Laboratorijas darbs versiju kontrolē ar git
Lab in version control with git

Programminženierija, LU Datorikas fakultāte

Software engineering, University of Latvia, Faculty of Computing

2023

Laboratorijas darba vispārējie noteikumi // General rules for the lab assignment

- Balstoties uz aprakstu izveidot git repozitoriju:
  - github vai alternatīvā git serverī
  - dokumentēt veiktos soļus
  - ievērot failu nosaukumu nomenklatūru – failu nosaukumiem jāsākas ar studenta apliecības numuru, piemēram, jz93015-main.py
- Iesniegt atskaiti par padarīto (sk. tālākos slaidus)

- Following the description, create a git repository:
  - in github or an alternative server
  - document steps accomplished
  - obey file naming conventions – names should start with student' id, e.g., jz93015-main.py
- Submit report on the accomplished work (see next slides)

Laboratorijas darba atskaites kopsavilkums // Summary of report on the laboratory work

1. Ekrāna kopija no github (1 attēls)
2. Darba procesa vizualizācija, piemēram, ar revision graph (4 attēli)

(Visi attēlu faili var tikt apvienoti vienā pdf failā.)

3. Lokālā repozitorija beigu stāvokļa kopija zip formātā (1 zip fails)
4. Failus iesniegt e-studijās

1. Screenshot of github (1 image)
2. Visualization of the process, e.g., with revision graph (4 images)

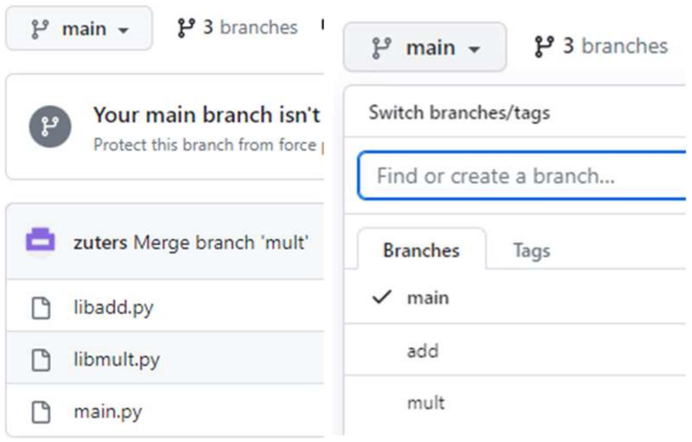
(All image files can be combined to a single pdf file.)

3. Local copy of the final status of the repository
4. Submit to e-studies

1/4. Ekrāna kopija no github beigu stāvoklī // 1/4. Screenshot of github in the final status

- Ekrāna kopija no github repozitorija beigu stāvoklī, kurā redzams konts, repozitorija nosaukums, visu zaru nosaukumi un visu failu nosaukumi (1 attēls)

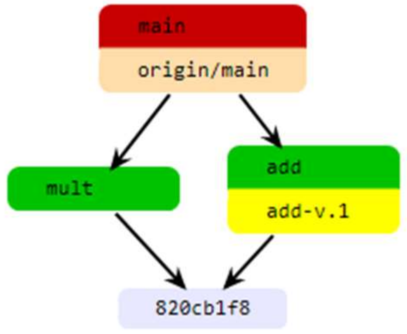
- Screenshot of github in the final status of the repository including account name, repository name, names of all branches, all file names (1 image)



2/4. Darba procesa vizualizācija // 2/4. Visualization of the process

- Darba procesa vizualizācija 4 starpstāvokļiem, piemēram, ar revision graph (4 attēli):
  - sākotnējā versija
  - add atzars izveidots
  - mult atzars izveidots
  - beigu versija

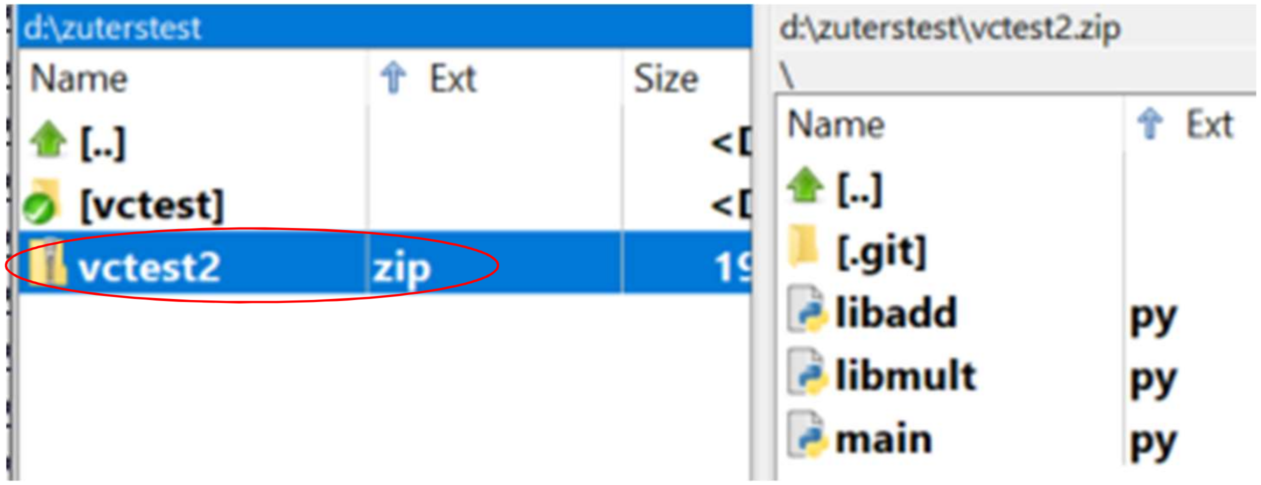
- Visualization of the laboratory work process for the 4 intermediate states (4 images):
  - initial version
  - add branch created
  - mult branch created
  - final status



3/4. Lokālā repozitorija kopija zip formātā // 3/4. Zipped local copy of the repository

- Lokālā repozitorija beigu stāvokļa kopija zip formātā (1 zip fails)

- Local copy of the final status of the repository (1 zip file)



d:\zuterstest

Name	Ext	Size
[..]		<[
[vctest]		<[
vctest2	zip	19

d:\zuterstest\vctest2.zip
\

Name	Ext
[..]	
[.git]	
libadd	py
libmult	py
main	py

4/4. Failu iesniegšana e-studijās // 4/4. Submission of the files in e-studies

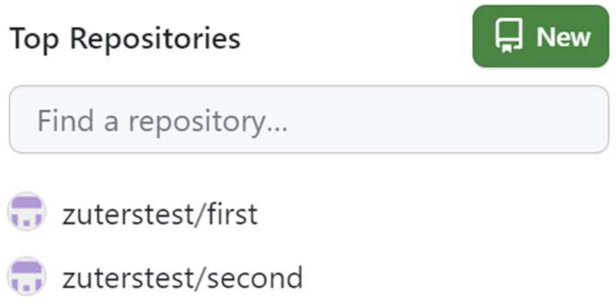
- Iesniegt 5 attēlus (iespējams kā vienu pdf failu) un vienu zip failu
- Atļautie paplašinājumi *.jpg, *.pdf un *.zip

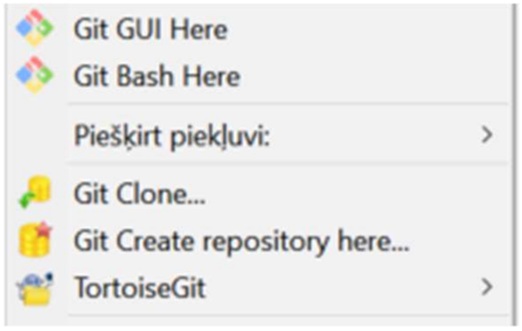
- Submit 5 images (possibly as one pdf file) and one zip file
- Accepted extensions *.jpg, *.pdf and *.zip

Sākotnējie nosacījumi laboratorijas darbam // Prerequisites for the lab work

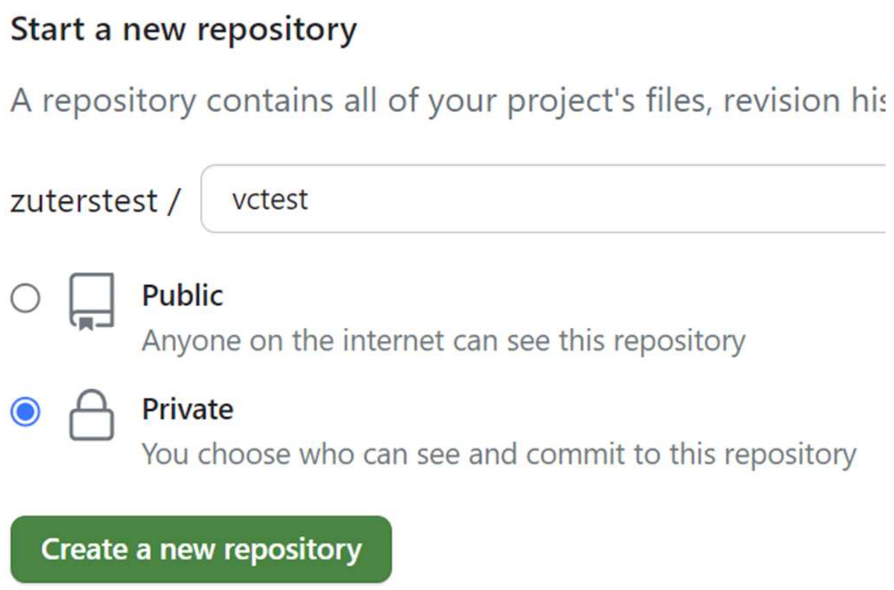
- Izveidot kontu github.com, piemēram, zuterstest
- (Windows) instalēt TortoiseGit:
  - https://tortoisegit.org/support/faq/#prerequisites
  - https://tortoisegit.org/download/

- Sign up to github.com, e.g., zuterstest
- (Windows) install TortoiseGit:
  - https://tortoisegit.org/support/faq/#prerequisites
  - https://tortoisegit.org/download/





Izveidot jaunu repozitoriju github // Create new repository in github



Start a new repository

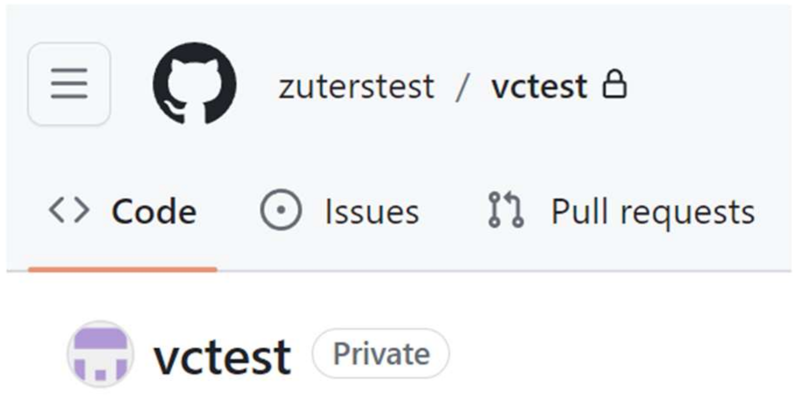
A repository contains all of your project's files, revision his

zuterstest / vctest

Public
Anyone on the internet can see this repository

[✓ Private]
You choose who can see and commit to this repository

Create a new repository

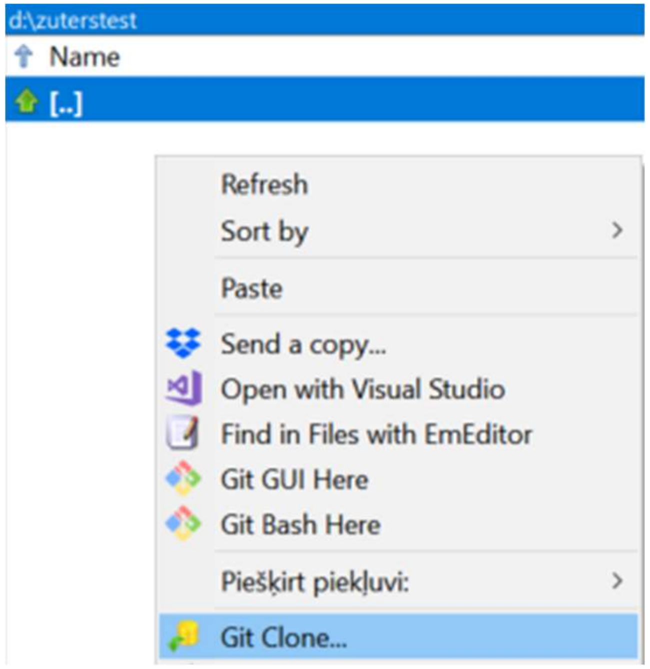


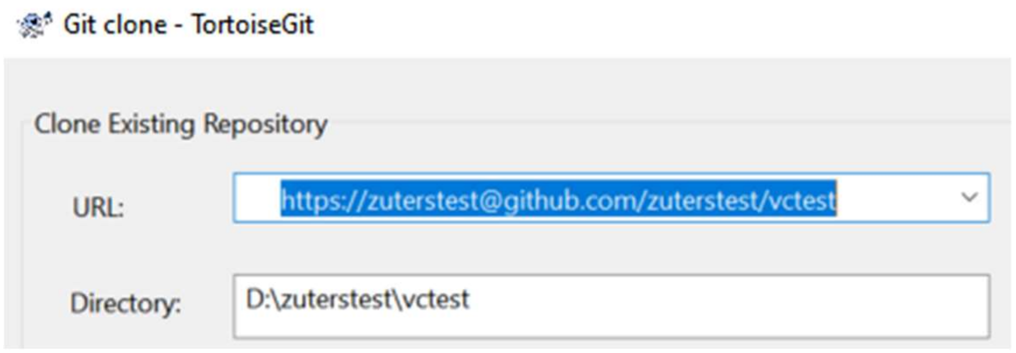
zuterstest / vctest

Code | Issues | Pull requests

vctest Private

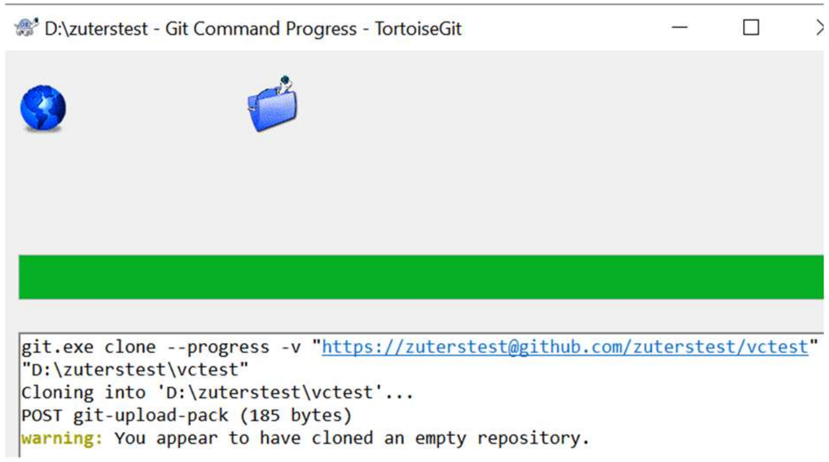
Klonēt repozitoriju failu sistēmā //
Clone the repository into local file system





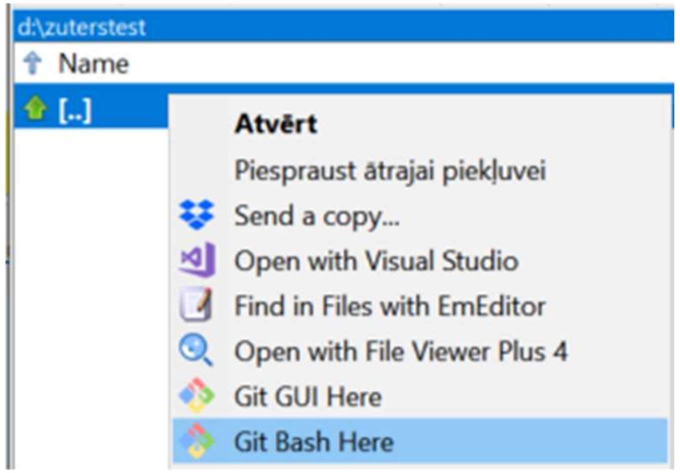
URL: https://zuterstest@github.com/zuterstest/vctest

Directory: D:\zuterstest\vctest



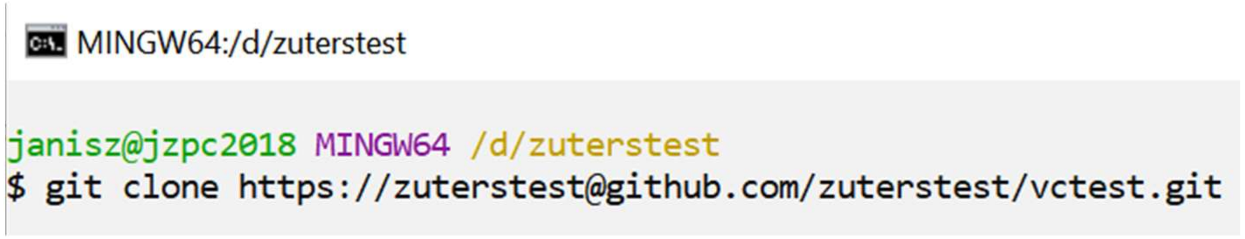
```
git.exe clone --progress -v "https://zuterstest@github.com/zuterstest/vctest"
"D:\zuterstest\vctest"
Cloning into 'D:\zuterstest\vctest'...
POST git-upload-pack (185 bytes)
warning: You appear to have cloned an empty repository.
```

Klonēt repozitoriju failu sistēmā v.2 // Clone the repository into local file system v.2

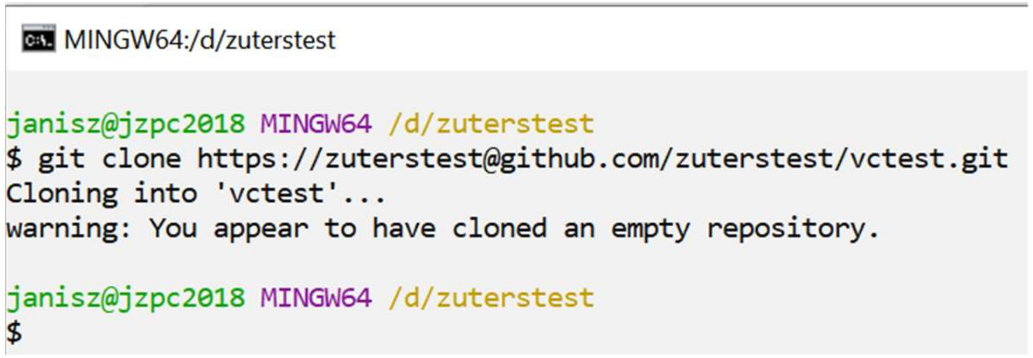


git clone https://[username]@github.com/[username]/[repository-name].git
git clone https://git@github.com/[username]/[repository-name].git

git clone https://zuterstest@github.com/zuterstest/vctest.git



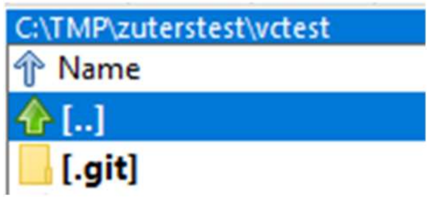
```
MINGW64:/d/zuterstest

janisz@jzpc2018 MINGW64 /d/zuterstest
$ git clone https://zuterstest@github.com/zuterstest/vctest.git
```



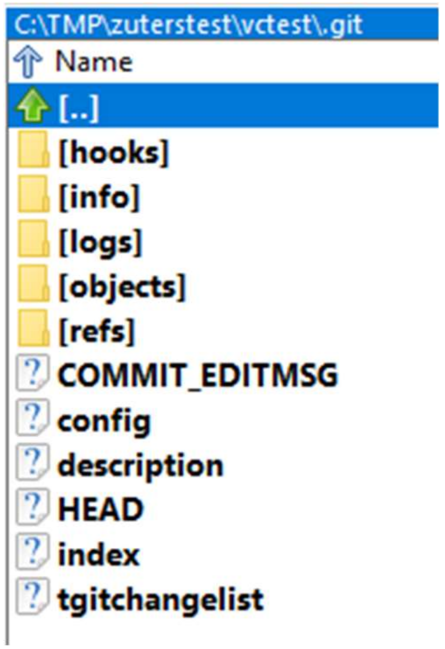
```
MINGW64:/d/zuterstest

janisz@jzpc2018 MINGW64 /d/zuterstest
$ git clone https://zuterstest@github.com/zuterstest/vctest.git
Cloning into 'vctest'...
warning: You appear to have cloned an empty repository.

janisz@jzpc2018 MINGW64 /d/zuterstest
$
```

Klonēšana // Cloning

- Tiek izveidota jauna direktorija ar repozitorija lokālo kopiju
- Jaunajā repozitorijā atrodas:
  - aktuālie faili (ja tādi ir)
  - direktorija .git, kurā ir visa versiju kontroles informācija par doto repozitoriju un saite uz serveri



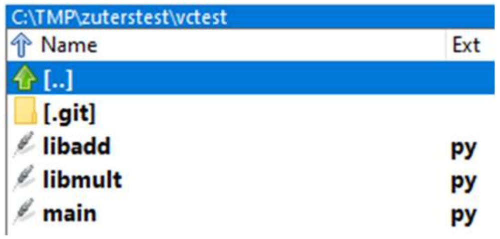
```
C:\TMP\zuterstest\vctest
Name
[..]
[.git]
```



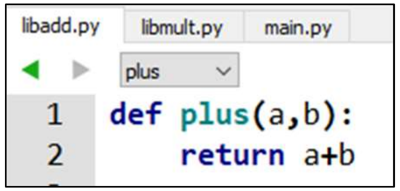
```
C:\TMP\zuterstest\vctest\.git
Name
[..]
[hooks]
[info]
[logs]
[objects]
[refs]
COMMIT_EDITMSG
config
description
HEAD
index
tgitchangelist
```

- A new directory with the local copy of the repo is created
- In the new repo you can find:
  - actual files (if any)
  - directory .git to hold the whole versioning information and link to server

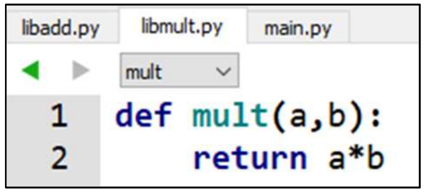
Iekopēt failus tukšajā repozitorijā // Copy the files into the empty repository



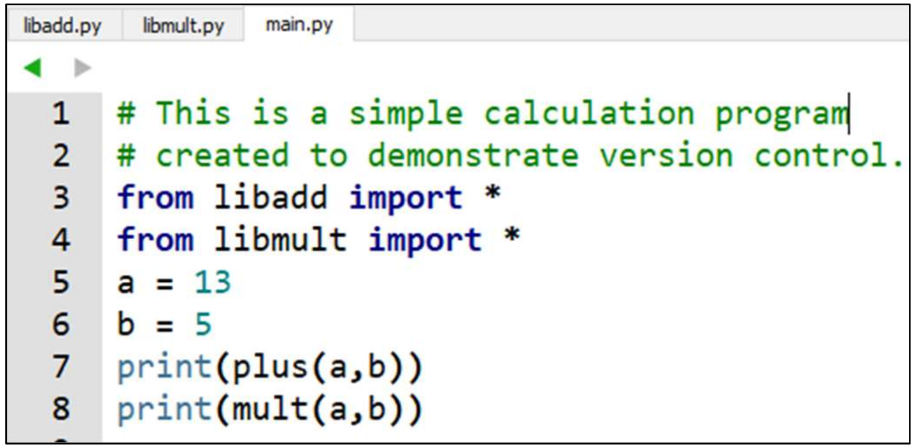
```
C:\TMP\zuterstest\vctest
Name          Ext
[..]
[.git]
libadd        py
libmult       py
main          py
```



```python
def plus(a,b):
    return a+b
```



```python
def mult(a,b):
    return a*b
```

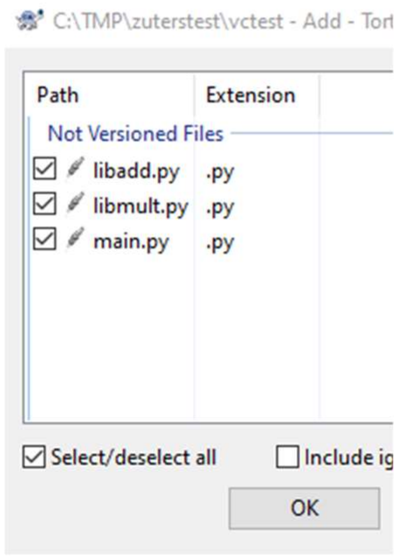


```python
# This is a simple calculation program
# created to demonstrate version control.
from libadd import *
from libmult import *
a = 13
b = 5
print(plus(a,b))
print(mult(a,b))
```

```
Console:
18
65
```

Pievienot failus repozitorijam, veikt commit // Add files to repo and perform initial commit

TortoiseGit//add

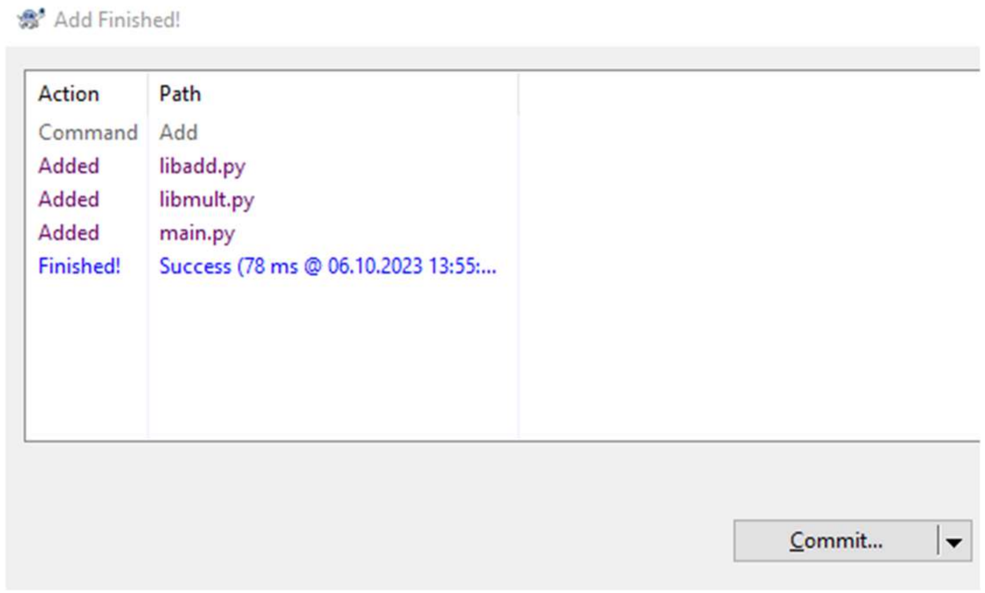


C:\TMP\zuterstest\vctest - Add - Tort

Path	Extension
Not Versioned Files	
☑ libadd.py	.py
☑ libmult.py	.py
☑ main.py	.py

☑ Select/deselect all ☐ Include ig

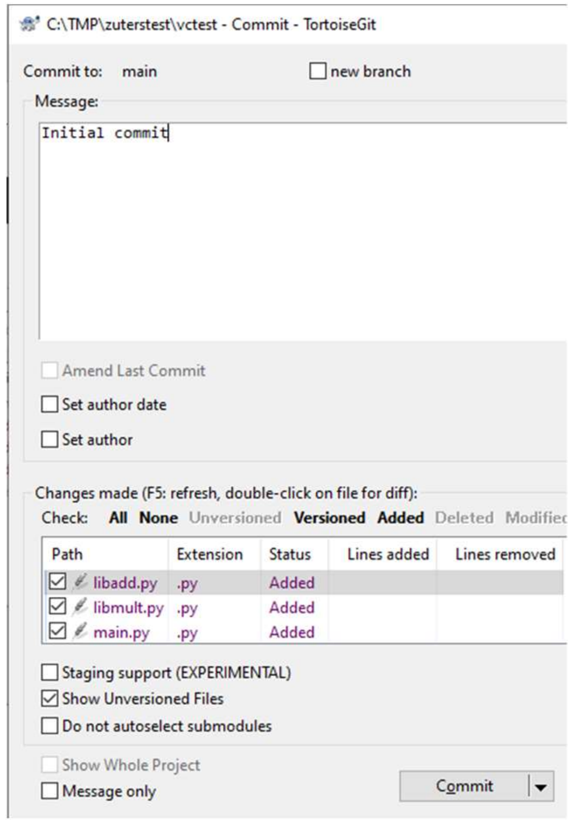
OK



Add Finished!

Action	Path
Command	Add
Added	libadd.py
Added	libmult.py
Added	main.py
Finished!	Success (78 ms @ 06.10.2023 13:55:...

Commit...



C:\TMP\zuterstest\vctest - Commit - TortoiseGit

Commit to: main ☐ new branch

Message:

```
Initial commit
```

☐ Amend Last Commit
☐ Set author date
☐ Set author

Changes made (F5: refresh, double-click on file for diff):

Check: All None Unversioned Versioned Added Deleted Modifiec

Path	Extension	Status	Lines added	Lines removed
☑ libadd.py	.py	Added		
☑ libmult.py	.py	Added		
☑ main.py	.py	Added		

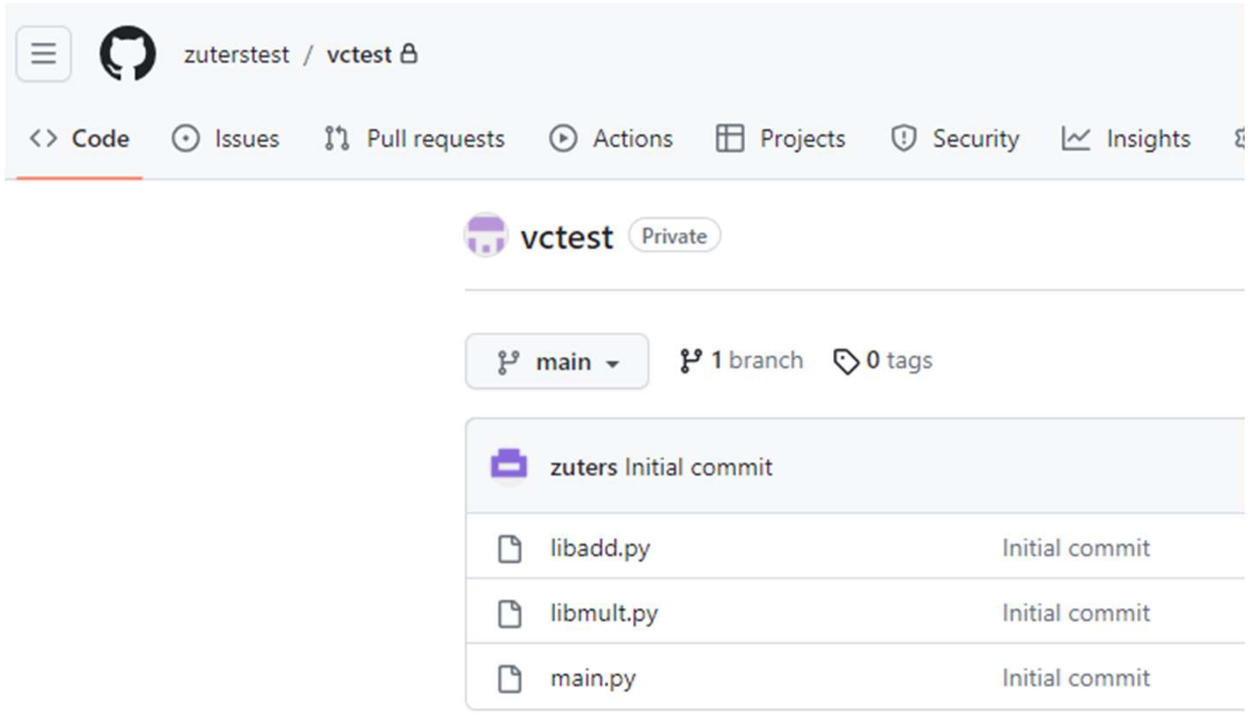
☐ Staging support (EXPERIMENTAL)
☑ Show Unversioned Files
☐ Do not autoselect submodules
☐ Show Whole Project
☐ Message only

Commit

Tagad visi 3 faili ir pievienoti repozitorija lokālajai kopijai //
All the three files are added to the local copy of the repository

Izmaiņu ielādēšana serverī ar push // Pushing changes to the server

Git Sync – Push


zuterstest / vctest

vctest Private

main 1 branch 0 tags

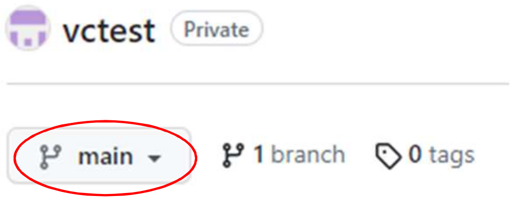
zuters Initial commit

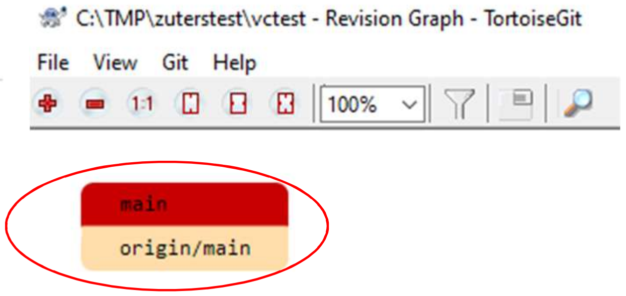
libadd.py	Initial commit
libmult.py	Initial commit
main.py	Initial commit

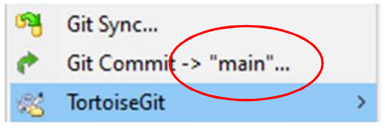
Galvenais zars main // Branch main

- Šobrīd repozitorijā atrodas tikai (noklusētais) galvenais versiju zars main (kādreiz sauca master) un tikai sākotējā versija
- no lokālās kopijas skatu punkta:
  - main – lokālais zars main
  - origin/main – zars main uz servera

- By now, there is only one (default) versioning branch in the repository – called main (previously – master) and just the initial version
- From the local copy perspective:
  - main – the local main branch
  - origin main – the branch main on server

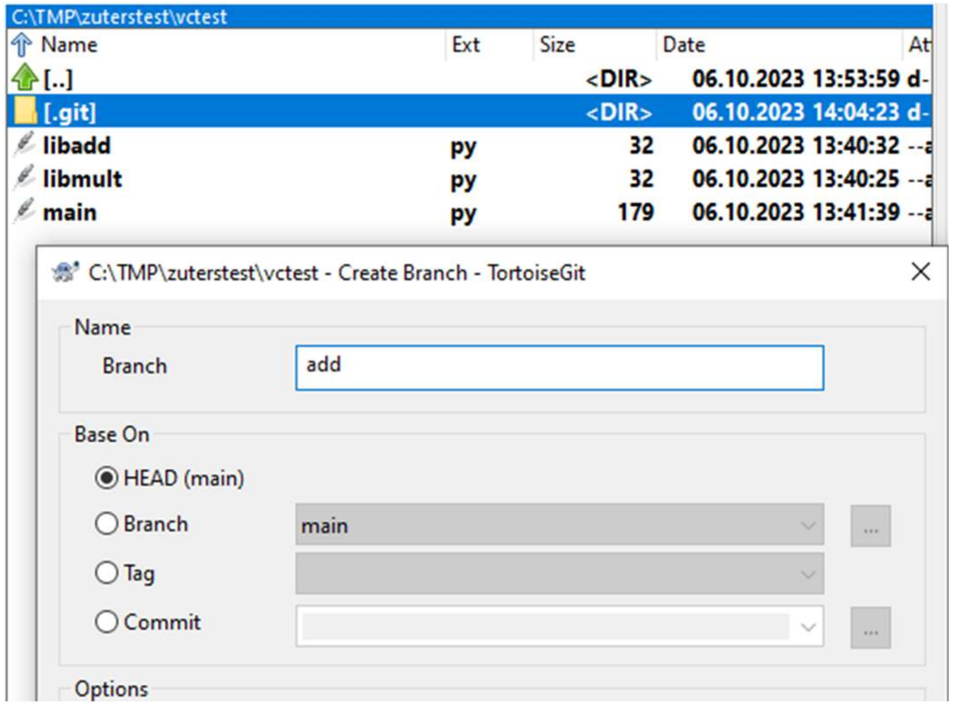






Jauna zara ‘add’ izveidošana // Creating a new branch ‘add’

TortoiseGit//Create Branch



C:\TMP\zuterstest\vctest

Name	Ext	Size	Date	At
[..]		<DIR>	06.10.2023 13:53:59	d-
[.git]		<DIR>	06.10.2023 14:04:23	d-
libadd	py	32	06.10.2023 13:40:32	--a
libmult	py	32	06.10.2023 13:40:25	--a
main	py	179	06.10.2023 13:41:39	--a

C:\TMP\zuterstest\vctest - Create Branch - TortoiseGit

Name

Branch: add

Base On

[● HEAD (main)]

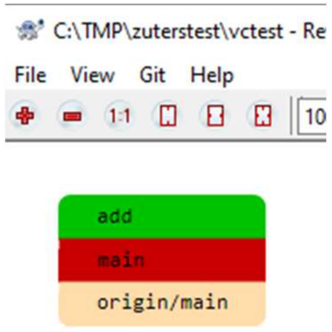
○ Branch: main

○ Tag

○ Commit

Options

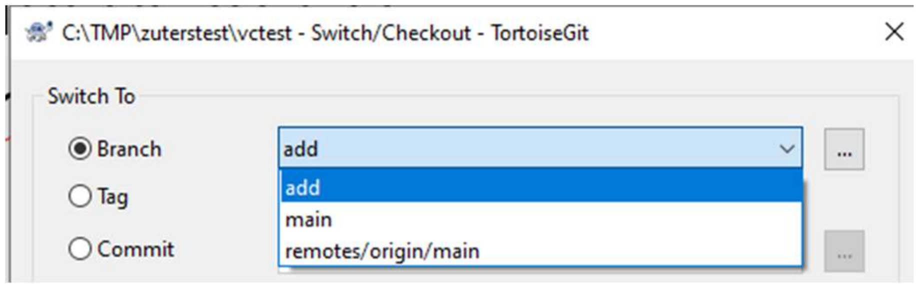
TortoiseGit//Revision Graph



- Izveidots jauns zars, kurš ir identisks main, aktīvais zars ir joprojām ir main (red)
- A new branch is created, and it is still identical to main, the active branch is main (red)

add zara modificēšana // Mofifying branch add

TortoiseGit//Switch/Checkout – «add»



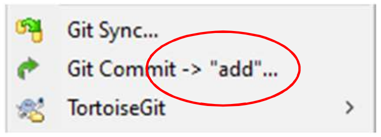
C:\TMP\zuterstest\vctest - Switch/Checkout - TortoiseGit

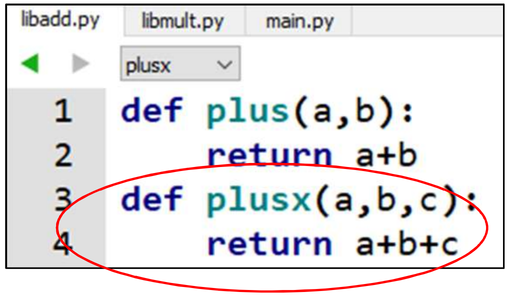
Switch To

[✓ Branch] add

Tag

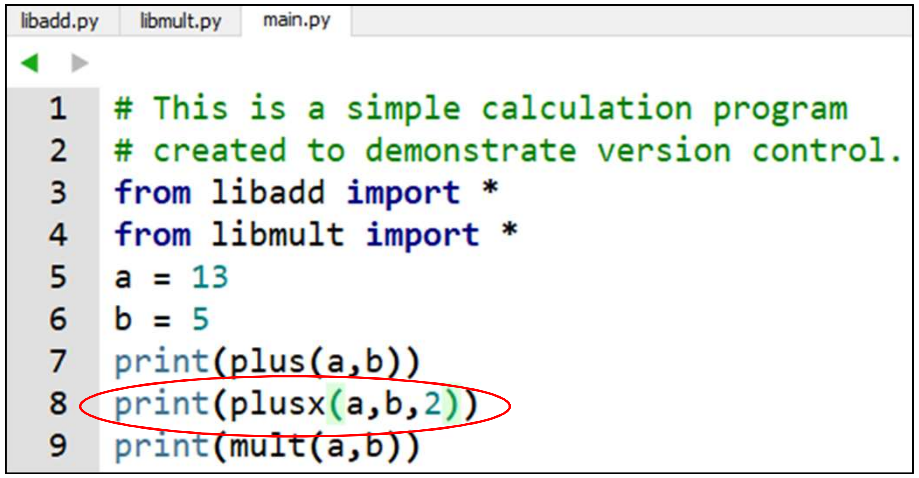
Commit





libadd.py | libmult.py | main.py

```
def plus(a,b):
    return a+b
def plusx(a,b,c):
    return a+b+c
```



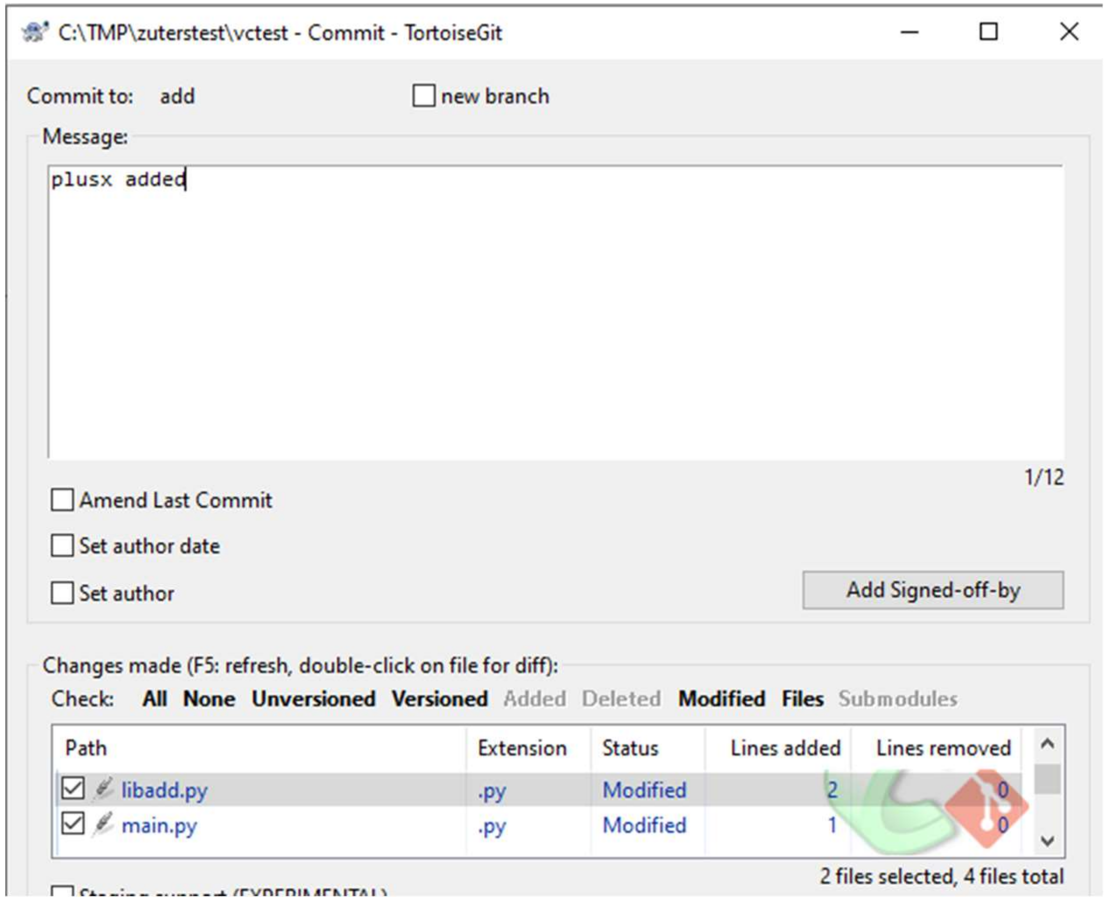
libadd.py | libmult.py | main.py

```
# This is a simple calculation program
# created to demonstrate version control.
from libadd import *
from libmult import *
a = 13
b = 5
print(plus(a,b))
print(plusx(a,b,2))
print(mult(a,b))
```

```
Console:
18
20
65
```

add zara commit // commit on add branch

git commit


C:\TMP\zuterstest\vctest - Commit - TortoiseGit

Commit to: add ☐ new branch

Message:

```
plusx added
```

1/12

☐ Amend Last Commit

☐ Set author date

☐ Set author

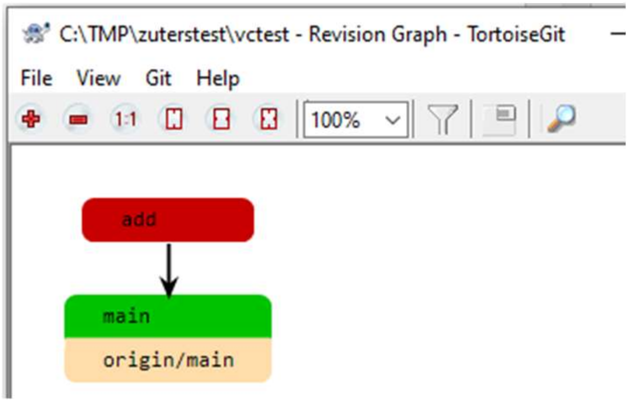
Add Signed-off-by

Changes made (F5: refresh, double-click on file for diff):

Check: **All** **None** **Unversioned** **Versioned** Added Deleted **Modified** **Files** Submodules

Path	Extension	Status	Lines added	Lines removed
☑ libadd.py	.py	Modified	2	0
☑ main.py	.py	Modified	1	0

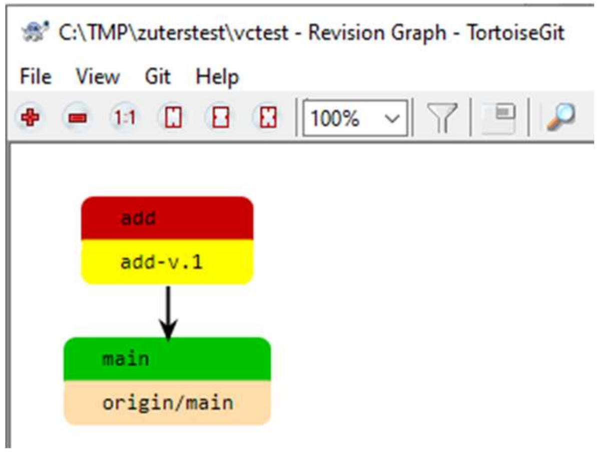
2 files selected, 4 files total


C:\TMP\zuterstest\vctest - Revision Graph - TortoiseGit

- Aktīvais zars ir add (sarkans) un tas ir atšķirīgs no main
- Active branch is add (red) and it is different than main

Taga (marķiera) pievienošana // Adding a tag

TortoiseGit//Create Tag – «add-v.1»

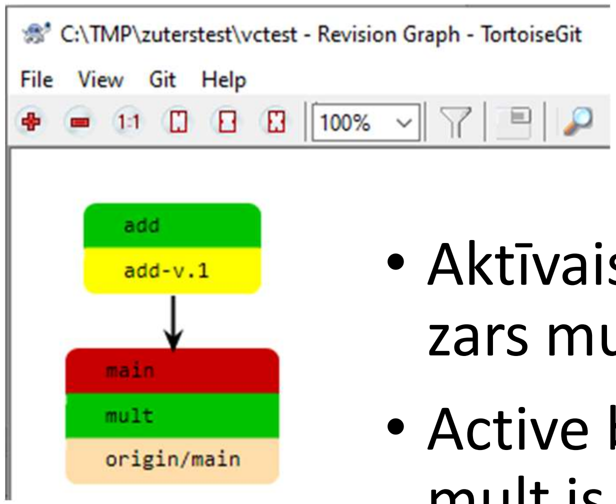


Otra zara ‘mult’ izveidošana // Creating a new branch ‘mult’

TortoiseGit//Switch/Checkout – «main»

TortoiseGit//Create Branch – «mult»

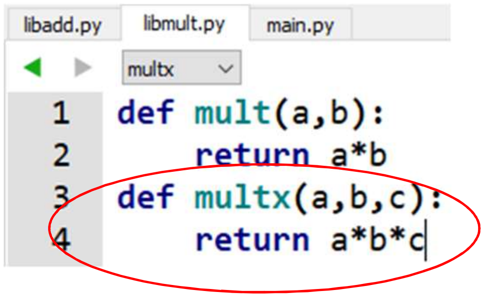
TortoiseGit//Revision Graph



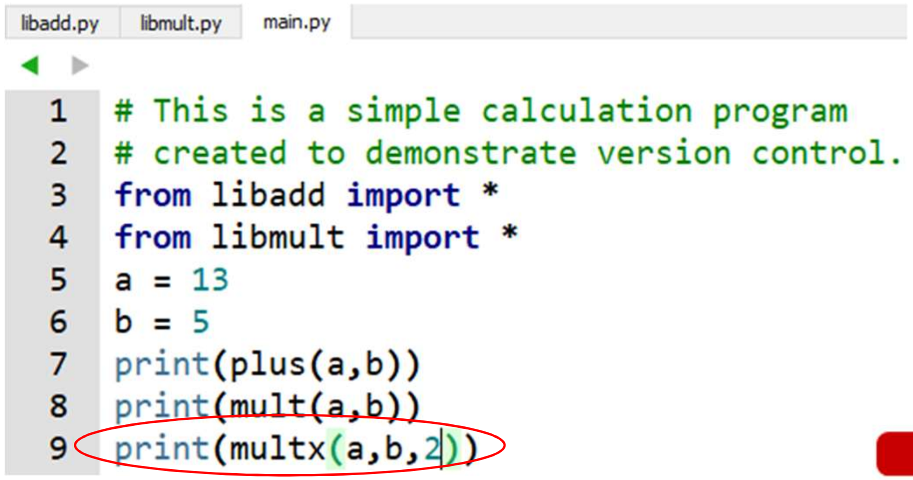
- Aktīvais zars ir main, bet zars mult ir tam identisks
- Active branch is main, but mult is equal to it

mult zara modificēšana // Mofifying branch mult

TortoiseGit//Switch/Checkout – «mult»



```
def mult(a,b):
    return a*b
def multx(a,b,c):
    return a*b*c
```

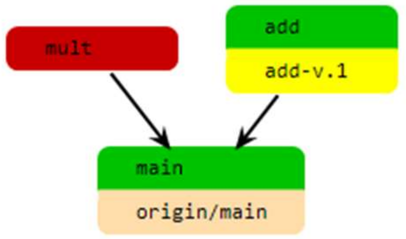


```
# This is a simple calculation program
# created to demonstrate version control.
from libadd import *
from libmult import *
a = 13
b = 5
print(plus(a,b))
print(mult(a,b))
print(multx(a,b,2))
```

```
Console:
18
65
130
```

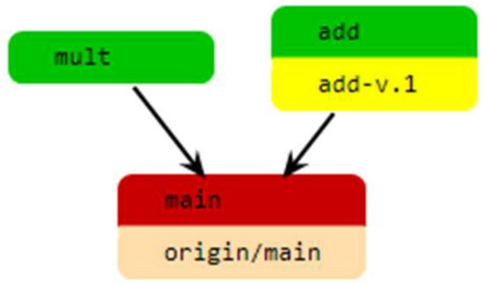
git commit –m «add multx»

TortoiseGit//Revision Graph

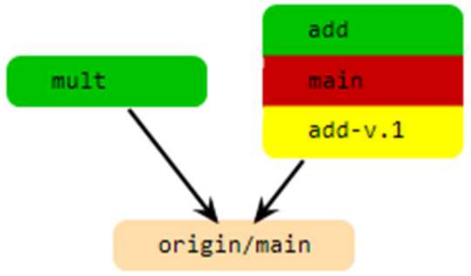


zara add pievienošana main zaram // merging main branch from add

TortoiseGit//Switch/Checkout – «main»

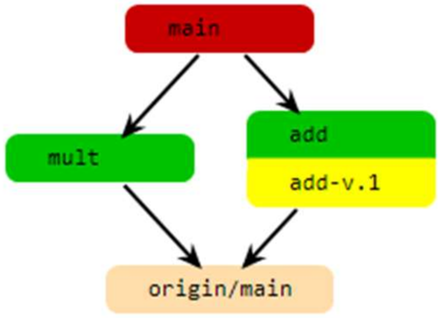


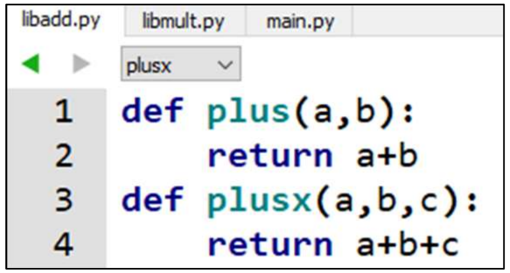
TortoiseGit//merge – from «add»



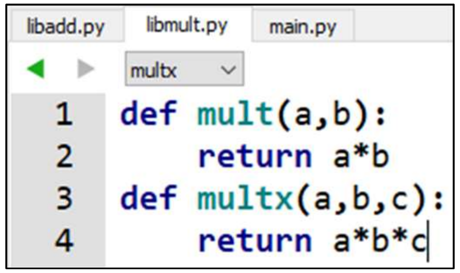
zara mult pievienošana main zaram // merging main branch from mult

TortoiseGit//merge – from «mult»

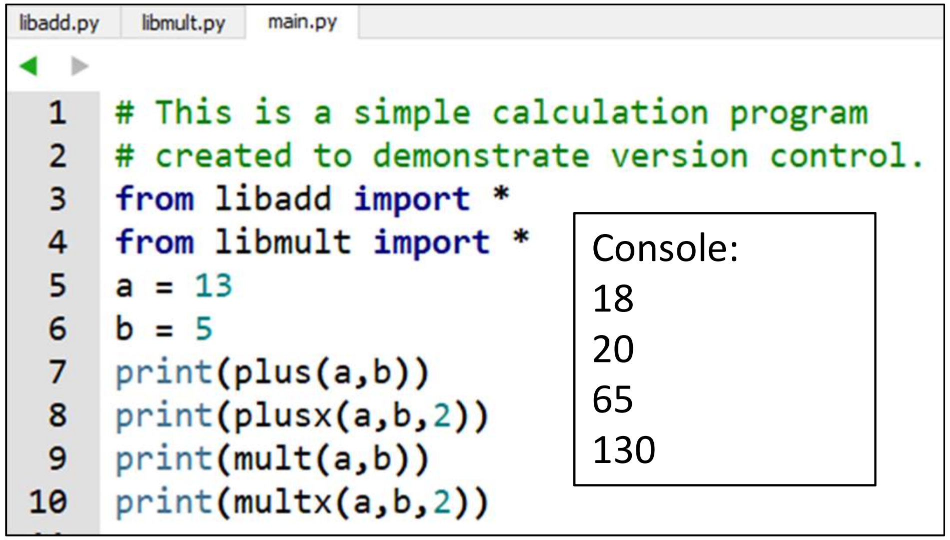




```python
def plus(a,b):
    return a+b
def plusx(a,b,c):
    return a+b+c
```



```python
def mult(a,b):
    return a*b
def multx(a,b,c):
    return a*b*c
```



```python
# This is a simple calculation program
# created to demonstrate version control.
from libadd import *
from libmult import *
a = 13
b = 5
print(plus(a,b))
print(plusx(a,b,2))
print(mult(a,b))
print(multx(a,b,2))
```

```
Console:
18
20
65
130
```

Izmaiņu ielādēšana serverī ar push // Pushing changes to the server

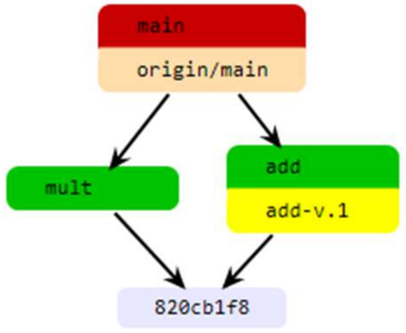
Git Sync – Push

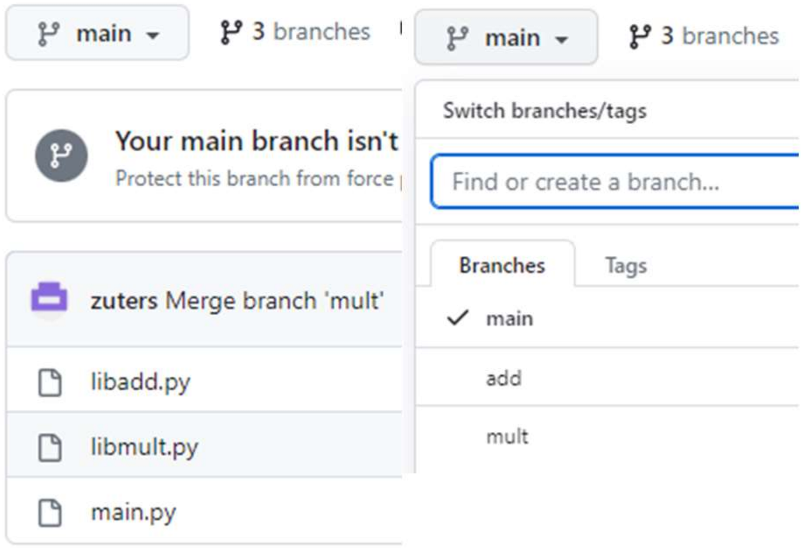
TortoiseGit//Switch/Checkout – «add»

Git Sync – Push

TortoiseGit//Switch/Checkout – «mult»

Git Sync – Push





Your main branch isn't

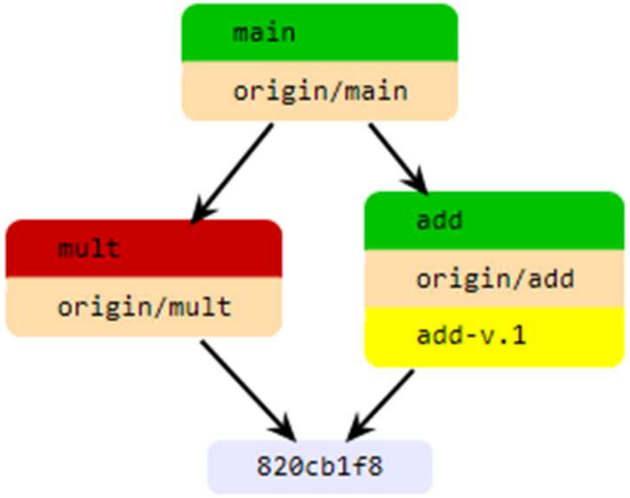
Protect this branch from force

zuters Merge branch 'mult'

libadd.py

libmult.py

main.py


main
origin/main
mult
origin/mult
add
origin/add
add-v.1
820cb1f8