

# Git/GitHub

Git Book: <https://git-scm.com/book/en/v2>

Reproducible Research Workshop: [http://www.geo.uzh.ch/microsite/reproducible\\_research/post/rr-rstudio-git](http://www.geo.uzh.ch/microsite/reproducible_research/post/rr-rstudio-git)

Wickham: <http://r-pkgs.had.co.nz/git.html>

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## Git Basics

<https://git-scm.com/book/en/v2/Getting-Started-Git-Basics>

- Git stores snapshots of current files (changed files are updated, unchanged files are not).
- Data is only added
- File states
  - Committed: Data stored in repository
  - Modified: Changes have been made, but not committed
  - Staged: Modified files that are to be committed
- File locations
  - Working directory (checked out files)
  - Staging area (staged files)
  - Repository (committed)
- Workflow
  1. Modify files
  2. Stage changes to be committed
  3. Commit changes

## Local Git setup

Configure Git

```
git config --global user.name 'yourGitHubUsername'
git config --global user.email 'name@provider.com'
```

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## Create a local project and make first commit

1. Create new R project in a new folder (check “Create Git repository”)
2. Create new R Markdown document in new project and save it.
3. Stage document by “adding” it.
4. Write commit message and commit document to repository.

## Modify the document

5. Add a line to the document and save - note that it shows up with “M” in the Git tab for “modified”.
6. Stage the document and commit again.

## Modify the document again

7. Add another line and repeat steps 5 and 6 to commit this modification

## Revert to previous commit

8. Select the commit that you want to revert to and copy the SHA hash
9. Open a terminal or shell window in this directory
10. Issue the command: `git reset --hard <SHA hash>`

## Branching

<https://git-scm.com/book/en/v2/Git-Branching-Basic-Branching-and-Merging>

Create a branch

```
git branch newbranch
```

Switch to branch

```
git checkout newbranch
```

Create and switch

```
git checkout -B secondbranch
```

Merge branch into master

```
git checkout master
```

```
git merge newbranch
```

Delete branch

```
git branch -d newbranch
```

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## GitHub

### Add a local repository to GitHub

1. Copy the URL of the github repository to the clipboard
2. In a terminal window in the folder of the current local repository, set the new remote repository:

```
$ git remote add origin <remote repository URL>
```

3. Verify the new remote URL

```
git remote -v
```

4. Push the changes in the local repository to GitHub

```
git push -u origin master
```

## Push commits to GitHub

5. Make a change in the R Markdown document, save it, stage it, and commit it.
  6. Push change up to GitHub
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## Create local repository/project from GitHub

Same as above, but a local repository first needs to be initialized. First create a folder and then create an RStudio project in it. Then on the command line, initialize the local repository.

```
git init
```

Close and re-open the project.

## Add a user to a GitHub repo

1. Modify
  2. Stage
  3. Commit
  4. Pull
  5. Push
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## Forking

- Copy of another repository
- Merges with parent repository are made via a ‘pull request’