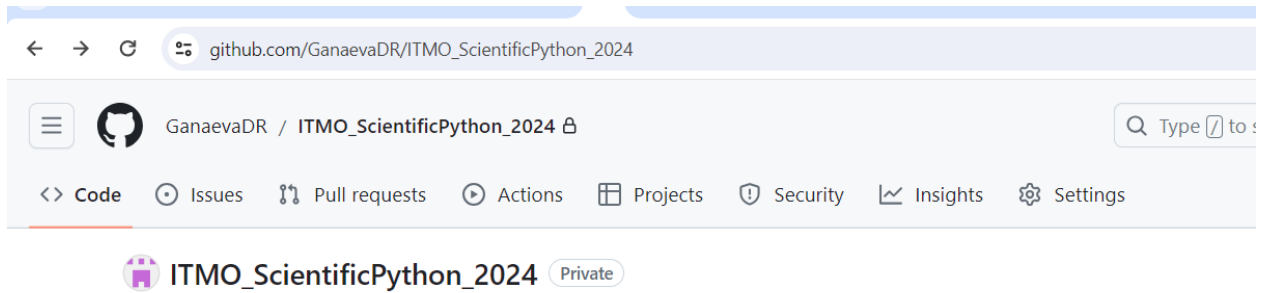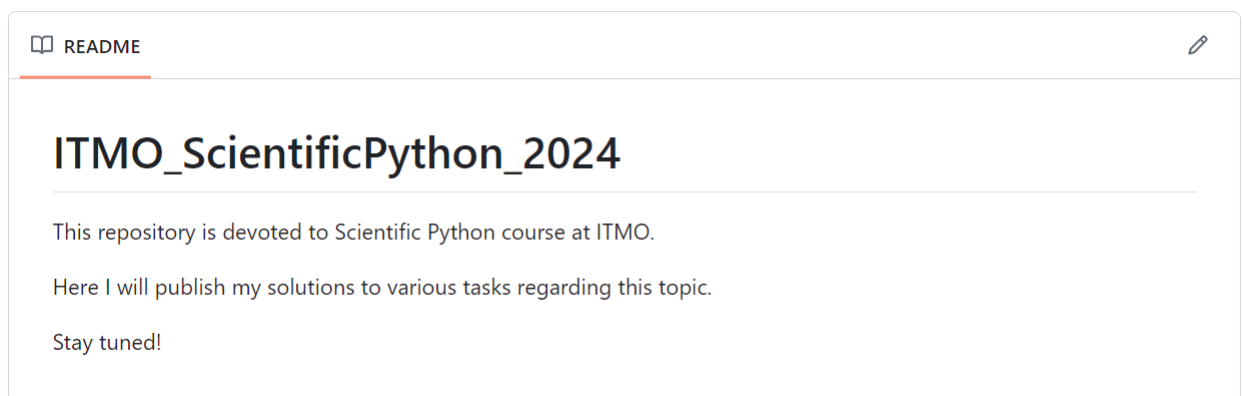# Report on HW1

First of all, I created a GitHub account and created a repository:

I also added a README description of what this repository is about:

Then I installed git to my local machine and finished personal settings by establishing my name and email. Then it looked like that:

I also created a folder "git_project" and initialized the work here, as well as cloned repository from GitHub:

```
Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python
$ mkdir git_project

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python
$ cd git_project/

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project
$ git init
Initialized empty Git repository in C:/Users/Dasha/Desktop/masters/2nd semester/Scientific_Python/git_p
roject/.git/

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project (master)
$ git clone https://github.com/GanaevaDR/ITMO_ScientificPython_2024
Cloning into 'ITMO_ScientificPython_2024'...
remote: Enumerating objects: 9, done.
remote: Counting objects: 100% (9/9), done.
remote: Compressing objects: 100% (5/5), done.
remote: Total 9 (delta 1), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (9/9), done.
Resolving deltas: 100% (1/1), done.
```

After that ITMO_ScientificPython_2024 folder appeared in git_project folder, so I entered it:

```
Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project (master)
$ ls
ITMO_ScientificPython_2024/

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project (master)
$ cd ITMO_ScientificPython_2024/
```

Then I set the remote there:

```
Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024 (master)
$ git remote
origin

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024 (master)
$ git remote show origin
* remote origin
  Fetch URL: https://github.com/GanaevaDR/ITMO_ScientificPython_2024
  Push  URL: https://github.com/GanaevaDR/ITMO_ScientificPython_2024
  HEAD branch: master
  Remote branch:
    master tracked
  Local branch configured for 'git pull':
    master merges with remote master
  Local ref configured for 'git push':
    master pushes to master (up to date)
```

Then I created HW1 branch, checkout it, created HW1 directory, added it to git and entered this HW1 folder:

```
Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024 (master)
$ git branch HW1

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024 (master)
$ git checkout HW1
Switched to branch 'HW1'

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024 (HW1)
$ mkdir HW1
```

```
Dasha@LAPTOP-J3G5GCOB MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024 (HW1)
$ git add HW1

Dasha@LAPTOP-J3G5GCOB MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024 (HW1)
$ cd HW1
```

Then, I created three needed files and filled them with necessary content. I also added, committed changes and pushed them to my repo:

```
Dasha@LAPTOP-J3G5GCOB MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ nano hw1.txt

Dasha@LAPTOP-J3G5GCOB MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git add hw1.txt

Dasha@LAPTOP-J3G5GCOB MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ nano test_revert.txt

Dasha@LAPTOP-J3G5GCOB MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git add test_revert.txt

Dasha@LAPTOP-J3G5GCOB MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ nano test_revert_merge.txt

Dasha@LAPTOP-J3G5GCOB MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git add test_revert_merge.txt

Dasha@LAPTOP-J3G5GCOB MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git status
On branch HW1
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        new file:   hw1.txt
        new file:   test_revert.txt
        new file:   test_revert_merge.txt

Dasha@LAPTOP-J3G5GCOB MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git commit -m "added three files to the branch HW1"
[HW1 56a4e41] added three files to the branch HW1
 3 files changed, 3 insertions(+)
 create mode 100644 HW1/hw1.txt
 create mode 100644 HW1/test_revert.txt
 create mode 100644 HW1/test_revert_merge.txt
```

```
Dasha@LAPTOP-J3G5GCOB MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git status
On branch HW1
nothing to commit, working tree clean

Dasha@LAPTOP-J3G5GCOB MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git push -u https://github.com/GanaevaDR/ITMO_ScientificPython_2024 HW1
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (6/6), 530 bytes | 530.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote:
remote: Create a pull request for 'HW1' on GitHub by visiting:
remote:      https://github.com/GanaevaDR/ITMO_ScientificPython_2024/pull/new/HW1
remote:
To https://github.com/GanaevaDR/ITMO_ScientificPython_2024
 * [new branch]      HW1 -> HW1
branch 'HW1' set up to track 'https://github.com/GanaevaDR/ITMO_ScientificPython_2024/HW1'.

Dasha@LAPTOP-J3G5GCOB MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ ls
hw1.txt  test_revert.txt  test_revert_merge.txt
```

Then I created testing branch and modified hw1.txt file:

```
Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git branch testing

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ nano hw1.txt

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git add hw1.txt

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git commit -m "changed hw1.txt file"
[HW1 27c399e] changed hw1.txt file
 1 file changed, 1 insertion(+)

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git push -u https://github.com/GanaevaDR/ITMO_ScientificPython_2024 HW1
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 434 bytes | 434.00 KiB/s, done.
Total 4 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/GanaevaDR/ITMO_ScientificPython_2024
   56a4e41..27c399e  HW1 -> HW1
branch 'HW1' set up to track 'https://github.com/GanaevaDR/ITMO_ScientificPython_2024/HW1'.
```

Then I checkout testing branch and modified test_revert.txt file:

```
Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git checkout testing
Switched to branch 'testing'

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (testing)
$ nano test_revert.txt

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (testing)
$ git add test_revert.txt

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (testing)
$ git commit -u "changed test_revert.txt file"
error: pathspec 'changed test_revert.txt file' did not match any file(s) known to git

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (testing)
$ git commit -m "changed test_revert.txt file"
[testing 4dc08a8] changed test_revert.txt file
 1 file changed, 1 insertion(+)

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (testing)
$ git push -u https://github.com/GanaevaDR/ITMO_ScientificPython_2024 testing
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Delta compression using up to 8 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (4/4), 395 bytes | 395.00 KiB/s, done.
Total 4 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
remote:
remote: Create a pull request for 'testing' on GitHub by visiting:
remote:      https://github.com/GanaevaDR/ITMO_ScientificPython_2024/pull/new/testing
remote:
To https://github.com/GanaevaDR/ITMO_ScientificPython_2024
 * [new branch]      testing -> testing
branch 'testing' set up to track 'https://github.com/GanaevaDR/ITMO_ScientificPython_2024/testing'.
```

After that I checkout HW1 branch and merge HW1 and testing branches:


```
Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (testing)
$ git checkout HW1
Switched to branch 'HW1'

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git merge testing
Merge made by the 'ort' strategy.
 HW1/test_revert.txt | 1 +
 1 file changed, 1 insertion(+)

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git commit -m "merged HW1 and testing branches"
On branch HW1
nothing to commit, working tree clean

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git push -u https://github.com/GanaevaDR/ITMO_ScientificPython_2024 HW1
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 373 bytes | 373.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/GanaevaDR/ITMO_ScientificPython_2024
   27c399e..01ec117  HW1 -> HW1
branch 'HW1' set up to track 'https://github.com/GanaevaDR/ITMO_ScientificPython_2024/HW1'.
```

But we forgot to change test_revert_merge.txt file, so we need to retract merging:


```
Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git revert -m 1 HEAD
[HW1 9fc53b6] Revert "Merge branch 'testing' into HW1"
 1 file changed, 1 deletion(-)

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git checkout testing
Switched to branch 'testing'

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (testing)
$ nano test_revert_merge.txt

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (testing)
$ git add test_revert_merge.txt
```

```
Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (testing)
$ git commit -m "changed test_revert_merge.txt file"
[testing 46adc8c] changed test_revert_merge.txt file
 1 file changed, 1 insertion(+)

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (testing)
$ git push -u https://github.com/GanaevaDR/ITMO_ScientificPython_2024 testing
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Delta compression using up to 8 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (4/4), 402 bytes | 402.00 KiB/s, done.
Total 4 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/GanaevaDR/ITMO_ScientificPython_2024
   4dc08a8..46adc8c  testing -> testing
branch 'testing' set up to track 'https://github.com/GanaevaDR/ITMO_ScientificPython_2024/testing'.
```

Then we merge branches again:

```
Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (testing)
$ git checkout HW1
Switched to branch 'HW1'

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git merge testing
Merge made by the 'ort' strategy.
 HW1/test_revert_merge.txt | 1 +
 1 file changed, 1 insertion(+)
```

Now we would like to check the content of files:

```
Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ cat hw1.txt
This is an initial file.
This is a change.

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ cat test_revert.txt
This is a file for testing revert.

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ cat test_revert_merge.txt
This is a file for testing revert and merge.
This is a change.
```

Surprisingly, we observe that no changes were saved to test_revert.txt file!

I guess that's because when we reverted the first merge of HW1 and testing, changes that were done to test_revert.txt in testing branch were lost.

I suggest that reverting this specific step of revert would restore changes to test_revert.txt.

To revert this command, we should build the tree of our commits:

```
$ git log --graph
*   commit 1482d9ffb2c80eacc6c550001876ee49df7389c6 (HEAD -> HW1)
|\  Merge: 9fc53b6 46adc8c
| | Author: Daria Ganaeva <ganaeva.dasha@gmail.com>
| | Date:   Fri Mar 8 13:31:23 2024 +0300
| |
| |     Merge branch 'testing' into HW1
| |
| * commit 46adc8c2c97eb8ca5b008a0937c21773c3895c18 (testing)
| | Author: Daria Ganaeva <ganaeva.dasha@gmail.com>
| | Date:   Fri Mar 8 13:30:09 2024 +0300
| |
| |     changed test_revert_merge.txt file
| |
* | commit 9fc53b6bd6141cd0ea0ab6b36007493aee288d75
| | Author: Daria Ganaeva <ganaeva.dasha@gmail.com>
| | Date:   Fri Mar 8 13:28:20 2024 +0300
| |
| |     Revert "Merge branch 'testing' into HW1"
| |
| |     This reverts commit 01ec117e53a2bd921bf07cf84773182eeb6a9213, reversing
| |     changes made to 27c399ec1403cbd3472e99158f5f4290deda85c0.
| |
* | commit 01ec117e53a2bd921bf07cf84773182eeb6a9213
|\| Merge: 27c399e 4dc08a8
| | Author: Daria Ganaeva <ganaeva.dasha@gmail.com>
| | Date:   Fri Mar 8 13:24:54 2024 +0300
| |
| |     Merge branch 'testing' into HW1
| |
| * commit 4dc08a8851d7bb07acc776247ae1e5136d0db6ce
| | Author: Daria Ganaeva <ganaeva.dasha@gmail.com>
| | Date:   Fri Mar 8 13:23:18 2024 +0300
| |
| |     changed test_revert.txt file
| |
* | commit 27c399ec1403cbd3472e99158f5f4290deda85c0
|/  Author: Daria Ganaeva <ganaeva.dasha@gmail.com>
|   Date:   Fri Mar 8 13:22:03 2024 +0300
|
|       changed hw1.txt file
|
* commit 56a4e41f0c041a5be24a9a6fb6f303798ab320b
| Author: Daria Ganaeva <ganaeva.dasha@gmail.com>
| Date:   Fri Mar 8 13:17:02 2024 +0300
|
|     added three files to the branch HW1
|
* commit a36d244cf36f8620f89b7144e76074f7a56db132 (origin/master, origin/HEAD, master)
| Author: Daria Ganaeva <36773060+GanaevaDR@users.noreply.github.com>
| Date:   Fri Mar 1 15:03:20 2024 +0300
|
|     Update README.md
|
* commit cc4186ec01b2a8ccff320b996d74dc3499222c80
| Author: Daria Ganaeva <36773060+GanaevaDR@users.noreply.github.com>
| Date:   Fri Mar 1 15:03:09 2024 +0300
```

We see that the commit of reverting merging goes under the ID "9fc53b6...".

So we revert this specific commit:

```
Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git revert 9fc53b6bd6141cd0ea0ab6b36007493aee288d75
[HW1 0e4503d] Reapply "Merge branch 'testing' into HW1"
 1 file changed, 1 insertion(+)
```

We check the content of our three files:

```
Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ cat hw1.txt
This is an initial file.
This is a change.

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ cat test_revert.txt
This is a file for testing revert.
This is a change.

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ cat test_revert_merge.txt
This is a file for testing revert and merge.
This is a change.
```

Now everything is fine. We are ready to push it to the repo and fully delete testing branch as everything is already merged to HW1 branch:

```
Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git push https://github.com/GanaevaDR/ITMO_ScientificPython_2024 HW1
Enumerating objects: 16, done.
Counting objects: 100% (15/15), done.
Delta compression using up to 8 threads
Compressing objects: 100% (9/9), done.
Writing objects: 100% (10/10), 1.16 KiB | 1.16 MiB/s, done.
Total 10 (delta 2), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (2/2), completed with 1 local object.
To https://github.com/GanaevaDR/ITMO_ScientificPython_2024
   01ec117..0e4503d  HW1 -> HW1

Dasha@LAPTOP-J3G5GC0B MINGW64 ~/Desktop/masters/2nd semester/Scientific_Python/git_project/ITMO_Scienti
ficPython_2024/HW1 (HW1)
$ git branch -d testing
Deleted branch testing (was 46adc8c).
```