

Отчёт по лабораторной работе №1 дисциплины “Избранные главы информатики”.

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1)

Просмотрим конфигурацию гита

```
rs@arch ~/d/i/253502_SERGEEV_17> git config --list
core.pager=more
user.email=rosto4eks@mail.ru
user.name=Rosto4eks
```

2)

Создадим файловую структуру

```
rs@arch ~/d/i/253502_SERGEEV_17> mkdir IGI STRWEB
rs@arch ~/d/i/253502_SERGEEV_17> cd IGI
rs@arch ~/d/i/2/IGI> mkdir LR1 LR2 LR3 LR4 LR5
rs@arch ~/d/i/2/IGI> cd ../STRWEB/
rs@arch ~/d/i/2/STRWEB> mkdir LR1 LR2 LR3 LR4
rs@arch ~/d/i/2/STRWEB> cd ../IGI/LR1/
rs@arch ~/d/i/2/I/LR1> mkdir -p foo/755 foo/example/775 baz/744 baz/bin/177 baz/bin/bar/447 baz/bin/bar/watch/547
rs@arch ~/d/i/2/I/LR1> echo 544 > baz/bin/bar/readme.txt
rs@arch ~/d/i/2/I/LR1> echo 447 > baz/bin/bar/test.txt
rs@arch ~/d/i/2/I/LR1> tree
.
├── baz
│   ├── 744
│   └── bin
│       ├── 177
│       └── bar
│           ├── 447
│           ├── readme.txt
│           ├── test.txt
│           └── watch
│               └── 547
└── foo
    ├── 755
    └── example
        └── 775

13 directories, 2 files
```

3)

Скопируем репозиторий при помощи git clone

```
rs@arch ~/d/i/2/I/LR1> git clone https://github.com/smartikaorg/geometric_lib
Cloning into 'geometric_lib'...
remote: Enumerating objects: 35, done.
remote: Total 35 (delta 0), reused 0 (delta 0), pack-reused 35
Receiving objects: 100% (35/35), 4.60 KiB | 4.60 MiB/s, done.
Resolving deltas: 100% (6/6), done.
```

4 a)

```
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
    new file:   IGI/LR1/geometric_lib
    new file:   IGI/LR2/.gitkeep
    new file:   IGI/LR3/.gitkeep
    new file:   IGI/LR4/.gitkeep
    new file:   IGI/LR5/.gitkeep
    new file:   STRWEB/LR1/.gitkeep
    new file:   STRWEB/LR2/.gitkeep
    new file:   STRWEB/LR3/.gitkeep
    new file:   STRWEB/LR4/.gitkeep
```

4 b)

Изменим пару файлов

```
rs@arch ~/d/i/2/I/L/b/b/b/watch (master)> echo 1337 > test.txt
rs@arch ~/d/i/2/I/L/b/b/b/watch (master)> echo 228 > readme.txt

rs@arch ~/d/i/2/IGI (master)> git status
On branch master

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    modified:   LR1/baz/bin/bar/watch/readme.txt
    modified:   LR1/baz/bin/bar/watch/test.txt
```

4 c)

```
rs@arch ~/d/i/2/IGI (master)> git commit -m"master add files"
[master 54140a7] master add files
 2 files changed, 2 insertions(+), 2 deletions(-)
rs@arch ~/d/i/2/IGI (master)> git status
On branch master
nothing to commit, working tree clean
```

4 d)

```
rs@arch ~/d/i/2/I/L/b/b/b/watch (master)> touch newfile.go
rs@arch ~/d/i/2/I/L/b/b/b/watch (master)> rm *.txt
rs@arch ~/d/i/2/I/L/b/b/b/watch (master)> git status
On branch master
Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        deleted:    readme.txt
        deleted:    test.txt

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

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

4 e)

При помощи команды mv переименуем файл

```
rs@arch ~/d/i/2/I/L/b/b/b/watch (master)> mv newfile.go main.go
rs@arch ~/d/i/2/I/L/b/b/b/watch (master)> git status
On branch master
Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        deleted:    readme.txt
        deleted:    test.txt

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

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

4 f)

```
rs@arch ~/d/i/2/IGI (IGI-LR1)> git checkout IGI
Switched to branch 'IGI'
rs@arch ~/d/i/2/IGI (IGI)> git checkout -b IGI-LR2
Switched to a new branch 'IGI-LR2'
rs@arch ~/d/i/2/IGI (IGI-LR2)> rm -rf LR1 LR3 LR3 LR4 LR5
rs@arch ~/d/i/2/IGI (IGI-LR2)> git add .
rs@arch ~/d/i/2/IGI (IGI-LR2)> git status
On branch IGI-LR2
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    deleted:    LR1/baz/bin/bar/watch/main.go
    deleted:    LR1/geometric_lib
    deleted:    LR3/.gitkeep
    deleted:    LR4/.gitkeep
    deleted:    LR5/.gitkeep

rs@arch ~/d/i/2/IGI (IGI-LR2)> git commit -m"IGI-LR2 init"
[IGI-LR2 7ff6d6f] IGI-LR2 init
5 files changed, 1 deletion(-)
delete mode 100644 IGI/LR1/baz/bin/bar/watch/main.go
delete mode 160000 IGI/LR1/geometric_lib
delete mode 100644 IGI/LR3/.gitkeep
delete mode 100644 IGI/LR4/.gitkeep
delete mode 100644 IGI/LR5/.gitkeep
```

```
rs@arch ~/d/i/2/STRWEB (STRWEB-LR4)> git log --branches --oneline --graph
* 04ab88b (HEAD -> STRWEB-LR4) STRWEB-LR4 init
| * b6eed0d (STRWEB-LR3) STRWEB-LR3 init
| /
| * c2ca2a3 (STRWEB-LR2) STRWEB-LR2 init
| /
| * 5095caf (STRWEB-LR1) STRWEB-LR1 init
| /
* c4e5ac2 (STRWEB) STRWEB init
| * bd5ed6c (IGI-LR5) IGI-LR5 init
| | * c0b7874 (IGI-LR4) IGI-LR4 init
| | /
| | * 73a803f (IGI-LR3) IGI-LR3 init
| | /
| | * 7ff6d6f (IGI-LR2) IGI-LR2 init
| | /
| | * 8b19c55 (IGI-LR1) IGI-LR1 init
| | /
| * 8cab288 (IGI) IGI init
| /
* 54140a7 (master) master add files
* 2e297ad master add files
* d983dd6 master init
```

4 g)

Вывод всех коммитов:

```
rs@arch ~/d/i/2/STRWEB (STRWEB-LR4)> git log --all --oneline
04ab88b (HEAD -> STRWEB-LR4) STRWEB-LR4 init
b6eed0d (STRWEB-LR3) STRWEB-LR3 init
c2ca2a3 (STRWEB-LR2) STRWEB-LR2 init
5095caf (STRWEB-LR1) STRWEB-LR1 init
c4e5ac2 (STRWEB) STRWEB init
bd5ed6c (IGI-LR5) IGI-LR5 init
c0b7874 (IGI-LR4) IGI-LR4 init
73a803f (IGI-LR3) IGI-LR3 init
7ff6d6f (IGI-LR2) IGI-LR2 init
8b19c55 (IGI-LR1) IGI-LR1 init
8cab288 (IGI) IGI init
54140a7 (master) master add files
2e297ad master add files
d983dd6 master init
```

Выведем все коммиты за последний час:

```
rs@arch ~/d/i/2/STRWEB (STRWEB-LR4)> git log --all --oneline --after="1 hour"
04ab88b (HEAD -> STRWEB-LR4) STRWEB-LR4 init
b6eed0d (STRWEB-LR3) STRWEB-LR3 init
c2ca2a3 (STRWEB-LR2) STRWEB-LR2 init
5095caf (STRWEB-LR1) STRWEB-LR1 init
```

Выведем все коммиты после определенной даты:

```
rs@arch ~/d/i/2/STRWEB (STRWEB-LR4)> git log --all --oneline --since="Sun Feb 18 23:52:08 2024 +0300"
04ab88b (HEAD -> STRWEB-LR4) STRWEB-LR4 init
b6eed0d (STRWEB-LR3) STRWEB-LR3 init
```

Вывод коммитов определенного автора

```
rs@arch ~/d/i/2/STRWEB (STRWEB-LR4)> git log --oneline --author="Rosto4eks"
04ab88b (HEAD -> STRWEB-LR4) STRWEB-LR4 init
c4e5ac2 (STRWEB) STRWEB init
54140a7 (master) master add files
2e297ad master add files
d983dd6 master init
```

и определенного коммитера:

```
rs@arch ~/d/i/2/STRWEB (STRWEB-LR4)> git log --oneline --committer="Rosto4eks"
04ab88b (HEAD -> STRWEB-LR4) STRWEB-LR4 init
c4e5ac2 (STRWEB) STRWEB init
54140a7 (master) master add files
2e297ad master add files
d983dd6 master init
```

4 h)

С помощью флага -p можно посмотреть подробную информацию о коммитах

```
rs@arch ~/d/i/2/STRWEB (master)> git log -p
commit 54140a70aa50c93121c3d25b116eef9f18cb4710 (HEAD -> master)
Author: Rosto4eks <rosto4eks@mail.ru>
Date: Sun Feb 18 11:42:35 2024 +0300

    master add files

diff --git a/IGI/LR1/baz/bin/bar/watch/readme.txt b/IGI/LR1/baz/bin/bar/watch/readme.txt
index 4970e69..9be0dc9 100644
--- a/IGI/LR1/baz/bin/bar/watch/readme.txt
+++ b/IGI/LR1/baz/bin/bar/watch/readme.txt
@@ -1,1 @@
-544
+228
```

С помощью флага -stat посмотрим более короткую информацию

```
rs@arch ~/d/i/2/STRWEB (master) [SIGHUP]> git log --stat
commit 54140a70aa50c93121c3d25b116eef9f18cb4710 (HEAD ->
master)
Author: Rosto4eks <rosto4eks@mail.ru>
Date:   Sun Feb 18 11:42:35 2024 +0300

    master add files

IGI/LR1/baz/bin/bar/watch/readme.txt | 2 +-
IGI/LR1/baz/bin/bar/watch/test.txt   | 2 +-
2 files changed, 2 insertions(+), 2 deletions(-)
```

флаг `--shortstat` скрывает проиндексированные файлы

```
rs@arch ~/d/i/2/STRWEB (master) [SIGHUP]> git log --shortstat
commit 54140a70aa50c93121c3d25b116eef9f18cb4710 (HEAD ->
master)
Author: Rosto4eks <rosto4eks@mail.ru>
Date:   Sun Feb 18 11:42:35 2024 +0300

    master add files

2 files changed, 2 insertions(+), 2 deletions(-)
```

флаг `--name-only` показывает только имена проиндексированных файлов

```
rs@arch ~/d/i/2/STRWEB (master)> git log --name-only
commit 54140a70aa50c93121c3d25b116eef9f18cb4710 (HEAD ->
master)
Author: Rosto4eks <rosto4eks@mail.ru>
Date:   Sun Feb 18 11:42:35 2024 +0300

    master add files

IGI/LR1/baz/bin/bar/watch/readme.txt
IGI/LR1/baz/bin/bar/watch/test.txt
```

флаг `--name-stat` отображает также что произошло с файлом

```
commit 54140a70aa50c93121c3d25b116eef9f18cb4710 (HEAD ->
master)
Author: Rosto4eks <rosto4eks@mail.ru>
Date:   Sun Feb 18 11:42:35 2024 +0300

    master add files

M       IGI/LR1/baz/bin/bar/watch/readme.txt
M       IGI/LR1/baz/bin/bar/watch/test.txt
```

флаг `--relative-date` показывает сколько времени прошло с момента создания коммита

```
rs@arch ~/d/i/2/STRWEB (master)> git log --relative-date
commit 54140a70aa50c93121c3d25b116eef9f18cb4710 (HEAD ->
master)
Author: Rosto4eks <rosto4eks@mail.ru>
Date:   13 hours ago

    master add files
```

флаг `-pretty` позволяет задать формат вывода информации

```
rs@arch ~/d/i/2/STRWEB (master)> git log --pretty="%h %ad | %s%d [%an]" --date="short"
54140a7 2024-02-18 | master add files (HEAD -> master) [Rosto4eks]
2e297ad 2024-02-18 | master add files [Rosto4eks]
d983dd6 2024-02-18 | master init [Rosto4eks]
```

Флаг `--graph` выводит коммита в виде графа


```
rs@arch ~/d/i/2/STRWEB (master)> git log --graph --all --oneline
* 04ab88b (STRWEB-LR4) STRWEB-LR4 init
| * b6eed0d (STRWEB-LR3) STRWEB-LR3 init
| /
| * c2ca2a3 (STRWEB-LR2) STRWEB-LR2 init
| /
| * 5095caf (STRWEB-LR1) STRWEB-LR1 init
| /
* c4e5ac2 (STRWEB) STRWEB init
| * bd5ed6c (IGI-LR5) IGI-LR5 init
| | * c0b7874 (IGI-LR4) IGI-LR4 init
| | /
| | * 73a803f (IGI-LR3) IGI-LR3 init
| | /
| | * 7ff6d6f (IGI-LR2) IGI-LR2 init
| | /
| | * 8b19c55 (IGI-LR1) IGI-LR1 init
| | /
| * 8cab288 (IGI) IGI init
| /
* 54140a7 (HEAD -> master) master add files
* 2e297ad master add files
* d983dd6 master init
```

4 i)

С помощью команды diff можно сравнить два коммита

```
rs@arch ~/d/i/2/STRWEB (master)> git diff 5414 2e29
diff --git a/IGI/LR1/baz/bin/bar/watch/readme.txt b/IGI/LR1/baz/bin/bar/watch/readme.txt
index 9be0dc9..4970e69 100644
--- a/IGI/LR1/baz/bin/bar/watch/readme.txt
+++ b/IGI/LR1/baz/bin/bar/watch/readme.txt
@@ -1,1 @@
-228
+544
diff --git a/IGI/LR1/baz/bin/bar/watch/test.txt b/IGI/LR1/baz/bin/bar/watch/test.txt
index a369ea6..e9b7520 100644
--- a/IGI/LR1/baz/bin/bar/watch/test.txt
+++ b/IGI/LR1/baz/bin/bar/watch/test.txt
@@ -1,1 @@
-1337
+447
```

4 j)

```
rs@arch ~/d/i/253502_SERGEEV_17 (master)> echo "17 номер варианта" > test.txt
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git add test.txt
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git commit -m"added new file"
[master 905c5e6] added new file
 1 file changed, 1 insertion(+)
 create mode 100644 test.txt
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git status
On branch master
nothing to commit, working tree clean
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git reset HEAD~
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git status
On branch master
Untracked files:
  (use "git add <file>..." to include in what will be committed)
    test.txt
```

4 k)

git reset “имя файла” для того чтобы убрать индексацию файла

```
rs@arch ~/d/i/253502_SERGEEV_17 (master)> echo 12345 > data.dat
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git add .
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   data.dat

rs@arch ~/d/i/253502_SERGEEV_17 (master)> git reset data.dat
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git status
On branch master
Untracked files:
  (use "git add <file>..." to include in what will be committed)
    data.dat
```

4 l)

git restore - для восстановления значения от последнего коммита

```
rs@arch ~/d/i/253502_SERGEEV_17 (master)> echo 12 > data.dat
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git status
On branch master
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:   data.dat

no changes added to commit (use "git add" and/or "git commit -a")
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git restore data.dat
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git status
On branch master
nothing to commit, working tree clean
```

5 a)

Quick setup — if you've done this kind of thing before

HTTPS

SSH

git@github.com:Rosto4eks/IGI.git

Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).

...or create a new repository on the command line

```
echo "# IGI" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin git@github.com:Rosto4eks/IGI.git
git push -u origin main
```

5 b)

Подключим удаленный репозиторий:

```
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git remote add origin git@github.com:Rosto4eks/IGI.git
```

Отправим локальные изменения в удаленный репозиторий

```
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git push --all
Enumerating objects: 43, done.
Counting objects: 100% (43/43), done.
Delta compression using up to 8 threads
Compressing objects: 100% (13/13), done.
Writing objects: 100% (35/35), 2.21 KiB | 564.00 KiB/s, done.
Total 35 (delta 9), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (9/9), completed with 1 local object.
To github.com:Rosto4eks/IGI.git
* [new branch]      IGI -> IGI
* [new branch]      IGI-LR1 -> IGI-LR1
* [new branch]      IGI-LR2 -> IGI-LR2
* [new branch]      IGI-LR3 -> IGI-LR3
* [new branch]      IGI-LR4 -> IGI-LR4
* [new branch]      IGI-LR5 -> IGI-LR5
* [new branch]      STRWEB -> STRWEB
* [new branch]      STRWEB-LR1 -> STRWEB-LR1
* [new branch]      STRWEB-LR2 -> STRWEB-LR2
* [new branch]      STRWEB-LR3 -> STRWEB-LR3
* [new branch]      STRWEB-LR4 -> STRWEB-LR4
```

5 c)

```
rs@arch ~/d/i/253502_SERGEEV_17 (master)> echo 123 > data.dat
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git add .
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git commit -m"changed data.dat"
[master 174ebc1] changed data.dat
1 file changed, 1 insertion(+), 1 deletion(-)
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 253 bytes | 253.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To github.com:Rosto4eks/IGI.git
40dcc6b..174ebc1 master -> master
```

5 d)

Repository name

IGI-LABS

IGI-LABS is available. repository

Rename

5 e)

Внесем изменения в удаленном репозитории



The screenshot shows a GitHub web interface for a file named 'data'. The file content is visible as '1 data'. The interface includes tabs for 'Code', 'Blame', and 'Raw', along with a download icon and a GitHub Copilot suggestion.

Получим изменения

```
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git pull
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 906 bytes | 906.00 KiB/s, done.
From github.com:Rosto4eks/IGI
   174ebc1..dd16090  master      -> origin/master
Updating 174ebc1..dd16090
Fast-forward
 data.dat | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)
```

5 f)

```
rs@arch ~/d/i/253502_SERGEEV_17 (master)> git log
dd16090 2024-02-19 | Update data.dat (HEAD -> master, origin/master) [Rostislav]
174ebc1 2024-02-19 | changed data.dat [Rosto4eks]
40dcc6b 2024-02-19 | added new file [Rosto4eks]
54140a7 2024-02-18 | master add files [Rosto4eks]
2e297ad 2024-02-18 | master add files [Rosto4eks]
d983dd6 2024-02-18 | master init [Rosto4eks]
```