HomeWork № 2 - Git

Проверяем наличие git:

```
git --version
```

```
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-50-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

 System information as of Wed May 21 05:07:39 UTC 2025

  System load:  0.0                Processes:             147
  Usage of /:   13.1% of 18.67GB   Users logged in:       0
  Memory usage: 8%                 IPv4 address for enp3s0: 37.9.53.245
  Swap usage:   0%

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.

   https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

115 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status


*** System restart required ***
Last login: Wed May 14 12:34:57 2025 from 134.17.212.130
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@dm-c2-9-53-245:~$
```

```
ubuntu@dm-c2-9-53-245:~$ git --version
git version 2.43.0
ubuntu@dm-c2-9-53-245:~$
```

Создаем каталог:

```
mkdir LestaCatalog
cd LestaCatalog
```

```
ubuntu@dm-c2-9-53-245:~$ mkdir LestaCatalog
ubuntu@dm-c2-9-53-245:~$ ls
LestaCatalog
ubuntu@dm-c2-9-53-245:~$
```

Настраиваем git:

```
git config --global color.ui true
git config --global user.name "YOUR NAME"
git config --global user.email "YOUR@EMAIL.com"
ssh-keygen -t ed25519 -C "YOUR@EMAIL.com"
```

```
cat ~/.ssh/id_ed25519.pub


ssh -T git@github.com


git init
```

```
ubuntu@dm-c2-9-53-245:~$ git config --global user.name "railsroger"
ubuntu@dm-c2-9-53-245:~$ git config --global user.email "railsroger@gmail.com"
ubuntu@dm-c2-9-53-245:~$ ssh-keygen -t ed25519 -C "railsroger@gmail.com"
Generating public/private ed25519 key pair.
Enter file in which to save the key (/home/ubuntu/.ssh/id_ed25519):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ubuntu/.ssh/id_ed25519
Your public key has been saved in /home/ubuntu/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:dYTrLGVKEJIkFhw1P9wHuOLQo4bBdg3LpWAzHQOcKPg railsroger@gmail.com
The key's randomart image is:
+--[ED25519 256]--+
|.=@OX*o..  ..    |
|+oB*+@=. o..     |
|.o ++.=oo o..    |
|  E o. ..++.     |
|   .  ..S*       |
|       .o o      |
|        .        |
|                 |
|                 |
+----[SHA256]-----+
ubuntu@dm-c2-9-53-245:~$ cat ~/.ssh/id_ed25519.pub
ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIIBooZXmBb2ZeddarFCjC3EdjQxIO/wslTI1DDrnKXvR railsroger@gmail.com
ubuntu@dm-c2-9-53-245:~$ ssh -T git@github.com
The authenticity of host 'github.com (140.82.121.3)' can't be established.
ED25519 key fingerprint is SHA256:+DiY3wvvV6TuJJhbpZisF/zLDAOzPMSvHdkr4UvCOqU.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'github.com' (ED25519) to the list of known hosts.
Hi railsroger! You've successfully authenticated, but GitHub does not provide shell access.
ubuntu@dm-c2-9-53-245:~$
```

Создаем каталоги:

```
mkdir Project1
mkdir Project2
mkdir Project3
cd Project3
mkdir Project4
```

```
touch /Project1/file1.txt
touch /Project1/file2.txt
touch /Project1/file3.txt

touch /Project2/file4.txt
touch /Project2/file5.txt
touch /Project2/file6.txt

touch /Project3/file7.txt
touch /Project3/file8.txt
touch /Project3/file9.txt
```

```
touch /Project3/Project4/file10.txt
touch /Project3/Project4/file11.txt
touch /Project3/Project4/file12.txt
```

```
Project4
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project3$ cd ..
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ ls
Project1  Project2  Project3
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ touch /Project1/file1.txt
touch: cannot touch '/Project1/file1.txt': No such file or directory
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ touch Project1/file1.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ cd Project1/
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ ls
file1.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ cd ..
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ touch Project1/file2.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ touch Project1/file3.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ cd Project1
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ ls
file1.txt  file2.txt  file3.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ cd ..
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ touch Project2/file4.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ touch Project2/file5.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ touch Project2/file6.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ touch Project3/file7.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ touch Project3/file8.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ touch Project3/file9.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ cd Project3/
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project3$ ls
Project4  file7.txt  file8.txt  file9.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project3$ cd ..
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ touch Project3/Project4/file10.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ touch Project3/Project4/file11.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ touch Project3/Project4/file12.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ ls
Project1  Project2  Project3
ubuntu@dm-c2-9-53-245:~/LestaCatalog$
```

Создаем файл .gitignore:

```
/Project2/
```

```
  GNU nano 7.2                               .gitignore
/Project2/
```
```
^G Help         ^O Write Out    ^W Where Is    ^K Cut        ^T Execute    ^C Location    M-U Undo
^X Exit         ^R Read File    ^\ Replace     ^U Paste      ^J Justify    ^/ Go To Line  M-E Redo
```
[Wrote 1 line]

```
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ cat .gitignore
/Project2/
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ |
```

```
git: 'staus' is not a git command. See 'git --help'.

The most similar command is
        status
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        .gitignore
        Project1/
        Project3/

nothing added to commit but untracked files present (use "git add" to track)
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ git init
Reinitialized existing Git repository in /home/ubuntu/LestaCatalog/.git/
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ git add .
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ git commit -m "Initial commit"
[master (root-commit) 77013dc] Initial commit
 10 files changed, 1 insertion(+)
 create mode 100644 .gitignore
 create mode 100644 Project1/file1.txt
 create mode 100644 Project1/file2.txt
 create mode 100644 Project1/file3.txt
 create mode 100644 Project3/Project4/file10.txt
 create mode 100644 Project3/Project4/file11.txt
 create mode 100644 Project3/Project4/file12.txt
 create mode 100644 Project3/file7.txt
 create mode 100644 Project3/file8.txt
 create mode 100644 Project3/file9.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog$
```

Создаем ветки:

```
git checkout -b feature/api
git checkout -b feature/ui
```

- сделать правки в файлы в каждой ветке
- сделать минимум 2 коммита

Делаем слияние:

```
git checkout main
git merge --no-ff feature/api -m "Merge feature/api in main with save
history"
```

```
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ git merge --no-ff feature/api -m "Merge feature/api in main with sav
e history"
Merge made by the 'ort' strategy.
 Project1/file1.txt | 1 +
 Project1/file2     | 7 +++++++
 Project1/file2.txt | 1 +
 3 files changed, 9 insertions(+)
 create mode 100644 Project1/file2
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ |
```

```
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ git log
commit 20cce8879ff132ec34f41976ba71729fab9d6e29 (HEAD -> master)
Merge: 77013dc 9f67407
Author: railsroger <railsroger@gmail.com>
Date:   Wed May 21 06:15:03 2025 +0000

    Merge feature/api in main with save history

commit 9f674071421acc43ff23aa1af391a6640af36826 (feature/api)
Author: railsroger <railsroger@gmail.com>
Date:   Wed May 21 05:54:37 2025 +0000

    Add html code to file2 for feature/api branch

commit 18134dc1d194a3fe7b3ae477b297882ceb2b4b7d
Author: railsroger <railsroger@gmail.com>
Date:   Wed May 21 05:48:15 2025 +0000

    Add text to file in the Procject1 catalog for feature/api branch

commit 77013dc950610868512443f58b515e5bcf526eef
Author: railsroger <railsroger@gmail.com>
Date:   Wed May 21 05:43:55 2025 +0000

    Initial commit
ubuntu@dm-c2-9-53-245:~/LestaCatalog$
```

```
#проверка изменений
git status
```

```
# проверка веток
git branch -a
```

Делаем rebase ветки feature/ui:

```
#rebase вутки относительно main
git checkout feature/ui
git rebase -i main
```

```
  GNU nano 7.2              /home/ubuntu/LestaCatalog/.git/rebase-merge/git-rebase-todo
pick 540fa69 Add text to file7 for feature/ui branch
pick 4e2a069 Add text to file9 for feature/ui branch

# Rebase 20cce88..4e2a069 onto 20cce88 (2 commands)
#
# Commands:
# p, pick <commit> = use commit
# r, reword <commit> = use commit, but edit the commit message
# e, edit <commit> = use commit, but stop for amending
# s, squash <commit> = use commit, but meld into previous commit
# f, fixup [-C | -c] <commit> = like "squash" but keep only the previous
#                    commit's log message, unless -C is used, in which case
#                    keep only this commit's message; -c is same as -C but
#                    opens the editor
# x, exec <command> = run command (the rest of the line) using shell
# b, break = stop here (continue rebase later with 'git rebase --continue')
# d, drop <commit> = remove commit
# l, label <label> = label current HEAD with a name
# t, reset <label> = reset HEAD to a label
# m, merge [-C <commit> | -c <commit>] <label> [# <oneline>]
#        create a merge commit using the original merge commit's
#        message (or the oneline, if no original merge commit was
#        specified); use -c <commit> to reword the commit message
# u, update-ref <ref> = track a placeholder for the <ref> to be updated
#                    to this position in the new commits. The <ref> is
#                    updated at the end of the rebase
#
# These lines can be re-ordered; they are executed from top to bottom.
#
                              [ Read 33 lines ]
^G Help       ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit       ^R Read File  ^\ Replace    ^U Paste      ^J Justify    ^/ Go To Line M-E Redo
```

```
[1]+  Stopped                 git log
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ git rebase -i master
Successfully rebased and updated refs/heads/feature/ui.
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ |
```

```
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ git branch -a
  feature/api
  feature/ui
* master
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ |
```

Создаем тег v1.0.0 на коммите, в котором объединены все изменения.
Подписываем тег с сообщением.

```
git tag -a v1.0.0 20cce88 -m "Consolidation of all changes"
```

```
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ git tag
v1.0.0
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ |
```

Иммитируем ошибочный коммит в любой из веток.
Отменяем его с помощью git revert, а затем — другим способом с использованием git
reset.

```
file1.txt  file2  file2.txt  file3.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ touch failed.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ nano failed.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ git add failed.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ git commit -m "Failed commit to file failed.txt"
[feature/api 7dd3d6d] Failed commit to file failed.txt
 1 file changed, 1 insertion(+)
 create mode 100644 Project1/failed.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ git log
commit 7dd3d6daf8727f6d0157a7eb54b6fbadb9ed434b (HEAD -> feature/api)
Author: railsroger <railsroger@gmail.com>
Date:   Wed May 21 06:44:12 2025 +0000

    Failed commit to file failed.txt

commit 9f674071421acc43ff23aa1af391a6640af36826
Author: railsroger <railsroger@gmail.com>
Date:   Wed May 21 05:54:37 2025 +0000

    Add html code to file2 for feature/api branch

commit 18134dc1d194a3fe7b3ae477b297882ceb2b4b7d
Author: railsroger <railsroger@gmail.com>
Date:   Wed May 21 05:48:15 2025 +0000

    Add text to file in the Procject1 catalog for feature/api branch

commit 77013dc950610868512443f58b515e5bcf526eef
Author: railsroger <railsroger@gmail.com>
Date:   Wed May 21 05:43:55 2025 +0000

    Initial commit
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ |
```

```
git revert HEAD
```

```
  GNU nano 7.2                  /home/ubuntu/LestaCatalog/.git/COMMIT_EDITMSG *
Revert "Failed commit to file failed.txt used git |revert"

This reverts commit 7dd3d6daf8727f6d0157a7eb54b6fbadb9ed434b.

# Please enter the commit message for your changes. Lines starting
# with '#' will be ignored, and an empty message aborts the commit.
#
# On branch feature/api
# Changes to be committed:
#       deleted:    Project1/failed.txt
#




^G Help        ^O Write Out   ^W Where Is    ^K Cut         ^T Execute     ^C Location    M-U Undo
^X Exit        ^R Read File   ^\ Replace     ^U Paste       ^J Justify     ^/ Go To Line  M-E Redo
```

```
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ git revert HEAD
[feature/api 4ecf590] Revert "Failed commit to file failed.txt used git revert"
 1 file changed, 1 deletion(-)
 delete mode 100644 Project1/failed.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ git log --oneline
4ecf590 (HEAD -> feature/api) Revert "Failed commit to file failed.txt used git revert"
7dd3d6d Failed commit to file failed.txt
9f67407 Add html code to file2 for feature/api branch
18134dc Add text to file in the Procject1 catalog for feature/api branch
77013dc Initial commit
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$
```

Восстанавливаемся до ошибочного коммита:

```
git reset --hard HEAD~1
```

```
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ git reset --hard HEAD~1
HEAD is now at 7dd3d6d Failed commit to file failed.txt
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ git log --oneline
7dd3d6d (HEAD -> feature/api) Failed commit to file failed.txt
9f67407 Add html code to file2 for feature/api branch
18134dc Add text to file in the Procject1 catalog for feature/api branch
77013dc Initial commit
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project1$ |
```

Моделируем ситуацию с временными изменениями.

Используем git stash для сохранения незакоммиченных изменений.

Затем восстановливаем их и продолжаем работу.

```
git stash push -m "Testing git stash"
git stash list
```

```
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project3/Project4$ git status
On branch feature/ui
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:   file10.txt

no changes added to commit (use "git add" and/or "git commit -a")
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project3/Project4$ git stash push -m "Testing git stash"
Saved working directory and index state On feature/ui: Testing git stash
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project3/Project4$ git stash list
stash@{0}: On feature/ui: Testing git stash
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project3/Project4$ git status
On branch feature/ui
nothing to commit, working tree clean
ubuntu@dm-c2-9-53-245:~/LestaCatalog/Project3/Project4$ |
```

Далее делаем коммит срочный в другой ветке.
Восстанваливаем stash коммит.

```
git stash apply stash@{0}
```

Далее продолжаем работу и вносим коммиты по желанию или можно удалить stash во все.

Настраиваем удалённый репозиторий.
Публикуем ветки, включая теги.

```
echo "# LG_Git" >> README.md
git init
git add README.md
git commit -m "Add file README.md"
```

```
git branch -M main

git remote add origin https://github.com/railsroger/LG_Git.git

git push -u origin main
```

```
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ git push --all --tags origin
fatal: options '--all' and '--tags' cannot be used together
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ git push --all origin
Username for 'https://github.com': railsroger
Password for 'https://railsroger@github.com':
Enumerating objects: 39, done.
Counting objects: 100% (39/39), done.
Delta compression using up to 2 threads
Compressing objects: 100% (29/29), done.
Writing objects: 100% (39/39), 3.23 KiB | 661.00 KiB/s, done.
Total 39 (delta 8), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (8/8), done.
To https://github.com/railsroger/LG_Git.git
 * [new branch]      feature/api -> feature/api
 * [new branch]      main -> main
 * [new branch]      master -> master
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ git push --tags origin
Username for 'https://github.com': railsroger
Password for 'https://railsroger@github.com':
remote: Support for password authentication was removed on August 13, 2021.
remote: Please see https://docs.github.com/get-started/getting-started-with-git/about-remote-repositories#
cloning-with-https-urls for information on currently recommended modes of authentication.
fatal: Authentication failed for 'https://github.com/railsroger/LG_Git.git/'
ubuntu@dm-c2-9-53-245:~/LestaCatalog$ git push --tags origin
Username for 'https://github.com': railsroger
Password for 'https://railsroger@github.com':
Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 169 bytes | 169.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/railsroger/LG_Git.git
 * [new tag]         v1.0.0 -> v1.0.0
ubuntu@dm-c2-9-53-245:~/LestaCatalog$
```