# Git Hands-On Exercises

## Exercise 1: Clone a Public Repository

\*\*Task\*\*: Clone a public GitHub repository to your local system.

\*\*Command\*\*:  
git clone https://github.com/USERNAME/REPOSITORY.git

## Exercise 2: Clone a Private Repository

\*\*Task\*\*: Clone a private GitHub repository (you must have access).

\*\*Command\*\*:  
git clone https://github.com/USERNAME/PRIVATE\_REPO.git  
# Enter your username and personal access token when prompted.

## Exercise 3: Clone to a Specific Directory

\*\*Task\*\*: Clone a repository into a custom directory.

\*\*Command\*\*:  
git clone https://github.com/USERNAME/REPOSITORY.git custom-directory

## Exercise 4: Clone a Specific Branch

\*\*Task\*\*: Clone only the 'dev' branch of a repository.

\*\*Command\*\*:  
git clone --branch dev https://github.com/USERNAME/REPOSITORY.git

## Exercise 5: Clone with SSH

\*\*Task\*\*: Clone a repository using SSH.

\*\*Command\*\*:  
git clone git@github.com:USERNAME/REPOSITORY.git

## Exercise 6: Push New Local Changes to Remote

\*\*Task\*\*: Add a new file, commit it, and push to the remote repository.

\*\*Command\*\*:  
echo "Hello World" > newfile.txt  
git add newfile.txt  
git commit -m "Add newfile.txt"  
git push origin main

## Exercise 7: Push to a New Branch

\*\*Task\*\*: Create a new branch locally and push it to the remote repository.

\*\*Command\*\*:  
git checkout -b new-feature  
git push -u origin new-feature

## Exercise 8: Push Without Committing

\*\*Task\*\*: Attempt to push without committing. Understand the error message.

\*\*Command\*\*:  
git push origin main  
# Observe the error about 'nothing to commit.'

## Exercise 9: Push After Resolving Conflicts

\*\*Task\*\*: Resolve a merge conflict locally and push the resolved branch.

\*\*Command\*\*:  
git push origin main

## Exercise 10: Pull Latest Changes from Main Branch

\*\*Task\*\*: Pull the latest changes from the 'main' branch.

\*\*Command\*\*:  
git pull origin main

## Exercise 11: Pull with Rebase

\*\*Task\*\*: Pull changes while rebasing your local commits on top.

\*\*Command\*\*:  
git pull --rebase origin main

## Exercise 12: Pull from a Different Remote

\*\*Task\*\*: Pull changes from a different remote repository.

\*\*Command\*\*:  
git remote add upstream https://github.com/USERNAME/UPSTREAM\_REPO.git  
git pull upstream main

## Exercise 13: Pull with SSH

\*\*Task\*\*: Pull changes using SSH.

\*\*Command\*\*:  
git pull git@github.com:USERNAME/REPOSITORY.git

## Exercise 14: Pull a Specific Branch

\*\*Task\*\*: Pull changes from a specific branch (e.g., 'feature-branch').

\*\*Command\*\*:  
git pull origin feature-branch

## Exercise 15: Clone a Repository with Submodules

\*\*Task\*\*: Clone a repository and initialize submodules.

\*\*Command\*\*:  
git clone --recurse-submodules https://github.com/USERNAME/REPOSITORY.git

## Exercise 16: Push a Tag to Remote

\*\*Task\*\*: Create a tag and push it to the remote repository.

\*\*Command\*\*:  
git tag v1.0  
git push origin v1.0

## Exercise 17: Push All Branches to Remote

\*\*Task\*\*: Push all branches from local to remote.

\*\*Command\*\*:  
git push --all origin

## Exercise 18: Fetch and Merge Remote Changes

\*\*Task\*\*: Fetch changes from the remote repository and merge them manually.

\*\*Command\*\*:  
git fetch origin  
git merge origin/main

## Exercise 19: Clone a Bare Repository

\*\*Task\*\*: Clone a repository in bare mode.

\*\*Command\*\*:  
git clone --bare https://github.com/USERNAME/REPOSITORY.git

## Exercise 20: Push to Multiple Remotes

\*\*Task\*\*: Add a second remote and push changes to both.

\*\*Command\*\*:  
git remote add backup https://github.com/USERNAME/BACKUP\_REPO.git  
git push origin main  
git push backup main