

Отчет по лабораторной работе №1

Работа с git.

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1 Цель работы

Познакомиться с системой контроля версий git, выполнить базовые команды по созданию, изменению и управлению локальными репозиториями git.

2 Выполнение лабораторной работы

```
credential.https://github.com.helper=  
credential.https://github.com.helper=!/usr/bin/gh auth git-credential  
credential.https://gist.github.com.helper=  
credential.https://gist.github.com.helper=!/usr/bin/gh auth git-credential  
user.email=1132226531@pfur.ru  
user.signingkey=D2497A499A0471D9  
user.name=Danila Starikov  
commit.gpgsign=true  
safe.directory=/home/dastarikov/.oh-my-zsh  
core.autocrlf=true  
core.quotepath=off
```

Рис. 2.1: Просмотр глобальных настроек git.

```
git config --global core.autocrlf input  
git config --global core.autocrlf true  
git config --global core.quotepath off
```

Рис. 2.2: Изменение параметров git.

```
→ Математическое моделирование rm -r hello  
→ Математическое моделирование mkdir hello  
→ Математическое моделирование cd hello  
→ hello touch hello.html  
→ hello echo "Hello, world\!" > hello.html  
→ hello cat hello.html  
Hello, world!  
→ hello
```

Рис. 2.3: Создание каталога hello.

```

> hello git init
hint: Using 'master' as the name for the initial branch. This default branch name
hint: is subject to change. To configure the initial branch name to use in all
hint: of your new repositories, which will suppress this warning, call:
hint:
hint:   git config --global init.defaultBranch <name>
hint:
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this command:
hint:
hint:   git branch -m <name>
Initialized empty Git repository in /home/dastarikov/work/study/2024-2025/Математическое моделирование/hello/.git/
> hello git:(master) × git add hello.html
warning: in the working copy of 'hello.html', LF will be replaced by CRLF the next time Git touches it
> hello git:(master) × git commit -m "Initial commit"
[master (root-commit) 4c4eb50] Initial commit
1 file changed, 1 insertion(+)
create mode 100644 hello.html
> hello git:(master) git status
On branch master
nothing to commit, working tree clean
> hello git:(master)

```

Рис. 2.4: Создание репозитория.

```

> hello git:(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:   hello.html

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

```

Рис. 2.5: Просмотр статуса после внесения изменений.

```

> hello git:(master) × git add hello.html
warning: in the working copy of 'hello.html', LF will be replaced by CRLF the next time Git touches it
> hello git:(master) × git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   hello.html

```

Рис. 2.6: Индексация изменений.

```

> hello git:(master) × git commit
[master 0fe363d] Added h1 tag
1 file changed, 1 insertion(+), 1 deletion(-)
> hello git:(master) git status
On branch master
nothing to commit, working tree clean

```

Рис. 2.7: Коммит изменений.


```

> hello git:(master) emacs hello.html
> hello git:(master) × git add hello.html
warning: in the working copy of 'hello.html', LF will be replaced by CRLF the next time Git touches it
> hello git:(master) × emacs hello.html &
[1] 169861
> hello git:(master) × git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   hello.html

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:   hello.html

> hello git:(master) ×

```

Рис. 2.8: Изменение файла после изменения, но до коммита.

```

> hello git:(master) × git commit -m "Added standard HTML page tags"
[master 4881e5d] Added standard HTML page tags
 1 file changed, 5 insertions(+), 1 deletion(-)
> hello git:(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:   hello.html

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

```

Рис. 2.9: Коммит изменений.

```

> hello git:(master) × git add .
warning: in the working copy of 'hello.html', LF will be replaced by CRLF the next time Git touches it
> hello git:(master) × git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   hello.html

```

Рис. 2.10: Индексация всех изменений в директории.

```

> hello git:(master) × git commit -m "Added HTML Header"
[master dcb8ae1] Added HTML Header
 1 file changed, 2 insertions(+)

```

Рис. 2.11: Коммит изменений.

```

commit dcb8ae123541bb2e823d5d14667cb49f294f29cc (HEAD -> master)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:40:13 2025 +0300

    Added HTML Header

commit 4881e5d9ad7dc7048a66b2d1e92653a8ed2cd882
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:39:31 2025 +0300

    Added standard HTML page tags

commit 0fe363d31e58acf34db90e51bda9710b62d9c194
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:35:10 2025 +0300

    Added h1 tag

commit 4c4eb50fecc2b240deb885fabca9cfec5ad0166b
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:33:19 2025 +0300

    Initial commit

```

Рис. 2.12: Просмотр логов репозитория.

```

> hello git:(master) git checkout 4c4eb50fecc2b240deb885fabca9cfec5ad0166b
Note: switching to '4c4eb50fecc2b240deb885fabca9cfec5ad0166b'.

You are in 'detached HEAD' state. You can look around, make experimental
changes and commit them, and you can discard any commits you make in this
state without impacting any branches by switching back to a branch.

If you want to create a new branch to retain commits you create, you may
do so (now or later) by using -c with the switch command. Example:

    git switch -c <new-branch-name>

Or undo this operation with:

    git switch -

Turn off this advice by setting config variable advice.detachedHead to false

HEAD is now at 4c4eb50 Initial commit
> hello git:(4c4eb50) cat hello.html
Hello, world!

```

Рис. 2.13: Переход к старой версии репозитория.

```

→ hello git:(4c4eb50) git checkout master
Previous HEAD position was 4c4eb50 Initial commit
Switched to branch 'master'
→ hello git:(master) cat hello.html
<html>
  <head>
</head>
  <body>
    <h1>Hello, world!</h1>
  </body>
</html>

```

Рис. 2.14: Возврат к последней версии.

```

→ hello git:(master) git tag v1
→ hello git:(master) git checkout v1^
Note: switching to 'v1^'.

You are in 'detached HEAD' state. You can look around, make experimental
changes and commit them, and you can discard any commits you make in this
state without impacting any branches by switching back to a branch.

If you want to create a new branch to retain commits you create, you may
do so (now or later) by using -c with the switch command. Example:

    git switch -c <new-branch-name>

Or undo this operation with:

    git switch -

Turn off this advice by setting config variable advice.detachedHead to false

HEAD is now at 4881e5d Added standard HTML page tags
→ hello git:(4881e5d) cat hello.html
<html>
  <body>
    <h1>Hello, world!</h1>
  </body>
</html>

```

Рис. 2.15: Создание тега.

```

→ hello git:(4881e5d) git tag v1-beta
→ hello git:(v1-beta) git checkout v1
Previous HEAD position was 4881e5d Added standard HTML page tag
HEAD is now at dcb8ae1 Added HTML Header
→ hello git:(v1) git checkout v1-beta
Previous HEAD position was dcb8ae1 Added HTML Header
HEAD is now at 4881e5d Added standard HTML page tags
→ hello git:(v1-beta)

```

Рис. 2.16: Создание второго тега.

```

→ hello git:(master) vim hello.html
→ hello git:(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:   hello.html

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

```

Рис. 2.17: Изменение файла.

```

→ hello git:(master) × git checkout hello.html
Updated 1 path from the index
→ hello git:(master) git status
On branch master
nothing to commit, working tree clean
→ hello git:(master) cat hello.html
<html>
  <head>
  </head>
  <body>
    <h1>Hello, world!</h1>
  </body>
</html>

```

Рис. 2.18: Отмена изменений для непроиндексированного файла.

```

→ hello git:(master) vim hello.html
→ hello git:(master) × git add hello.html
→ hello git:(master) × git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   hello.html

→ hello git:(master) × git res
git: 'res' is not a git command. See 'git --help'.

The most similar commands are
    reset
    restore
    grep
    rebase
→ hello git:(master) × git reset HEAD hello.html
Unstaged changes after reset:
M       hello.html
→ hello git:(master) × git checkout hello.html
Updated 1 path from the index
→ hello git:(master) git status
On branch master
nothing to commit, working tree clean

```

Рис. 2.19: Отмена изменений для проиндексированного файла.

```

commit dd04ff9f65d3185687f92fa5ae929a30600ab0b4 (HEAD -> master)
Author: Danila Starikov <1132226531@pfur.ru>
Date:   Sat Feb 22 21:50:13 2025 +0300

    Revert "Oops, we didnt want this commit"

    This reverts commit b75d6aea10e01e106ca7775c69e5890159d01d8f.

commit b75d6aea10e01e106ca7775c69e5890159d01d8f
Author: Danila Starikov <1132226531@pfur.ru>
Date:   Sat Feb 22 21:49:52 2025 +0300

    Oops, we didnt want this commit

```

Рис. 2.20: Лог отмены коммита.

```
commit dcb8ae123541bb2e823d5d14667cb49f294f29cc (HEAD -> master, tag: v1)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:40:13 2025 +0300

    Added HTML Header

commit 4881e5d9ad7dc7048a66b2d1e92653a8ed2cd882 (tag: v1-beta)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:39:31 2025 +0300

    Added standard HTML page tags

commit 0fe363d31e58acf34db90e51bda9710b62d9c194
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:35:10 2025 +0300

    Added h1 tag

commit 4c4eb50fecc2b240deb885fabca9cfec5ad0166b
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:33:19 2025 +0300

    Initial commit
```

Рис. 2.21: Просмотр логов после git reset.

```
commit dd04ff9f65d3185687f92fa5ae929a30600ab0b4 (tag: oops)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:50:13 2025 +0300

    Revert "Oops, we didnt want this commit"

    This reverts commit b75d6aea10e01e106ca7775c69e5890159d01d8f.

commit b75d6aea10e01e106ca7775c69e5890159d01d8f
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:49:52 2025 +0300

    Oops, we didnt want this commit

commit dcb8ae123541bb2e823d5d14667cb49f294f29cc (HEAD -> master, tag: v1)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:40:13 2025 +0300

    Added HTML Header

commit 4881e5d9ad7dc7048a66b2d1e92653a8ed2cd882 (tag: v1-beta)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:39:31 2025 +0300

    Added standard HTML page tags

commit 0fe363d31e58acf34db90e51bda9710b62d9c194
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:35:10 2025 +0300
```

Рис. 2.22: Создание тега oops.

```

commit dcb8ae123541bb2e823d5d14667cb49f294f29cc (HEAD -> master, tag: v1)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:40:13 2025 +0300

    Added HTML Header

commit 4881e5d9ad7dc7048a66b2d1e92653a8ed2cd882 (tag: v1-beta)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:39:31 2025 +0300

    Added standard HTML page tags

commit 0fe363d31e58acf34db90e51bda9710b62d9c194
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:35:10 2025 +0300

    Added h1 tag

commit 4c4eb50fecc2b240deb885fabca9cfec5ad0166b
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:33:19 2025 +0300

    Initial commit

```

Рис. 2.23: Git reset к тегу до ненужного коммита.

```

→ hello git:(master) git tag -d oops
Deleted tag 'oops' (was dd04ff9)
→ hello git:(master) git log --all

```

Рис. 2.24: Удаление тега oops.

```

→ hello git:(master) vim hello.html
→ hello git:(master) × git add hello.html
→ hello git:(master) × git commit -m "Add an author comment"
[master 25076ff] Add an author comment
1 file changed, 1 insertion(+)
→ hello git:(master) vim hello.html
→ hello git:(master) × git add hello.html
→ hello git:(master) × git commit --amend -m "Add an author comment"
[master c8618d5] Add an author comment
Date: Sat Feb 22 21:54:04 2025 +0300
1 file changed, 1 insertion(+)

```

Рис. 2.25: Внесение изменения в созданный коммит.


```

commit c8618d535f88c05a25a7e3bc787c23403675230a (HEAD -> master)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:54:04 2025 +0300

    Add an author comment

commit dcb8ae123541bb2e823d5d14667cb49f294f29cc (tag: v1)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:40:13 2025 +0300

    Added HTML Header

commit 4881e5d9ad7dc7048a66b2d1e92653a8ed2cd882 (tag: v1-beta)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:39:31 2025 +0300

    Added standard HTML page tags

commit 0fe363d31e58acf34db90e51bda9710b62d9c194
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:35:10 2025 +0300

    Added h1 tag

commit 4c4eb50fecc2b240deb885fabca9cfec5ad0166b
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:33:19 2025 +0300

    Initial commit

```

Рис. 2.26: Просмотр логов.

```

→ hello git:(master) mkdir lib
→ hello git:(master) git mv hello.html lib
→ hello git:(master) × git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    renamed:    hello.html -> lib/hello.html

```

Рис. 2.27: Перемещение hello.html в отдельный каталог.

```

> hello git:(master) vim index.html
> hello git:(master) × git add index.html
warning: in the working copy of 'index.html', LF will be replaced by CRLF the next time Git touches it
> hello git:(master) × git commit -m "Added index.html"
[master 15e988f] Added index.html
1 file changed, 5 insertions(+)
create mode 100644 index.html

```

Рис. 2.28: Создание нового файла.

```

> hello git:(master) ls -C .git
branches  COMMIT_EDITMSG  config  description  HEAD  hooks  index  info  logs  objects  ORIG_HEAD  refs
> hello git:(master) ls -C .git/objects
03 0f 13 14 15 25 48 4c 5a 60 62 68 74 7d 83 8f 9f aa af b7 b8 bb c8 dc dd ee fd info pack
> hello git:(master) ls -C .git/objects/13
661d59764d20c81d71265393f807ceaff95adf
> hello git:(master) cat .git/config
[core]
    repositoryformatversion = 0
    filemode = true
    bare = false
    logallrefupdates = true
> hello git:(master) ls .git/refs
heads  tags
> hello git:(master) ls .git/refs/heads
master
> hello git:(master) ls .git/refs/tags
v1  v1-beta
> hello git:(master) cat .git/refs/tags/v1
dcb8ae123541bb2e823d5d14667cb49f294f29cc

```

Рис. 2.29: Просмотр каталога .git.

```

> hello git:(master) git cat-file -t HEAD
commit
> hello git:(master) git cat-file -p HEAD
tree 7d5d847fc94f91b6554ae30079f80d063d432e32
parent 8301b2ffc57e4c16b45f950e5076a0f1e0582419
author Danila Starikov <1132226531@pfur.ru> 1740250671 +0300
committer Danila Starikov <1132226531@pfur.ru> 1740250671 +0300
gpgsig -----BEGIN PGP SIGNATURE-----

iHUEABYKAB0WIQT3Z1VqTtY8K5t5Y0rSSXpJmgRx2QUCZ7oeLwAKCRDSSXpJmgRx
2XktAP92ehNKmVYXc+GX863XugnrxirfVXLuaBcPrjKfJINXXgEAz0Hxz5SMldOX
tLVkb1F7KChLT7Z0ee0JC8XFyo7KQgY=
=cF5B
-----END PGP SIGNATURE-----

Added index.html

```

Рис. 2.30: Просмотр файла HEAD.

```

> hello git:(master) git cat-file -p 7d5d847fc94f91b6554ae30079f80d063d432e32
100644 blob 14233c5033cb05f1ab74742d59432e5d5a447749    index.html
040000 tree 036defd4fdebd1f339abe3e00a42d8ee3c21d3c6    lib
> hello git:(master) git cat-file -p 036defd4fdebd1f339abe3e00a42d8ee3c21d3c6
100644 blob 62907dc2a08959adc9916a1679ed23c9335d15b4    hello.html
> hello git:(master) git cat-file -p 62907dc2a08959adc9916a1679ed23c9335d15b4
<!-- Author: Danila A. Starikov (starikov-ad@rudn.ru)-->
<html>
  <head>
</head>
  <body>
    <h1>Hello, world!</h1>
  </body>
</html>

```

Рис. 2.31: Просмотр hello.html через хэш.

```

> hello git:(master) git checkout -b style
Switched to a new branch 'style'
> hello git:(style) git status
On branch style
nothing to commit, working tree clean

```

Рис. 2.32: Создание новой ветки.

```

> hello git:(style) vim lib/style.css
> hello git:(style) x git add lib/style.css
warning: in the working copy of 'lib/style.css', LF will be replaced by CRLF the next time Git touches it
> hello git:(style) x git commit -m "Added css stylesheet"
[style d4e2177] Added css stylesheet
1 file changed, 3 insertions(+)
create mode 100644 lib/style.css
> hello git:(style) vim index.html
> hello git:(style) vim lib/hello.html
> hello git:(style) x git add lib/hello.html
> hello git:(style) x git commit -m "Hello uses style.css"
[style 7efb177] Hello uses style.css
1 file changed, 1 insertion(+)
> hello git:(style) vim index.html
> hello git:(style) x git add index.html
warning: in the working copy of 'index.html', LF will be replaced by CRLF the next time Git touches it
> hello git:(style) x git commit -m "Updated index.html"
[style ff29f25] Updated index.html
1 file changed, 3 insertions(+)

```

Рис. 2.33: Добавление файла со стилями.

```

commit ff29f254613942e45925e0693e85c59d59deef80 (HEAD -> style)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 22:06:47 2025 +0300

    Updated index.html

commit 7efb1776ebf75a83824f246d22d4f6fb0f50ca8b
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 22:05:58 2025 +0300

    Hello uses style.css

commit d4e2177b3b8af0751eddbc7cdfb1d351c0e0b5ca
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 22:04:13 2025 +0300

    Added css stylesheet

commit 15e988f566f29b8e1510a7d62c3738158447819c (master)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:57:51 2025 +0300

    Added index.html

commit 8301b2ffc57e4c16b45f950e5076a0f1e0582419
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:56:30 2025 +0300

    Moved hello.html to lib

```

Рис. 2.34: Просмотр логов.

```

→ hello git:(style) git checkout master
Switched to branch 'master'
→ hello git:(master) cat lib/hello.html
<!-- Author: Danila A. Starikov (starikov-ad@rudn.ru)-->
<html>
  <head>
  </head>
  <body>
    <h1>Hello, world!</h1>
  </body>
</html>
→ hello git:(master)

```

Рис. 2.35: Возвращение в master ветку.

```

> hello git:(master) git checkout style
Switched to branch 'style'
> hello git:(style) cat lib/hello.html
<!-- Author: Danila A. Starikov (starikov-ad@rudn.ru)-->
<html>
  <head>
    <link type="text/css" rel="stylesheet" media="all" href="style.css" />
  </head>
  <body>
    <h1>Hello, world!</h1>
  </body>
</html>

```

Рис. 2.36: Сравнение содержимого hello.html в ветке style.

```

> hello git:(master) git checkout master
Already on 'master'
> hello git:(master) vim README.md
> hello git:(master) x git add README.md
warning: in the working copy of 'README.md', LF will be replaced by CRLF the next time Git touches it
> hello git:(master) x git commit -m "Added README"
[master bd43232] Added README
1 file changed, 1 insertion(+)
create mode 100644 README.md

```

Рис. 2.37: Добавление README.

```

* commit bd4323222394901ef1c23714c2df2f3ec1143387 (HEAD -> master)
| Author: Danila Starikov <1132226531@pfur.ru>
| Date: Sat Feb 22 22:08:40 2025 +0300
|
| Added README
|
* commit ff29f254613942e45925e0693e85c59d59deef80 (style)
| Author: Danila Starikov <1132226531@pfur.ru>
| Date: Sat Feb 22 22:06:47 2025 +0300
|
| Updated index.html
|
* commit 7efb1776ebf75a83824f246d22d4f6fb0f50ca8b
| Author: Danila Starikov <1132226531@pfur.ru>
| Date: Sat Feb 22 22:05:58 2025 +0300
|
| Hello uses style.css
|
* commit d4e2177b3b8af0751eddbc7cdfb1d351c0e0b5ca
| Author: Danila Starikov <1132226531@pfur.ru>
| Date: Sat Feb 22 22:04:13 2025 +0300
|
| Added css stylesheet
|
* commit 15e988f566f29b8e1510a7d62c3738158447819c
| Author: Danila Starikov <1132226531@pfur.ru>
| Date: Sat Feb 22 21:57:51 2025 +0300
|
| Added index.html

```

Рис. 2.38: Просмотр графа коммитов.

```

*   commit 1806e8bc7939e5607f31fcf1f251ec053c690495 (HEAD -> style)
| \
|  Merge: ff29f25 bd43232
|  Author: Danila Starikov <1132226531@pfur.ru>
|  Date:   Sat Feb 22 22:09:29 2025 +0300
|
|      Merge branch 'master' into style
|
*   commit bd432322394901ef1c23714c2df2f3ec1143387 (master)
|  Author: Danila Starikov <1132226531@pfur.ru>
|  Date:   Sat Feb 22 22:08:40 2025 +0300
|
|      Added README
|
*   commit ff29f254613942e45925e0693e85c59d59deef80
|  Author: Danila Starikov <1132226531@pfur.ru>
|  Date:   Sat Feb 22 22:06:47 2025 +0300
|
|      Updated index.html
|
*   commit 7efb1776ebf75a83824f246d22d4f6fb0f50ca8b
|  Author: Danila Starikov <1132226531@pfur.ru>
|  Date:   Sat Feb 22 22:05:58 2025 +0300
|
|      Hello uses style.css
|
*   commit d4e2177b3b8af0751eddbc7cdfb1d351c0e0b5ca
| /  Author: Danila Starikov <1132226531@pfur.ru>
|  Date:   Sat Feb 22 22:04:13 2025 +0300
|

```

Рис. 2.39: Слияние двух веток.

```

* commit f6a40e2f132e10acd35a0084f7c4ff88b68d18d8 (HEAD -> master)
| Author: Danila Starikov <1132226531@pfur.ru>
| Date: Sat Feb 22 22:11:05 2025 +0300
|
| Life is great
|
* commit 1806e8bc7939e5607f31fcf1f251ec053c690495 (style)
| \ Merge: ff29f25 bd43232
| / Author: Danila Starikov <1132226531@pfur.ru>
| / Date: Sat Feb 22 22:09:29 2025 +0300
|
| Merge branch 'master' into style
|
* commit bd4323222394901ef1c23714c2df2f3ec1143387
| Author: Danila Starikov <1132226531@pfur.ru>
| Date: Sat Feb 22 22:08:40 2025 +0300
|
| Added README
|
* commit ff29f254613942e45925e0693e85c59d59deef80
| Author: Danila Starikov <1132226531@pfur.ru>
| Date: Sat Feb 22 22:06:47 2025 +0300
|
| Updated index.html
|
* commit 7efb1776ebf75a83824f246d22d4f6fb0f50ca8b
| Author: Danila Starikov <1132226531@pfur.ru>
| Date: Sat Feb 22 22:05:58 2025 +0300

```

Рис. 2.40: Создание нового коммита после слияния.


```

* commit bd4323222394901ef1c23714c2df2f3ec1143387 (HEAD -> style, master)
| Author: Danila Starikov <1132226531@pfur.ru>
| Date: Sat Feb 22 22:08:40 2025 +0300
|
| Added README
|
* commit 15e988f566f29b8e1510a7d62c3738158447819c
| Author: Danila Starikov <1132226531@pfur.ru>
| Date: Sat Feb 22 21:57:51 2025 +0300
|
| Added index.html
|
* commit 8301b2ffc57e4c16b45f950e5076a0f1e0582419
| Author: Danila Starikov <1132226531@pfur.ru>
| Date: Sat Feb 22 21:56:30 2025 +0300
|
| Moved hello.html to lib
|
* commit c8618d535f88c05a25a7e3bc787c23403675230a
| Author: Danila Starikov <1132226531@pfur.ru>
| Date: Sat Feb 22 21:54:04 2025 +0300
|
| Add an author comment
|
* commit dcb8ae123541bb2e823d5d14667cb49f294f29cc (tag: v1)
| Author: Danila Starikov <1132226531@pfur.ru>
| Date: Sat Feb 22 21:40:13 2025 +0300
|
| Added HTML Header

```

Рис. 2.41: Перебазирование ветки style.

```

➤ Математическое моделирование git clone hello cloned_hello
Cloning into 'cloned_hello'...
done.
➤ Математическое моделирование ls
cloned_hello hello mathmod

```

Рис. 2.42: Клонирование репозитория.

```

commit bd4323222394901ef1c23714c2df2f3ec1143387 (HEAD -> master, origin/style, origin/master, origin/HEAD)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 22:08:40 2025 +0300

    Added README

commit 15e988f566f29b8e1510a7d62c3738158447819c
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:57:51 2025 +0300

    Added index.html

```

Рис. 2.43: Просмотр логов в клонированном репозитории.

```

> cloned_hello git:(master) git remote
origin
> cloned_hello git:(master) git remote show origin
* remote origin
Fetch URL: /home/dastarikov/work/study/2024-2025/Математическое моделирование/hello
Push URL: /home/dastarikov/work/study/2024-2025/Математическое моделирование/hello
HEAD branch: master
Remote branches:
  master tracked
  style 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)

```

Рис. 2.44: Просмотр информации об удаленном репозитории.

```

* master
remotes/origin/HEAD -> origin/master
remotes/origin/master
remotes/origin/style
(END)

```

Рис. 2.45: Просмотр списка веток в клонированном репозитории.

```

> hello git:(master) x git add README.md
> hello git:(master) x git commit -m "Changed README in original repo"
[master 940a9bb] Changed README in original repo
1 file changed, 2 insertions(+), 1 deletion(-)

```

Рис. 2.46: Коммит изменений в основном репозитории.

```

commit 940a9bb6cc14f7d56015259e268adb71b664d158 (origin/master, origin/HEAD)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 22:27:42 2025 +0300

    Changed README in original repo

commit bd4323222394901ef1c23714c2df2f3ec1143387 (HEAD -> master, origin/style)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 22:08:40 2025 +0300

    Added README

commit 15e988f566f29b8e1510a7d62c3738158447819c
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:57:51 2025 +0300

    Added index.html

commit 8301b2ffc57e4c16b45f950e5076a0f1e0582419
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:56:30 2025 +0300

    Moved hello.html to lib

commit c8618d535f88c05a25a7e3bc787c23403675230a
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 21:54:04 2025 +0300

    Add an author comment
:

```

Рис. 2.47: Просмотр логов в клонированном репозитории.

```

> cloned_hello git:(master) git fetch
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (3/3), 548 bytes | 548.00 KiB/s, done.
From /home/dastarikov/work/study/2024-2025/Математическое моделирование/hello
 bd43232..940a9bb master -> origin/master
> cloned_hello git:(master) git log --all

```

Рис. 2.48: Копирование изменений из удаленного репозитория.

```

> cloned_hello git:(master) git merge origin/master
Updating bd43232..940a9bb
Fast-forward
 README.md | 3 ++-
 1 file changed, 2 insertions(+), 1 deletion(-)
> cloned_hello git:(master) cat README.md
This is the Hello World example from the git tutorial.
This is the Hello World example from the git tutorial.

```

Рис. 2.49: Слияние master и origin/master веток.

```
* master
style
remotes/origin/HEAD -> origin/master
remotes/origin/master
remotes/origin/style
(END)
```

Рис. 2.50: Добавление новой ветки в клонированном репозитории.

```
commit 940a9bb6cc14f7d56015259e268adb71b664d158 (HEAD -> master, origin/master, origin/HEAD)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 22:27:42 2025 +0300

    Changed README in original repo

commit bd4323222394901ef1c23714c2df2f3ec1143387 (origin/style, style)
Author: Danila Starikov <1132226531@pfur.ru>
Date: Sat Feb 22 22:08:40 2025 +0300

    Added README
```

Рис. 2.51: Просмотр логов.

```
> hello git:(master) × git add README.md
> hello git:(master) × git commit -m "Added shared comment to readme"
[master 39ed8a2] Added shared comment to readme
1 file changed, 1 insertion(+)
> hello git:(master) git push shared master
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), 585 bytes | 585.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
To ../hello.git
940a9bb..39ed8a2 master -> master
```

Рис. 2.52: Коммит изменений в основном репозитории.

```
➤ hello git:(master) cd ../cloned_hello
➤ cloned_hello git:(master) git remote add shared ../hello.git
➤ cloned_hello git:(master) git branch --track shared master
branch 'shared' set up to track 'master'.
➤ cloned_hello git:(master) git pull shared master
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 3 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (3/3), 565 bytes | 565.00 KiB/s, done.
From ../hello
 * branch          master      -> FETCH_HEAD
 * [new branch]     master      -> shared/master
Updating 940a9bb..39ed8a2
Fast-forward
 README.md | 1 +
 1 file changed, 1 insertion(+)
➤ cloned_hello git:(master) cat README.md
This is the Hello World example from the git tutorial.
This is the Hello World example from the git tutorial.
(Changed in the original and pushed to shared)
```

Рис. 2.53: Извлечение изменений из удаленного репозитория.

3 Выводы

В результате выполнения лабораторной работы познакомились с основными функциями системы контроля версий git.