
Exercise Introduction

Before attempting the exercises in this document please ensure that you have read and understood the key topics covered in Tutorial.

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Task 1: Basic Git Setup (5 min)

Run the following commands and observe what they do. Feel free to test around.

You can find help for any git command using `git <COMMAND> --help` or `man git-<COMMAND>`.

Feel free to replace `nano` with your favorite text editor command.

Setup

```
mkdir -p $HOME/git-ex && cd $HOME/git-exercise
git --version
git config --global user.name "NAME"
git config --global user.email "EMAIL"
git config --global core.editor "nano"
git init --initial-branch=main
git status
```

Set your name.

Set your email.

Set nano as editor for commit messages.

Task 2: Commits and branches (10 min)

Committing

```
touch README
git status
git add .
git status
git commit -m "Initial Commit"
nano README
git status
git diff README
```

Write a few words into the file and close nano.

See your changes, close with `q`.

```
git add README
git commit
```

Write a commit message using nano, save and close.

Reverting changes

```
rm README
git status
git reset --hard HEAD
```

Undo the delete by reverting to the last commit this also undoes any other changes you made.

```
git status
ls
rm README
git commit -a -m "Deleted README"
git status
ls
```

See that the README file is back.

Use **-a** flag to commit a staged changes.

Confirm that README was deleted and the change was committed.

This shows a list of your recent commits.

Type the first two characters of the id of your last commit and

press **TAB** and **ENTER**.

Write a commit message for your reverted commit, save and close nano.

```
git revert TAB + TAB
```

Creating branches

```
git checkout -b feature
echo "This is a new file." > new_file
git add new_file
git commit -m"add a new file"
git log --graph --oneline --decorate
git checkout main
ls
```

Create a new branch.

Stage the new file.

Create a commit on **feature**.

Visualize the commit history.

Return to the initial branch.

What happened to the working tree?

Task 3: Remote repositories (5 min)

Remote repository

Make sure you can login to <https://gitlab.gwdg.de>, <https://gitlab-ce.gwdg.de> or <https://github.com>.

Replace the domain and username accordingly.

```
git remote add origin "https://gitlab-ce.gwdg.de/USERNAME/git-exercise.git"
git push --set-upstream origin main
```

This will query your credentials if you do not have them stored already

and create a remote repository.

The visibility of the repository is private by default so only you and the teammates you have explicitly invited have access.

Visit <https://gitlab-ce.gwdg.de/USERNAME/git-exercise> to view your new project.

Delete the local copy of the repository.

switch back to your home directory.

```
rm -rf ~/git-exercise
cd
git clone https://gitlab-ce.gwdg.de/USERNAME/git-exercise.git
```

Download the repository from remote.

```
cd git-exercise
```

Make a change to README on the web and commit it.

```
git pull  
git log
```

See the change you made on the web.

Task 4: Working with .gitignore (2 min)

gitignore

```
touch credentials
```

```
git status
```

See that the credentials file can be staged.

```
nano .gitignore
```

Write **credentials** into the file and save your changes.

```
git status
```

See that only **.gitignore** can be staged and credentials is ignored.

```
git add credentials
```

Git has many more features, one of them, which is commonly used, is branching.

Further Reading

- Missing Semester; Version Control (Git): <https://missing.csail.mit.edu/2020/version-control/>
- Learn Git branching: <https://learngitbranching.js.org/>