

What is the version control system?

A system that keeps record of your changes.

Allow for collaborative development

Allows you to know who made what changes & when

Allows you to revert any changes.

Version control system types

Local

Centralized

Distributed

Local version control system

system works on your local computer.

It means that in my laptop I can install this version control system and I can track my changes, assume

that I'm updating my file multiple times.

Then each time the file will be recorded.

What changes you have done and when you have done those changes and it always point to the latest update

what you have done.

If you want to go back to the previous version, you can go easily.

But local version control system works.

If you are a single developer or you don't want to collaboratively work with your team.

But this doesn't solve the problem.

centralized version control system

If we want to write the code with a group of people next, let's see centralized version control system

In centralized version control system, you have a centralized repository or main server repository and collaborators and developers communicate with the main server repository and write the code and you don't have any local copy of your code or project in the centralized repository in case. If centralized repository is not accessible, developers or collaborators could not be able to write the code.

Why?

Because this should be always accessible.

So centralized repository solves the problem to work with group of people, but in case centralized repository is not accessible, it is a problem for the collaborators or developers.

Distributed version control system.

Distributed version control system is the mostly are widely used version control system. Why?

Because it has a main server repository as well as the local repository.

Nothing.

But whatever code you are having, same code is available in the developer system.

You can sync central repository with the local repository and developers can continue write the code

even though centralized repository is not accessible because same code or project is available in the

local system, they can write the code and commit in the local repository and they push it into the

centralized repository.

But in this case, pushing your changes directly to the centralized repository is not possible.

You must push your changes into the local repository from local repository.

It will go to the centralized repository.

In this case, even though centralized repository is not available, our local repository is not available.

There is no problem because even other collaborators or developers also having the same code.

You can push this code into the central repository from there.

Again, everybody can able to pull it, so pull nothing but taking the code into your local repository,
push nothing but pushing the code into the centralized repository.

Install git on window.

Install git on Linux.

This is one time activity

Configure 2 system and create 2 user developer1 and developer2

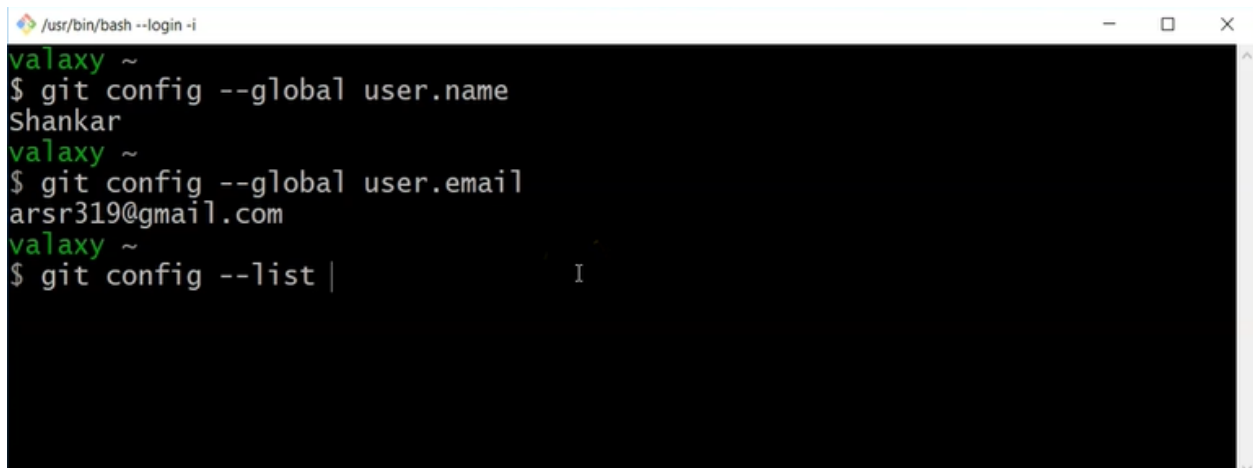
Git config --global user.name

Git config --global user.email

Git config --global user.name "developer2"

Git config --global user.email developer2@gmail.com

Git config --list

A terminal window with a black background and green text. The window title is "/usr/bin/bash --login -i". The prompt is "valaxy ~". The first command is "\$ git config --global user.name", followed by the output "Shankar". The second command is "\$ git config --global user.email", followed by the output "arsr319@gmail.com". The third command is "\$ git config --list", followed by a vertical bar "|".

```
/usr/bin/bash --login -i
valaxy ~
$ git config --global user.name
Shankar
valaxy ~
$ git config --global user.email
arsr319@gmail.com
valaxy ~
$ git config --list |
```

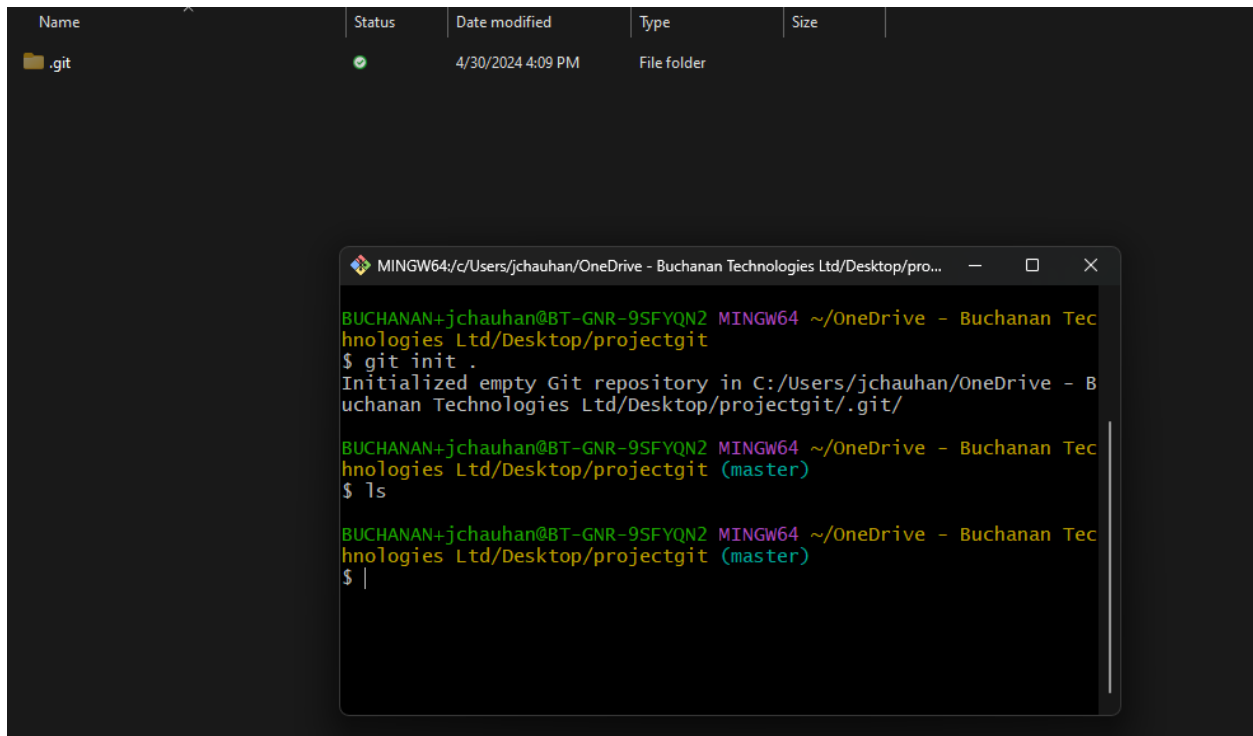
```
quick connect...
2 13.232.225.222 (ec2-user)
[root@ip-172-31-42-165 ~]#
[root@ip-172-31-42-165 ~]# git config --global user.name
[root@ip-172-31-42-165 ~]# git config --global user.email
[root@ip-172-31-42-165 ~]# git config --global user.name "developer2"
[root@ip-172-31-42-165 ~]# git config --global user.email "developer2@gmail.com"
[root@ip-172-31-42-165 ~]# git config --global user.email
developer2@gmail.com
[root@ip-172-31-42-165 ~]# git config --global user.name
developer2
[root@ip-172-31-42-165 ~]#
```

Before working with Git

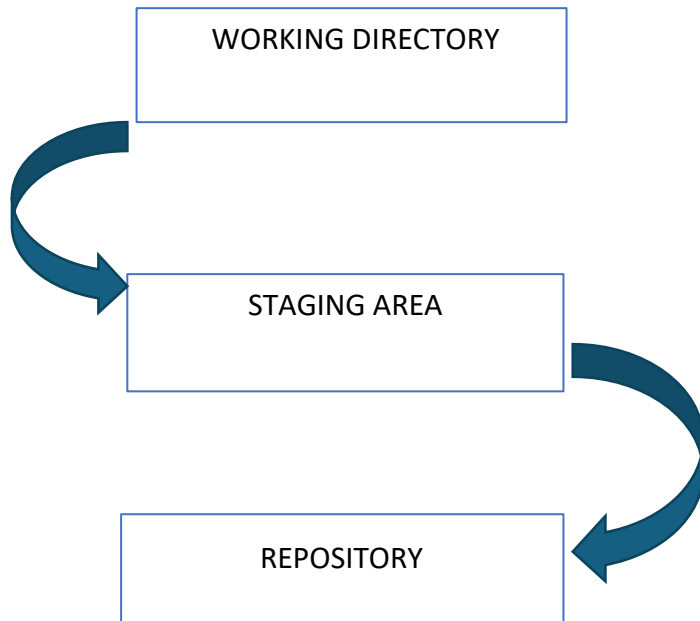
- All git commands start with “git”
- You should introduce yourself to git
- Git works with repositories
- Most of the git commands should run inside a git repository

First create repository into laptop

Projectgit



Git stages



```
MINGW64/c/Users/jchauhan/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ ls
file1  file2.txt

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    file1
    file2.txt

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

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git add file1

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$
git
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
    new file:   file1

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    file2.txt

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git add file2.txt

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
    new file:   file1
    new file:   file2.txt

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$
```

```
MINGW64/c/Users/jchauhan/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git log
fatal: your current branch 'master' does not have any commits yet

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git log --oneline
fatal: your current branch 'master' does not have any commits yet

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git commit -m "this is 1st commit"
[master (root-commit) 407a011] this is 1st commit
2 files changed, 0 insertions(+), 0 deletions(-)
create mode 100644 file1
create mode 100644 file2.txt

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git log --oneline
407a011 (HEAD -> master) this is 1st commit

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git status
On branch master
nothing to commit, working tree clean

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git log
commit 407a011832116787b7e65ae974f6e54468e77d44 (HEAD -> master)
Author: buntty4200 <jchauhanjayraj8648@gmail.com>
Date:   Wed May 1 15:45:26 2024 +0530

    this is 1st commit

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ |
```

On windows system

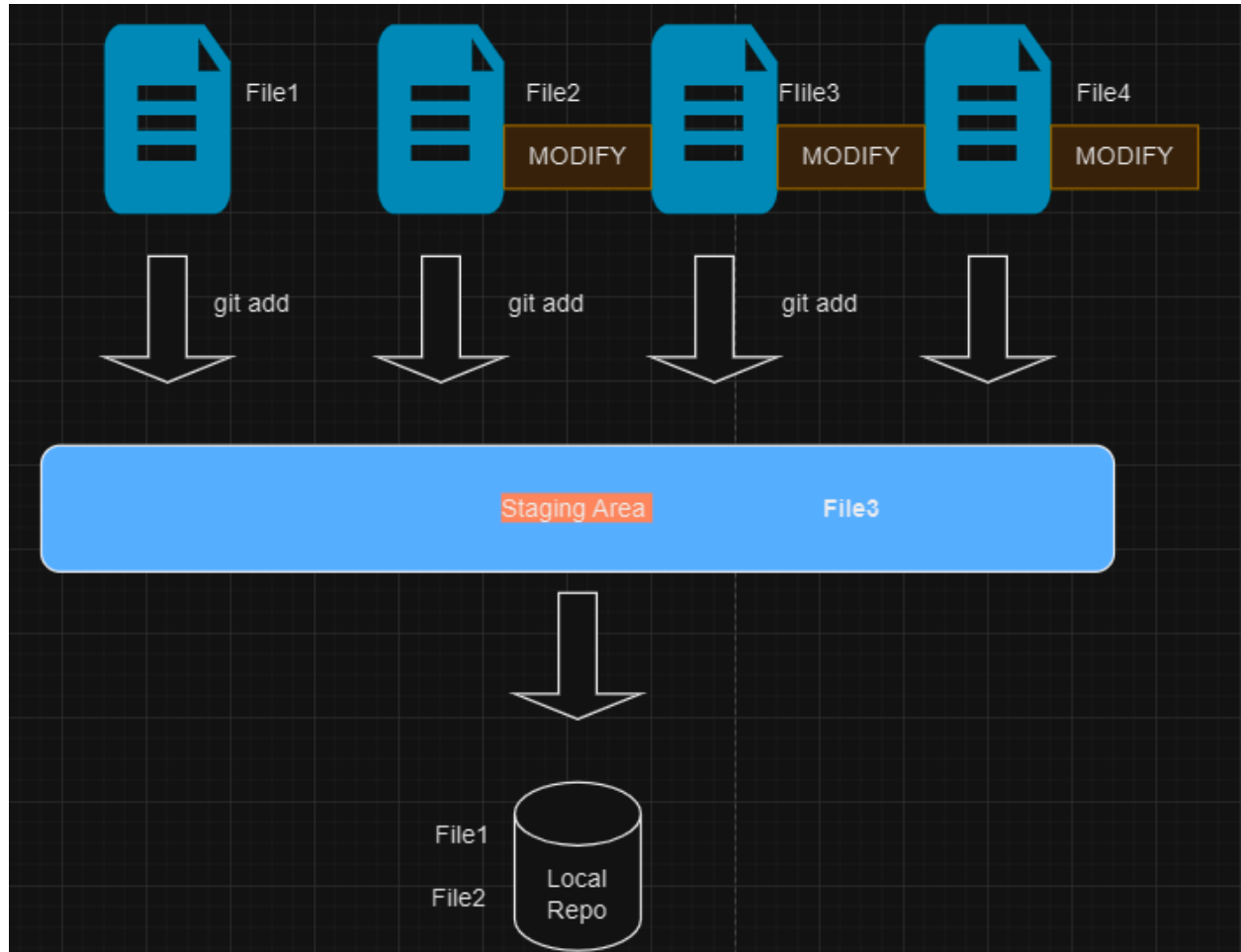
Git add – add files into the staging area

Git commit - that add changes to the local VCs

Git status – shows current stage of repository

Git log – shows commit history

GIT Workflow




```
MINGW64:/c/Users/jchauhan/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ ls
file1 file2.txt
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ touch file3 file4
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ ls
file1 file2.txt file3 file4
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git status
On branch master
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        file3
        file4

nothing added to commit but untracked files present (use "git add" to track)
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git add file3
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        new file:   file3

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        file4

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ cat file3
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ cat file4
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ vim file3
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ vim file4
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ cat file3
this is file3
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ cat file4
this is file4
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$
```

```
MINGW64/c/Users/jchauhan/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit
file1 file2.txt file3 file4

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ vim file2.txt

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   file3

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:   file2.txt
    modified:   file3

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    file4

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git add .
warning: in the working copy of 'file2.txt', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'file3', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'file4', LF will be replaced by CRLF the next time Git touches it

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    modified:   file2.txt
    new file:   file3
    new file:   file4

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git commit -m "adding file3 and file4 as well"
[master ceeb760] adding file3 and file4 as well
3 files changed, 4 insertions(+)
create mode 100644 file3
create mode 100644 file4

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git log
commit ceeb760c9a6822aa7b139d7993c560200c891135 (HEAD -> master)
Author: bunt4200 <chauhanjayraj8648@gmail.com>
Date:   Wed May 1 17:14:32 2024 +0530

    adding file3 and file4 as well

commit 407a011832116787b7e65ae974f6e54468e77d44
Author: bunt4200 <chauhanjayraj8648@gmail.com>
Date:   Wed May 1 15:45:26 2024 +0530

    this is 1st commit
```

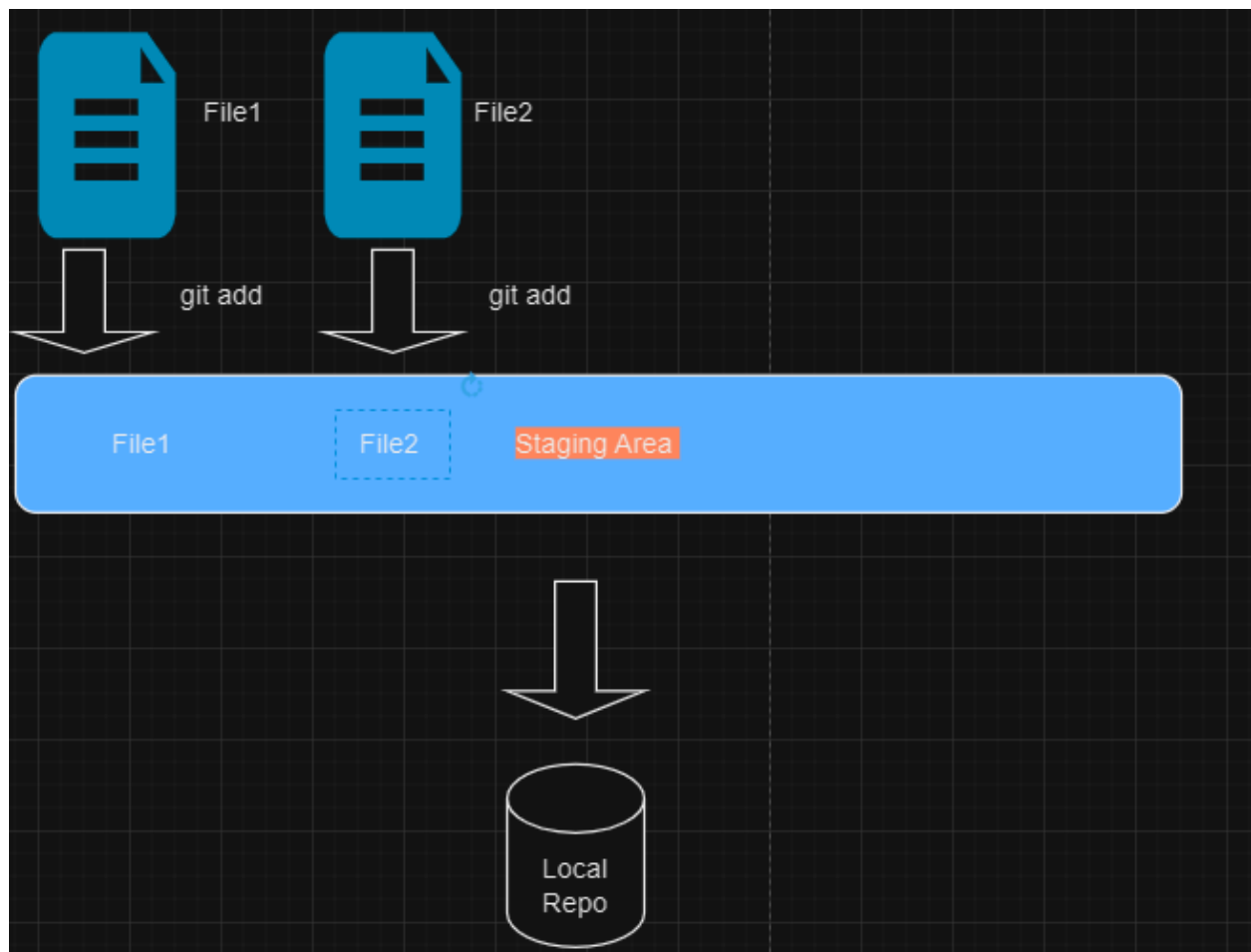
Compare code changes with different git stage

Staging area to local repo

Git diff – Compare changes of working directory with staging area.

Git diff –staged – Compare changes of staging area with local repository.

Git diff HEAD – Compare changes of working directory with local repository.



```
MINGW64:/c/Users/jchauhan/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ ls
file1 file2.txt file3 file4
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ vim file1
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ cat file1
this is line1
this is line2
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ mv file2.txt file2
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git status
On branch master
Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   file1
        deleted:    file2.txt

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        file2

no changes added to commit (use "git add" and/or "git commit -a")
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git add --all
warning: in the working copy of 'file1', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'file2', LF will be replaced by CRLF the next time Git touches it
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   file1
        renamed:    file2.txt -> file2
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   file1
        renamed:    file2.txt -> file2
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:   file1
        modified:   file2
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ |
```

```
MINGW64/c/Users/jchauhan/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit
$ git diff
warning: in the working copy of 'file1', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'file2', LF will be replaced by CRLF the next time Git touches it
diff --git a/file1 b/file1
index c5d41b7..070d3ad 100644
--- a/file1
+++ b/file1
@@ -1,2 +1,3 @@
 this is line1
 this is line2
+this is line3
\ No newline at end of file
diff --git a/file2 b/file2
index c3ee0b8..9c8290b 100644
--- a/file2
+++ b/file2
@@ -1,2 +1,3 @@
 this is file2
 this is a text file
+this is a text2 file
\ No newline at end of file

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git diff --staged
diff --git a/file1 b/file1
index e69de29..c5d41b7 100644
--- a/file1
+++ b/file1
@@ -0,0 +1,2 @@
+this is line1
+this is line2
diff --git a/file2.txt b/file2
similarity index 100%
rename from file2.txt
rename to file2

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git diff --staged HEAD
diff --git a/file1 b/file1
index e69de29..c5d41b7 100644
--- a/file1
+++ b/file1
@@ -0,0 +1,2 @@
+this is line1
+this is line2
diff --git a/file2.txt b/file2
similarity index 100%
rename from file2.txt
rename to file2

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git diff HEAD
warning: in the working copy of 'file1', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'file2', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'file2', LF will be replaced by CRLF the next time Git touches it
diff --git a/file1 b/file1
index e69de29..070d3ad 100644
--- a/file1
+++ b/file1
@@ -0,0 +1,3 @@
+this is line1
+this is line2
+this is line3
\ No newline at end of file
diff --git a/file2.txt b/file2
similarity index 62%
rename from file2.txt
```

```
MINGW64~/c/Users/jchauhan/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit
modified: file1
modified: file2

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git add .
warning: in the working copy of 'file1', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'file2', LF will be replaced by CRLF the next time Git touches it

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git commit -m "updated file"
[master cad6267] updated file
2 files changed, 4 insertions(+)
rename file2.txt => file2 (62%)

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git log
commit cad6267c0c0c1cc8516a9e4611a7ad73091d017d (HEAD -> master)
Author: buntty4200 <chauhanjayraj8648@gmail.com>
Date: Wed May 1 17:40:30 2024 +0530

    updated file

commit ceeb760c9a6822aa7b139d7993c560200c891135
Author: buntty4200 <chauhanjayraj8648@gmail.com>
Date: Wed May 1 17:14:32 2024 +0530

    adding file3 and file4 as well

commit 407a011832116787b7e65ae974f6e54468e77d44
Author: buntty4200 <chauhanjayraj8648@gmail.com>
Date: Wed May 1 15:45:26 2024 +0530

    this is 1st commit

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git diff ^C

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git diff cad6267c

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git diff cad6267c ceeb760c
diff --git a/file1 b/file1
index 070d3ad..e69de29 100644
--- a/file1
+++ b/file1
@@ -1,3 +0,0 @@
-this is line1
-this is line2
-this is line3
\ No newline at end of file
diff --git a/file2 b/file2.txt
similarity index 62%
rename from file2
rename to file2.txt
index 9c8290b..c3ee0b8 100644
--- a/file2
+++ b/file2.txt
@@ -1,3 +1,2 @@
 this is file2
 this is a text file
-this is a text2 file
\ No newline at end of file

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$
```

Why do we need GitHub?

Creating GitHub account

Creating a Repository on GitHub

Cloning a repository from github

```
MINGW64:/c/Users/jchauhan/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit
$ git status
fatal: not a git repository (or any of the parent directories): .git

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit
$ |
```

```
MINGW64:/c/Users/jchauhan/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit
$ git status
fatal: not a git repository (or any of the parent directories): .git

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit
$ git clone https://github.com/bunty4200/vtgitrepo.git
Cloning into 'vtgitrepo'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit
$ ls
vtgitrepo/

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit
$

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit
$ cd vtgitrepo/

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ ls
README.md

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ cat README.md
# vtgitrepo
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ |
```

Push code on to remote repository

Update code on clone repository

```
MINGW64:/c/Users/jchauhan/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ git status
On branch master
Your branch is up to date with 'origin/master'.

nothing to commit, working tree clean

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ ls
README.md

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ echo "<h1> This is index.html file </h2>" > index.html

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ ls
README.md index.html

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ cat index.html
<h1> This is index.html file </h2>

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ echo "<h1> our contact details are </h1>" > contact.html

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ echo "<h2> Phone no: 123-456-789 </h2>" >> contact.html

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ ls
README.md contact.html index.html

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ cat contact.html
<h1> our contact details are </h1>
<h2> Phone no: 123-456-789 </h2>

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ cat index.html
<h1> This is index.html file </h2>

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ git status
On branch master
Your branch is up to date with 'origin/master'.

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

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



```
MINGW64/c/Users/jchauhan/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ git add .
warning: in the working copy of 'contact.html', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'index.html', LF will be replaced by CRLF the next time Git touches it

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ git status
On branch master
Your branch is up to date with 'origin/master'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        new file:   contact.html
        new file:   index.html

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ git commit -m "added contact and index file"
[master 425d253] added contact and index file
 2 files changed, 3 insertions(+)
 create mode 100644 contact.html
 create mode 100644 index.html

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ git status
On branch master
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)

nothing to commit, working tree clean

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ git log
commit 425d253aac5b2ecf543337db848ab755ac33716c (HEAD -> master)
Author: bunt4200 <bunty4200@users.noreply.github.com>
Date:   Wed May 1 20:02:50 2024 +0530

    added contact and index file

commit c9dbb6a615052b9aa75128caf5efee6992442a7c (origin/master, origin/HEAD)
Author: bunt4200 <102523569+bunty4200@users.noreply.github.com>
Date:   Wed May 1 19:39:04 2024 +0530

    Initial commit

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ git push origin master
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 430 bytes | 143.00 KiB/s, done.
Total 4 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/bunty4200/vtgitrepo.git
   c9dbb6a..425d253  master -> master

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$
```

Working with other developer code

In linux system developer2 user so that user pull the code modify the code

```

[root@developer2-system ~]# hostname
developer2-system
[root@developer2-system ~]# git clone https://github.com/bunty4200/vtgitrepo.git
Cloning into 'vtgitrepo'...
remote: Enumerating objects: 7, done.
remote: Counting objects: 100% (7/7), done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 7 (delta 0), reused 4 (delta 0), pack-reused 0
Receiving objects: 100% (7/7), done.
[root@developer2-system ~]#
[root@developer2-system ~]# ls
vtgitrepo
[root@developer2-system ~]#
[root@developer2-system ~]# cd vtgitrepo/
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# ls
README.md  contact.html  index.html
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# echo "<h1> contact@gmail.com </h1>" >> contact.html
<h1> contact@gmail.com </h1> >> contact.html
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# echo "<h1> contact@gmail.com </h1>" >> contact.html
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# cat contact.html
<h1> our contact details are </h1>
<h2> Phone no: 123-456-789 </h2>
<h1> contact@gmail.com </h1>
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# git status
On branch master
Your branch is up to date with 'origin/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:   contact.html

no changes added to commit (use "git add" and/or "git commit -a")
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# git add .
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# git status
On branch master
Your branch is up to date with 'origin/master'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    modified:   contact.html

[root@developer2-system vtgitrepo]# git commit -m "added email to contact"
[master 8740bb0] added email to contact
1 file changed, 1 insertion(+)
[root@developer2-system vtgitrepo]# █

```

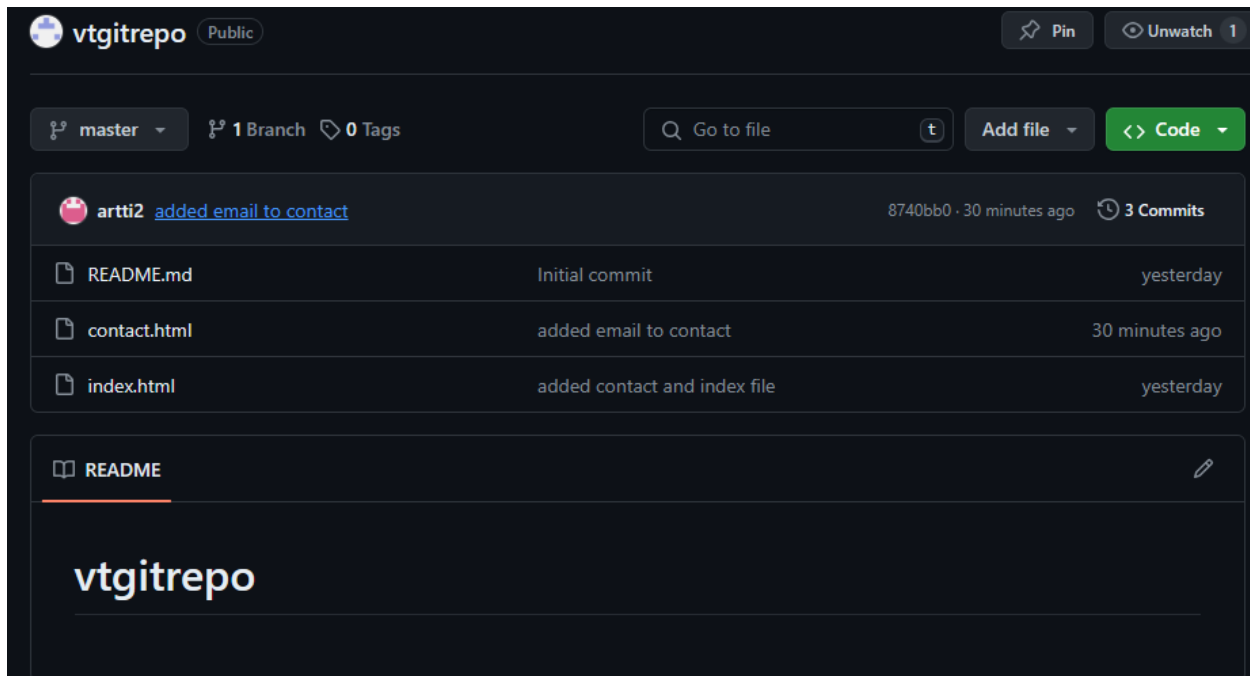
Push the code remote repository

You can generate a personal access token on GitHub and use it as a replacement for your password when pushing changes. Follow these steps:

- Go to your GitHub account settings.
- Select "Developer settings" > "Personal access tokens" > "Generate new token".
- Give your token a name, select the scopes (permissions) you need (at least **repo** or **public_repo**), and click "Generate token".

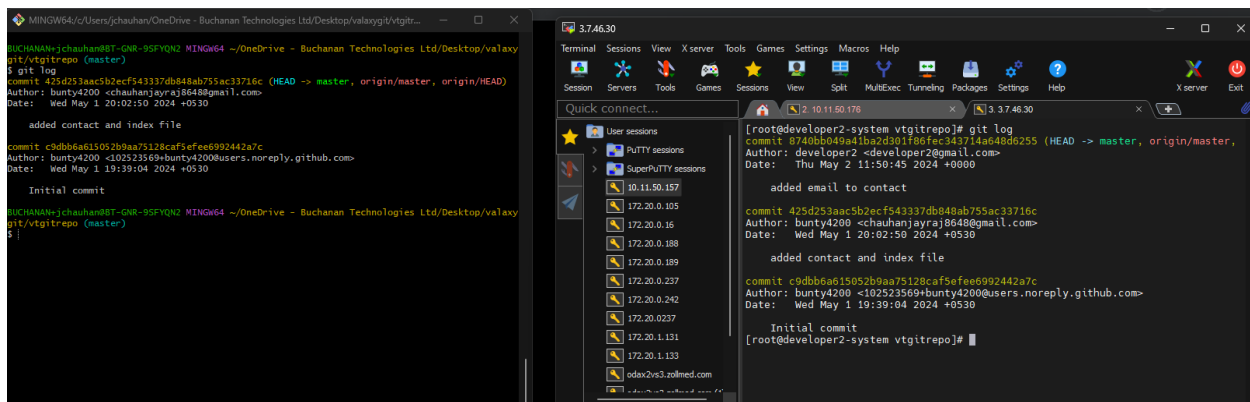
- Copy the generated token and use it as your password when prompted.

```
[root@developer2-system vtgitrepo]# git push origin master
Username for 'https://github.com': buntty4200
Password for 'https://buntty4200@github.com':
remote: Support for password authentication was removed on August 13, 2021.
remote: Please see https://docs.github.com/get-started/getting-started-with-git/about-authentication-with-git
fatal: Authentication failed for 'https://github.com/buntty4200/vtgitrepo.git/'
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# git push origin master
Username for 'https://github.com': buntty4200
Password for 'https://buntty4200@github.com':
remote: Support for password authentication was removed on August 13, 2021.
remote: Please see https://docs.github.com/get-started/getting-started-with-git/about-authentication-with-git
fatal: Authentication failed for 'https://github.com/buntty4200/vtgitrepo.git/'
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/root/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_rsa
Your public key has been saved in /root/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:HxEFP09AJBhjZ0PCPTfZH+iHsnEdT/Bued+sx4E5+Sc root@developer2-system
The key's randomart image is:
+---[RSA 3072]-----+
|      .Bo+== .      |
|      . =.o * o o    |
|      o + = = + o    |
|      . o + B *.     |
|      S + + O.=      |
|      . * * ++       |
|      o   o.=        |
|      Eo+            |
|      .o.            |
+---[SHA256]-----+
[root@developer2-system vtgitrepo]# cat /root/.ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQGDlJDDCdsLR9zgShdV0AcGI+1AqqXrpTcABR3GY0mZb02
eLYlV96oJQQiKQggFnAdx/kPpfz62paxnf5xiN6h4sUKHzLom2uu67CbAkx3eNH9x3woV2dCxh+JQhAHbw
lGcggoBRiXyAFM4iA7v5LkBRcnkEJi0iMd1oTm7IR42nM+vHC/Th+D+xU3QKRC05CxjcECS/9WSIbJMdgt
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# git push origin master
Username for 'https://github.com': buntty4200
Password for 'https://buntty4200@github.com':
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 389 bytes | 389.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/buntty4200/vtgitrepo.git
  425d253..8740bb0 master -> master
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]#
```



What is the difference between git clone and git pull ?

So far we are using the git clone to clone the repository.



So, to demonstrate this one, I'm taking the same repository.

In this repository we have three commits at this moment and same three commits are available in the developer two system as well.

I just executed git log command and you can see three commits are there and these commits are updated in our remote repository.

And if I check for developer one system, this is our developer, one system.
But in the developer one system we have only two commits because the third commit was done by the developer Two
he updated this one in the remote repository.
Remote repository, nothing.
But over here he has committed updated.
Now I would like to get these updates to my developer One system for that we need to execute a command called git pull.

What is the difference between git pull and git clone in case the repository is not exist in our system?

Then we need to use the git clone.

A we have done our changes and we pushed over here and even as a developer two also initially

he has used git clone command.

Why?

Because the repository itself is not exist in the local system in case if it is not exist in the local

system, then we need to go with the git clone, whereas repository is already available, but few changes

you want to pull from the remote repository.

If that is the case, we need to use the git pull command.

```
MINGW64:/c/Users/jchauhan/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ git pull
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 3 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 369 bytes | 17.00 KiB/s, done.
From https://github.com/bunty4200/vtgitrepo
  425d253..8740bb0  master    -> origin/master
Updating 425d253..8740bb0
Fast-forward
 contact.html | 1 +
 1 file changed, 1 insertion(+)

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ ls
README.md  contact.html  index.html

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ cat contact.html
<h1> our contact details are </h1>
<h2> Phone no: 123-456-789 </h2>
<h1> contact@gmail.com </h1>

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ git log
commit 8740bb049a41ba2d301f86fec343714a648d6255 (HEAD -> master, origin/master, origin/HEAD)
Author: developer2 <developer2@gmail.com>
Date: Thu May 2 11:50:45 2024 +0000

    added email to contact

commit 425d253aac5b2ecf543337db848ab755ac33716c
Author: bunty4200 <chauhanjayraj8648@gmail.com>
Date: Wed May 1 20:02:50 2024 +0530

    added contact and index file

commit c9dbb6a615052b9aa75128caf5efee6992442a7c
Author: bunty4200 <102523569+bunty4200@users.noreply.github.com>
Date: Wed May 1 19:39:04 2024 +0530

    Initial commit

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/valaxygit/vtgitrepo (master)
$ |
```

Unable to push changes onto remote repository

In this lecture, we are going to talk about a common issue which is faced by the developers and how do they resolve it to avoid the problem.

Let's take an example that there is a repository in our GitHub account now. Developer one and Developer two want to work on the same code.

So to get that code we need to pull it into our local system, right?

For that we can execute a command called Git clone so that the code will come into the local system.

Now assume that developer one has pulled the code similar way, even Developer two also cloning the same repository at this point of time.

Everybody has the same piece of code now.

Developer one and Developer two start working on this code.

Let's assume that Developer one has updated his code.

Now there is some change or variation with the remote repository code similar way.

Even Developer two also updated his code.

Now both the guys have done their own changes to the same repository.

Now we need to push this code onto remote repository right now let's say that Developer one is trying

to check in his code onto remote repository at this point of time.

Developer one can able to check in his code without any issue.

Why?

Because whatever.

Commit id on the remote repository and whatever commit id he was having on local repository.

Both are same.

Now on top of that one he has done his own commits.

So while pushing also there won't be any problem developer one can able to update his code with the remote repository, whereas if developer two is trying to update his code onto remote repository, it doesn't take it.

Why?

Because whenever you have pulled this code from the remote repository, the code, what were there in

the remote repository and what is there at this point of time?

Both are differ.

To avoid this problem we need to pull the code by using git pull command pushing our changes are checking in our changes.

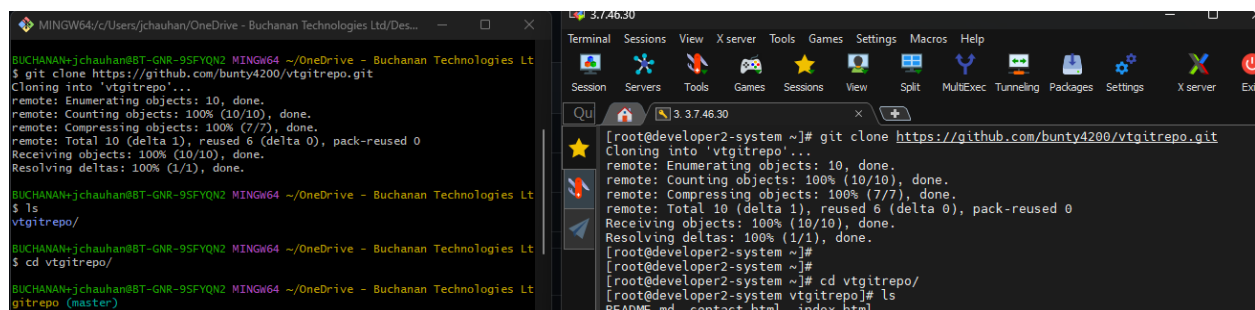
That is the best practice.

Apart from this, we can still use git branches which we are going to talk about those in the later point of this course.

Let's see this.

Let's see this demonstration with practical.

Developer1 and Developer2 cloning the same code



The image shows two terminal windows side-by-side. The left window is titled 'MINGW64/c:/Users/jchauhan/OneDrive - Buchanan Technologies Ltd/Des...' and shows a user cloning a repository. The right window is titled '3.7.46.30' and shows a user cloning the same repository. Both windows show the same output for the cloning process.

```
BUCHANAN+jchauhan@BT-GNR-9SFYQ2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd
$ git clone https://github.com/bunty4200/vtgitrepo.git
Cloning into 'vtgitrepo'...
remote: Enumerating objects: 10, done.
remote: Counting objects: 100% (10/10), done.
remote: Compressing objects: 100% (7/7), done.
remote: Total 10 (delta 1), reused 6 (delta 0), pack-reused 0
Receiving objects: 100% (10/10), done.
Resolving deltas: 100% (1/1), done.
BUCHANAN+jchauhan@BT-GNR-9SFYQ2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd
$ ls
vtgitrepo/
BUCHANAN+jchauhan@BT-GNR-9SFYQ2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd
$ cd vtgitrepo/
BUCHANAN+jchauhan@BT-GNR-9SFYQ2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd
$ git status
gitrepo (master)
On branch master
nothing to commit, working tree clean
```

```
[root@developer2-system ~]# git clone https://github.com/bunty4200/vtgitrepo.git
Cloning into 'vtgitrepo'...
remote: Enumerating objects: 10, done.
remote: Counting objects: 100% (10/10), done.
remote: Compressing objects: 100% (7/7), done.
remote: Total 10 (delta 1), reused 6 (delta 0), pack-reused 0
Receiving objects: 100% (10/10), done.
Resolving deltas: 100% (1/1), done.
[root@developer2-system ~]#
[root@developer2-system ~]# cd vtgitrepo/
[root@developer2-system vtgitrepo]# ls
README.md  contact.html  index.html
```

Git log - you see the same commit ID

```
vtgitrepo [master] $ git log
commit 8740bb049a41ba2d301f86fec343714a648d6255 (HEAD -> master, origin/master)
Author: developer2 <developer2@gmail.com>
Date: Thu May 2 11:50:45 2024 +0000

    added email to contact

commit 425d253aac5b2ecf543337db848ab755ac33716c
Author: buntty4200 <chauhanjayraj8648@gmail.com>
Date: Wed May 1 20:02:50 2024 +0530

    added contact and index file

commit c9dbb6a615052b9aa75128caf5efee6992442a7c
Author: buntty4200 <102523569+buntty4200@users.noreply.github.com>
Date: Wed May 1 19:39:04 2024 +0530

    Initial commit

BUCHANAN+jchauhan@8BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/vtgitrepo (master)
$ |

[root@developer2-system ~]# cd vtgitrepo/
[root@developer2-system vtgitrepo]# ls
README.md contact.html index.html
[root@developer2-system vtgitrepo]# git log
commit 8740bb049a41ba2d301f86fec343714a648d6255 (HEAD -> master, origin/master, origin/develop)
Author: developer2 <developer2@gmail.com>
Date: Thu May 2 11:50:45 2024 +0000

    added email to contact

commit 425d253aac5b2ecf543337db848ab755ac33716c
Author: buntty4200 <chauhanjayraj8648@gmail.com>
Date: Wed May 1 20:02:50 2024 +0530

    added contact and index file

commit c9dbb6a615052b9aa75128caf5efee6992442a7c
Author: buntty4200 <102523569+buntty4200@users.noreply.github.com>
Date: Wed May 1 19:39:04 2024 +0530

    Initial commit

[root@developer2-system vtgitrepo]#
```

Developer1 made changes and commit on local repo

```
MINGW64/c:/Users/jchauhan/OneDrive - Buchanan Technologies Ltd/Desktop/gitproject/Java Projects/vtgitrepo

BUCHANAN+jchauhan@8BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/gitproject/Java Projects/vtgitrepo (master)
$ echo "<h1> add whatsUpnumber <h2>" >> contact.html

BUCHANAN+jchauhan@8BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/gitproject/Java Projects/vtgitrepo (master)
$ cat contact.html
<h1> our contact details are </h1>
<h2> Phone no: 123-456-789 </h2>
<h1> contact@gmail.com </h1>
<h1> add whatsUpnumber <h2>

BUCHANAN+jchauhan@8BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/gitproject/Java Projects/vtgitrepo (master)
$ git status
On branch master
Your branch is up to date with 'origin/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:   contact.html

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

BUCHANAN+jchauhan@8BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/gitproject/Java Projects/vtgitrepo (master)
$ git add contact.html
warning: in the working copy of 'contact.html', LF will be replaced by CRLF the next time Git touches it

BUCHANAN+jchauhan@8BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/gitproject/Java Projects/vtgitrepo (master)
$ git status
On branch master
Your branch is up to date with 'origin/master'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   contact.html

BUCHANAN+jchauhan@8BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/gitproject/Java Projects/vtgitrepo (master)
$ git commit -m "updated code"
[master 4844f62] updated code
1 file changed, 1 insertion(+)

BUCHANAN+jchauhan@8BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/gitproject/Java Projects/vtgitrepo (master)
$ |
```

Developer2 made changes on file


```
3.7.46.30
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit

[Qu] 3 3.7.46.30
[root@developer2-system vtgitrepo]# echo "<h1> add new member in our team </h1>" >> index.html
[root@developer2-system vtgitrepo]# git status
On branch master
Your branch is up to date with 'origin/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:   index.html

no changes added to commit (use "git add" and/or "git commit -a")
[root@developer2-system vtgitrepo]# git add .
[root@developer2-system vtgitrepo]# git commit -m "added new code"
[master b900b1a] added new code
 1 file changed, 1 insertion(+)
[root@developer2-system vtgitrepo]#
```

Push the developer1 code on git HUB and check commit id in local system as well as git branch.

```
BUCHANAN+jchauhan8BT-GNR-95FYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/gitproject/Java Projects/vtgitrepo (master)
$ git push origin master
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 365 bytes | 365.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/bunty4200/vtgitrepo.git
  8740bb0..4844f62  master -> master

BUCHANAN+jchauhan8BT-GNR-95FYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/gitproject/Java Projects/vtgitrepo (master)
$ git log
commit 4844f627bd74aa9020a7c7f75ff322aa967694aa (HEAD -> master, origin/master, origin/HEAD)
Author: bunty4200 <chauhanjayraj8648@gmail.com>
Date:   Fri May 3 15:45:40 2024 +0530

    updated code

commit 8740bb049a41ba2d301f86fec343714a648d6255
Author: developer2 <developer2@gmail.com>
Date:   Thu May 2 11:50:45 2024 +0000

    added email to contact

commit 425d253aac5b2ecf543337db848ab755ac33716c
Author: bunty4200 <chauhanjayraj8648@gmail.com>
Date:   Wed May 1 20:02:50 2024 +0530

    added contact and index file

commit c9dbb6a615052b9aa75128caf5efee6992442a7c
Author: bunty4200 <l02523569+bunty4200@users.noreply.github.com>
Date:   Wed May 1 19:39:04 2024 +0530

    Initial commit

BUCHANAN+jchauhan8BT-GNR-95FYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/gitproject/Java Projects/vtgitrepo (master)
$
```

Developer2 is trying to push to code on GitHub.

```

[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# git push origin master
Username for 'https://github.com': buntty4200
Password for 'https://buntty4200@github.com':
To https://github.com/buntty4200/vtgitrepo.git
 ! [rejected]        master -> master (fetch first)
error: failed to push some refs to 'https://github.com/buntty4200/vtgitrepo.git'
hint: Updates were rejected because the remote contains work that you do
hint: not have locally. This is usually caused by another repository pushing
hint: to the same ref. You may want to first integrate the remote changes
hint: (e.g., 'git pull ...') before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.
[root@developer2-system vtgitrepo]# git log
commit b900b1a9940af3eeebcd99a790c548001b74fea6 (HEAD -> master)
Author: developer2 <developer2@gmail.com>
Date:   Fri May 3 10:19:07 2024 +0000

    added new code

commit 8740bb049a41ba2d301f86fec343714a648d6255 (origin/master, origin/HEAD)
Author: developer2 <developer2@gmail.com>
Date:   Thu May 2 11:50:45 2024 +0000

    added email to contact


commit 425d253aac5b2ecf543337db848ab755ac33716c
Author: buntty4200 <chauhanjayraj8648@gmail.com>
Date:   Wed May 1 20:02:50 2024 +0530

    added contact and index file

commit c9dbb6a615052b9aa75128caf5efee6992442a7c
Author: buntty4200 <102523569+buntty4200@users.noreply.github.com>
Date:   Wed May 1 19:39:04 2024 +0530


    Initial commit
[root@developer2-system vtgitrepo]# █

```


vtgitrepo
Public
Pin
Unwatch 1

master
1 Branch
0 Tags

Add file
<> Code


buntty4200 updated code
 4844f62 · 1 hour ago
4 Commits

Commits

master

All usersAll time

Commits on May 3, 2024

updated code

bunty4200 committed 1 hour ago4844f62

Commits on May 2, 2024

added email to contact

artti2 committed yesterday8748bb8

To resolve this problem, we are using git pull

```

[root@developer2-system vtgitrepo]# git pull origin master --allow-unrelated-histories
From https://github.com/bunty4200/vtgitrepo
 * branch      master      -> FETCH_HEAD
hint: You have divergent branches and need to specify how to reconcile them.
hint: You can do so by running one of the following commands sometime before
hint: your next pull:
hint:
hint:   git config pull.rebase false  # merge
hint:   git config pull.rebase true   # rebase
hint:   git config pull.ff only        # fast-forward only
hint:
hint: You can replace "git config" with "git config --global" to set a default
hint: preference for all repositories. You can also pass --rebase, --no-rebase,
hint: or --ff-only on the command line to override the configured default per
hint: invocation.
fatal: Need to specify how to reconcile divergent branches.
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# git config pull.rebase false
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# git pull origin master
From https://github.com/bunty4200/vtgitrepo
 * branch      master      -> FETCH_HEAD
Merge made by the 'ort' strategy.
 contact.html | 1 +
 1 file changed, 1 insertion(+)
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# git pull origin master
From https://github.com/bunty4200/vtgitrepo
 * branch      master      -> FETCH_HEAD
Already up to date.
[root@developer2-system vtgitrepo]#
[root@developer2-system vtgitrepo]# git commit
On branch master
Your branch is ahead of 'origin/master' by 2 commits.
  (use "git push" to publish your local commits)

nothing to commit, working tree clean
[root@developer2-system vtgitrepo]# git log
commit 5ee7492f8959accfe9e33ed67e88756cc0b95c5e (HEAD -> master)
Merge: b900b1a 4844f62
Author: developer2 <developer2@gmail.com>
Date:   Fri May 3 12:01:33 2024 +0000

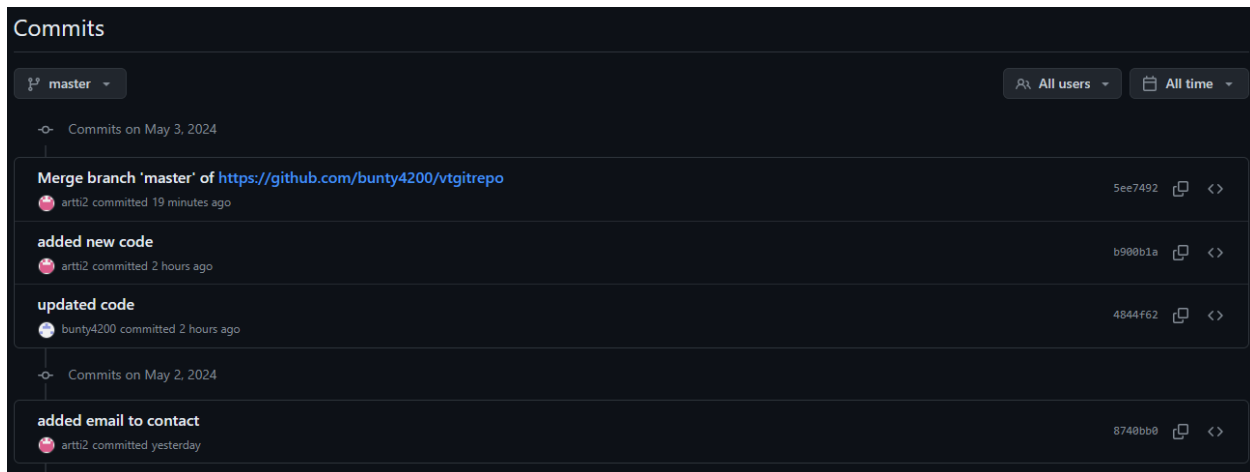
    Merge branch 'master' of https://github.com/bunty4200/vtgitrepo

commit b900b1a9940af3eeebcd99a790c548001b74fea6
Author: developer2 <developer2@gmail.com>
Date:   Fri May 3 10:19:07 2024 +0000

    added new code

commit 4844f627bd74aa9020a7c7f75ff322aa967694aa (origin/master, origin/HEAD)
Author: bunty4200 <chauhanjayraj8648@gmail.com>
Date:   Fri May 3 15:45:40 2024 +0530

```



How can we connect to GitHub with SSH key?

Connecting to GitHub using ssh?

On linux system create ssh-key.

And add public key on git hub account.

```
[root@developer2-system ~]# cd /root/.ssh/
[root@developer2-system .ssh]# ls
authorized_keys  id_rsa  id_rsa.pub
[root@developer2-system .ssh]#
[root@developer2-system .ssh]#
[root@developer2-system .ssh]# cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQgQDljDDCdsLR9zgShdV0Ac
lV96oJQQiKQggFnAdx/kPpfz62paxnf5xiN6h4sUKHzLom2uu67CbAkx3e
BRixYaFM4iA7v5LkBRcnkEJi0iMd1oTm7IR42nM+vHC/Th+D+xU3QKRC05
[root@developer2-system .ssh]#
[root@developer2-system .ssh]# cd
```

```
[root@developer2-system ~]#
[root@developer2-system ~]# git clone git@github.com:bunty4200/dockeruat.git
Cloning into 'dockeruat'...
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
Receiving objects: 100% (3/3), done.
[root@developer2-system ~]#
[root@developer2-system ~]#
[root@developer2-system ~]# ls
dockeruat  newtf  vtgitrepo
[root@developer2-system ~]#
```

```

[root@developer2-system dockeruat]# ls
README.md
[root@developer2-system dockeruat]# touch index.html
[root@developer2-system dockeruat]#
[root@developer2-system dockeruat]# git status
On branch main
Your branch is up to date with 'origin/main'.

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

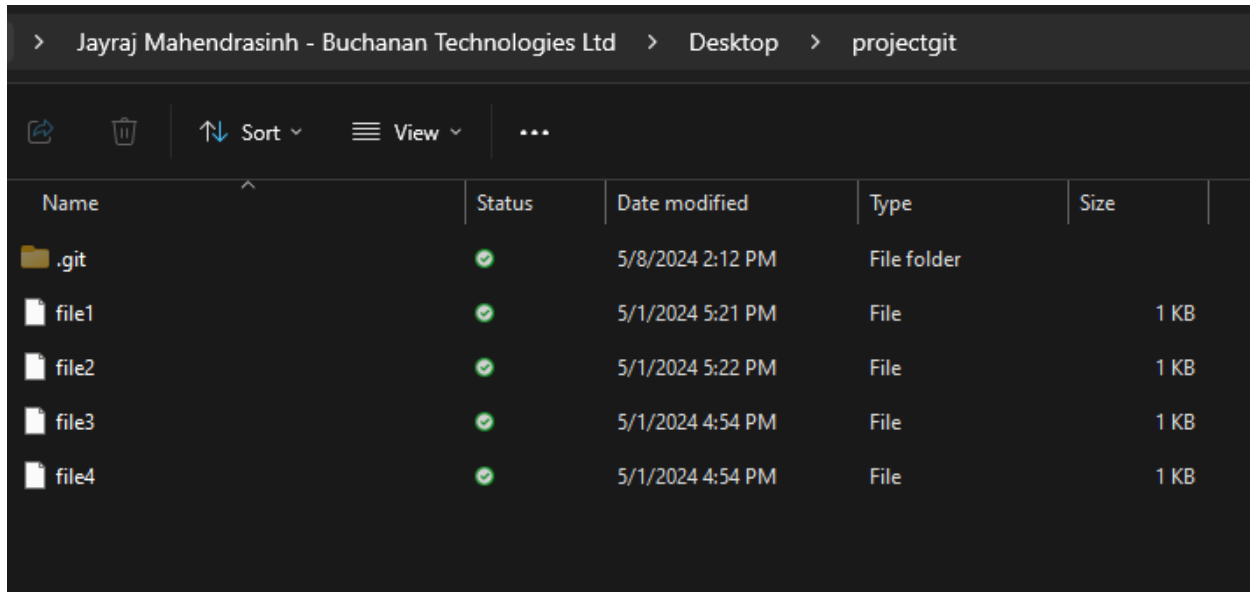
nothing added to commit but untracked files present (use "git add" to track)
[root@developer2-system dockeruat]#
[root@developer2-system dockeruat]# git add index.html
[root@developer2-system dockeruat]#
[root@developer2-system dockeruat]# git commit -m "added new file"
[main 19556fe] added new file
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 index.html
[root@developer2-system dockeruat]#
[root@developer2-system dockeruat]# git push origin maste
error: src refspec maste does not match any
error: failed to push some refs to 'github.com:bunty4200/dockeruat.git'
[root@developer2-system dockeruat]#
[root@developer2-system dockeruat]# git push origin master
error: src refspec master does not match any
error: failed to push some refs to 'github.com:bunty4200/dockeruat.git'
[root@developer2-system dockeruat]# git push origin main
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 274 bytes | 274.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:bunty4200/dockeruat.git
   f87aeb0..19556fe  main -> main
[root@developer2-system dockeruat]# █

```

As same as on developer1

23. Map Local Repo with Remote repository – git remote add

In Developer1 system there is one folder projectgit is on local code are available. It's code are not updated in remote repository.



Jayraj Mahendrasinh - Buchanan Technologies Ltd > Desktop > projectgit						
Name	Status	Date modified	Type	Size		
.git	✓	5/8/2024 2:12 PM	File folder			
file1	✓	5/1/2024 5:21 PM	File	1 KB		
file2	✓	5/1/2024 5:22 PM	File	1 KB		
file3	✓	5/1/2024 4:54 PM	File	1 KB		
file4	✓	5/1/2024 4:54 PM	File	1 KB		

Open git bash hear.

```
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git status
On branch master
nothing to commit, working tree clean

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git log
commit cad6267c0c0c1cc8516a9e4611a7ad73091d017d (HEAD -> master)
Author: bunt4200 <chauhanjayraj8648@gmail.com>
Date: Wed May 1 17:40:30 2024 +0530

    updated file

commit ceeb760c9a6822aa7b139d7993c560200c891135
Author: bunt4200 <chauhanjayraj8648@gmail.com>
Date: Wed May 1 17:14:32 2024 +0530

    adding file3 and file4 as well

commit 407a011832116787b7e65ae974f6e54468e77d44
Author: bunt4200 <chauhanjayraj8648@gmail.com>
Date: Wed May 1 15:45:26 2024 +0530

    this is 1st commit

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ |
```

While using git log command you can see on first commit there not updated in repository.

My requirement is I would like to share this code with the other developer who is working on linux system.

I must share the developer1 code with developer2.

```
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ ls
file1 file2 file3 file4

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ ls -la
total 52
drwxr-xr-x 1 BUCHANAN+jchauhan 4096 0 May 1 17:19 ./
drwxr-xr-x 1 BUCHANAN+jchauhan 4096 0 May 2 19:11 ../
drwxr-xr-x 1 BUCHANAN+jchauhan 4096 0 May 8 14:12 .git/
-rw-r--r-- 1 BUCHANAN+jchauhan 4096 41 May 1 17:21 file1
-rw-r--r-- 1 BUCHANAN+jchauhan 4096 54 May 1 17:22 file2
-rw-r--r-- 1 BUCHANAN+jchauhan 4096 14 May 1 16:54 file3
-rw-r--r-- 1 BUCHANAN+jchauhan 4096 14 May 1 16:54 file4

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ cd .git/

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit/.git (GIT_DIR!)
$ ls
COMMIT_EDITMSG HEAD config description hooks/ index info/ logs/ objects/ refs/

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit/.git (GIT_DIR!)
$ cat config
[core]
    repositoryformatversion = 0
    filemode = false
    bare = false
    logallrefupdates = true
    symlinks = false
    ignorecase = true

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit/.git (GIT_DIR!)
$ git push origin master
fatal: 'origin' does not appear to be a git repository
fatal: Could not read from remote repository.

Please make sure you have the correct access rights
and the repository exists.

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit/.git (GIT_DIR!)
$ |
```

In config file we don't have any repository That is the reason you could not be able to push.

In other remote repository you can the remote origin that's why you could push the file on repository.

```
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/gitproject/Java Projects/vtgitrepo/.git (GIT_DIR!)
$ cat config
[core]
    repositoryformatversion = 0
    filemode = false
    bare = false
    logallrefupdates = true
    symlinks = false
    ignorecase = true
[remote "origin"]
    url = https://github.com/bunty4200/vtgitrepo.git
    fetch = +refs/heads/*:refs/remotes/origin/*
[branch "master"]
    remote = origin
    merge = refs/heads/master

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/gitproject/Java Projects/vtgitrepo/.git (GIT_DIR!)
$ |
```

Create repository on git hub with README.md file.

So git hub suggest command on page.

So use git remote add command to map local repo to remote repo.

git remote add origin <https://github.com/bunty4200/projectgit.git>

```
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git remote add origin https://github.com/bunty4200/projectgit.git

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ ls
file1 file2 file3 file4

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ ls -la
total 52
drwxr-xr-x 1 BUCHANAN+jchauhan 4096  0 May  1 17:19 ./
drwxr-xr-x 1 BUCHANAN+jchauhan 4096  0 May  2 19:11 ../
drwxr-xr-x 1 BUCHANAN+jchauhan 4096  0 May  8 14:54 .git/
-rw-r--r-- 1 BUCHANAN+jchauhan 4096 41 May  1 17:21 file1
-rw-r--r-- 1 BUCHANAN+jchauhan 4096 54 May  1 17:22 file2
-rw-r--r-- 1 BUCHANAN+jchauhan 4096 14 May  1 16:54 file3
-rw-r--r-- 1 BUCHANAN+jchauhan 4096 14 May  1 16:54 file4

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ cd .git/

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit/.git (GIT_DIR!)
$ ls -la
./ ../ COMMIT_EDITMSG HEAD config description hooks/ index info/ logs/ objects/ refs/

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit/.git (GIT_DIR!)
$
ca
BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit/.git (GIT_DIR!)
$ cat config
[core]
    repositoryformatversion = 0
    filemode = false
    bare = false
    logallrefupdates = true
    symlinks = false
    ignorecase = true
[remote "origin"]
    url = https://github.com/bunty4200/projectgit.git
    fetch = +refs/heads/*:refs/remotes/origin/*

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit/.git (GIT_DIR!)
$ git push origin master
Enumerating objects: 12, done.
Counting objects: 100% (12/12), done.
Delta compression using up to 8 threads
Compressing objects: 100% (7/7), done.
Writing objects: 100% (12/12), 938 bytes | 312.00 KiB/s, done.
Total 12 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/bunty4200/projectgit.git
 * [new branch]      master -> master

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit/.git (GIT_DIR!)
$ ls
COMMIT_EDITMSG HEAD config description hooks/ index info/ logs/ objects/ refs/

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit/.git (GIT_DIR!)
$ cd ..

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ ls
file1 file2 file3 file4

BUCHANAN+jchauhan@BT-GNR-9SFYQN2 MINGW64 ~/OneDrive - Buchanan Technologies Ltd/Desktop/projectgit (master)
$ git status
On branch master
nothing to commit, working tree clean
```

Now in developer system I want using that same repository.

Git clone repo on developer2 system

24. How a Java developer push code onto remote repository