# DevTech Training

Short Course - Day 1

# DevTech Training - Short Course

git

GitHub

docker

docker hub

## Training Staff

- WORGIE V. FLORES

  ETRACS Developer

## About the Training

- **ETRACS** Environment Setups
- **ETRACS** Deployment Setups
- Virtualization
- Working Setup
- Git
- Docker
- iReport

# ETRACS Environment Setups

| Standalone | Docker Deployment |
|---|---|
| Windows, Mac & Linux | Windows, Mac & Linux |
| MySQL / MSSQL | MySQL / MSSQL |
| Java | Docker Engine |
| Git | Git |
| | Optional Add-ons<br>• Hypervisor |

# ETRACS Deployment Setups

| | Standalone | Docker |
|---|---|---|
| Main | | ✓ |
| Province | ✓ | ✓ |
| Municipality | ✓ | ✓ |
| City | ✓ | ✓ |
| Remote<br>• Barangay, Hospital, Market, Terminals, etc… | ✓ | |

## Virtualization

( Play Video 01 )

## What is Virtualization ?

- Virtualization creates a virtual layer using the hypervisor software, which manages resources assigned to the virtual instances.

- The newly formed virtual representation is known as **virtual machines (VMs)**.

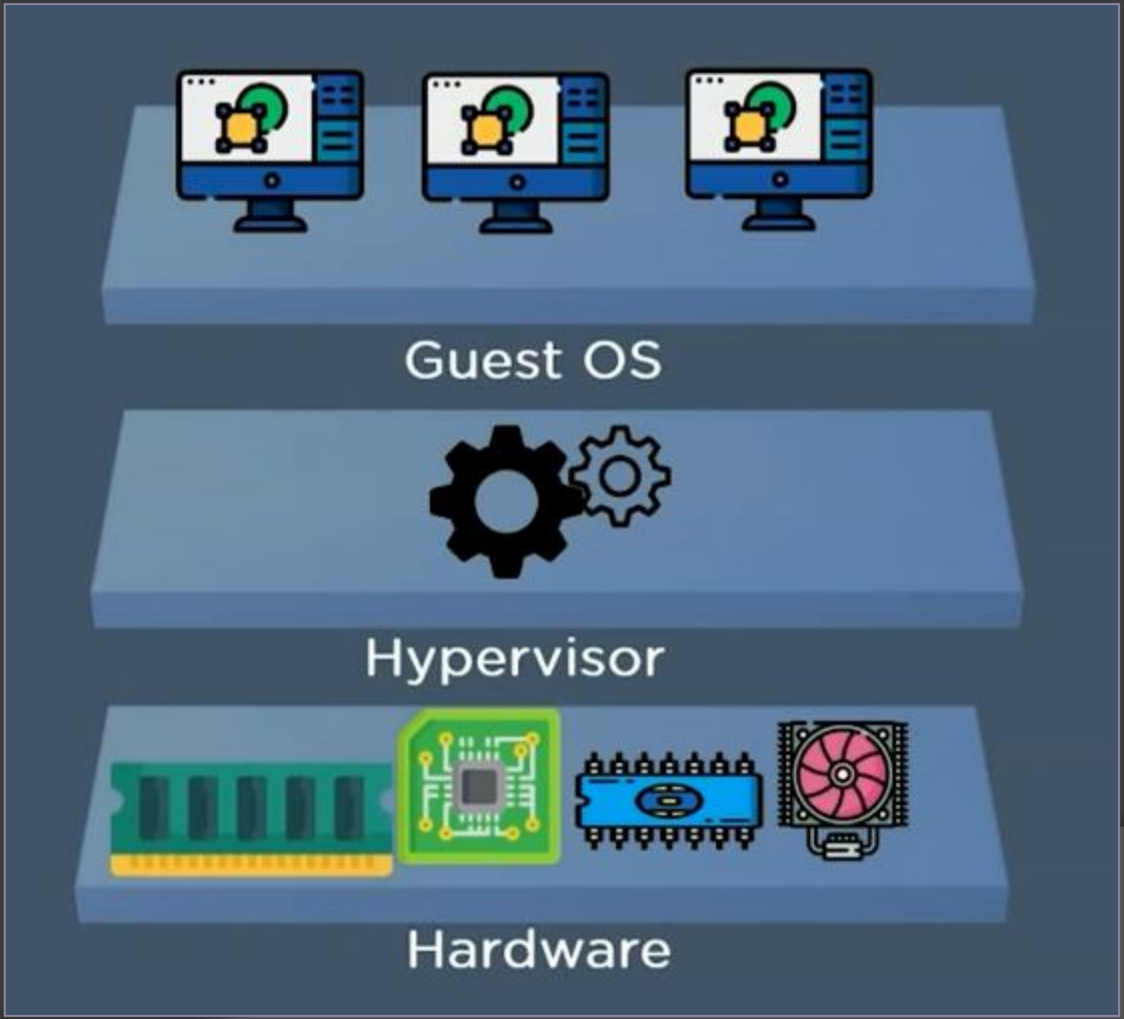
## What is Virtual Machine (VM) ?

- **Virtual Machine** is an emulation or a virtual presentation of a physical system.
- They are also referred to as **Guest**, whereas the physical system they run on is referred to as the **Host**.

## Role of Hypervisor

- **Hypervisor** is a software that manages VMs.
- It acts as an interface between VM and physical hardware to ensure proper access to the resources needed for working.

## Role of Hypervisor



## Benefits of Virtualization

- Resource efficiency, using virtualization the maximum computing capacity can be utilized.
- Minimum downtime, application and OS crash cases can be neglected by running multiple VMs with the same OS.
- Time management, setting up a whole server from scratch can be avoided by using sufficient hardware devices for virtualization.

## Working Setup

## About your setup

- **WSL 2**
- **Docker Desktop**
- **Ubuntu** (18 or 20) from the Microsoft Store
- **Database Engine** (MySQL / MSSQL)
- **Java** 1.8

## About your setup

- **WSL** 2
  - Windows Subsystem For Linux (**WSL**) is a tool provided by Microsoft to run Linux natively on Windows
  - Essentially providing a full Linux shell that can interact with your Windows file system
  - WSL 2, is a new version that powers the architecture to run ELF64 Linux binaries on Windows, and increase the file system performance, as well as adding full system call compatibility

## About your setup

- **Docker Desktop**
  - An easy-to-install application for your Mac or Windows environment that enables you to build and share containerized applications and micro-services
  - Includes **Docker Engine**, **Docker CLI** client, **Docker Compose**, **Docker Content Trust**, and **Credential Helper**

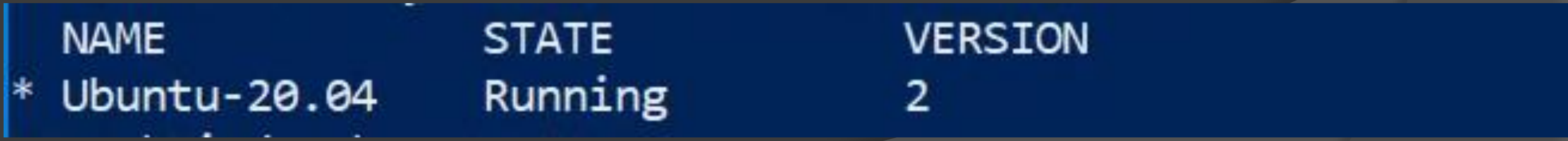
# Check Setup Status

- Press **Windows Logo + S**, then type **PowerShell**, and then open the "**Windows PowerShell**" app

- In the **Windows PowerShell** console window, execute the command:

```
wsl -l -v
```

- Result should be:



```
  NAME            STATE           VERSION
* Ubuntu-20.04    Running         2
```

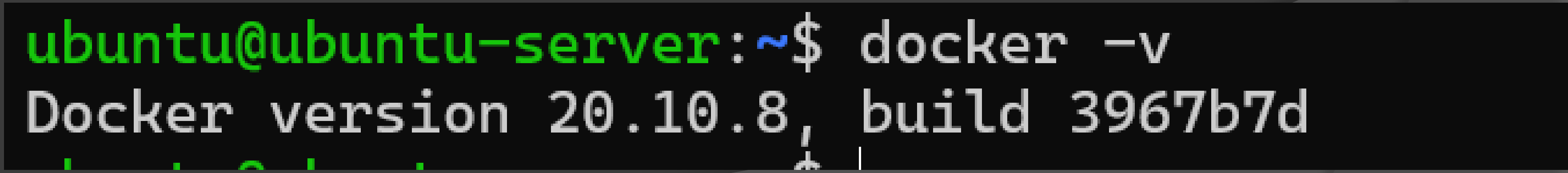
# Check Setup Status

- Press **Windows Logo + S**, then type **Ubuntu**, and then open the "**Ubuntu-20**" app

- In the **Ubuntu** console window, execute the command:

```
docker -v
```

- Result should be:



```
ubuntu@ubuntu-server:~$ docker -v
Docker version 20.10.8, build 3967b7d
```

## Git

( Play Video 02 )

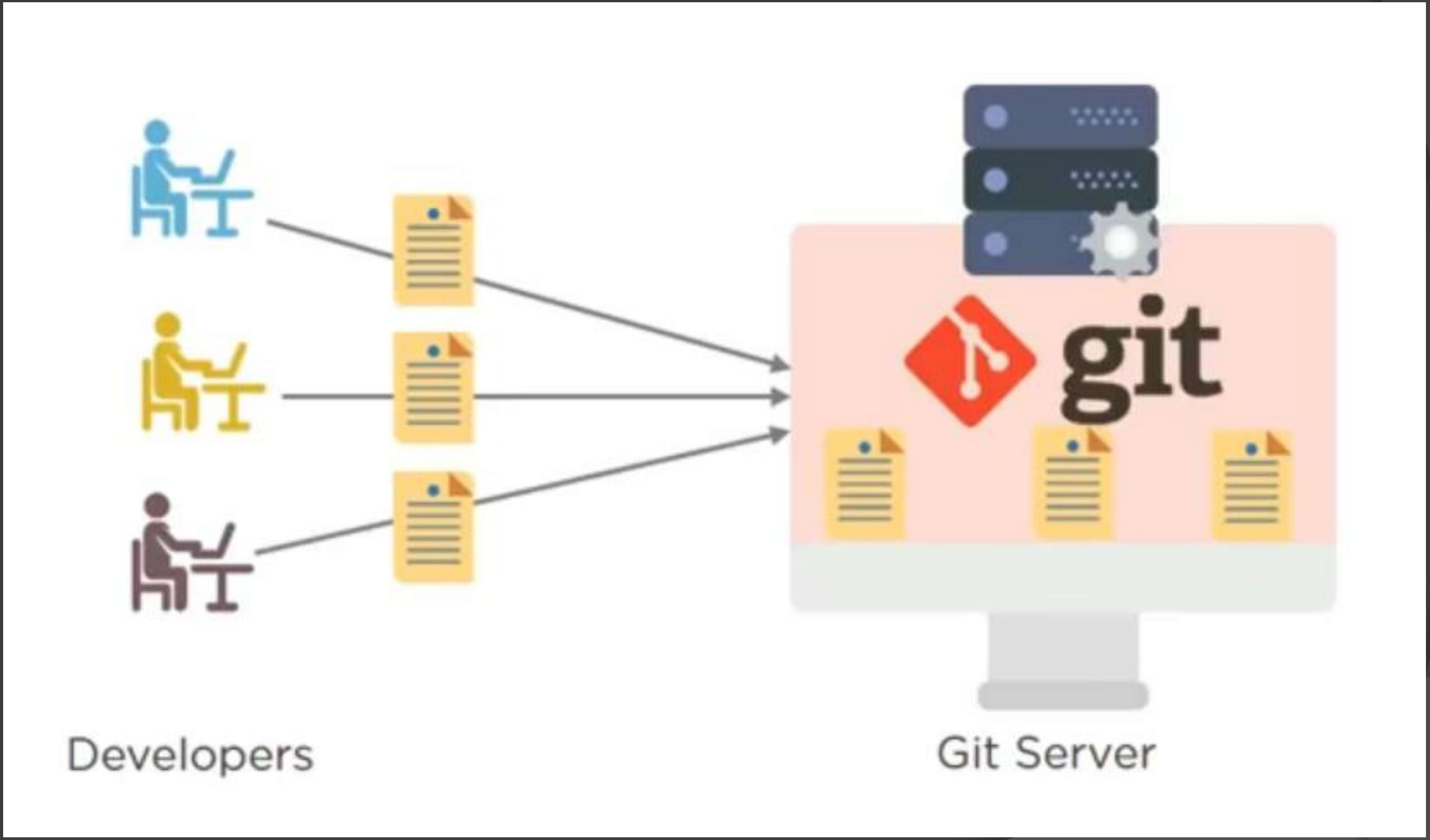
## About Git

- Introduction
- Features
- Workflow
- Branching
- Commands
- Demo

## What is Git ?

- Git is a distributed version control tool.
- It is a popular version control system.
- It is used for:
  - Tracking code changes
  - Tracking who made changes
  - Coding collaboration
  - Maintaining historical and current versions of source code
- It allows multiple developers to work together
- Supports non-linear development because of its thousands of parallel branches

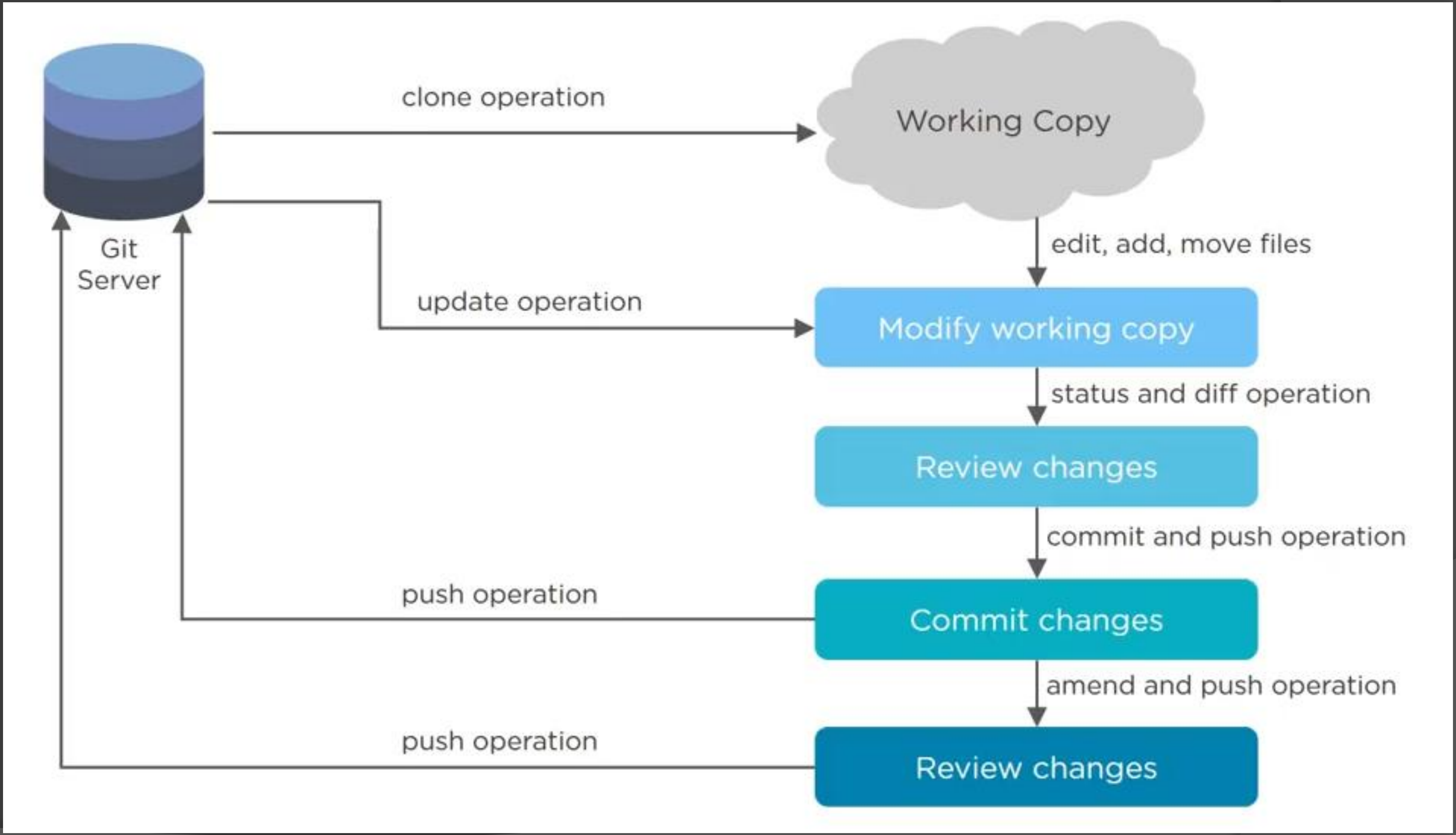
# What is Git ?



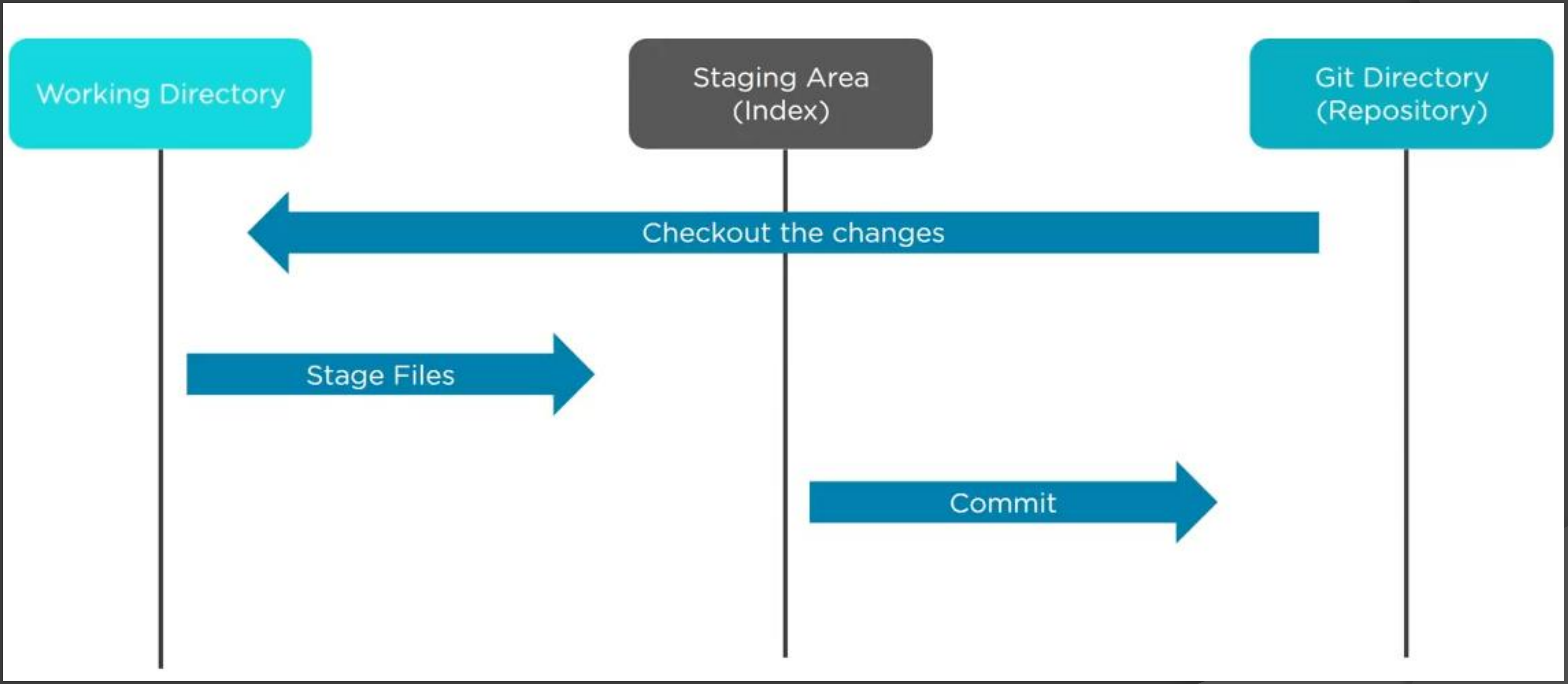
## Features of Git

- Free and Open Source
- Tracks History
- Supports Non-Linear Development
- Creates Backup
- Scalable
- Supports Collaboration
- Branching is easier
- Distributed Development

# Git Workflow



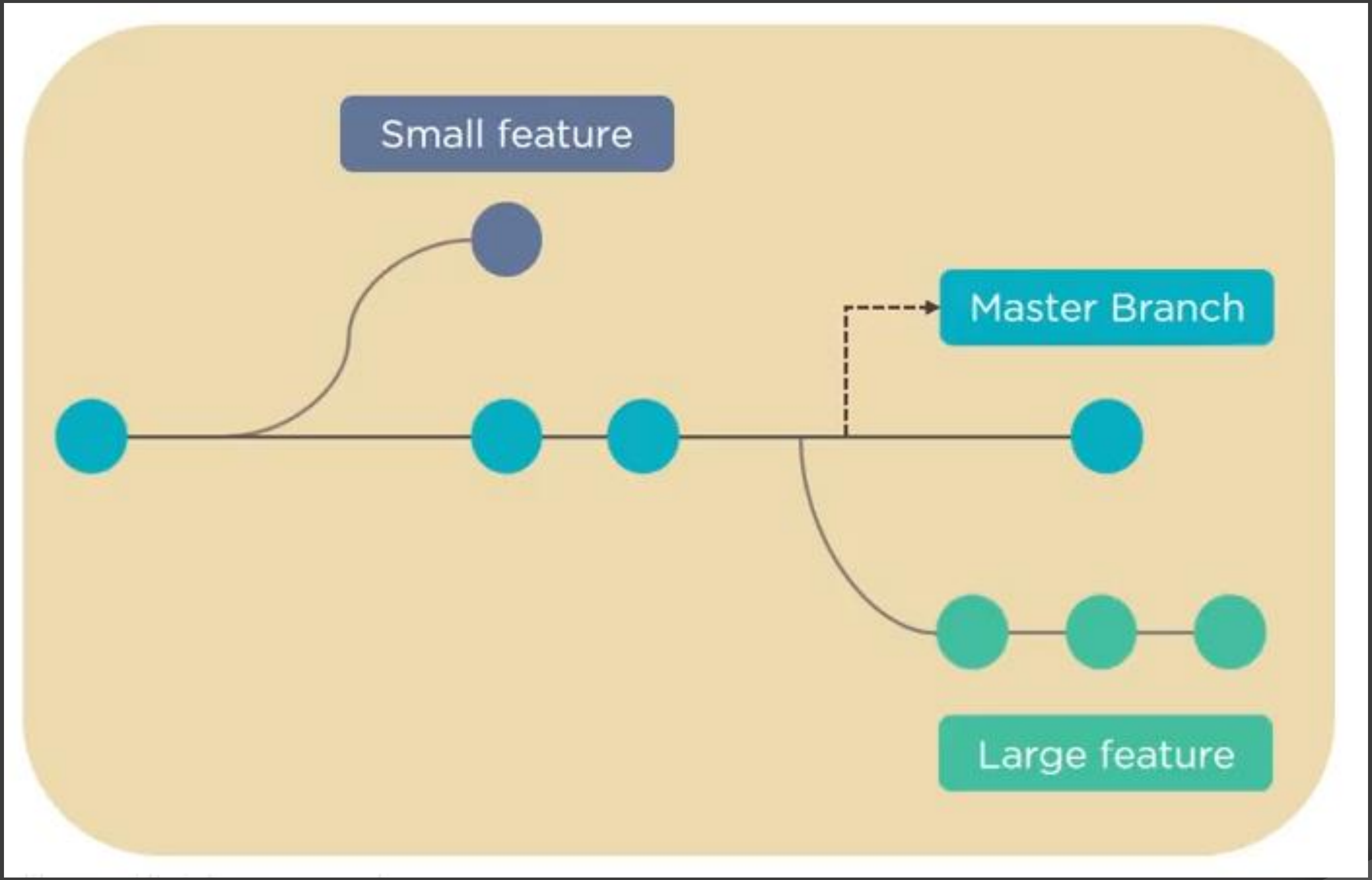
## Git Workflow - 3 States



## Branch in Git

- It is used to keep your changes util they are ready
- You can do your work on a branch while the main branch (master) remains stable.   After you are done with your work, you can merge it to the main branch

## Branch in Git



- The diagram shows there is a master branch
- There are 2 more branches, Small feature and Large feature working separately

## Git Commands

**git config**

- A convenience function that is used to set **Git** configuration values on a global or local project level
- These configuration levels correspond to the **.gitconfig** text files

## Git Commands

**git  init**

- Create a new **Git** repository or initialize a new empty repository
- Creates a **.git** subdirectory in the current working directory, which contains all of the necessary Git metadata for the new repository

## Git Commands

**git clone**

- Used to target an existing repository and creates a clone, or copy of the target repository

## Git Commands

**git  status**

- Gives all the necessary information about the current branch.
- Displays the state of the working directory and the staging area
- It lets you see which changes have been staged, which haven’t, and which files aren’t being tracked by **Git**

## Git Commands

**git add**

- Adds a change in the working directory to the staging area

## Git Commands

### git commit

- The most-used command of Git. Once we reach a certain point in development, we want to save our changes (maybe after a specific task or issue).
- Git commit is like setting a checkpoint in the development process which you can go back to later if needed.
- We also need to write a short message to explain what we have developed or changed in the source code.

# Git Commands

**git push**

- Uploads your commits to the remote repository.

## Git Commands

**git pull**

- Used to get updates from the remote repository

## Git Commands

**git branch**

- Used to create, list, rename, and delete branches

## Git Commands

**git checkout**

- Used mostly for switching from one branch to another

## Demo on Git

## Configure Git for the first time

```
git config --global user.name "Juan Dela Cruz"

git config --global user.email "jdelacruz@gmail.com"
```

## Display the config settings

```
git config --list
```

To check the version

```
git --version
```

To check the help information

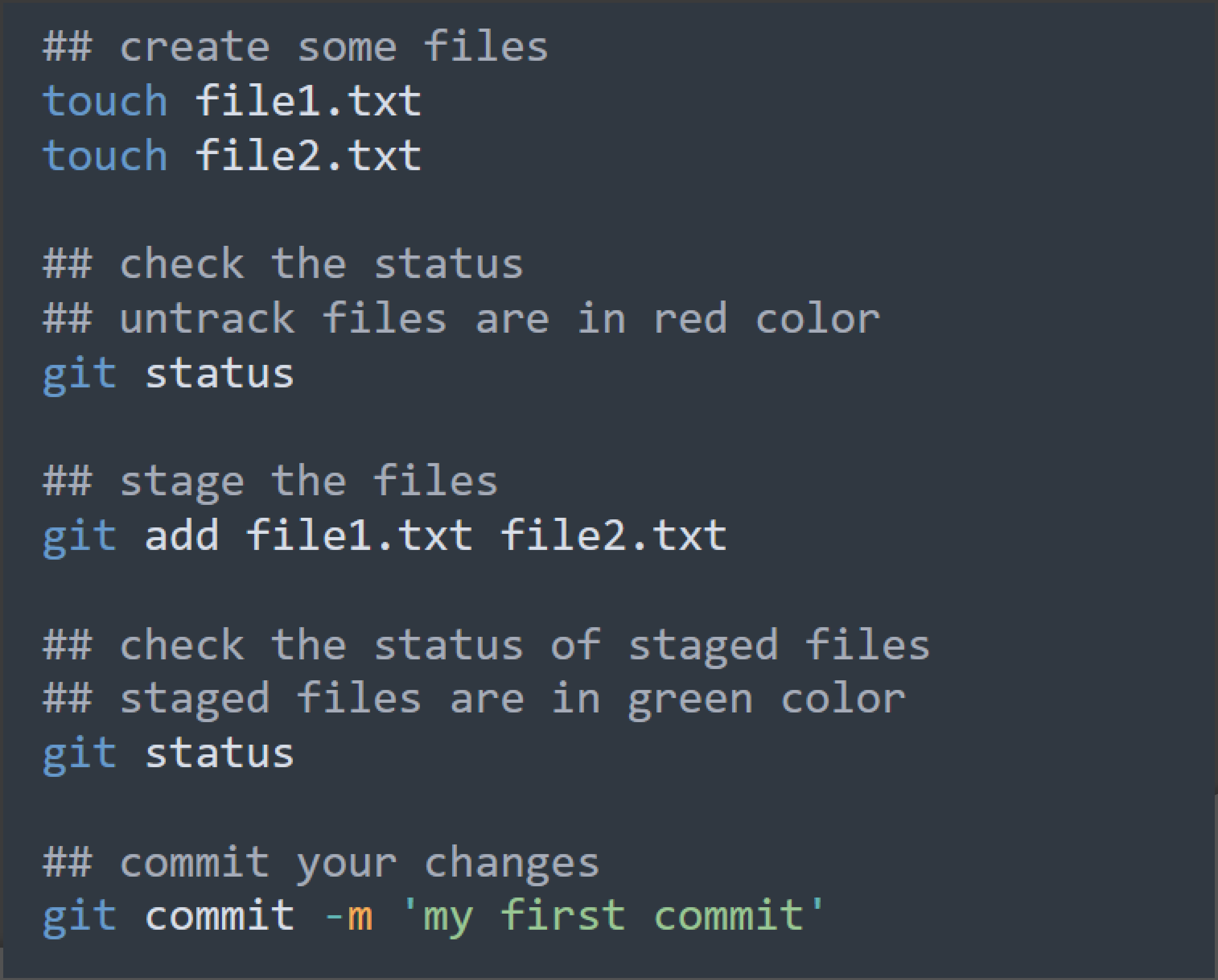
```
git --help
```

## Create a new local repository

1. Open your Windows File Manager ( press WIN + E )
2. Create a folder “**training**” under drive C
3. Switch back to your **Ubuntu** console window and execute the following commands:

```
## Go to your training folder
cd /mnt/c/training

## Initialize a Git repository
git init test-repo

## Go to the repository folder
cd test-repo
```

## Adding files to the repository

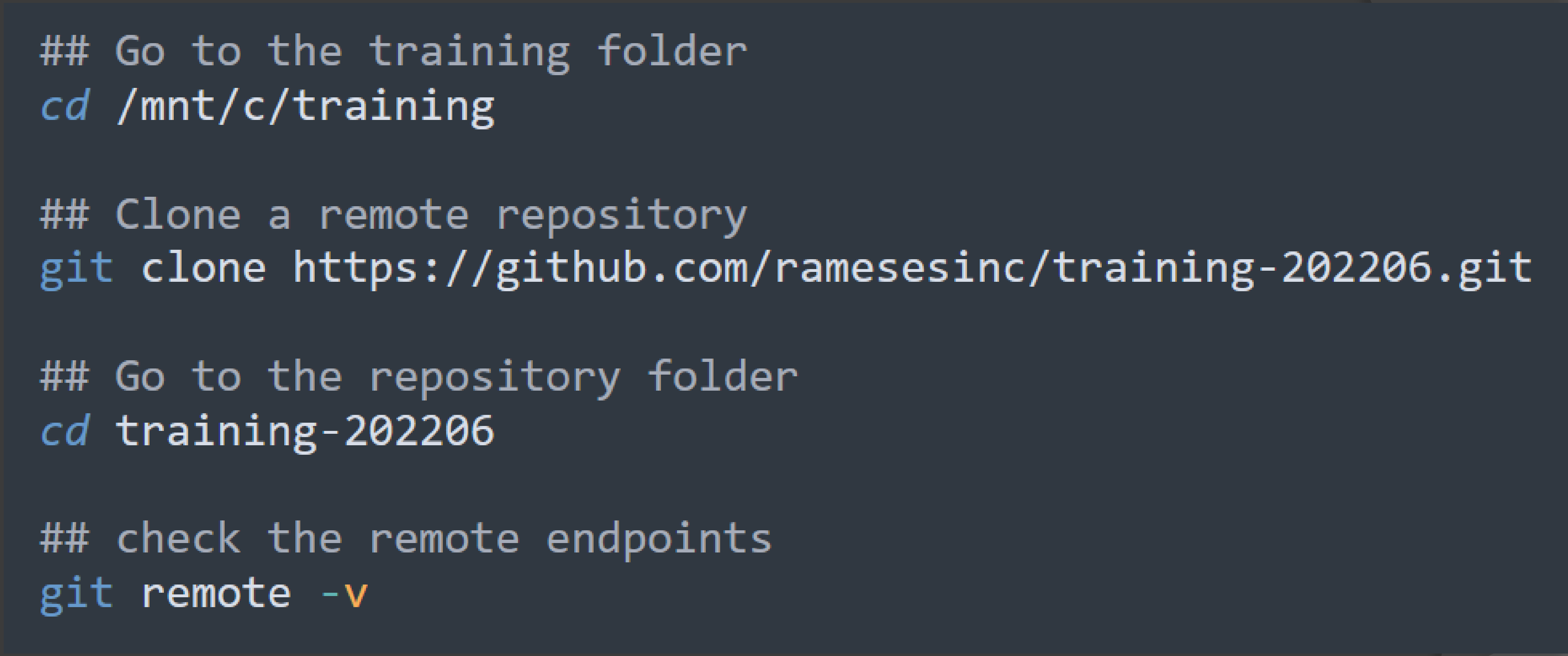


```
## create some files
touch file1.txt
touch file2.txt

## check the status
## untrack files are in red color
git status

## stage the files
git add file1.txt file2.txt

## check the status of staged files
## staged files are in green color
git status

## commit your changes
git commit -m 'my first commit'
```

## Check repository logs

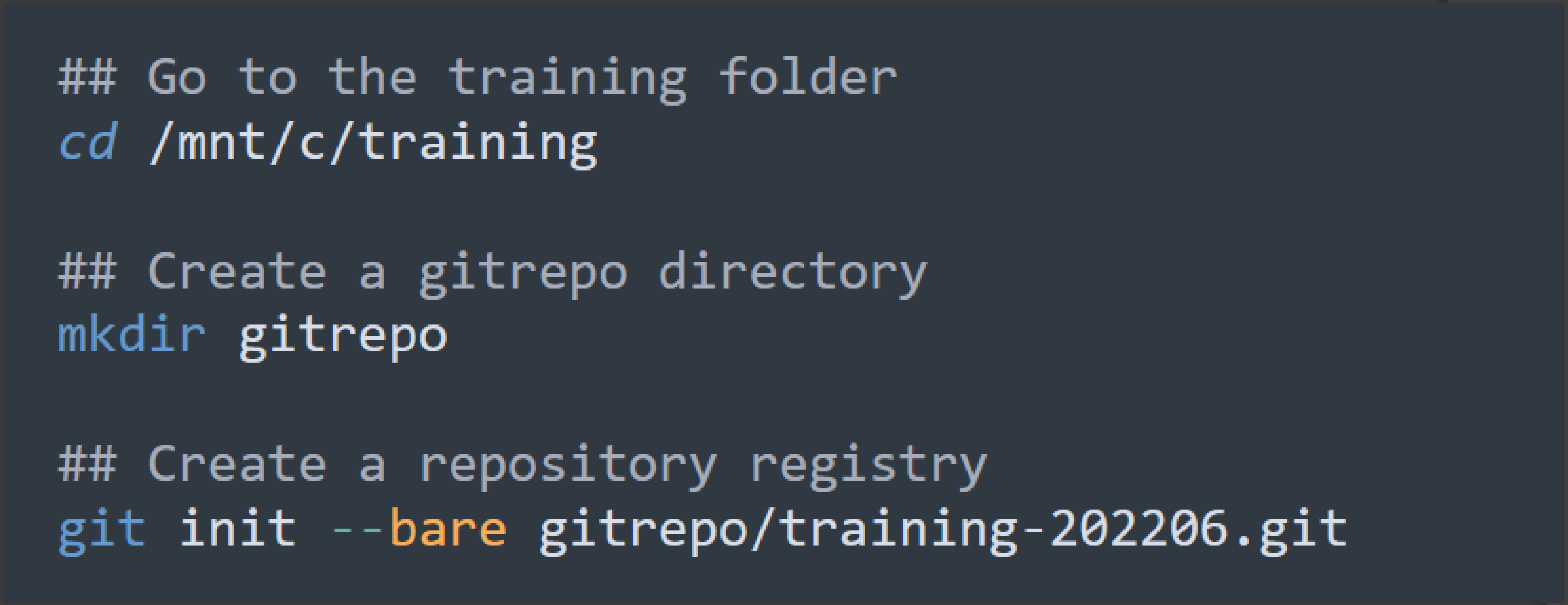
```
## display logs with 30 max lines
git log -n 30

## display logs with 30 max lines
## and with graphical representation
git log --graph -n 30
```

## Cloning repository from GitHub



```
## Go to the training folder
cd /mnt/c/training

## Clone a remote repository
git clone https://github.com/ramesesinc/training-202206.git

## Go to the repository folder
cd training-202206

## check the remote endpoints
git remote -v
```

## Create a local repository registry



```
## Go to the training folder
cd /mnt/c/training

## Create a gitrepo directory
mkdir gitrepo

## Create a repository registry
git init --bare gitrepo/training-202206.git
```

## Mount a local repository registry from file

```
## Go to the training folder
cd /mnt/c/training

## Go to the working repository
cd training-202206

## Check the current remote endpoints
git remote -v

## Register a remote endpoint
git remote add localfile file:///mnt/c/training/gitrepo/training-202206.git

## Check the current remote endpoints
## localfile must already be added
git remote -v
```

## Mount a local repository registry from your local server

```
## Go to the training folder
cd /mnt/c/training

## Go to the working repository
cd training-202206

## Check the current remote endpoints
git remote -v

## Register a remote endpoint
git remote add localserver ubuntu@192.168.0.10:gitrepo/training-202206.git

## Check the current remote endpoints
## localfile must already be added
git remote -v
```

## Pull updates from remote repository

```
## Go to your repository folder
cd /mnt/c/training/training-202206

## Pull updates
git pull

## Check logs for commit messages
git log --graph -n 30
```

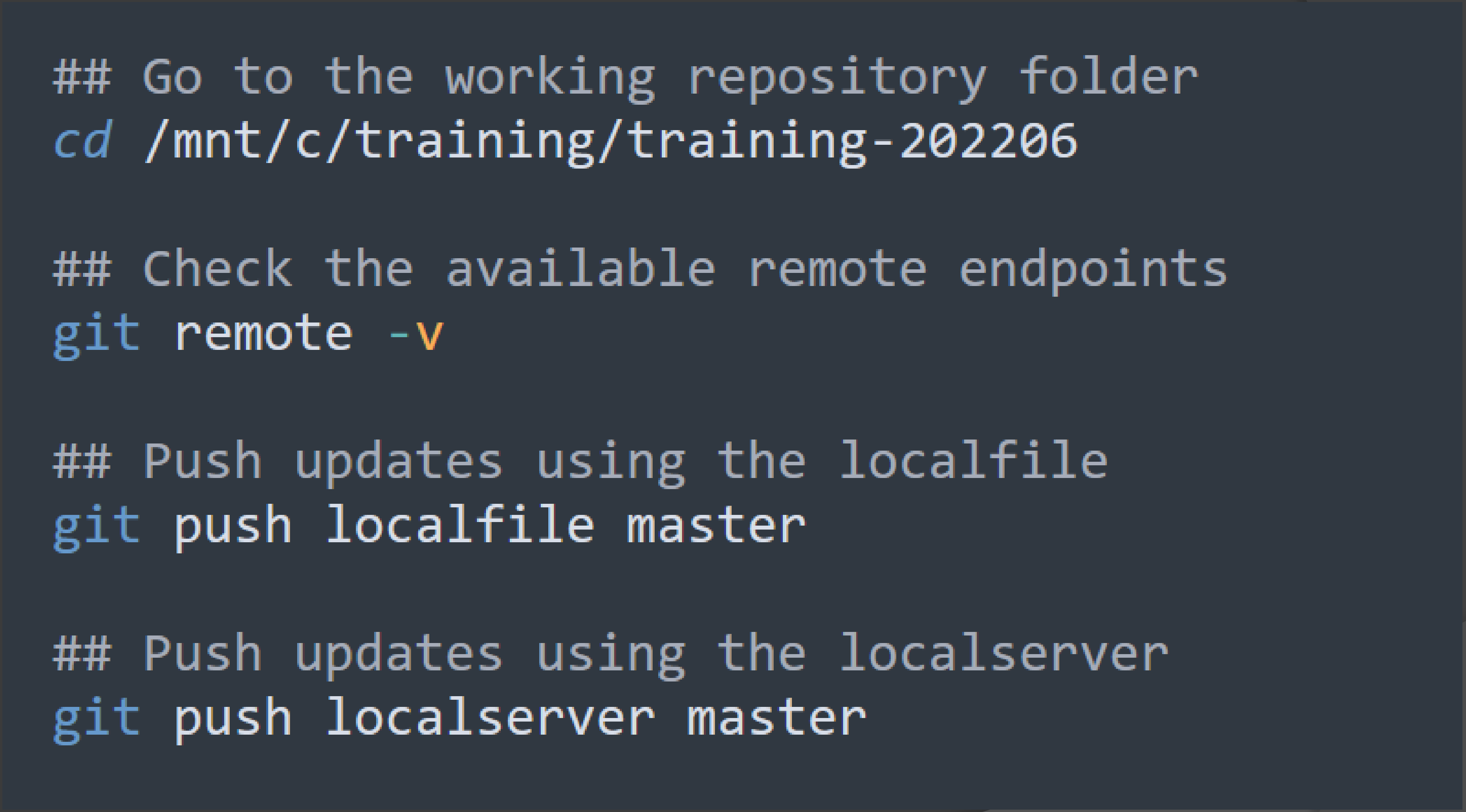
## Pull updates from other remote repository

```
## Go to the working repository folder
cd /mnt/c/training/training-202206

## Check the available remote endpoints
git remote -v

## Pull updates from the remote name
git pull localfile master

## Check the logs
## with maximum 30 lines
## with graphical representation
git log --graph -n 30
```

## Push updates to remote repository

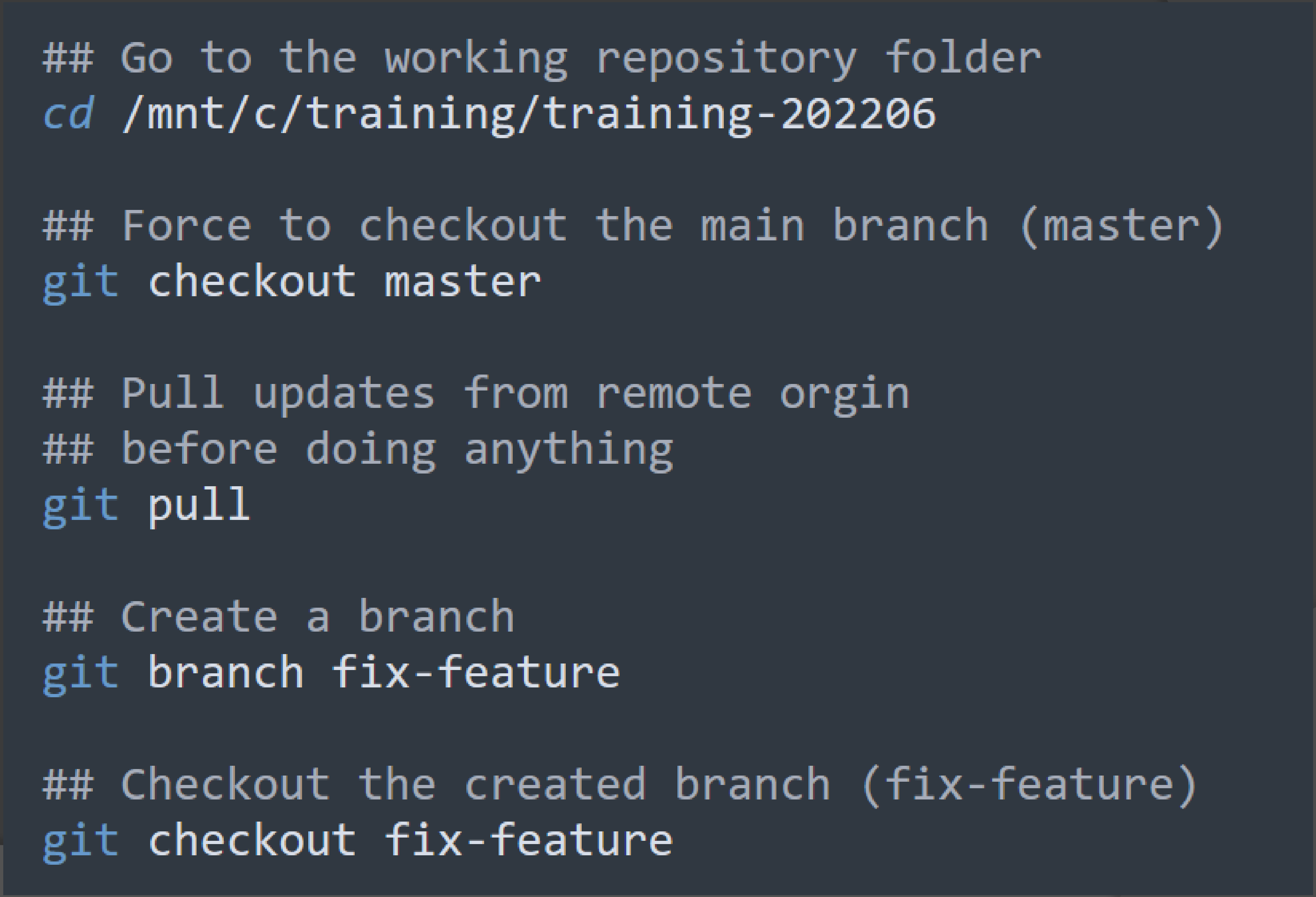
```
## Go to your repository folder
cd /mnt/c/training/training-202206

## Push updates
git push
```

## Push updates to other remote repository



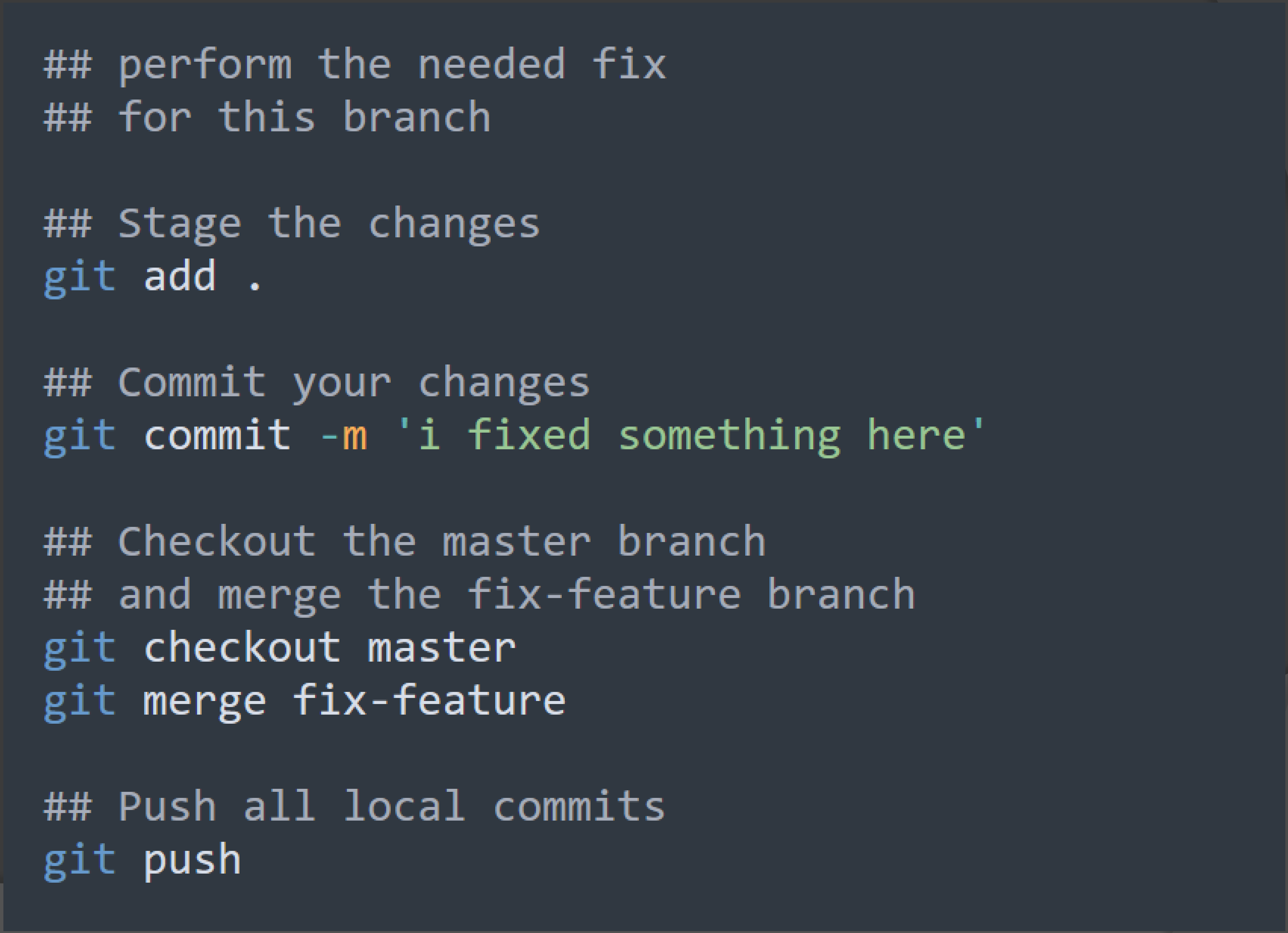
```
## Go to the working repository folder
cd /mnt/c/training/training-202206

## Check the available remote endpoints
git remote -v

## Push updates using the localfile
git push localfile master

## Push updates using the localserver
git push localserver master
```

## Create a branch to fix isolated bug



```
## Go to the working repository folder
cd /mnt/c/training/training-202206

## Force to checkout the main branch (master)
git checkout master

## Pull updates from remote orgin
## before doing anything
git pull

## Create a branch
git branch fix-feature

## Checkout the created branch (fix-feature)
git checkout fix-feature
```

## Create a branch to fix isolated bug



```
## perform the needed fix
## for this branch

## Stage the changes
git add .

## Commit your changes
git commit -m 'i fixed something here'

## Checkout the master branch
## and merge the fix-feature branch
git checkout master
git merge fix-feature

## Push all local commits
git push
```

## Thank You!