bФедеральное государственное автономное образовательное учреждение высшего образования

«Национальный исследовательский университет ИТМО»

Факультет Информационных технологий и программирования

Работа: **Лабораторная работа 2:** Изучение системы управления версиями Git

Выполнили: Крамской Вадим и Аниськин Климентий

Проверил:

Санкт-Петербург

2022 г.

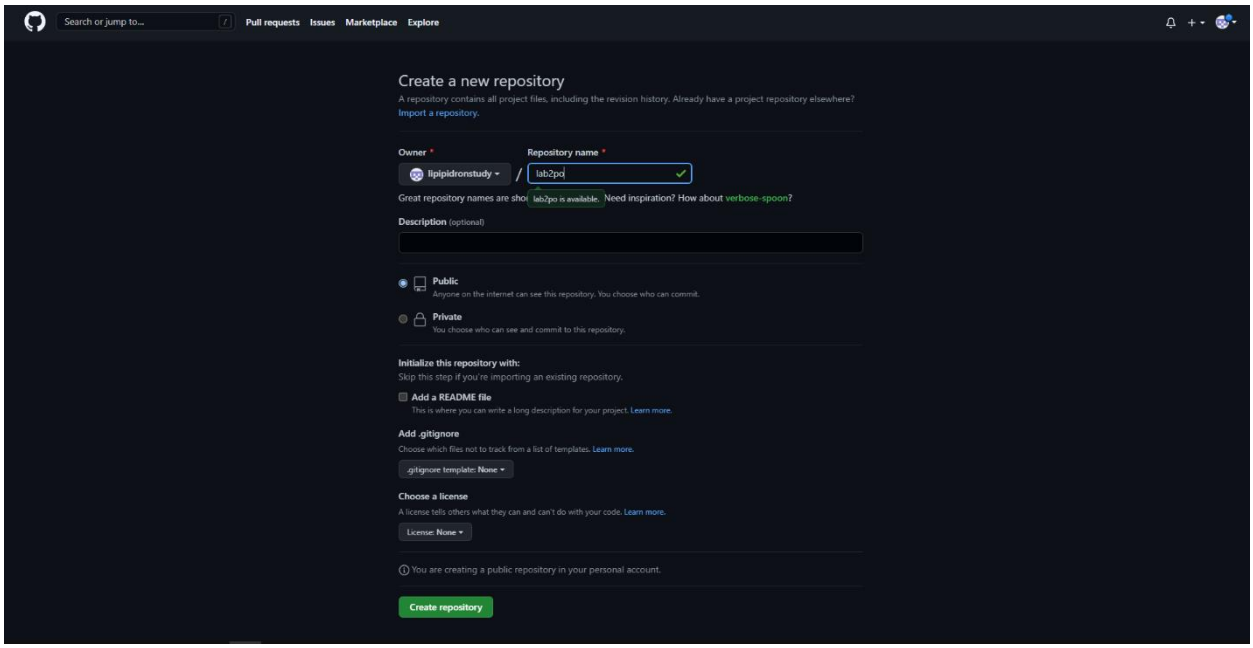
Лабораторная работа 2: Изучение системы управления версиями Git
Нужно изучить и описать систему управления версиями Git в объёме не более пяти страниц, не считая титульника. Формат сдачи следующий: я задаю вопросы по основным командам Git, вам нужно дать ответы, опираясь на ваши отчеты.
За каждый неправильный ответ отнимается один балл от числа максимального количества баллов за работу.

Разбиваемся по парам и создаем

1) Первый студент заводит репозиторий, второй делает в нее Pull request.
2) Каждому:
    a. Создание веток по модели GitFlow - https://danielkummer.github.io/git-flow-cheatsheet/index.ru_RU.html - Обязательное наличие веток фич, релиз, девелоп, хот фикс.
    b. В репозитории обязательно оформлен ReadMe.
    c. Наличие тегов.
    d. Submodules
    e. LFS
3) Также всем студентам обязательно подготовить справочник по основным командам Git с примерами. Уметь кратко ответить на вопросы о предназначении основных команд Git.

Пункт 1.

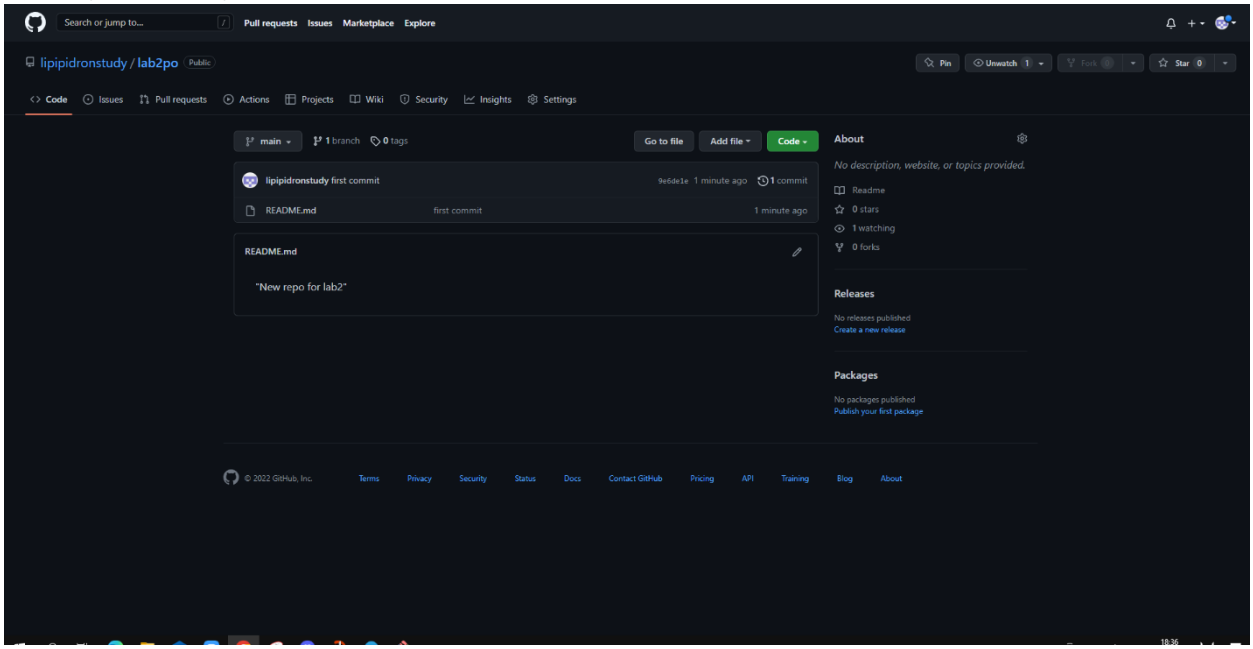
1)Создание нового репозитория на гитхабе.



2)Пушинг в репозиторий файла README.md

```
C:\Users\VadimAlg>cd C:\Users\VadimAlg\Desktop\git\lab2po

C:\Users\VadimAlg\Desktop\git\lab2po>echo "New repo for lab2" >> README.md

C:\Users\VadimAlg\Desktop\git\lab2po>git init
Initialized empty Git repository in C:/Users/VadimAlg/Desktop/git/lab2po/.git/

C:\Users\VadimAlg\Desktop\git\lab2po>git add README.md

C:\Users\VadimAlg\Desktop\git\lab2po>git commit -m "first commit"
[master (root-commit) 9e6de1e] first commit
 1 file changed, 1 insertion(+)
 create mode 100644 README.md

C:\Users\VadimAlg\Desktop\git\lab2po>git branch -M main

C:\Users\VadimAlg\Desktop\git\lab2po>git remote add origin https://github.com/lipipidronstudy/lab2po.git

C:\Users\VadimAlg\Desktop\git\lab2po>git push -u origin main
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 235 bytes | 117.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/lipipidronstudy/lab2po.git
 * [new branch]      main -> main
branch 'main' set up to track 'origin/main'.

C:\Users\VadimAlg\Desktop\git\lab2po>
```

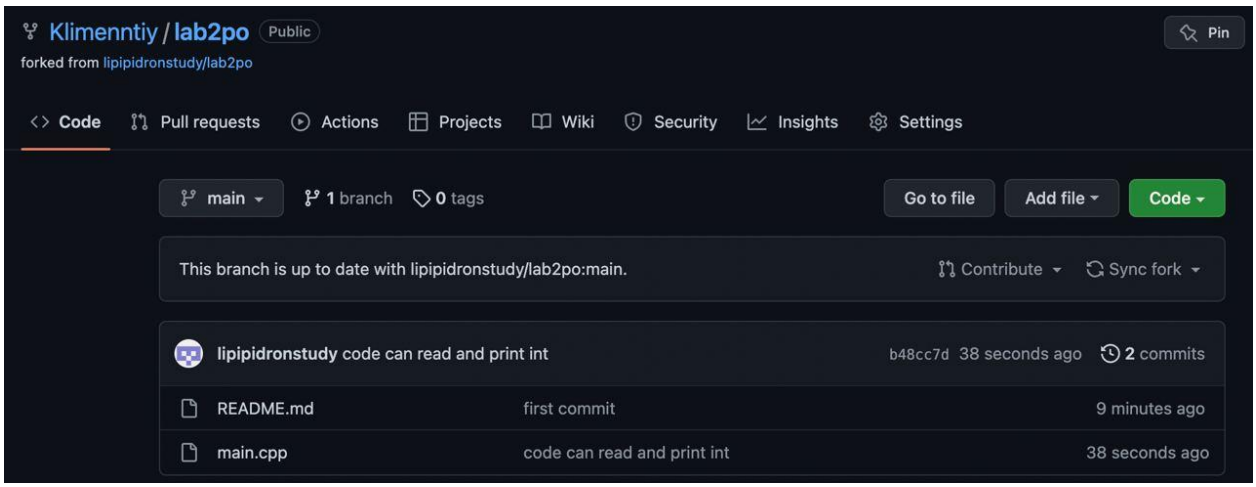
3)Результат пушинга на гитхабе



4)Пушинг нового .cpp файла

```
C:\Users\VadimAlg\Desktop\git\lab2po>git status
On branch main
Your branch is up to date with 'origin/main'.

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        main.cpp

nothing added to commit but untracked files present (use "git add" to track)

C:\Users\VadimAlg\Desktop\git\lab2po>git add main.cpp
warning: in the working copy of 'main.cpp', LF will be replaced by CRLF the next time Git touches it

C:\Users\VadimAlg\Desktop\git\lab2po>git commit -m "code can read and print int"
[main b48cc7d] code can read and print int
 1 file changed, 9 insertions(+)
 create mode 100644 main.cpp

C:\Users\VadimAlg\Desktop\git\lab2po>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

C:\Users\VadimAlg\Desktop\git\lab2po>git push
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 12 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 374 bytes | 187.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/lipipidronstudy/lab2po.git
   9e6de1e..b48cc7d  main -> main

C:\Users\VadimAlg\Desktop\git\lab2po>
```

5)Форк репозитория дургим пользователем(Климентий)



6)Клон репозитория(Климентий)

```
klimenntiy@MacBook-Pro-Klimentij ~ % cd Documents/itmo/po
klimenntiy@MacBook-Pro-Klimentij po % git clone git@github.com:Klimenntiy/lab2po.git
Cloning into 'lab2po'...
remote: Enumerating objects: 6, done.
remote: Counting objects: 100% (6/6), done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 6 (delta 0), reused 6 (delta 0), pack-reused 0
Receiving objects: 100% (6/6), done.
klimenntiy@MacBook-Pro-Klimentij po %
```

7)Создание и переключение на новую ветку(Климентий)

```
klimenntiy@MacBook-Pro-Klimentij lab2po % git branch meow
klimenntiy@MacBook-Pro-Klimentij lab2po % ls -l
total 16
-rw-r--r--  1 klimenntiy  staff   21 30 сен 18:45 README.md
-rw-r--r--  1 klimenntiy  staff  120 30 сен 18:45 main.cpp
klimenntiy@MacBook-Pro-Klimentij lab2po % git checkout meow
Switched to branch 'meow'
klimenntiy@MacBook-Pro-Klimentij lab2po %
```

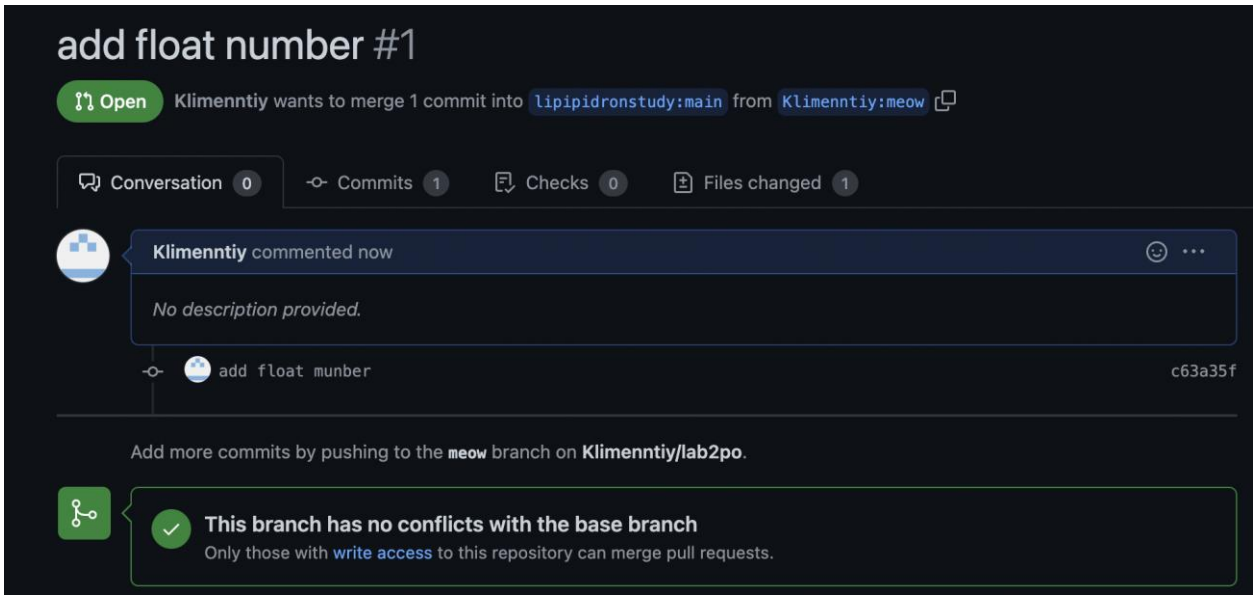
8) Внес изменения в main.cpp и закоммитил это (Климентий)

```
klimenntiy@MacBook-Pro-Klimentij lab2po % git add 'main.cpp'
klimenntiy@MacBook-Pro-Klimentij lab2po % git commit -m 'add float munber'
[meow c63a35f] add float munber
 1 file changed, 3 insertions(+)
klimenntiy@MacBook-Pro-Klimentij lab2po %
```

9)Запушил ветку в форк(Климентий)

```
klimenntiy@MacBook-Pro-Klimentij lab2po % git push --set-upstream origin meow
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 381 bytes | 381.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'meow' on GitHub by visiting:
remote:      https://github.com/Klimenntiy/lab2po/pull/new/meow
remote:
To github.com:Klimenntiy/lab2po.git
 * [new branch]      meow -> meow
Branch 'meow' set up to track remote branch 'meow' from 'origin'.
klimenntiy@MacBook-Pro-Klimentij lab2po %
```

10)Произвел Pull Request(Климентий)



Пункт 2.

Вадим.

1) Клон репозитория

```
C:\Users\VadimAlg>cd C:\Users\VadimAlg\Desktop\repo

C:\Users\VadimAlg\Desktop\repo>git clone https://github.com/lipipidronstudy/lab2po.git
Cloning into 'lab2po'...
remote: Enumerating objects: 6, done.
remote: Counting objects: 100% (6/6), done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 6 (delta 0), reused 6 (delta 0), pack-reused 0
Receiving objects: 100% (6/6), done.

C:\Users\VadimAlg\Desktop\repo>
```

2)Создание веток фич, девелоп, хотфикс и релиз

```
C:\Users\VadimAlg\Desktop\repo\lab2po>git branch -m hotfixVadim

C:\Users\VadimAlg\Desktop\repo\lab2po>git checkout main
Switched to a new branch 'main'
branch 'main' set up to track 'origin/main'.
```

```
C:\Users\VadimAlg\Desktop\repo\lab2po>git branch -m fitchVadim

C:\Users\VadimAlg\Desktop\repo\lab2po>git checkout main
Switched to a new branch 'main'
branch 'main' set up to track 'origin/main'.

C:\Users\VadimAlg\Desktop\repo\lab2po>git branch -m realeseVadim
```

```
C:\Users\VadimAlg\Desktop\repo\lab2po>git checkout main
Switched to a new branch 'main'
branch 'main' set up to track 'origin/main'.

C:\Users\VadimAlg\Desktop\repo\lab2po>git branch -m developVadim

C:\Users\VadimAlg\Desktop\repo\lab2po>git branch -a
* developVadim
  fitchVadim
  hotfixVadim
  realeseVadim
  remotes/origin/HEAD -> origin/main
  remotes/origin/main
```

3)Добавление новых функций в ветку фич, добавление тега.

```
C:\Users\VadimAlg\Desktop\repo\lab2po>git checkout fitchVadim
Switched to branch 'fitchVadim'
Your branch is up to date with 'origin/main'.

C:\Users\VadimAlg\Desktop\repo\lab2po>git status
On branch fitchVadim
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:   main.cpp

no changes added to commit (use "git add" and/or "git commit -a")

C:\Users\VadimAlg\Desktop\repo\lab2po>git add main.cpp

C:\Users\VadimAlg\Desktop\repo\lab2po>git commit -m "fitch - read and print char"
[fitchVadim 2869a0a] fitch - read and print char
 1 file changed, 3 insertions(+)
```

```
C:\Users\VadimAlg\Desktop\repo\lab2po>git tag v1.1-char

C:\Users\VadimAlg\Desktop\repo\lab2po>git tag
v1.1-char

C:\Users\VadimAlg\Desktop\repo\lab2po>
```

4) Фикс багов и тег

```
C:\Users\VadimAlg\Desktop\repo\lab2po>git checkout hotfixVadim
Switched to branch 'hotfixVadim'
Your branch is up to date with 'origin/main'.

C:\Users\VadimAlg\Desktop\repo\lab2po>git status
On branch hotfixVadim
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:   main.cpp

no changes added to commit (use "git add" and/or "git commit -a")

C:\Users\VadimAlg\Desktop\repo\lab2po>git add main.cpp

C:\Users\VadimAlg\Desktop\repo\lab2po>git commit -m "Fixed bugs"
[hotfixVadim 7643fbc] Fixed bugs
 1 file changed, 3 insertions(+)

C:\Users\VadimAlg\Desktop\repo\lab2po>git tag v1.2-Fbugs

C:\Users\VadimAlg\Desktop\repo\lab2po>git tag
v1.1-char
v1.2-Fbugs

C:\Users\VadimAlg\Desktop\repo\lab2po>
```

5) Добавление основного файла в ветку девелоп

```
C:\Users\VadimAlg\Desktop\repo\lab2po>git checkout developVadim
Switched to branch 'developVadim'
Your branch is up to date with 'origin/main'.

C:\Users\VadimAlg\Desktop\repo\lab2po>git add 'main.cpp'
fatal: pathspec ''main.cpp'' did not match any files

C:\Users\VadimAlg\Desktop\repo\lab2po>git checkout developVadim
Already on 'developVadim'
M       main.cpp
Your branch is up to date with 'origin/main'.

C:\Users\VadimAlg\Desktop\repo\lab2po>git add 'main.cpp'
fatal: pathspec ''main.cpp'' did not match any files

C:\Users\VadimAlg\Desktop\repo\lab2po>git add main.cpp

C:\Users\VadimAlg\Desktop\repo\lab2po>git commit -m "added main file"
[developVadim cab82cc] added main file
 1 file changed, 1 insertion(+), 1 deletion(-)
```

6) Добавление основного файла в ветку релиз

```
C:\Users\VadimAlg\Desktop\repo\lab2po>git checkout realeseVadim
Switched to branch 'realeseVadim'
Your branch is up to date with 'origin/main'.

C:\Users\VadimAlg\Desktop\repo\lab2po>git add main.cpp

C:\Users\VadimAlg\Desktop\repo\lab2po>git commit -m "added main file"
[realeseVadim 850ce22] added main file
 1 file changed, 1 insertion(+), 1 deletion(-)

C:\Users\VadimAlg\Desktop\repo\lab2po>
```

7) Добавление submodules

```
C:\Users\VadimAlg\Desktop\repo\lab2po>git submodule add https://github.com/lipipidronstudy/c-func.git
Cloning into 'C:/Users/VadimAlg/Desktop/repo/lab2po/c-func'...
remote: Enumerating objects: 12, done.
remote: Counting objects: 100% (12/12), done.
remote: Compressing objects: 100% (8/8), done.
remote: Total 12 (delta 1), reused 9 (delta 1), pack-reused 0
Receiving objects: 100% (12/12), done.
Resolving deltas: 100% (1/1), done.
warning: in the working copy of '.gitmodules', LF will be replaced by CRLF the next time Git touches it

C:\Users\VadimAlg\Desktop\repo\lab2po>
```

8) Установка lfs

```
C:\Users\VadimAlg\Desktop\repo\lab2po>git lfs install
Updated Git hooks.
Git LFS initialized.

C:\Users\VadimAlg\Desktop\repo\lab2po>
```

9) Добавление большого файла

```
C:\Users\VadimAlg\Desktop\repo\lab2po>git lfs track DiscordSetup.exe
Tracking "DiscordSetup.exe"

C:\Users\VadimAlg\Desktop\repo\lab2po>git commit -m "added DiscordSetup"
[main d4c2625] added DiscordSetup
 2 files changed, 4 insertions(+)
 create mode 100644 .gitmodules
 create mode 160000 c-func

C:\Users\VadimAlg\Desktop\repo\lab2po>
```

```
C:\Users\VadimAlg\Desktop\repo\lab2po>git add .gitattributes

C:\Users\VadimAlg\Desktop\repo\lab2po>git commit -m "add .gitattributes"
[main 270f8cd] add .gitattributes
 1 file changed, 1 insertion(+)
 create mode 100644 .gitattributes

C:\Users\VadimAlg\Desktop\repo\lab2po>
```

10)Пушинг всего проекта

```
C:\Users\VadimAlg\Desktop\repo\lab2po>git push origin --all
Enumerating objects: 14, done.
Counting objects: 100% (14/14), done.
Delta compression using up to 12 threads
Compressing objects: 100% (12/12), done.
Writing objects: 100% (12/12), 1007 bytes | 335.00 KiB/s, done.
Total 12 (delta 7), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (7/7), completed with 1 local object.
To https://github.com/lipipidronstudy/lab2po.git
 * [new branch]      developVadim -> developVadim
 * [new branch]      fitchVadim -> fitchVadim
 * [new branch]      hotfixVadim -> hotfixVadim
 * [new branch]      realeseVadim -> realeseVadim

C:\Users\VadimAlg\Desktop\repo\lab2po>git push origin --tags
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/lipipidronstudy/lab2po.git
 * [new tag]         v1.1-char -> v1.1-char
 * [new tag]         v1.2-Fbugs -> v1.2-Fbugs

C:\Users\VadimAlg\Desktop\repo\lab2po>
```

Климентий.

1) Клон репозитория

```
klimenntiy@MacBook-Pro-Klimentij lab2po % cd
klimenntiy@MacBook-Pro-Klimentij ~ % cd Documents/itmo/po
klimenntiy@MacBook-Pro-Klimentij po % git clone git@github.com:Klimenntiy/lab2po.git
Cloning into 'lab2po'...
remote: Enumerating objects: 9, done.
remote: Counting objects: 100% (9/9), done.
remote: Compressing objects: 100% (7/7), done.
remote: Total 9 (delta 1), reused 8 (delta 0), pack-reused 0
Receiving objects: 100% (9/9), done.
Resolving deltas: 100% (1/1), done.
klimenntiy@MacBook-Pro-Klimentij po %
```

2) Создание веток фич, девелоп, хотфикс и релиз

```
klimenntiy@MacBook-Pro-Klimentij lab2po % git checkout meow
Branch 'meow' set up to track remote branch 'meow' from 'origin'.
Switched to a new branch 'meow'
klimenntiy@MacBook-Pro-Klimentij lab2po % git branch meow_fitc
klimenntiy@MacBook-Pro-Klimentij lab2po % git branch meow_develop
klimenntiy@MacBook-Pro-Klimentij lab2po % git branch meow_realese
klimenntiy@MacBook-Pro-Klimentij lab2po % git branch meow_hot_fix
klimenntiy@MacBook-Pro-Klimentij lab2po % git branch -a
  main
* meow
  meow_develop
  meow_fitc
  meow_hot_fix
  meow_realese
```

3) Добавление новых функций в ветку фич, добавление тега.

```
klimenntiy@MacBook-Pro-Klimentij lab2po % git checkout meow_fitc
Switched to branch 'meow_fitc'
klimenntiy@MacBook-Pro-Klimentij lab2po % git add 'main.cpp'
klimenntiy@MacBook-Pro-Klimentij lab2po % git coomit -m 'add char number'
git: 'coomit' is not a git command. See 'git --help'.

The most similar command is
        commit
klimenntiy@MacBook-Pro-Klimentij lab2po % git tag v1.1-char
klimenntiy@MacBook-Pro-Klimentij lab2po % git tag
v1.1-char
klimenntiy@MacBook-Pro-Klimentij lab2po %
```

4) Фикс багов и тег

```
klimenntiy@MacBook-Pro-Klimentij lab2po % git checkout meow_hot_fix
M       main.cpp
Switched to branch 'meow_hot_fix'
klimenntiy@MacBook-Pro-Klimentij lab2po % git add 'main.cpp'
klimenntiy@MacBook-Pro-Klimentij lab2po % git commit -m 'fix add ;'
[meow_hot_fix f505475] fix add ;
 1 file changed, 5 insertions(+), 2 deletions(-)
klimenntiy@MacBook-Pro-Klimentij lab2po % git tag v1.2-fix
klimenntiy@MacBook-Pro-Klimentij lab2po % git tag
v1.1-char
v1.2-fix
```

5) Добавление основного файла в ветки релиз и девелоп

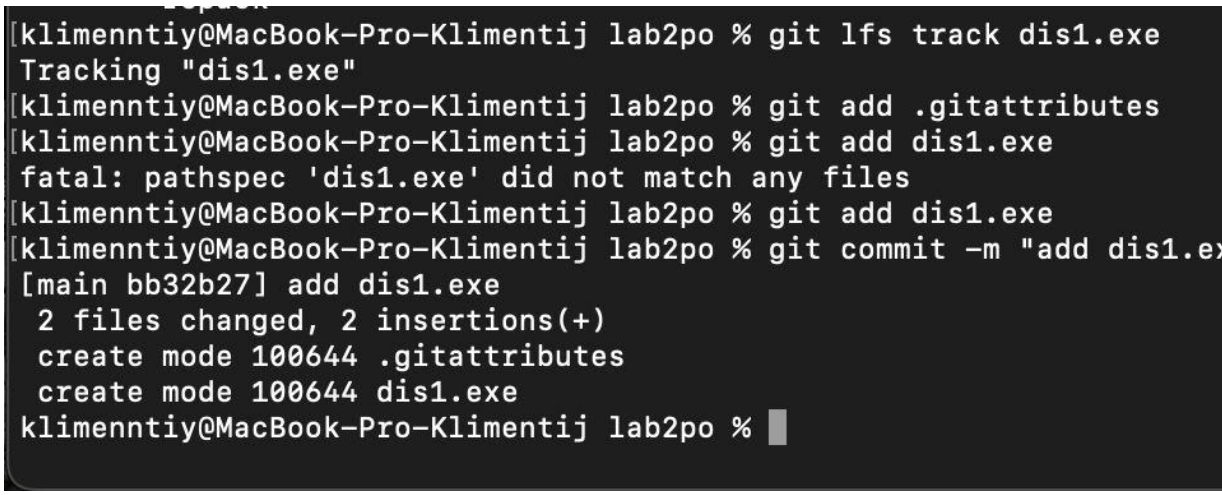
```
klimenntiy@MacBook-Pro-Klimentij lab2po % git add 'main.cpp'
klimenntiy@MacBook-Pro-Klimentij lab2po % git commit -m 'add start file'
[meow_develop ddb57d8] add start file
 1 file changed, 2 insertions(+)
klimenntiy@MacBook-Pro-Klimentij lab2po % git checkout meow_realese
Switched to branch 'meow_realese'
klimenntiy@MacBook-Pro-Klimentij lab2po % git add 'main.cpp'
klimenntiy@MacBook-Pro-Klimentij lab2po % git commit -m 'add start file'
[meow_realese b93a067] add start file
 1 file changed, 1 insertion(+)
klimenntiy@MacBook-Pro-Klimentij lab2po %
```

6) Добавление submodule

```
klimenntiy@MacBook-Pro-Klimentij lab2po % git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
klimenntiy@MacBook-Pro-Klimentij lab2po % git submodule add git@github.com:lipipidronstudy
-func.git
Cloning into '/Users/klimenntiy/Documents/itmo/po/lab2po/c-func'...
remote: Enumerating objects: 12, done.
remote: Counting objects: 100% (12/12), done.
remote: Compressing objects: 100% (8/8), done.
remote: Total 12 (delta 1), reused 9 (delta 1), pack-reused 0
Receiving objects: 100% (12/12), done.
Resolving deltas: 100% (1/1), done.
klimenntiy@MacBook-Pro-Klimentij lab2po %
```

7) Установка lfs

8) Добавление большого файла


klimenntiy@MacBook-Pro-Klimentij lab2po % git lfs track dis1.exe
Tracking "dis1.exe"
klimenntiy@MacBook-Pro-Klimentij lab2po % git add .gitattributes
klimenntiy@MacBook-Pro-Klimentij lab2po % git add dis1.exe
fatal: pathspec 'dis1.exe' did not match any files
klimenntiy@MacBook-Pro-Klimentij lab2po % git add dis1.exe
klimenntiy@MacBook-Pro-Klimentij lab2po % git commit -m "add dis1.ex
[main bb32b27] add dis1.exe
2 files changed, 2 insertions(+)
create mode 100644 .gitattributes
create mode 100644 dis1.exe
klimenntiy@MacBook-Pro-Klimentij lab2po %