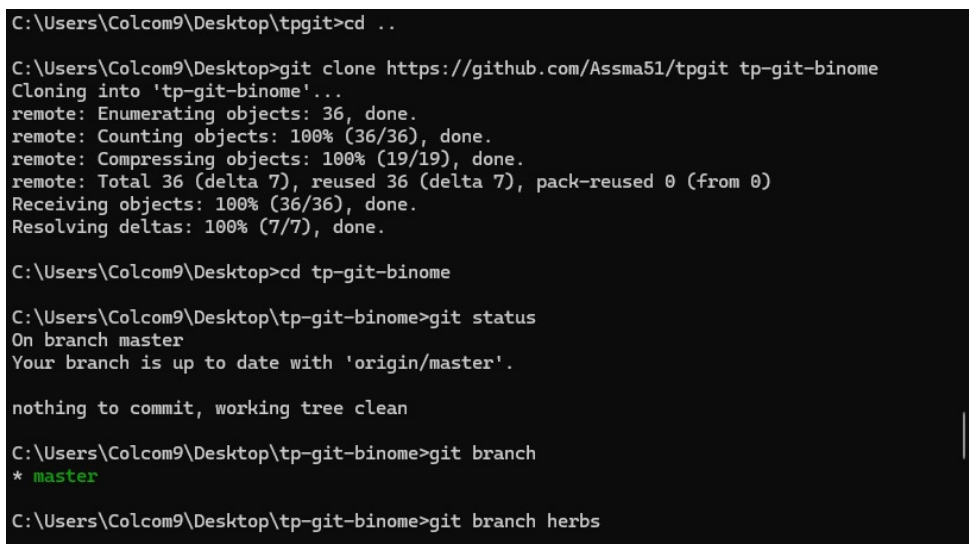
Explain:

```
git clone https://github.com/Assma51/tpgit tp-git-binome
cd tp-git-binome
```

i cloned the repository and started working on it.

Screenshot

6.2 Merge Conflict

My collegue pushed her work in the remote repository. And as a good habit, I need to first to pull her modifications before pushing mine.Because we were working on the same file, a merge conflict emerged.

Screenshot

```
C:\Users\Colcom9\Desktop\tp-git-binome>echo "parsley" >> herbs.txt

C:\Users\Colcom9\Desktop\tp-git-binome>git add herbs.txt

C:\Users\Colcom9\Desktop\tp-git-binome>git commit -m "Add parsley to the herbs"
[herbs 1dcc418] Add parsley to the herbs
 1 file changed, 1 insertion(+)
 create mode 100644 herbs.txt

C:\Users\Colcom9\Desktop\tp-git-binome>echo "Basil" >> herbs.txt

C:\Users\Colcom9\Desktop\tp-git-binome>git add herbs.txt

C:\Users\Colcom9\Desktop\tp-git-binome>git commit -m "Add Basil to herbs"
[herbs 15d55e1] Add Basil to herbs
 1 file changed, 1 insertion(+)

C:\Users\Colcom9\Desktop\tp-git-binome>git checkout master
Switched to branch 'master'
Your branch is ahead of 'origin/master' by 3 commits.
  (use "git push" to publish your local commits)

C:\Users\Colcom9\Desktop\tp-git-binome>git merge herbs
Merge made by the 'ort' strategy.
 herbs.txt | 2 ++
 1 file changed, 2 insertions(+)
 create mode 100644 herbs.txt
```

Screenshot

It was resolved by modifying the fruits.txt file's content and then pushed to our repository.

```
C:\Users\Colcom9\Desktop\tp-git-binome>git status
On branch master
Your branch is up to date with 'origin/master'.

nothing to commit, working tree clean

C:\Users\Colcom9\Desktop\tp-git-binome>echo "avocado" >> fruits.txt

C:\Users\Colcom9\Desktop\tp-git-binome>git add fruits.txt

C:\Users\Colcom9\Desktop\tp-git-binome>git commit -m " Add avocado to fruits list"
[master 125c7b5]  Add avocado to fruits list
 1 file changed, 0 insertions(+), 0 deletions(-)

C:\Users\Colcom9\Desktop\tp-git-binome>git pull
remote: Enumerating objects: 9, done.
remote: Counting objects: 100% (8/8), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 5 (delta 3), reused 5 (delta 3), pack-reused 0 (from 0)
Unpacking objects: 100% (5/5), 527 bytes | 23.00 KiB/s, done.
From https://github.com/Assma51/tpgit
   5553b98..c501128  master       -> origin/master
warning: Cannot merge binary files: fruits.txt (HEAD vs. c501128ffd49aed119b158054d7fbd
7fe946b50a)
Auto-merging fruits.txt
CONFLICT (content): Merge conflict in fruits.txt
Automatic merge failed; fix conflicts and then commit the result.
```

```
C:\Users\Colcom9\Desktop\tp-git-binome>git add fruits.txt

C:\Users\Colcom9\Desktop\tp-git-binome>git commit -m "Add avocado to the list"
[master 75530a3] Add avocado to the list

C:\Users\Colcom9\Desktop\tp-git-binome>git push
Enumerating objects: 10, done.
Counting objects: 100% (10/10), done.
Delta compression using up to 28 threads
Compressing objects: 100% (6/6), done.
Writing objects: 100% (6/6), 635 bytes | 635.00 KiB/s, done.
Total 6 (delta 4), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (4/4), completed with 2 local objects.
To https://github.com/Assma51/tpgit
   c501128..75530a3  master -> master

C:\Users\Colcom9\Desktop\tp-git-binome>
```

Chapter 7

Conclusion

Through this lab, I was able to understand and practice the fundamental concepts of Git, starting from initializing a repository to performing commits, creating and switching between branches, and merging them back into the main branch. I also learned how to connect a local repository to a remote one on GitHub, which is an essential step for collaboration and backup.

The exercises on working in pairs highlighted the importance of regularly pulling updates from collaborators and resolving merge conflicts when they occur. This gave me hands-on experience with one of the most common scenarios in teamwork using version control.

Overall, this lab not only strengthened my knowledge of Git commands but also helped me appreciate the role of version control in real-world software development projects.