

Git Tasks

4. **How many types of version control systems are there?**

There are two main categories of version control systems:

- **Centralized**
- **Decentralized** (distributed).

5. **Explain Branching concept in Git.**

A Git branch is essentially an independent line of development. One can take advantage of branching when working on new features or bug fixes because it isolates his work from that of other team member. Different branches can be merged into any one branch as long as they belong to the same repository. Branching enables one to isolate his work from others. Changes in the primary branch or other branches will not affect his branch, unless he decide to pull the latest changes from those branches.

6. **Explain Forking Workflow in Git.**

Forking Workflow helps a maintainer of a project open up the repository to contributions from any developer without having to manually manage authorization settings for each individual contributor. This gives the maintainer more of a "pull" style workflow. Most commonly used in open-source projects, the Forking Workflow can also be applied to private business workflows to give more authoritative control over what is merged into a release. This can be useful in teams that have Deploy Managers or strict release cycles.

Practical Tasks

- Initialize an empty Git repository on your local machine with the name “**gitlocal**” and make a **README.md** file in that directory which should contain your name as a heading and a hello message (<https://www.makeareadme.com/>).

```
MINGW64: c:/Users/Robin/Desktop/gitlocal
Robin@DESKTOP-UEOMTPF MINGW64 ~
$ cd Desktop/

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop
$ mkdir gitlocal

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop
$ cd gitlocal/

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal
$ git init
Initialized empty Git repository in C:/Users/Robin/Desktop/gitlocal/.git/

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (master)
$ vim README.md

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (master)
$
```

[illegible]

- Now check the status of your git directory and push all the files from that directory to your GitHub repo which you have made in the first step (“InnovationPython_yourname”). With a message “First Commit to Git Repo”.

```

MINGW64:/c/Users/Robin/Desktop/gitlocal

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (master)
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        README.md

nothing added to commit but untracked files present (use "git add" to track)

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (master)
$ git add README.md
warning: LF will be replaced by CRLF in README.md.
The file will have its original line endings in your working directory

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (master)
$ git commit -m "first commit to Git Repo"
[master (root-commit) 3c9a541] first commit to Git Repo
1 file changed, 3 insertions(+)
create mode 100644 README.md

```

Push the file

```

MINGW64:/c/Users/Robin/Desktop/gitlocal

$ git commit -m "first commit to Git Repo"
[master (root-commit) 3c9a541] first commit to Git Repo
1 file changed, 3 insertions(+)
create mode 100644 README.md

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (master)
$ git branch -M main

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (main)
$ git remote add origin https://github.com/ashiqrobin/InnovationPython_MdAshiquAmin.git

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (main)
$ git push -u origin main
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 247 bytes | 247.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To https://github.com/ashiqrobin/InnovationPython_MdAshiquAmin.git
 * [new branch]      main -> main
Branch 'main' set up to track remote branch 'main' from 'origin'.

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (main)
$

```

- Now add a file to your Github repo named “demo.txt” from the github console with content : “This is the demo file before modifications”.



- Pull the changes in your git repo to your local machine git directory named “gitlocal” and check the status for the modifications done in that repo. This time the demo file should be visible in your local machine.

```

MINGW64:/c/Users/Robin/Desktop/gitlocal
Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (main)
$ ls
README.md

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (main)
$ git pull
remote: Enumerating objects: 4, done.
remote: Counting objects: 100% (4/4), 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), done.
From https://github.com/ashiqrobin/InnovationPython_MdAshiqu1Amin
   3c9a541..71159cc  main       -> origin/main
Updating 3c9a541..71159cc
Fast-forward
 demo.txt | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 demo.txt

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (main)
$ ls
demo.txt  README.md

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

nothing to commit, working tree clean

```

- Now make a new branch in your local machine with the name “ developer ”.

```

MINGW64:/c/Users/Robin/Desktop/gitlocal
Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (main)
$ git branch developer

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (main)
$ git branch
  developer
* main

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (main)
$

```

- Edit that demo file and write some content in that e.g. “This is a demo file after modification” and push the modifications to your GitHub repo from the **developer** branch with a commit message “Commit from developer branch”.

```

MINGW64:/c/Users/Robin/Desktop/gitlocal
Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (developer)
$ cat demo.txt
This is the demo file before modifications

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (developer)
$ vim demo.txt

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (developer)
$ cat demo.txt
This is a demo file after modifications

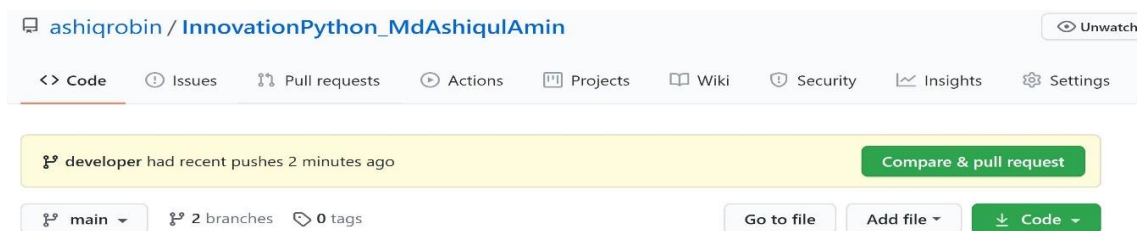
Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (developer)
$ git add demo.txt

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (developer)
$ git commit -m "Commit from developer branch"
[developer dafaf79] Commit from developer branch
1 file changed, 1 insertion(+), 1 deletion(-)

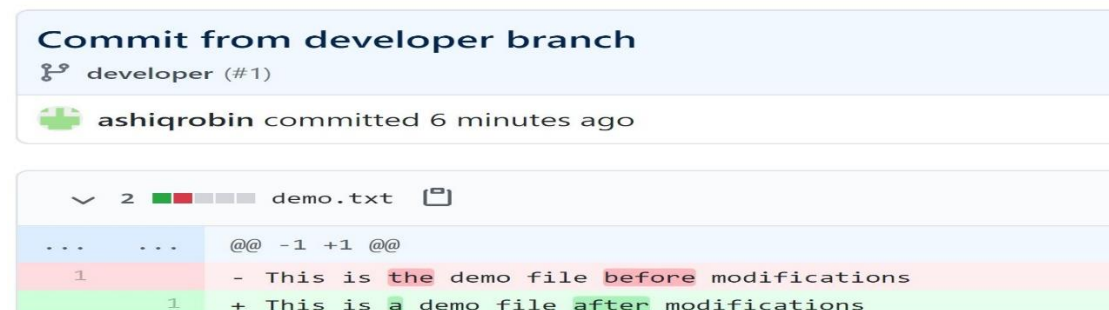
Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (developer)
$ git push -u origin developer
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 323 bytes | 323.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
remote:
remote: Create a pull request for 'developer' on GitHub by visiting:
remote:   https://github.com/ashiqrobin/InnovationPython_MdAshiquAmin/pull/new/developer
remote:
To https://github.com/ashiqrobin/InnovationPython_MdAshiquAmin.git
 * [new branch]      developer -> developer
Branch 'developer' set up to track remote branch 'developer' from 'origin'.

```

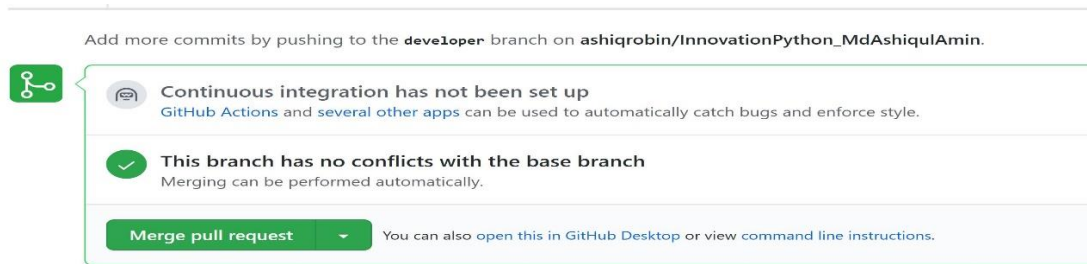
- Go to the GitHub console and generate a merge request to master branch after checking the modifications.



Modifications



- After merging you could see the modified content in the demo file. Now revert back to the previous version from terminal.



modifications



- After switching back to the previous version your demo file should have the content: This is a demo file before modification.
- At the end delete the developer branch.

```

MINGW64:/c/Users/Robin/Desktop/gitlocal

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (developer)
$ git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (main)
$ cat demo.txt
This is the demo file before modifications

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (main)
$ git pull
remote: Enumerating objects: 1, done.
remote: Counting objects: 100% (1/1), done.
remote: Total 1 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (1/1), done.
From https://github.com/ashiqrobin/InnovationPython_MdAshiquAmin
  71159cc..0d5abc5  main      -> origin/main
Updating 71159cc..0d5abc5
Fast-forward
 demo.txt | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (main)
$ cat demo.txt
This is a demo file after modifications

Robin@DESKTOP-UEOMTPF MINGW64 ~/Desktop/gitlocal (main)
$ git branch -d developer
Deleted branch developer (was dafaf79).

```