GitHub and Terminal Trouble Shooting

This Cheat Sheet is supposed to help you in case of the most common issues, you can encounter when using git and GitHub via the terminal.

! Please be aware!
If you have anything really weird going on and encounter a series of error messages, be cautious!
Git is great to keep track of all your files and changes, but if you mess up stuff, you can - in the worst case - delete all your work. And trying to restore this is anything but fun...

To prevent you from such technical (and mental) breakdowns, ensure you always know and truely understand what you are telling you command line.
And if you decide to try fixing your problem on your own: a good idea is to save the latest version of your current assignment (which you want to push), in a ***second location*** on your local machine, some place ***outside*** the repository!

Either, google stuff or watch YouTube video or ask the tutors (especially Andri, our remote technical support).
You can contact us via Discord or mail:

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To make the explanations more intuitive, this Cheat Sheet will sometimes refere to the below illustration of packing delivery boxes (`git add`, sending them off for shipping (`git commit`) and shipping them (`git push`).

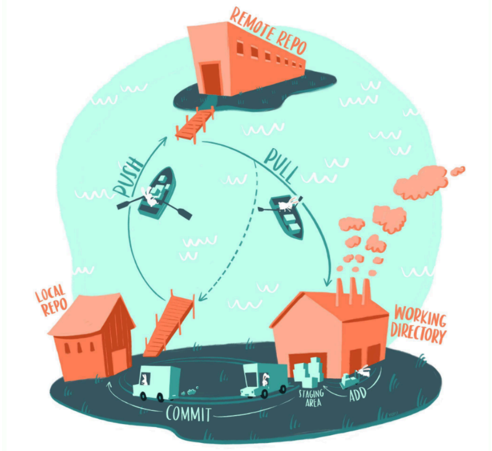
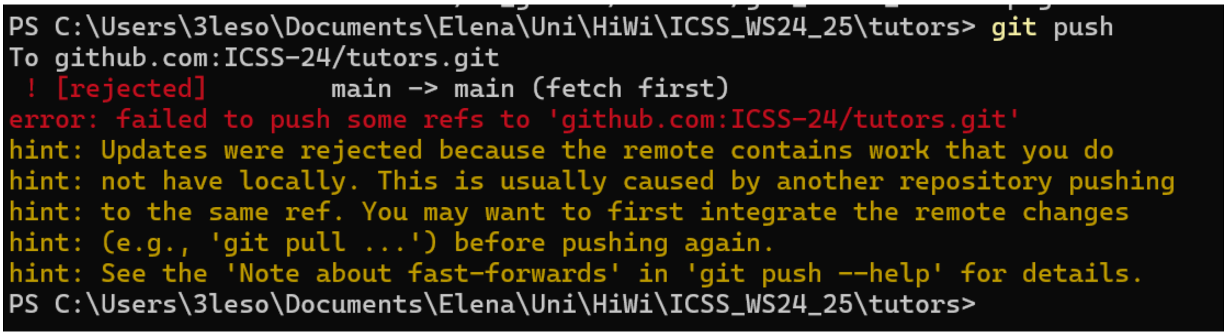


Fig. 1: git_commands.png

Illustration by Allison Horst Source

I can't push my changes

One of the most common issues, you can encounter is that when trying to push your changes to GitHub, git tells you that you can't push, because the remote contains work you do not have locally.



```
PS C:\Users\3leso\Documents\Elena\Uni\HiWi\ICSS_WS24_25\tutors> git push
To github.com:ICSS-24/tutors.git
 ! [rejected]        main -> main (fetch first)
error: failed to push some refs to 'github.com:ICSS-24/tutors.git'
hint: Updates were rejected because the remote contains work that you do
hint: not have locally. This is usually caused by another repository pushing
hint: to the same ref. You may want to first integrate the remote changes
hint: (e.g., 'git pull ...') before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.
PS C:\Users\3leso\Documents\Elena\Uni\HiWi\ICSS_WS24_25\tutors>
```

Fig. 2: git_pull_error.png

This will usually appear when the tutors uploaded your feedback for the previous assignmnet to your remote repository and you did not pull this change (new file) down to your local machine, before trying to push (upload) your new assignment.

The Solution

The fix is quite easy:

- simply run `git pull` to download the new feedback file
- and afterwards you run `git push` again.
    - Note that you **do not** have to `add` and `commit` again!

In the Future

→ try to get used to *this exact order of commands*, to prevent such hickups from appearing

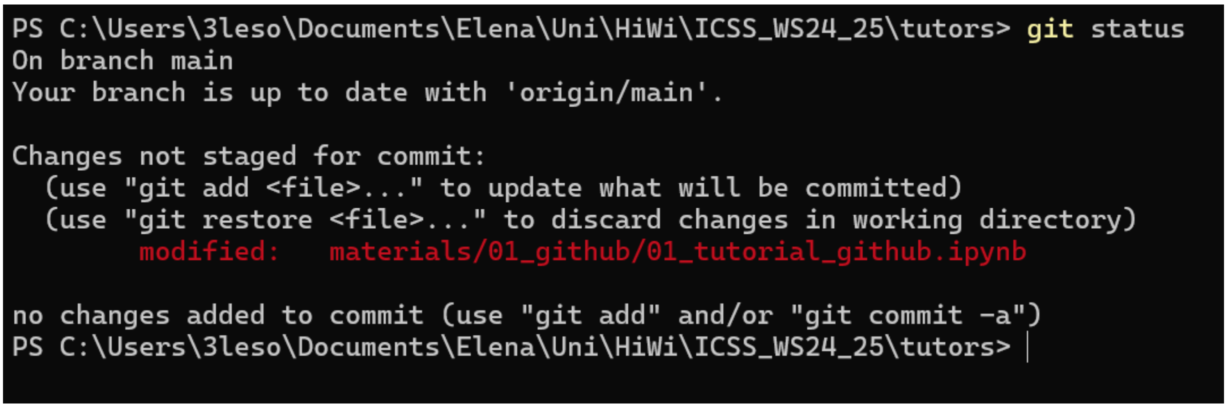
1. `git pull`
    - First, you run git pull, to pull the latest version from the remote. Here, things might have changed, for example the tutors uploaded the 'feedback.txt' file for the last assignment. But don't worry. The changes you made locally to the new assignment won't be lost.
2. `git add`
    - Now, you add the changes you've made (from the factory, pack them up to be delivered)
3. `git commit`
    - Commit the changes to the local repository (call the delivery person, to pick them up and transfer them)
4. `git push`
    - Upload the changes to GitHub (ship off the boxes)

`git status`

Use `git status` is a great command to check, where you are in the current process of adding and commiting changes.
Below you can see how it works to understand at which point in the process you are:

Step 1: I changed a file in my local working directory.

Running `git status` , the output tells me that I have changes, which are not staged for commit (and therefore colored in red)

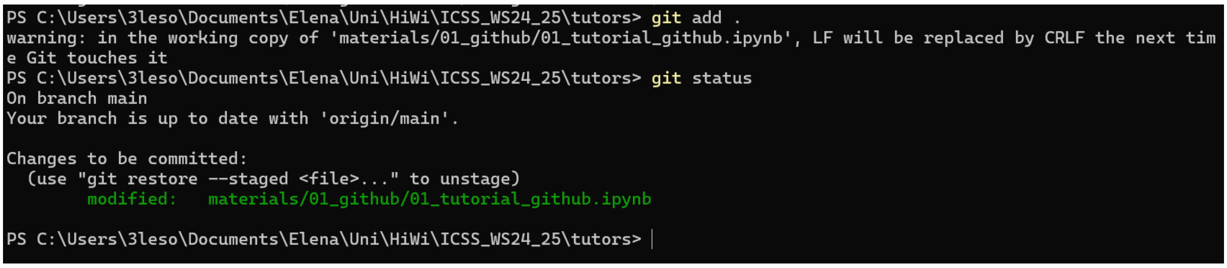


```
PS C:\Users\3leso\Documents\Elena\Uni\HiWi\ICSS_WS24_25\tutors> git status
On branch main
Your branch is up to date with 'origin/main'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   materials/01_github/01_tutorial_github.ipynb

no changes added to commit (use "git add" and/or "git commit -a")
PS C:\Users\3leso\Documents\Elena\Uni\HiWi\ICSS_WS24_25\tutors>
```

Fig. 3: git_status.png

Step 2: Adding changes

Now, I run `git add` and afterwards again `git status`.
As you can see, the messages changes: now we do have changes, that can be commited (because the previous step `add` has been done). The file is now colored in green.

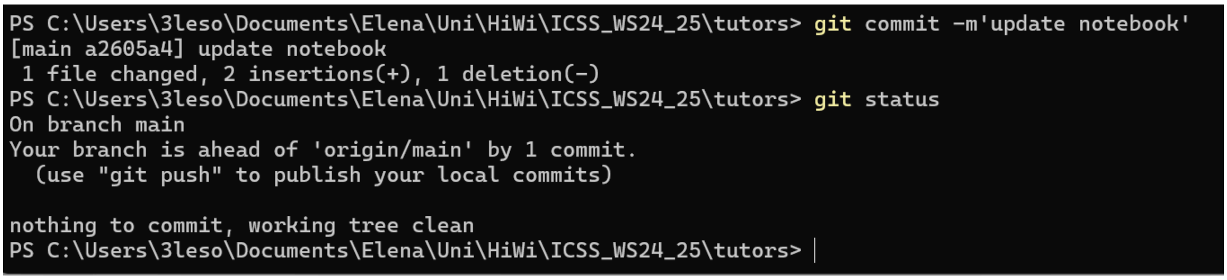


```
PS C:\Users\3leso\Documents\Elena\Uni\HiWi\ICSS_WS24_25\tutors> git add .
warning: in the working copy of 'materials/01_github/01_tutorial_github.ipynb', LF will be replaced by CRLF the next tim
e Git touches it
PS C:\Users\3leso\Documents\Elena\Uni\HiWi\ICSS_WS24_25\tutors> git status
On branch main
Your branch is up to date with 'origin/main'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   materials/01_github/01_tutorial_github.ipynb

PS C:\Users\3leso\Documents\Elena\Uni\HiWi\ICSS_WS24_25\tutors>
```

Fig. 4: git_add.png

Step 3: Commit

After I commited my changes to the local repository, the message tells me, that I am ahead of the remote repository and that I need to `push` in order to upload the changes.

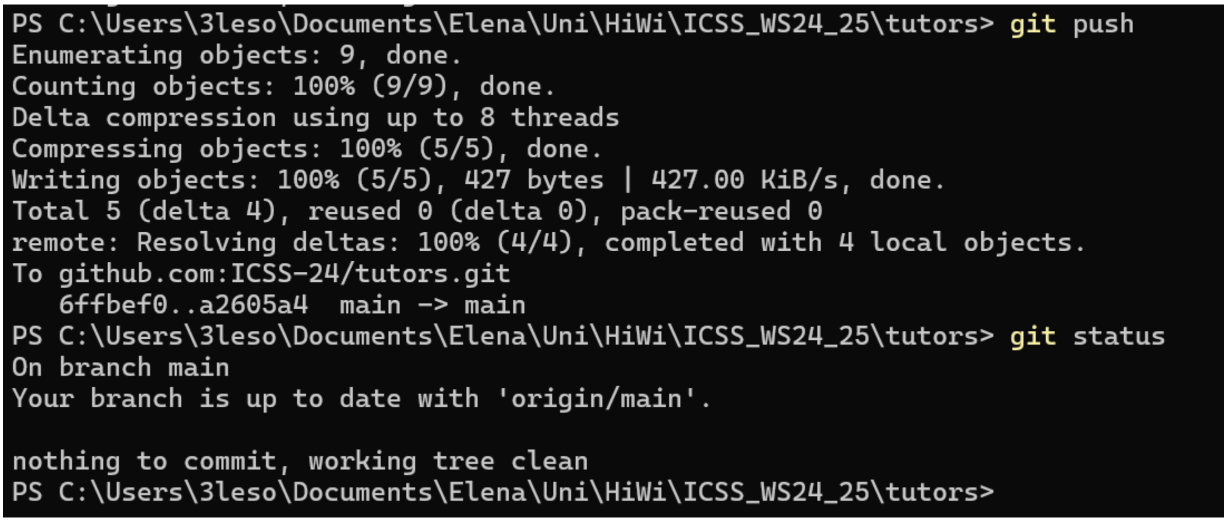


```
PS C:\Users\3leso\Documents\Elena\Uni\HiWi\ICSS_WS24_25\tutors> git commit -m'update notebook'
[main a2605a4] update notebook
 1 file changed, 2 insertions(+), 1 deletion(-)
PS C:\Users\3leso\Documents\Elena\Uni\HiWi\ICSS_WS24_25\tutors> git status
On branch main
Your branch is ahead of 'origin/main' by 1 commit.
  (use "git push" to publish your local commits)

nothing to commit, working tree clean
PS C:\Users\3leso\Documents\Elena\Uni\HiWi\ICSS_WS24_25\tutors>
```

Fig. 5: git_commit.png

Step 4: Push

After pushing, the staus tells me that we are up-to-date now and that we have nothing to commit.



```
PS C:\Users\3leso\Documents\Elena\Uni\HiWi\ICSS_WS24_25\tutors> git push
Enumerating objects: 9, done.
Counting objects: 100% (9/9), done.
Delta compression using up to 8 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (5/5), 427 bytes | 427.00 KiB/s, done.
Total 5 (delta 4), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (4/4), completed with 4 local objects.
To github.com:ICSS-24/tutors.git
   6ffbef0..a2605a4  main -> main
PS C:\Users\3leso\Documents\Elena\Uni\HiWi\ICSS_WS24_25\tutors> git status
On branch main
Your branch is up to date with 'origin/main'.

nothing to commit, working tree clean
PS C:\Users\3leso\Documents\Elena\Uni\HiWi\ICSS_WS24_25\tutors>
```

Fig. 6: git_push.png

I tried to upload too big files

During ICSS we will ask you to work with pretty big data files, too big to upload them in a regular way to GitHub.

From experience we know that it is likely to happen that you forget about that and kept the file in your working directory when doing `git add` and `git commit`.
During the `git push` you will probably get an error message.

Simply removing the file from you working directory and trying `git add` and `git commit` again, ***won't*** solve the issue. You simply only pack new delivery boxes, but don't unpack the one, which contains the too big file.

What you need to do is to unpack and remove the too big files from the already packed delivery boxes (in the illustration), which are already staged in the local repository, to be send off.
Technically speaking, you have to undo the `git commit` and `git add`. This can be done using:

`git reset --soft HEAD~1`

After the `add` and `commit` have been rewind, you can remove the too big file from your working directory and again, do the `add`, `commit` and `push`.