

# Лабораторная работа №1

Работа с git

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## Информация

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Приобрести практические навыки работы с системой управления версиями Git.

1. Создать репозиторий
2. Изменить его содержимое, изучить работу с коммитами, версиями и тегами
3. Поработать с объектами Git
4. Создать дополнительную ветку, провести слияние, разрешение конфликтов
5. Создать клон репозитория и слить его с оригинальным
6. Залить и извлечь изменения

## Выполнение лабораторной работы

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```
zamba@LAPTOP-1M90JOT7 MINGW64 ~  
$ git config --global core.autocrlf true  
  
zamba@LAPTOP-1M90JOT7 MINGW64 ~  
$ git config --global core.safecrlf true  
  
zamba@LAPTOP-1M90JOT7 MINGW64 ~  
$ git config --global core.quotepath off
```

Рис. 1: Настройка git

# Создание проекта

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~  
$ mkdir hello  
  
zamba@LAPTOP-1M90J0T7 MINGW64 ~  
$ cd hello  
  
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello  
$ touch hello.html  
  
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello  
$ echo "Hello, world!" > hello.html  
  
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello  
$ git init  
initialized empty Git repository in C:/Users/zamba/hello/.git/
```

Рис. 2: Создание репозитория

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)  
$ git add hello.html  
  
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)  
$ git commit -m "Initial Commit"  
[master (root-commit) cf7dcdf] Initial Commit  
1 file changed, 1 insertion(+)  
create mode 100644 hello.html  
  
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)  
$ git status  
On branch master  
nothing to commit, working tree clean
```

Рис. 3: Добавление файла в репозиторий



```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (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")

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git add hello.html

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   hello.html

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git commit
hint: Waiting for your editor to close the file...
[master 5bf9aea] «Added h1 tag»
 1 file changed, 1 insertion(+), 1 deletion(-)

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git status
On branch master
nothing to commit, working tree clean
```

Рис. 4: Внесение изменений в содержимое репозитория

Изменим страницу «Hello, World», чтобы она содержала стандартные теги

и

.

```
<html>
```

```
  <body>
```

```
    <h1>Hello, World!</h1>
```

```
  </body>
```

```
</html>
```

```
zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git add hello.html

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (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
```

Рис. 5: Внесение нескольких изменений в содержимое репозитория

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git commit -m "Added standard HTML page tags"
[master 37474f7] Added standard HTML page tags
1 file changed, 5 insertions(+), 1 deletion(-)

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (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")

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git add .

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   hello.html

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git commit -m "Added HTML header"
[master 7cb8daf] Added HTML header
1 file changed, 2 insertions(+)
```

Рис. 7: Внесение изменений в содержимое репозитория

```
zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git log
commit 7cb8dafe36c825a849386adb65b250b7a6efe71 (HEAD -> master)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 19:57:47 2025 +0300

    Added HTML header

commit 37474f7875484b8a4288cb95c7ee9eca00b2e363
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 19:56:45 2025 +0300

    Added standard HTML page tags

commit 5bf9aeab72c67c321b9b75ce212cf8ebaa576c85
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 19:49:26 2025 +0300

    «Added h1 tag»

commit cf7dcdfff6ab8ddf94daf3d55063b0aec1def931
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 19:44:39 2025 +0300

    Initial Commit

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git log --pretty=oneline
7cb8dafe36c825a849386adb65b250b7a6efe71 (HEAD -> master) Added HTML header
37474f7875484b8a4288cb95c7ee9eca00b2e363 Added standard HTML page tags
5bf9aeab72c67c321b9b75ce212cf8ebaa576c85 «Added h1 tag»
cf7dcdfff6ab8ddf94daf3d55063b0aec1def931 Initial Commit
```

Рис. 7: Просмотр истории

## Получение старых версий

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git checkout cf7dcdf
Note: switching to 'cf7dcdf'.

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 cf7dcdf Initial Commit

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello ((cf7dcdf...))
$ cat hello.html
Hello, World!

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello ((cf7dcdf...))
$ git checkout master
Previous HEAD position was cf7dcdf Initial Commit
Switched to branch 'master'

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ cat hello.html
<html>
  <head>
</head>
  <body>
    <h1>Hello, World!</h1>
  </body>
</html>
```

Рис. 8: Просмотр разных версий репозитория

```
zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git tag v1

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (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 37474f7 Added standard HTML page tags

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello ((37474f7...))
$ cat hello.html
<html>
  <body>
    <h1>Hello, World!</h1>
  </body>
</html>

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello ((37474f7...))
$ git tag v1-beta
```

## Отмена локальных изменений (до индексации)

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello ((v1-beta))
$ git checkout master
Previous HEAD position was 37474f7 Added standard HTML page tags
Switched to branch 'master'

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (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")

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git checkout hello.html
Updated 1 path from the index

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git status
On branch master
nothing to commit, working tree clean

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ cat hello.html
<html>
  <head>
  </head>
  <body>
    <h1>Hello, World!</h1>
  </body>
</html>
```

Рис. 10: Отмена локальных изменений (до индексации)



## Отмена проиндексированных изменений (перед коммитом)

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git add hello.html

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   hello.html

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git reset HEAD hello.html
Unstaged changes after reset:
M       hello.html

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git checkout hello.html
Updated 1 path from the index

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git status
On branch master
nothing to commit, working tree clean
```

Рис. 11: Отмена проиндексированных изменений (перед коммитом)

```
zamba@LAPTOP~1M90JOT7 MINGW64 ~/hello (master)
$ git add hello.html

zamba@LAPTOP~1M90JOT7 MINGW64 ~/hello (master)
$ git commit -m "Oops, we didn't want this commit"
[master 0e2e7c9] Oops, we didn't want this commit
1 file changed, 1 insertion(+)

zamba@LAPTOP~1M90JOT7 MINGW64 ~/hello (master)
$ git revert HEAD
[master cc974f9] Revert "Oops, we didn't want this commit"
1 file changed, 1 deletion(-)

zamba@LAPTOP~1M90JOT7 MINGW64 ~/hello (master)
$ git log
commit cc974f93684deced301b531e9c72fc96377e8809 (HEAD -> master)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:12:18 2025 +0300

    Revert "Oops, we didn't want this commit"

    This reverts commit 0e2e7c9c36d596a46e68fc3bfab145341fcbe374.

commit 0e2e7c9c36d596a46e68fc3bfab145341fcbe374
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:12:01 2025 +0300

    Oops, we didn't want this commit
```

Рис. 12: Отмена коммитов

```
zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git tag oops

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git reset --hard v1
HEAD is now at 7cb8daf Added HTML header

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git log
commit 7cb8dafa36c825a849386adbc65b250b7a6efe71 (HEAD -> master, tag: v1)
Author: dina <l132226536@pfur.ru>
Date: Sat Feb 15 19:57:47 2025 +0300

    Added HTML header

commit 37474f7875484b8a4288cb95c7ee9eca00b2e363 (tag: v1-beta)
Author: dina <l132226536@pfur.ru>
Date: Sat Feb 15 19:56:45 2025 +0300

    Added standard HTML page tags

commit 5bf9aeab72c67c321b9b75ce212cf8ebaa576c85
Author: dina <l132226536@pfur.ru>
Date: Sat Feb 15 19:49:26 2025 +0300

    «Added h1 tag»

commit cF7dcdfff6ab8ddf94daf3d55063b0aec1def931
Author: dina <l132226536@pfur.ru>
Date: Sat Feb 15 19:44:39 2025 +0300

    Initial Commit
```

Рис. 13: Удаление коммиттов из ветки

```
commit 9PT0P-1990J017 MINGW64 ~/hello (master)
$ git log --all
commit cc974f93684deced301b531e9c72fc96377e8809 (tag: oops)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:12:18 2025 +0300

    Revert "Oops, we didn't want this commit"

    This reverts commit 0e2e7c9c36d596a46e68fc3bfab145341fcbe374.

commit 0e2e7c9c36d596a46e68fc3bfab145341fcbe374
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:12:01 2025 +0300

    Oops, we didn't want this commit

commit 7cb8dafa36c825a849386adbc65b250b7a6efe71 (HEAD -> master, tag: v1)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 19:57:47 2025 +0300

    Added HTML header

commit 37474f7875484b8a4288cb95c7ee9eca00b2e363 (tag: v1-beta)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 19:56:45 2025 +0300

    Added standard HTML page tags

commit 5bf9aeb72c67c321b9b75ce212cf8ebaa576c85
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 19:49:26 2025 +0300

    «Added h1 tag»

commit cf7dcffff6ab8ddf94daf3d55063b0aec1def931
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 19:44:39 2025 +0300

    Initial Commit
```

Рис. 14: Ничего никогда не теряется

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git tag -d oops
Deleted tag 'oops' (was cc974f9)

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git log --all
commit 7cb8d4fe36c825a849386adbc65b250b7a6eFe71 (HEAD -> master, tag: v1)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 19:57:47 2025 +0300

    Added HTML header

commit 37474f7875484b8a4288cb95c7ee9eca00b2e363 (tag: v1-beta)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 19:56:45 2025 +0300

    Added standard HTML page tags

commit 5bf9aeab72c67c321b9b75ce212cf8ebaa576c85
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 19:49:26 2025 +0300

    «Added h1 tag»

commit cf7dcdff6ab8ddf94daf3d55063b0aec1def931
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 19:44:39 2025 +0300

    Initial Commit
```

Рис. 15: Удаление тега oops

## Изменение предыдущего коммита



```
<> hello.html ●
C: > Users > zamba > hello > <> hello.html > ...
1  <!-- Author: Dina V. Zambalova -->
2  <html>
3      <head>
4      </head>
5      <body>
6          <h1>Hello, World!</h1>
7      </body>
8  </html>
```

Рис. 16: Изменение предыдущего коммита

# Изменение предыдущего коммита

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git add hello.html

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git commit -m "Add an author comment"
[master c16671a] Add an author comment
1 file changed, 1 insertion(+)

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git add hello.html

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git commit -m "Add an author and email comment"
[master 5e89eb6] Add an author and email comment
1 file changed, 1 insertion(+), 1 deletion(-)

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git reset

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git commit --amend -m "Add an author/email comment"
[master 3cb49d8] Add an author/email comment
Date: Sat Feb 15 20:19:39 2025 +0300
1 file changed, 1 insertion(+), 1 deletion(-)

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git log
commit 3cb49d8dac1ed4200b97cc672056195fa68b3999 (HEAD -> master)
Author: dina <l132226536@pfur.ru>
Date: Sat Feb 15 20:19:39 2025 +0300

    Add an author/email comment

commit c16671a145afef42c3542ffca3f16b2ddff7343d
Author: dina <l132226536@pfur.ru>
Date: Sat Feb 15 20:17:53 2025 +0300

    Add an author comment
```

Рис. 17: Изменение предыдущего коммита

Переместим наш файл в каталог `lib`. Для этого создадим его и используем команду `git mv`, сделаем коммит этого перемещения.



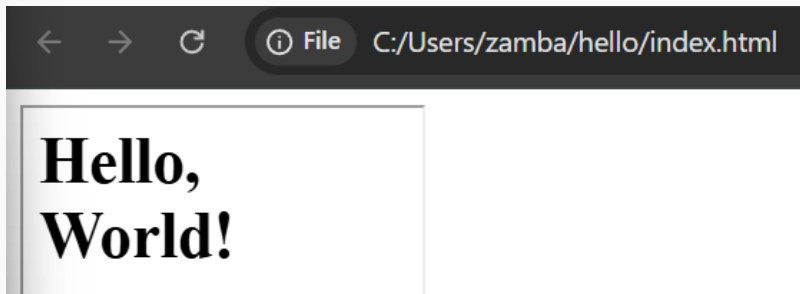


Рис. 18: Результат открытия index.html

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ ls -C .git
COMMIT_EDITMSG  ORIG_HEAD  description  index  logs/  refs/
HEAD           config     hooks/       info/  objects/

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ ls -C .git/objects
02/ 0e/ 31/ 3c/ 52/ 5a/ 5e/ 6c/ 7c/ 8a/ a6/ bf/ cc/ f7/ pack/
09/ 1f/ 37/ 4b/ 5b/ 62/ 78/ 84/ 8b/ ae/ c1/ cf/ info/

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ ls -C .git/objects/<dir>
bash: syntax error near unexpected token 'newline'

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ ls -C .git/objects/cf
7dcdf6ab8dd94daf3d55063b0aec1def931

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ cat .git/config
[core]
    repositoryformatversion = 0
    filemode = false
    bare = false
    logallrefupdates = true
    symlinks = false
    ignorecase = true
    autocrlf = input

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ ls .git/refs
heads/  tags/

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ ls .git/refs/heads
master

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ ls .git/refs/tags
v1  v1-beta

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ cat .git/refs/tags/v1
7cb8d4fe36c825a849386adbc65b250b7a6efe71

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ cat .git/HEAD
ref: refs/heads/master
```

# Работа непосредственно с объектами git

```
zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git log --max-count=1
commit 84cb721c7c96dd409b1a1941fc4ce6b6482712e5 (HEAD -> master)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:26:12 2025 +0300

    Moved hello.html to lib

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git cat-file -t 84cb721
commit

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git cat-file -p 84cb721
tree 1f6b6f16f2309b92848ffa72267b7a81b52a7b48
parent 3cb49d8dac1ed4200b97cc672056195fa68b3999
author dina <1132226536@pfur.ru> 1739640372 +0300
committer dina <1132226536@pfur.ru> 1739640372 +0300

Moved hello.html to lib

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git cat-file -p 1f6b6f1
040000 tree 31b4412bbf8f56ba5c352a027b8650ea3d5191b4    lib

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git cat-file -p 31b4412
100644 blob 02375877b79a7caad70a95b704ba824976431759    hello.html

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git cat-file -p 0237587
<!-- Author: Dina V. Zambalova (1132226536@pfur.ru) -->
<html>
  <head>
  </head>
  <body>
    <h1>Hello, world!</h1>
  </body>
</html>
```

Рис. 20: Работа непосредственно с объектами git

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git checkout -b style
Switched to a new branch 'style'

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (style)
$ git status
On branch style
Untracked files:
  (use "git add <file>..." to include in what will be committed)
    index.html

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

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (style)
$ touch lib/style.css
```

Рис. 21: Создание ветки

```
zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (style)
$ git add lib/style.css

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (style)
$ git commit -m "Added css stylesheet"
[style fe7d490] Added css stylesheet
1 file changed, 4 insertions(+)
create mode 100644 lib/style.css
```

Рис. 22: Создание ветки

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (style)
$ git log --all
commit 74ed3f16a843022b4df178d9aea637cdfc3b6324 (HEAD -> style)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:57:39 2025 +0300

    Updated index.html

commit b58634dec18f15e63a0aa43b9a47845b585f221b
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:54:49 2025 +0300

    Hello uses style.css

commit fe7d490e063675ef8acf4ed553b221084122e9c8
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:52:07 2025 +0300

    Added css stylesheet

commit 84cb721c7c96dd409b1a1941fc4ce6b6482712e5 (master)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:26:12 2025 +0300

    Moved hello.html to lib
```

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (style)
$ git checkout master
Switched to branch 'master'

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ cat lib/hello.html
<!-- Author: Dina V. Zambalova (1132226536@pfur.ru) -->
<html>
  <head>
  </head>
  <body>
    <h1>Hello, World!</h1>
  </body>
</html>
```

Рис. 24: Переключение на ветку master

# Изменения в ветке master

```
zamba@APTOP-1M90J0T7 MINGW64 ~/hello (style)
$ git checkout master
Switched to branch 'master'

zamba@APTOP-1M90J0T7 MINGW64 ~/hello (master)
$ echo "This is the Hello world example from the git tutorial." > README.md

zamba@APTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git add README.md

zamba@APTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git commit -m "Added README"
[master b2954c3] Added README
1 file changed, 1 insertion(+)
create mode 100644 README.md

zamba@APTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git log --graph --all
* commit b2954c34fae578928709eb3c621cdd5ae45a380 (HEAD -> master)
  Author: dina <113226536@pfur.ru>
  Date: Sat Feb 15 21:04:52 2025 +0300
  Added README

* commit 74ed3f16a843022b4df178d9aea637cdfc3b6324 (style)
  Author: dina <113226536@pfur.ru>
  Date: Sat Feb 15 20:57:39 2025 +0300
  updated index.html

* commit b58634dec18f15e63a0aa43b9a47845b585f221b
  Author: dina <113226536@pfur.ru>
  Date: Sat Feb 15 20:54:49 2025 +0300
  Hello uses style.css

* commit fe7d490e063675ef8acf4ed553b221084122e9c8
  Author: dina <113226536@pfur.ru>
  Date: Sat Feb 15 20:52:07 2025 +0300
  Added css stylesheet

* commit 84cb721c7c96d8409b1a1941fc4ce6b6482712e5
  Author: dina <113226536@pfur.ru>
  Date: Sat Feb 15 20:26:12 2025 +0300
  Moved hello.html to lib
```

Рис. 25: Изменения в ветке master



```
zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git checkout style
Switched to branch 'style'

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (style)
$ git merge master
Merge made by the 'ort' strategy.
 README.md | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 README.md

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (style)
$ git log --graph --all
*   commit cafcef19ee610acbae233608c99b4a683e75a252 (HEAD -> style)
|/  Merge: 74ed3f1 b2954c3
|   Author: dina <1132226536@pfur.ru>
|   Date:   Sat Feb 15 21:06:34 2025 +0300
|
|       Merge branch 'master' into style
|
|   * commit b2954c34fae578928709eb3c621cded5ae45a380 (master)
|   | Author: dina <1132226536@pfur.ru>
|   | Date:   Sat Feb 15 21:04:52 2025 +0300
|   |
|   |       Added README
|   |
|   * commit 74ed3f16a843022b4df178d9aea637cdfc3b6324
|   | Author: dina <1132226536@pfur.ru>
|   | Date:   Sat Feb 15 20:57:39 2025 +0300
|   |
|   |       Updated index.html
|   |
|   * commit b58634dec18f15e63a0aa43b9a47845b585f221b
|   | Author: dina <1132226536@pfur.ru>
|   | Date:   Sat Feb 15 20:54:49 2025 +0300
|   |
|   |       Hello uses style.css
|   |
|   * commit fe7d490e063675ef8acf4ed553b221084122e9c8
|   | Author: dina <1132226536@pfur.ru>
|   | Date:   Sat Feb 15 20:52:07 2025 +0300
|   |
|   |       Added css stylesheet
```

Рис. 26: Слияние веток

## Создание конфликта

```
zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (style)
$ git checkout master
Switched to branch 'master'

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git add lib/hello.html

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git commit -m 'Life is great'
[master 3dd0edb] Life is great
1 file changed, 2 insertions(+), 1 deletion(-)

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git log --graph --all
* commit 3dd0edb77a7b57e00d4b1b65505e3b6b42931693 (HEAD -> master)
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 21:10:38 2025 +0300
    Life is great

* commit cafcef19ee610acbae233608c99b4a683e75a252 (style)
  \ Merge: 74ed3f1 b2954c3
  / Author: dina <1132226536@pfur.ru>
  / Date: Sat Feb 15 21:06:34 2025 +0300
    Merge branch 'master' into style

* commit b2954c34fae578928709eb3c621cded5ae45a380
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 21:04:52 2025 +0300
    Added README

* commit 74ed3f16a843027b4df178d9aea637cdfc3b6324
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 20:57:39 2025 +0300
    Updated index.html

* commit b58634dec18f15e63a0aa43b9a47845b585f221b
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 20:54:49 2025 +0300
    Hello uses style.css
```

Рис. 27: Создание конфликта

```
1  <!-- Author: Dina V. Zambalova (1132226536@pfur.ru) -->
2  <html>
3      <head>
4          <!-- no style -->
5      </head>
6      <body>
7          <h1>Hello, World! Life is great!</h1>
8      </body>
9  </html>
```

Рис. 28: Конфликт

```
1  <!-- Author: Dina V. Zambalova (1132226536@pfur.ru) -->
2  <html>
3    <head>
4      <link type="text/css" rel="stylesheet"
5        media="all" href="style.css" />
6    </head>
7    <body>
8      <h1>Hello, World! Life is great!</h1>
9    </body>
10 </html>
```

Рис. 29: Разрешение конфликта

```
saabari@TOP-1000J077 MINGW64 ~/hello (style)
$ git log --graph
* commit cceec8f307853810e12b0b72cbfc59743b7c30f (HEAD -> style)
  Merge: cafce11 3d00edb
  Author: dina <11322265360pfur.ru>
  Date: Sat Feb 15 21:17:36 2025 +0300

    Merged master fixed conflict.

* commit 3d00edb77a7b57e00d4b1b65505e3b6b47931693 (master)
  Author: dina <11322265360pfur.ru>
  Date: Sat Feb 15 21:10:38 2025 +0300

    Life is great

* commit cafce119ee610acbae233608c99b4a683e75a252
  Merge: 74ed3f1 b2954c3
  Author: dina <11322265360pfur.ru>
  Date: Sat Feb 15 21:06:34 2025 +0300

    Merge branch 'master' into style

* commit b2954c34fae578928709eb3c621cde5ae45a380
  Author: dina <11322265360pfur.ru>
  Date: Sat Feb 15 21:04:52 2025 +0300

    Added README

* commit 74ed3f16a843022b4df178d9aea637cdfc3b6324
  Author: dina <11322265360pfur.ru>
  Date: Sat Feb 15 20:57:39 2025 +0300

    Updated index.html

* commit b58634dec18f15e63a0aa43b9a47845b585f221b
  Author: dina <11322265360pfur.ru>
  Date: Sat Feb 15 20:54:49 2025 +0300

    Hello uses style.css

* commit fe/d490e0b36/sef8acf4ed553b221084122e9c8
  Author: dina <11322265360pfur.ru>
  Date: Sat Feb 15 20:52:07 2025 +0300

    Added css stylesheet

* commit 84cb721c7c96dd409b1a1041fc4ce6b6482717e5
  Author: dina <11322265360pfur.ru>
  Date: Sat Feb 15 20:26:12 2025 +0300

    Moved hello.html to lib
```

Рис. 30: Поиск коммита перед слиянием

## Сброс ветки style

```
zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (style)
$ git reset --hard 74ed3f1
HEAD is now at 74ed3f1 Updated index.html

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (style)
$ git log --graph --all
* commit 3dd0edb77a7b57e00d4b1b65505e3b6b42931693 (master)
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 21:10:38 2025 +0300

    Life is great

* commit b2954c34fae578928709eb3c621cdd5ae45a380
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 21:04:52 2025 +0300

    Added README

* commit 74ed3f16a843022b4df178d9aea637cdfc3b6324 (HEAD -> style)
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 20:57:39 2025 +0300

    Updated index.html

* commit b58634dec18f15e63a0aa43b9a47845b585f221b
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 20:54:49 2025 +0300

    Hello uses style.css

* commit fe7d490e063675ef8acf4ed553b221084122e9c8
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 20:52:07 2025 +0300

    Added css stylesheet

* commit 84cb721c7c96dd409b1a1941fc4ce6b6482712e5
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 20:26:12 2025 +0300

    Moved hello.html to lib
```

Рис. 31: Сброс ветки style

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (style)
$ git checkout master
Switched to branch 'master'

zamba@LAPTOP-1M90J0T7 MINGW64 ~/hello (master)
$ git log --graph
* commit 3dd0edb77a7b57e00d4b1b65505e3b6b42931693 (HEAD -> master)
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 21:10:38 2025 +0300

    Life is great

* commit b2954c34Fae578928709eb3c621cded5ae45a380
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 21:04:52 2025 +0300

    Added README

* commit 84cb721c7c96dd409b1a1941fc4ce6b6482712e5
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 20:26:12 2025 +0300

    Moved hello.html to lib

* commit 3cb49d8dac1ed4200b97cc672056195fa68b3999
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 20:19:39 2025 +0300

    Add an author/email comment

* commit c16671a145afef42c3542ffca3f16b2ddff7343d
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 20:17:53 2025 +0300

    Add an author comment

* commit 7cb8dafa36c825a849386adbc65b250b7a6efe71 (tag: v1)
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 19:57:47 2025 +0300

    Added HTML header
```

Рис. 32: Поиск коммита перед конфликтом

## Сброс ветки master

```
zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git reset --hard b2954c3
HEAD is now at b2954c3 Added README

zamba@LAPTOP-1M90JOT7 MINGW64 ~/hello (master)
$ git log --graph --all
* commit b2954c34fae578928709eb3c621cded5ae45a380 (HEAD -> master)
| Author: dina <1132226536@pfur.ru>
| Date: Sat Feb 15 21:04:52 2025 +0300
|
| Added README
|
* commit 74ed3f16a843022b4df178d9aea637cdfc3b6324 (style)
| Author: dina <1132226536@pfur.ru>
| Date: Sat Feb 15 20:57:39 2025 +0300
|
| Updated index.html
|
* commit b58634dec18f15e63a0aa43b9a47845b585f221b
| Author: dina <1132226536@pfur.ru>
| Date: Sat Feb 15 20:54:49 2025 +0300
|
| Hello uses style.css
|
* commit fe7d490e063675ef8acf4ed553b221084122e9c8
| Author: dina <1132226536@pfur.ru>
| Date: Sat Feb 15 20:52:07 2025 +0300
|
| Added css stylesheet
|
* commit 84cb721c7c96dd409b1a1941fc4ce6b6482712e5
| Author: dina <1132226536@pfur.ru>
| Date: Sat Feb 15 20:26:12 2025 +0300
|
| Moved hello.html to lib
```

Рис. 33: Сброс ветки master



```
zamba@LAPTOP-1M9030T7 MINGW64 ~/hello (master)
$ git checkout style
Switched to branch 'style'

zamba@LAPTOP-1M9030T7 MINGW64 ~/hello (style)
$ git rebase master
Successfully rebased and updated refs/heads/style.

zamba@LAPTOP-1M9030T7 MINGW64 ~/hello (style)
$ git log --graph
* commit 77c529194578880085eee3392f99e505bc2520cf (HEAD -> style)
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 20:57:39 2025 +0300

    Updated index.html

* commit 3c8eef665633ac400eecaabdbec253368b5cf87dd
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 20:54:49 2025 +0300

    Hello uses style.css

* commit 51e28697339b4e53911b6516932861a8ac7a7a6a
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 20:52:07 2025 +0300

    Added css stylesheet

* commit b2954c34fae578928709eb3c621cded5ae45a380 (master)
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 21:04:52 2025 +0300

    Added README

* commit 84cb721c7c96dd409b1a1941fc4ce6b6482712e5
  Author: dina <1132226536@pfur.ru>
  Date: Sat Feb 15 20:26:12 2025 +0300

    Moved hello.html to lib
```

Рис. 34: Перебазирование

## Слияние в ветку master

```
zamba@LAPTOP-1X90J0T7: MINGW64 ~/hello (style)
$ git checkout master
Switched to branch 'master'

zamba@LAPTOP-1X90J0T7: MINGW64 ~/hello (master)
$ git merge style
Updating b2954c3..77c5291
Fast-forward
 index.html | 9 ++++++
 lib/hello.html | 2 ++
 lib/style.css | 4 +++
 3 files changed, 15 insertions(+)
 create mode 100644 index.html
 create mode 100644 lib/style.css

zamba@LAPTOP-1X90J0T7: MINGW64 ~/hello (master)
$ git log
commit 77c529184578880085eee3302f99e505bc2520cf (HEAD -> master, style)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:57:39 2025 +0300

    Updated index.html

commit 3c8eef665633ac400eacabdbec253368b5cf87dd
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:54:49 2025 +0300

    Hello uses style.css

commit 51e78697330b4e53911b6516932861a8ac7a7a6a
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:52:07 2025 +0300

    Added css stylesheet

commit b2954c34fae578928709eb3c621cdd5ae45a380
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 21:04:52 2025 +0300

    Added README

commit 84cb771c7c96dd409b1a1941fc4ce6b6482712e5
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:26:12 2025 +0300

    Moved hello.html to lib
```

Рис. 35: Слияние style в master

```
zamba@LAPTOP-1M90JOT7 MINGW64 ~  
$ cd work  
  
zamba@LAPTOP-1M90JOT7 MINGW64 ~/work  
$ pwd  
/c/Users/zamba/work  
  
zamba@LAPTOP-1M90JOT7 MINGW64 ~/work  
$ ls  
hello/  
  
zamba@LAPTOP-1M90JOT7 MINGW64 ~/work  
$ git clone hello cloned_hello  
Cloning into 'cloned_hello'...  
done.  
  
zamba@LAPTOP-1M90JOT7 MINGW64 ~/work  
$ ls  
cloned_hello/  hello/
```

Рис. 36: Клонирование репозиториев

# Клонирование репозиториев

```
zamba@LAPTOP-1M90JOT7 MINGW64 ~/work
$ cd cloned_hello

zamba@LAPTOP-1M90JOT7 MINGW64 ~/work/cloned_hello (master)
$ ls
README.md  index.html  lib/

zamba@LAPTOP-1M90JOT7 MINGW64 ~/work/cloned_hello (master)
$ git log --all
commit 7c529194578880085eee3392f99e505bc2520cf (HEAD -> master, origin/style, origin/master,
origin/HEAD)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:57:39 2025 +0300

    Updated index.html

commit 3c8eef665633ac400eacabdbec253368b5cf87dd
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:54:49 2025 +0300

    Hello uses style.css

commit 51e28697339b4e53911b6516932861a8ac7a7a6a
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:52:07 2025 +0300

    Added css stylesheet

commit b2954c34fae578928709eb3c621cded5ae45a380
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 21:04:52 2025 +0300

    Added README

commit 84cb721c7c96dd409b1a1941fc4ce6b6482712e5
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:26:12 2025 +0300

    Moved hello.html to lib
```

Рис. 37: Клонирование репозиториев

## Что такое origin?

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ git remote
origin

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ git remote show origin
* remote origin
  Fetch URL: C:/Users/zamba/work/hello
  Push URL: C:/Users/zamba/work/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. 38: Просмотр имени по умолчанию удаленного репозитория

Посмотрим на ветки, доступные в нашем клонированном репозитории. Можно увидеть, что в списке только ветка master.

# Изменение оригинального репозитория

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ git branch
* master

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ git branch -a
* master
  remotes/origin/HEAD -> origin/master
  remotes/origin/master
  remotes/origin/style

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ cd ../hello

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/hello (master)
$ git add README
fatal: pathspec 'README' did not match any files

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/hello (master)
$ git add README.md

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/hello (master)
$ git commit -m "Changed README in original repo"
[master 5684cdf] Changed README in original repo
1 file changed, 1 insertion(+), 1 deletion(-)
```

Рис. 39: Изменение оригинального репозитория

# Изменение оригинального репозитория

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/hello (master)
$ cd ../cloned_hello

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (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 1), reused 0 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (3/3), 323 bytes | 26.00 KiB/s, done.
From C:/Users/zamba/work/hello
  77c5291..5684cdf  master    -> origin/master

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ git log --all
commit 5684cdfca0fa01c5d788f676e59239172ac98677 (origin/master, origin/HEAD)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 21:42:28 2025 +0300

    Changed README in original repo

commit 77c529194578880085eee3392f99e505bc2520cf (HEAD -> master, origin/style)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:57:39 2025 +0300

    Updated index.html

commit 3c8eef665633ac400eacabdbec253368b5cf87dd
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:54:49 2025 +0300

    Hello uses style.css

commit 51e28697339b4e53911b6516932861a8ac7a7a6a
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:52:07 2025 +0300

    Added css stylesheet

commit b2954c34fae578928709eb3c621cded5ae45a380
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 21:04:52 2025 +0300

    Added README
```

Рис. 40: Извлечение изменений



```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ cat README.md
This is the Hello World example from the git tutorial.

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ git merge origin/master
Updating 77c5291..5684cdf
Fast-forward
 README.md | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ cat README.md
This is the Hello World example from the git tutorial.
zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ git pull
Already up to date.
```

Рис. 41: Слияние извлеченных изменений

## Добавление ветки наблюдения

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ git branch --track style origin/style
branch 'style' set up to track 'origin/style'.

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ git branch -a
* master
  style
  remotes/origin/HEAD -> origin/master
  remotes/origin/master
  remotes/origin/style

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ git log --max-count=2
commit 5684cdfca0fa01c5d788f676e59239172ac98677 (HEAD -> master, origin/master, origin/HEAD)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 21:42:28 2025 +0300

    Changed README in original repo

commit 77c529194578880085eee3392f99e505bc2520cf (origin/style, style)
Author: dina <1132226536@pfur.ru>
Date: Sat Feb 15 20:57:39 2025 +0300

    Updated index.html
```

Рис. 42: Добавление ветки наблюдения

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ cd ..

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work
$ git clone --bare hello hello.git
Cloning into bare repository 'hello.git'...
done.

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work
$ ls hello.git
HEAD  config  description  hooks/  info/  objects/  packed-refs  refs/

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work
$ cd hello

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/hello (master)
$ git remote add shared ../hello.git
```

Рис. 43: Создание чистого репозитория

```
zamba@LAPTOP-1M90JOT7 MINGW64 ~/work/hello (master)
$ git checkout master
Already on 'master'
M       README.md

zamba@LAPTOP-1M90JOT7 MINGW64 ~/work/hello (master)
$ git add README.md

zamba@LAPTOP-1M90JOT7 MINGW64 ~/work/hello (master)
$ git commit -m "Added shared comment to readme"
[master 4d12a91] Added shared comment to readme
1 file changed, 2 insertions(+), 1 deletion(-)

zamba@LAPTOP-1M90JOT7 MINGW64 ~/work/hello (master)
$ git push shared master
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 12 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 395 bytes | 395.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To ../hello.git
5684cdf..4d12a91 master -> master
```

Рис. 44: Отправка изменений

## Отправка и извлечение изменений

```
zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/hello (master)
$ cd ../cloned_hello

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ git remote add shared ../hello.git

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ git branch --track shared master
branch 'shared' set up to track 'master'.

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (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 0), reused 0 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (3/3), 375 bytes | 25.00 KiB/s, done.
From ../hello
 * branch          master      -> FETCH_HEAD
 * [new branch]    master      -> shared/master
Updating 5684cdf..4d12a91
Fast-forward
 README.md | 3 ++-
 1 file changed, 2 insertions(+), 1 deletion(-)

zamba@LAPTOP-1M90J0T7 MINGW64 ~/work/cloned_hello (master)
$ cat README.md
This is the Hello World example from the git tutorial.
(Changed in the original and pushed to shared)
```

Рис. 45: Извлечение изменений

## Выводы

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В процессе выполнения данной лабораторной работы я приобрела практические навыки работы с Git.