

## Version control with Git exercise

In this exercise we will show how version control with Git can be implemented for an example R project. The project is the same that is created in the first workflow [exercise](#), however to save time or in case you haven't completed this exercise we will start with the finished output from it.

There is an alternative way of working with Git. Instead of linking Rstudio directly to your Github account, you can also use the Github Desktop application, which provides you with an easy to use GUI and very simple setup. If you are interested in using Github Desktop instead, skip to Step 8.

### Step 1: Download and configure Git

- Download Git from <https://git-scm.com/downloads>
- Once downloaded open the Git terminal window and type in the following with your credentials

```
git config --global user.name "NVHarisena1" git config --global user.email "NVHarisena1\@ethz.ch" git config --global --list
```

The third command should return your updated user-name and email id.

### Step 2: Create a repository on Github

We will make a quick repository on Github for an individual project, without changing much of the specific configurations since it will be beyond the scope of this workshop.

- Login to your account at <https://github.com/>
- Create a new repository by clicking the '+' sign in the top right side of the website or in the 'Start new repository' section in the homepage
- Provide a clear name for the repository for e.g. "R\_repro\_nv" and a quick description like "Test for Reproducible research workshop"
- Set the visibility of the profile to "Public"
- Initialize this repository with: Add a README file.
- Select a license for your repository in the "Choose your license" section. Check out [this website](#) to identify which license works for you. Even though it is optional to add license information to a repository, it is good practice to include this ([See more details](#)).
- Click the green `Create repository` button

**Create a new repository**  
A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository](#).

Required fields are marked with an asterisk (\*).

Repository template  
 Start your repository with a template repository's contents.

Owner \*  Repository name \*  1.  R\_repro\_nv is available.

Great repository names are short and memorable. Need inspiration? How about [literate-goggles](#) ?

Description (optional)  
 2.

Public Anyone on the internet can see this repository. You choose who can commit.  
 Private You choose who can see and commit to this repository.

Initialize this repository with:  
 Add a README file This is where you can write a long description for your project. [Learn more about READMEs](#).

Add .gitignore  
 3.

Choose which files not to track from a list of templates. [Learn more about ignoring files](#).

Choose a license  
 4.

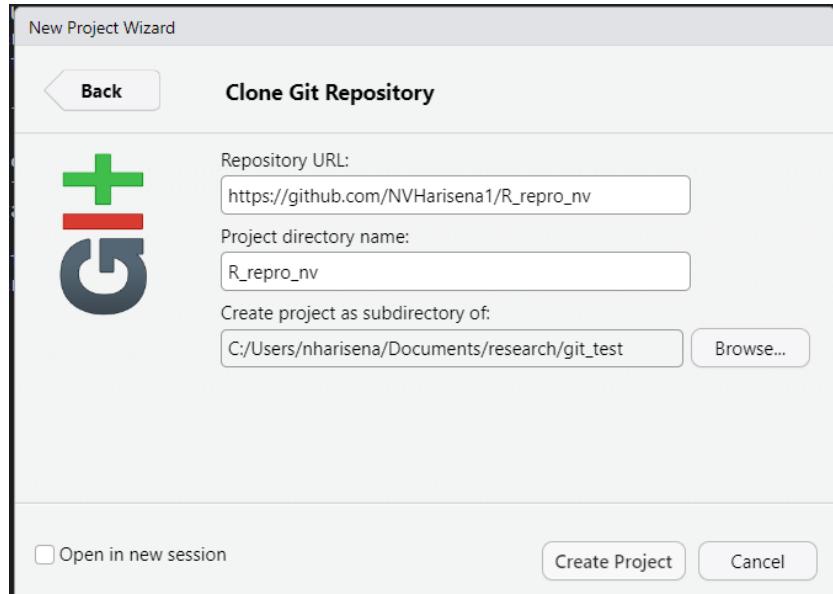
A license tells others what they can and can't do with your code. [Learn more about licenses](#).  
This will set `main` as the default branch. Change the default name in your [settings](#).

① You are creating a public repository in your personal account.

1: Setting up the repository

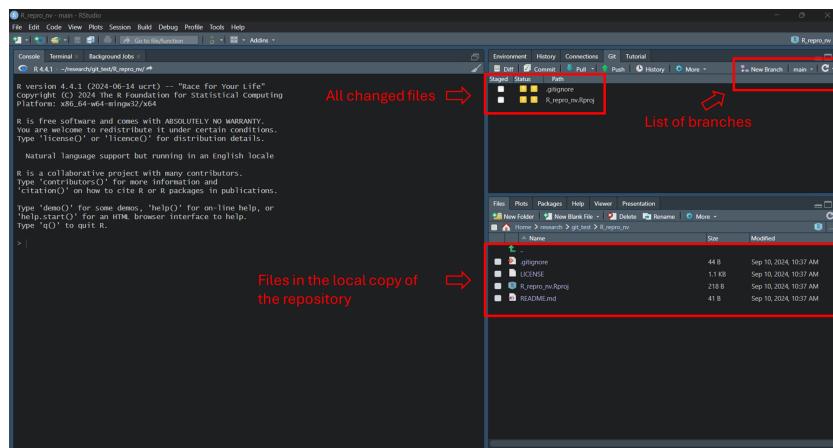
### Step 3: Link created repository to R-Studio

- Open a new session in R studio and create a new project
- In the ‘New Project Wizard’ navigate to ‘Version Control’>‘Git’
- In the “repository URL” paste the URL of your new GitHub repository. It will be something like this [https://github.com/nvharisena1/R\\_repro\\_test](https://github.com/nvharisena1/R_repro_test).
- Add folder location where you want the project to be saved locally in your computer in “Create project as subdirectory of” section
- Click **Create project**



2: Linking repository to R-Studio

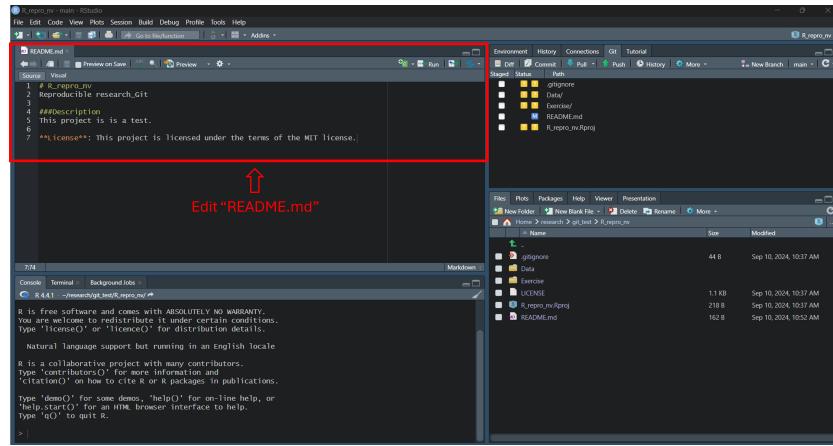
You will see R-studio has now been set up for your local clone of the project to communicate with your online repository. You can see a drop-down to the right of 'New Branch' button in the Git tab. This will show you all the branches available to pull or push data to. Your drop-down should show only a 'main' branch, since no new branches were created. As stated in the workflow introduction, creating branches is useful for projects with multiple collaborators or sub-themes. Pushing to different branches and then setting up a 'pull-request' to merge to the 'main' branch allows for systematic version control of the project.



3: R-Studio new project session with git link

## Step 5: Edit the README.md file

- Open the README.md from the file viewer pane
- Add a description section for the project with a heading and a describing sentence, for e.g. “This project is a test”.
- Add license information for the project, for e.g. “This project is licensed under the terms of the MIT license.”
- Save the file.

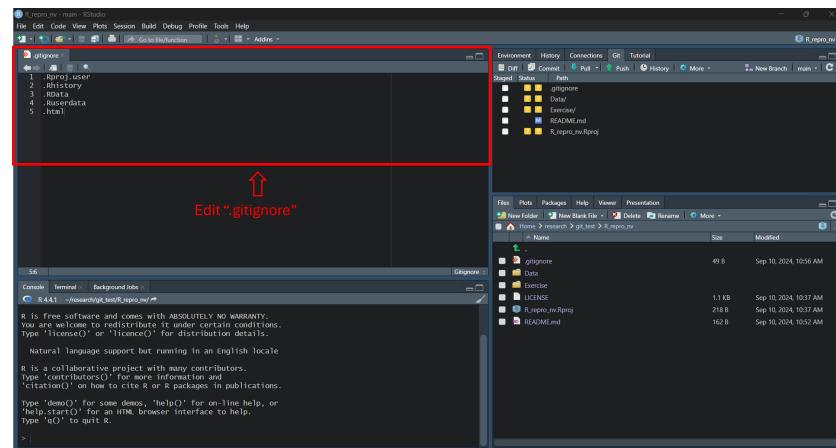


4: Edit README.md

## Step 6: Edit the .gitignore file

The git ignore functionality tells git which files to ignore while ‘pushing’ the local changes to the remote (online) repository [see more details](#). In this example we will tell git to ignore all .html files. .html files are created when you preview a file, for example click preview on the edited README.md and a .html should be created.

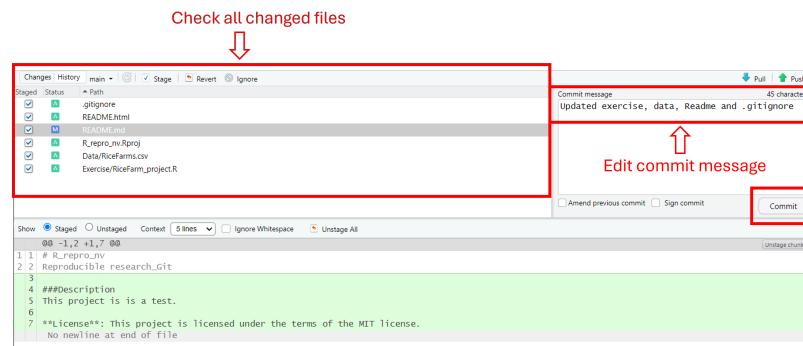
- Open the .gitignore file and add .html in a new line and save the file



5: Editing the .gitignore file

### Step 7: Commit and push

- Click the **Commit** button in the Git tab
- Check all the files listed in the top left section
- Write a sentence describing the changes i.e. *“Updated exercise, data, Readme and .gitignore”*
- Click **Commit** and close the window
- click **Push** in the Git tab, a window will pop up showing the interface with the remote system and details of the upload.



6: Commit changes

Great! You have finished your first project update (local changes committed and pushed) via Git on Rstudio.

## **Step 8: Download and install Github Desktop**

This is an alternative way to work with Github when coding in R. For this, we will not link Rstudio to our Github account but we will use the Github Desktop application instead.

- Download [Github Desktop](#)
- Install the application and login with your Github account

## **Step 9: Create a repository on Github**

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4.  You are creating a public repository in your personal account.

## 7: Setting up the repository

### Step 10: Clone your Github repository to your computer

- In the Github Desktop application click ‘File’>‘Clone Repository’ and select your new repository. Define the directory on your computer, where you want to clone the repository to. Press the **Clone** button.

### Step 11: Edit the README.md file

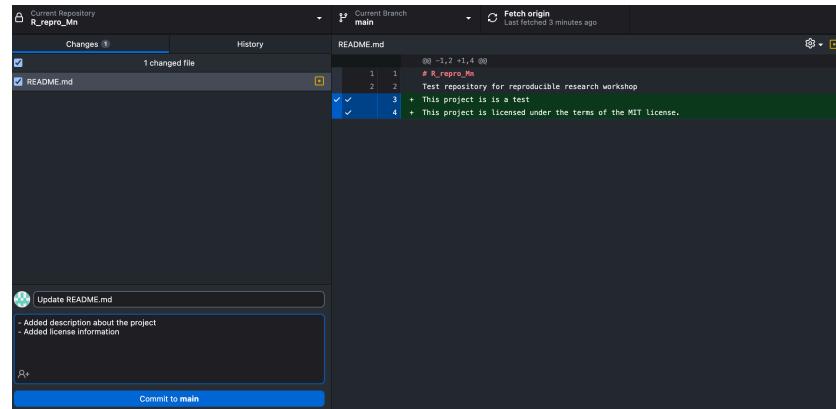
- Open the README.md in your local project directory with a text editor.
- Add a description section for the project with a heading and a describing sentence, for e.g. “This project is a test”.
- Add license information for the project, for e.g. “This project is licensed under the terms of the MIT license.”

- Save the file.

### Step 12: Push the updated README.md file

Since you have edited the README.md file, Github Desktop app will propose to you to push this change from your computer to your repository.

- Add a title and a description and click `Commit to main` button.
- Click `Push origin` button to upload your changes to your repository on Github.



8: Committing changes github