

Лабораторная работа №1

Система контроля версий Git

дисциплина: Математическое моделирование

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Введение.

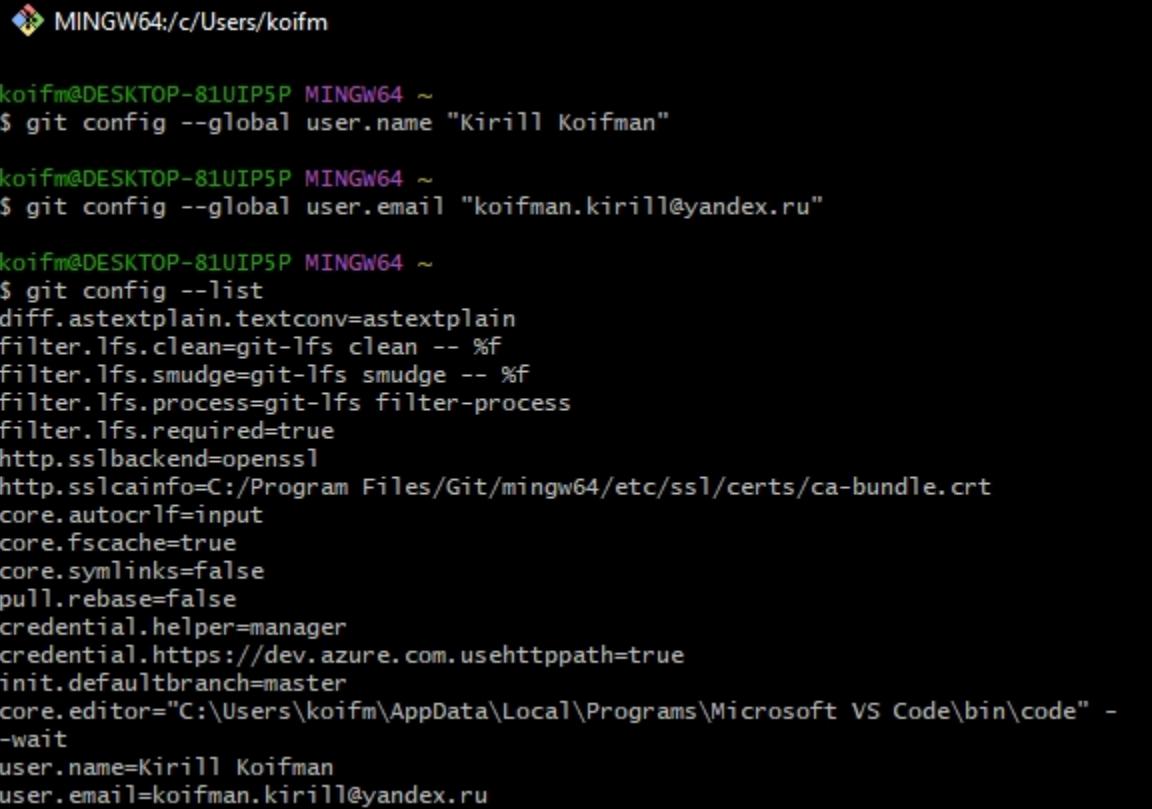
Цель работы.

Создать и настроить рабочее пространство для выполнения работы. Получить навыки работы с системой контроля версий Git.

Задача.

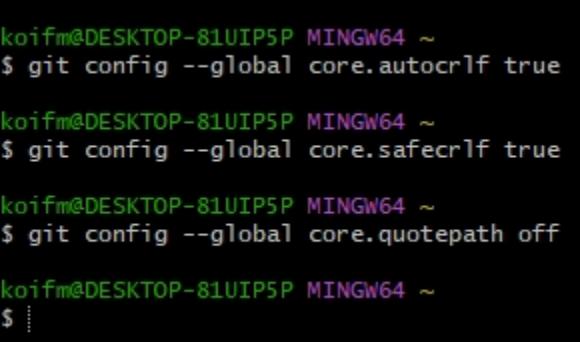
Создать и настроить репозиторий курса с помощью Git и выполнить задания из файла по работе с Git.

1. Для начала установим имя, почту, а также настроим core.autocrlf параметрами true и input, чтобы все переводы строк текстовых файлов в главном репозитории были одинаковы. И добавим отображение Unicode (рис.1 - рис.2):



```
MINGW64:/c/Users/koifm
koifm@DESKTOP-81UIP5P MINGW64 ~
$ git config --global user.name "Kirill Koifman"
koifm@DESKTOP-81UIP5P MINGW64 ~
$ git config --global user.email "koifman.kirill@yandex.ru"
koifm@DESKTOP-81UIP5P MINGW64 ~
$ git config --list
diff.astextplain.textconv=astextplain
filter.lfs.clean=git-lfs clean -- %f
filter.lfs.smudge=git-lfs smudge -- %f
filter.lfs.process=git-lfs filter-process
filter.lfs.required=true
http.sslbackend=openssl
http.sslcainfo=C:/Program Files/Git/mingw64/etc/ssl/certs/ca-bundle.crt
core.autocrlf=input
core.fscache=true
core.symlinks=false
pull.rebase=false
credential.helper=manager
credential.https://dev.azure.com/usehttppath=true
init.defaultbranch=master
core.editor="C:\Users\koifm\AppData\Local\Programs\Microsoft VS Code\bin\code" -
-wait
user.name=Kirill Koifman
user.email=koifman.kirill@yandex.ru
```

РИС.1



```
koifm@DESKTOP-81UIP5P MINGW64 ~
$ git config --global core.autocrlf true
koifm@DESKTOP-81UIP5P MINGW64 ~
$ git config --global core.safecrlf true
koifm@DESKTOP-81UIP5P MINGW64 ~
$ git config --global core.quotepath off
koifm@DESKTOP-81UIP5P MINGW64 ~
$
```

РИС.2

2. Теперь создадим проект "Hello World!": Для этого создадим пустой каталог с именем hello, затем войдём в него и создадим там файл с именем hello.html (рис.3):

```
koifm@DESKTOP-81UIP5P MINGW64 ~
$ mkdir hello

koifm@DESKTOP-81UIP5P MINGW64 ~
$ cd hello/

koifm@DESKTOP-81UIP5P MINGW64 ~/hello
$ touch hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello
$ echo "Hello, World!" > hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello
$
```

РИС.3

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello
$ git init
Initialized empty Git repository in C:/Users/koifm/hello/.git/
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

РИС.4

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git add hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git commit -m "Initial Commit"
[master (root-commit) d33d9e4] Initial Commit
 1 file changed, 1 insertion(+)
 create mode 100644 hello.html

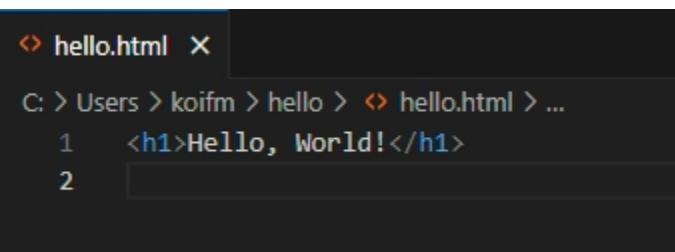
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git status
On branch master
nothing to commit, working tree clean

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

РИС.5(коммитить нечего)

3. Добавим кое-какие HTML-теги к нашему приветствуию (рис.6) и проверим статус:

4. Теперь проиндексируем изменения (рис.7)



```
hello.html X

C: > Users > koifm > hello > hello.html > ...
1   <h1>Hello, World!</h1>
2
```

РИС.6

```
koifm@DESKTOP-81UIP5P 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")

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git add hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    modified:   hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

Рис.7(файл был изменён и проиндексирован)

Создадим коммит (рис.8):

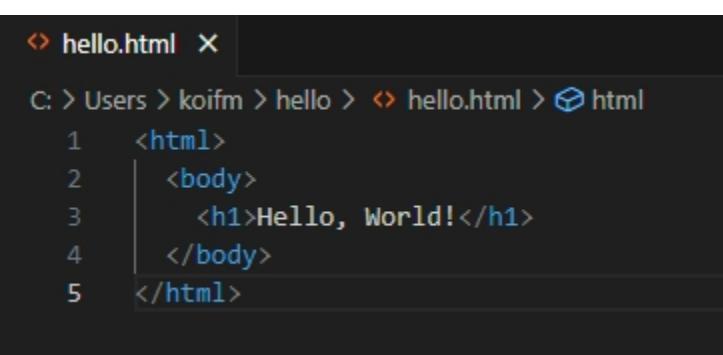
```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git commit
[master 8662fa5] Added h1 tag
 1 file changed, 1 insertion(+), 1 deletion(-)

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git status
On branch master
nothing to commit, working tree clean

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

Рис.8(коммит был успешно сделан)

Изменим страницу «Hello, World», чтобы она содержала стандартные теги и , и добавим изменения в индекс, после чего ещё раз изменим файл и создадим коммит (рис.9 - рис.11):



The screenshot shows a code editor window with the file 'hello.html' open. The file contains the following HTML code:

```
C: > Users > koifm > hello > < hello.html > html
1  <html>
2  |  <body>
3  |  |  <h1>Hello, World!</h1>
4  |  |  </body>
5  </html>
```

Рис.9

```
↳ hello.html X
C: > Users > koifm > hello > ↳ hello.html > html
1   <html>
2   |   <head>
3   |   </head>
4   |   <body>
5   |       <h1>Hello, World!</h1>
6   |   </body>
7   </html>
```

РИС.10

```
koifm@DESKTOP-81UIP5P 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

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git commit -m "Added standard HTML page tags"
[master 520b0d8] Added standard HTML page tags
 1 file changed, 5 insertions(+), 1 deletion(-)

koifm@DESKTOP-81UIP5P 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")
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

РИС.11(hello.html имеет незафиксированные изменения, но уже не в буферной зоне)

Теперь добавим второе изменение в индекс, а затем проверим состояние с помощью командыgit status (рис.12):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git add .

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    modified:   hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git commit -m "Added HTML header"
[master 364ba08] Added HTML header
 1 file changed, 2 insertions(+)

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

РИС.12(изменения были успешно закоммичены)

Проверим список произведенных изменений в разных форматах (рис.13, рис.14):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log
commit 364ba0894386c43ae0577ddcad721ca56b512968 (HEAD -> master)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:20:17 2024 +0300

    Added HTML header

commit 520b0d85de5cfbc9226ff5021c1cec5ae1ebab02
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:18:32 2024 +0300

    Added standard HTML page tags

commit 8662fa59a759a6a5ebbb96765f967a926d75bc63
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:14:13 2024 +0300

    Added h1 tag

commit d33d9e43243edd5b7b042a619a6c88a62b509f48
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:10:39 2024 +0300

    Initial Commit

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

РИС.13(список ранее сделанных коммитов с прилагающейся информацией)

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log --pretty=oneline
364ba0894386c43ae0577ddcad721ca56b512968 (HEAD -> master) Added HTML header
520b0d85de5cfbc9226ff5021c1cec5ae1ebab02 Added standard HTML page tags
8662fa59a759a6a5ebbb96765f967a926d75bc63 Added h1 tag
d33d9e43243edd5b7b042a619a6c88a62b509f48 Initial Commit

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log --pretty=oneline --max-count=2
364ba0894386c43ae0577ddcad721ca56b512968 (HEAD -> master) Added HTML header
520b0d85de5cfbc9226ff5021c1cec5ae1ebab02 Added standard HTML page tags

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log --pretty=oneline --until='3 minutes ago'
520b0d85de5cfbc9226ff5021c1cec5ae1ebab02 Added standard HTML page tags
8662fa59a759a6a5ebbb96765f967a926d75bc63 Added h1 tag
d33d9e43243edd5b7b042a619a6c88a62b509f48 Initial Commit

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

*РИС.14(список ранее сделанных коммитов с прилагающейся информацией:

- в одностороннем формате;
- в одностороннем формате, последние 2;
- в одностороннем формате, сделанные за последние 3 минуты)*

Вернёмся к предыдущей версии с помощью git checkout (рис.15):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello ((d33d9e4...))
$ git checkout master
Previous HEAD position was d33d9e4 Initial Commit
Switched to branch 'master'

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ cat hello.html
<html>
  <head>
  </head>
  <body>
    <h1>Hello, World!</h1>
  </body>
</html>
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

Рис.16(успешно откатились до последнего коммита и вывели последний вариант файла hello.html)

Назовём текущую версию страницы hello первой (v1) и поднимемся к предыдущему коммиту и ему тоже присвоим тег (рис.17):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git tag v1

koifm@DESKTOP-81UIP5P 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 520b0d8 Added standard HTML page tags

koifm@DESKTOP-81UIP5P MINGW64 ~/hello ((520b0d8...))
$ cat hello.html
<html>
  <body>
    <h1>Hello, World!</h1>
  </body>
</html>
koifm@DESKTOP-81UIP5P MINGW64 ~/hello ((520b0d8...))
$ git tag v1-beta

koifm@DESKTOP-81UIP5P MINGW64 ~/hello ((v1-beta))
$
```

Рис.17

Теперь попробуем попреключаться между двумя отмеченными версиями (рис.18):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello ((v1-beta))
$ git checkout v1
Previous HEAD position was 520b0d8 Added standard HTML page tags
HEAD is now at 364ba08 Added HTML header

koifm@DESKTOP-81UIP5P MINGW64 ~/hello ((v1))
$ git checkout v1-beta
Previous HEAD position was 364ba08 Added HTML header
HEAD is now at 520b0d8 Added standard HTML page tags

koifm@DESKTOP-81UIP5P MINGW64 ~/hello ((v1-beta))
$
```

РИС.18

Проверим доступные теги (рис.19):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello ((v1-beta))
$ git tag
v1
v1-beta

koifm@DESKTOP-81UIP5P MINGW64 ~/hello ((v1-beta))
$ git log master --all
commit 364ba0894386c43ae0577ddcad721ca56b512968 (tag: v1, master)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:20:17 2024 +0300

    Added HTML header

commit 520b0d85de5cfbc9226ff5021c1cec5ae1ebab02 (HEAD, tag: v1-beta)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:18:32 2024 +0300

    Added standard HTML page tags

commit 8662fa59a759a6a5ebbb96765f967a926d75bc63
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:14:13 2024 +0300

    Added h1 tag

commit d33d9e43243edd5b7b042a619a6c88a62b509f48
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:10:39 2024 +0300

    Initial Commit

koifm@DESKTOP-81UIP5P MINGW64 ~/hello ((v1-beta))
$
```

РИС.19

5. Теперь уделим внимание отмене локальных изменений: Переместимся на ветку master и изменим hello.html (рис.20 - рис.21):



```
↳ hello.html X
C: > Users > koifm > hello > ↳ hello.html > ↳ html > ↳ body
1  <html>
2  |  <head>
3  |  </head>
4  |  <body>
5  |  |  <h1>Hello, World!</h1>
6  |  |  <!-- This is a bad comment. We want to revert it. -->
7  |  |  </body>
8  |  </html>
```

РИС.20

```

koifm@DESKTOP-81UIIP5P MINGW64 ~/hello ((v1-beta))
$ git checkout master
Previous HEAD position was 520b0d8 Added standard HTML page tags
Switched to branch 'master'

koifm@DESKTOP-81UIIP5P 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")

koifm@DESKTOP-81UIIP5P MINGW64 ~/hello (master)
$ git checkout hello.html
Updated 1 path from the index

koifm@DESKTOP-81UIIP5P MINGW64 ~/hello (master)
$ git status
On branch master
nothing to commit, working tree clean

koifm@DESKTOP-81UIIP5P MINGW64 ~/hello (master)
$ cat hello.html
<html>
  <head>
  </head>
  <body>
    <h1>Hello, World!</h1>
  </body>
</html>
koifm@DESKTOP-81UIIP5P MINGW64 ~/hello (master)
$ ...

```

РИС.21(файл был изменён, но не проиндексирован, поэтому мы успешно его откатили до предыдущей версии)

- Теперь займёмся процессом отмены проиндексированных изменений: Переместимся на ветку master и изменим hello.html: Внесём изменение в файл hello.html в виде нежелательного комментария, проиндексируем его и проверим состояние, после чего выполним сброс буферной зоны к HEAD (рис.22 - рис.23). Теперь переключимся на версию коммита (рис.24):

```

C: > Users > koifm > hello > < hello.html > < html > < head >
1   <html>
2   |   <head>
3   |   |   <!-- This is an unwanted but staged comment -->
4   |   |   </head>
5   |   <body>
6   |   |   <h1>Hello, World!</h1>
7   |   </body>
8   </html>

```

РИС.22

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git add hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    modified:   hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git reset HEAD hello.html
Unstaged changes after reset:
M       hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

Рис.23

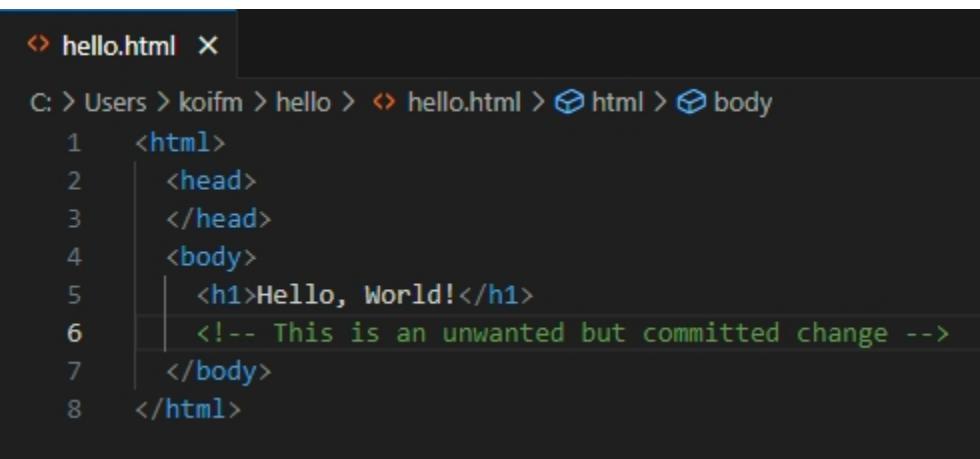
```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git checkout hello.html
Updated 1 path from the index

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git status
On branch master
nothing to commit, working tree clean

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

Рис.24(рабочий каталог снова чист)

7. Попробуем создать коммит, а потом отменить его с помощью создания следующего коммита (рис.25 - рис.26):



```
<html>
  <head>
  </head>
  <body>
    <h1>Hello, World!</h1>
    <!-- This is an unwanted but committed change -->
  </body>
</html>
```

Рис.25

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git add hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git commit -m "Oops, we didn't want this commit"
[master 77db71b] Oops, we didn't want this commit
 1 file changed, 1 insertion(+)

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

Рис.26(сделали неправильный коммит)

Чтобы отменить коммит, нам необходимо сделать коммит, который удаляет изменения, сохраненные нежелательным коммитом. После этого проверим лог (рис.27):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git revert HEAD
[master 9cb1b4e] Revert "Oops, we didn't want this commit"(CHECKED)
 1 file changed, 1 deletion(-)

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git status
On branch master
nothing to commit, working tree clean

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log
commit 9cb1b4e2b519f1857e3ad1c1febe018652d88fcc (HEAD -> master)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:34:55 2024 +0300

    Revert "Oops, we didn't want this commit"(CHECKED)

    This reverts commit 77db71b5ce51838d733336e7a68eeef6e86386d46.

commit 77db71b5ce51838d733336e7a68eeef6e86386d46
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:34:29 2024 +0300

    Oops, we didn't want this commit

commit 364ba0894386c43ae0577ddcad721ca56b512968 (tag: v1)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:20:17 2024 +0300

    Added HTML header

commit 520b0d85de5cfbc9226ff5021c1cec5ae1ebab02 (tag: v1-beta)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:18:32 2024 +0300

    Added standard HTML page tags

commit 8662fa59a759a6a5ebbb96765f967a926d75bc63
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:14:13 2024 +0300

    Added h1 tag

commit d33d9e43243edd5b7b042a619a6c88a62b509f48
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:10:39 2024 +0300

    Initial Commit

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ |
```

Рис.27(ненужный коммит сохранился в истории)

8. А сейчас попробуем удалить коммит из ветки: Предположим, мы делаем коммит, и сразу понимаем, что это была ошибка. Было бы неплохо иметь команду «возврата», которая позволила бы нам сделать вид, что неправильного коммита никогда и не было: Вновь проверим историю коммитов и отметим тегом последний (рис.28):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log
commit 9cb1b4e2b519f1857e3ad1c1febe018652d88fcc (HEAD -> master)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:34:55 2024 +0300

    Revert "Oops, we didn't want this commit"(CHECKED)

    This reverts commit 77db71b5ce51838d733336e7a68eef6e86386d46

commit 77db71b5ce51838d733336e7a68eef6e86386d46
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:34:29 2024 +0300

    Oops, we didn't want this commit

commit 364ba0894386c43ae0577ddcad721ca56b512968 (tag: v1)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:20:17 2024 +0300

    Added HTML header

commit 520b0d85de5cfbc9226ff5021c1cec5ae1ebab02 (tag: v1-beta)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:18:32 2024 +0300

    Added standard HTML page tags

commit 8662fa59a759a6a5ebbb96765f967a926d75bc63
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:14:13 2024 +0300

    Added h1 tag

commit d33d9e43243edd5b7b042a619a6c88a62b509f48
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:10:39 2024 +0300

    Initial Commit

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git tag oops
```

PIIC.28

Сбросим ветку до нужной точки (рис.29):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git reset --hard v1
HEAD is now at 364ba08 Added HTML header

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log
commit 364ba0894386c43ae0577ddcad721ca56b512968 (HEAD -> master, tag: v1)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:20:17 2024 +0300

    Added HTML header

commit 520b0d85de5cfbc9226ff5021c1cec5ae1ebab02 (tag: v1-beta)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:18:32 2024 +0300

    Added standard HTML page tags

commit 8662fa59a759a6a5ebbb96765f967a926d75bc63
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:14:13 2024 +0300

    Added h1 tag

commit d33d9e43243edd5b7b042a619a6c88a62b509f48
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:10:39 2024 +0300

    Initial Commit

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ ...
```

PIIC.29

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log --all
commit 9cb1b4e2b519f1857e3ad1c1febe018652d88fcc (tag: oops)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:34:55 2024 +0300

    Revert "Oops, we didn't want this commit"(CHECKED)

    This reverts commit 77db71b5ce51838d733336e7a68eeF6e86386d46.

commit 77db71b5ce51838d733336e7a68eeF6e86386d46
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:34:29 2024 +0300

    Oops, we didn't want this commit

commit 364ba0894386c43ae0577ddcad721ca56b512968 (HEAD -> master, tag: v1)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:20:17 2024 +0300

    Added HTML header

commit 520b0d85de5cfbc9226ff5021c1cec5ae1ebab02 (tag: v1-beta)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:18:32 2024 +0300

    Added standard HTML page tags

commit 8662fa59a759a6a5ebbb96765f967a926d75bc63
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:14:13 2024 +0300

    Added h1 tag

commit d33d9e43243edd5b7b042a619a6c88a62b509f48
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:10:39 2024 +0300

    Initial Commit

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

РИС.30

9. Удалим тег oops и коммиты, на которые он ссылался, сборщиком мусора (рис.31)

```

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git tag -d oops
Deleted tag 'oops' (was 9cb1b4e)

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log --all
commit 364ba0894386c43ae0577ddcad721ca56b512968 (HEAD -> master, tag: v1)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:20:17 2024 +0300

    Added HTML header

commit 520b0d85de5cfbc9226ff5021c1cec5ae1ebab02 (tag: v1-beta)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:18:32 2024 +0300

    Added standard HTML page tags

commit 8662fa59a759a6a5ebbb96765f967a926d75bc63
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:14:13 2024 +0300

    Added h1 tag

commit d33d9e43243edd5b7b042a619a6c88a62b509f48
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:10:39 2024 +0300

    Initial Commit

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ ...

```

РИС.31(«oops» большие не будет отображаться в репозитории)

10. Также попробуем внести изменения в сделанный коммит (рис.32 - рис.35):

РИС.32

```

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git add hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git commit -m "Add an author comment"
[master 98674c3] Add an author comment
 1 file changed, 1 insertion(+)

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ ...

```

РИС.33(сделали коммит)

```
hello.html X  
C: > Users > koifm > hello > < hello.html > ...  
1  <!-- Author: Koifman K. (koifman.kirill@yandex.ru) |-->  
2  <html>  
3  | <head>  
4  | </head>  
5  | <body>  
6  | | <h1>Hello, World!</h1>  
7  | </body>  
8  </html>
```

РИС.34

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)  
$ git add hello.html  
  
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)  
$ git commit --amend -m "Add an author/email comment"  
[master 6dc9be1] Add an author/email comment  
Date: Sat Feb 10 15:43:07 2024 +0300  
1 file changed, 1 insertion(+)  
  
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)  
$ git log  
commit 6dc9be17941b23f32cc188d91cc1e7bb75aed87c (HEAD -> master)  
Author: Kirill Koifman <koifman.kirill@yandex.ru>  
Date: Sat Feb 10 15:43:07 2024 +0300  
  
    Add an author/email comment  
  
commit 364ba0894386c43ae0577ddcad721ca56b512968 (tag: v1)  
Author: Kirill Koifman <koifman.kirill@yandex.ru>  
Date: Sat Feb 10 15:20:17 2024 +0300  
  
    Added HTML header  
  
commit 520b0d85de5cfbc9226ff5021c1cec5ae1ebab02 (tag: v1-beta)  
Author: Kirill Koifman <koifman.kirill@yandex.ru>  
Date: Sat Feb 10 15:18:32 2024 +0300  
  
    Added standard HTML page tags  
  
commit 8662fa59a759a6a5ebbb96765f967a926d75bc63  
Author: Kirill Koifman <koifman.kirill@yandex.ru>  
Date: Sat Feb 10 15:14:13 2024 +0300  
  
    Added h1 tag  
  
commit d33d9e43243edd5b7b042a619a6c88a62b509f48  
Author: Kirill Koifman <koifman.kirill@yandex.ru>  
Date: Sat Feb 10 15:10:39 2024 +0300  
  
    Initial Commit  
  
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)  
$
```

РИС.35(заменили предыдущий коммит новым)

11. Сейчас мы собираемся создать структуру нашего репозитория. Давайте перенесем страницу в каталог lib (рис.36)

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ mkdir lib

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git mv hello.html lib

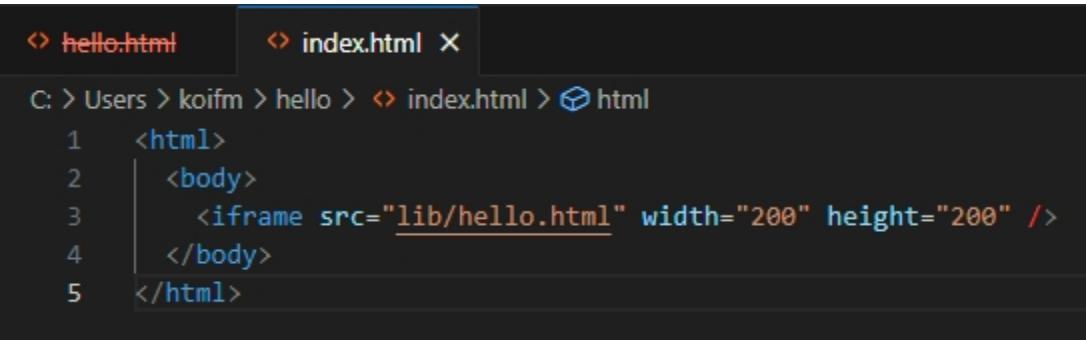
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    renamed:    hello.html -> lib/hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git commit -m "Moved hello.html to lib"
[master 979b8b5] Moved hello.html to lib
 1 file changed, 0 insertions(+), 0 deletions(-)
 rename hello.html => lib/hello.html (100%)

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

РИС.36(успешно перенесли)

13. Добавим файл index.html в наш репозиторий (рис.37 - рис.39):



```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ cat index.html
<html>
  <body>
    <iframe src="lib/hello.html" width="200" height="200" />
  </body>
</html>
```

РИС.37

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git commit -m "Added index.html"
[master 63968f0] Added index.html
 1 file changed, 5 insertions(+)
 create mode 100644 index.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log
commit 63968f0265cee206d820640779d16b8f8d4076b4 (HEAD -> master)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:00:26 2024 +0300

  Added index.html
```

РИС.38

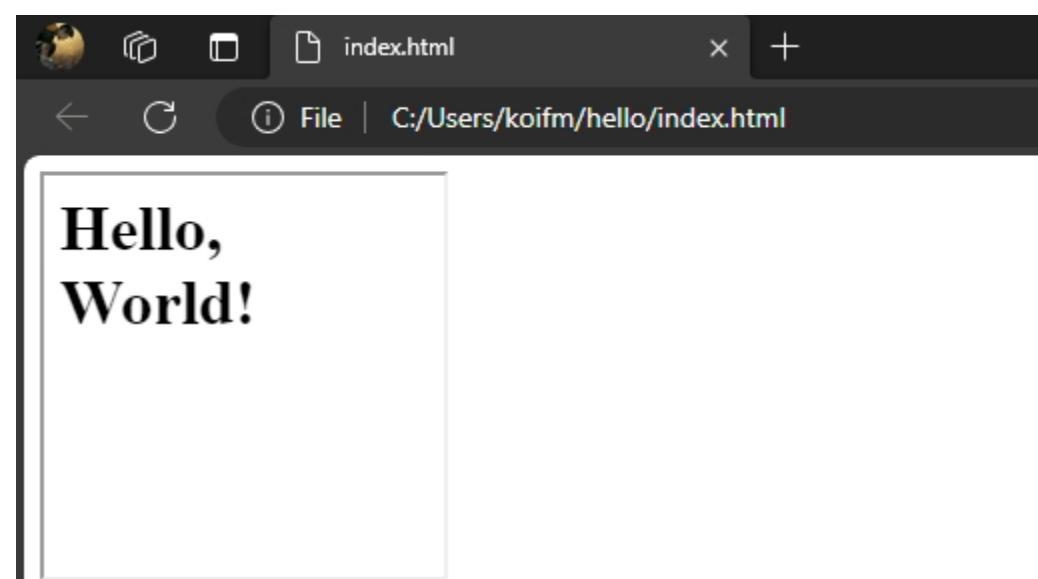


РИС.39(можно увидеть кусок страницы *hello* в маленьком окошке)

14. Рассмотрим детальней каталог .git (рис.40), где можно увидеть:

- информацию git;
- базу данных объектов;
- файл конфигурации;
- информацию о ветках, тегах;

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ ls -C .git
COMMIT_EDITMSG HEAD ORIG_HEAD config description hooks/ index info/ logs/ objects/ packed-refs refs/
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ ls -C .git/objects
10/ 36/ 3e/ 4b/ 52/ 53/ 57/ 62/ 63/ 6d/ 76/ 77/ 80/ 86/ 8a/ 8e/ 97/ 98/ 9c/ a6/ ad/ b9/ d3/ f7/ fb/ info/ pack/
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ ls -C .git/objects/<36>
bash: syntax error near unexpected token `36'
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ ls -C .git/objects/36
4ba0894386c43ae0577ddcad721ca56b512968
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ ls -C .git/objects/6d/
c9be17941b23f32cc188d91cc1e7bb75aed87c
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ cat .git/config
[core]
    repositoryformatversion = 0
    filemode = false
    bare = false
    logallrefupdates = true
    symlinks = false
    ignorecase = true

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ ls .git/refs
heads/ tags/
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ ls .git/refs/heads
master
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ ls .git/refs/tags
v1 v1-beta
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ ls .git/refs/tags/v1
.git/refs/tags/v1
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ cat .git/HEAD
ref: refs/heads/master
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

РИС.40

15. Исследуем информацию о наших коммитах с помощью объектов git (рис.41 - рис.42):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log --max-count=1
commit 63968f0265cee206d820640779d16b8f8d4076b4 (HEAD -> master)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:00:26 2024 +0300

    Added index.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git cat-file -t 63968f0265cee206d8206407
commit

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git cat-file -p 63968f0265cee206d8206407
tree d37b2ccca496b2b39c7bbdc40d4c8432644d958b
parent 979b8b50201fe559159c3350c22735250fba0516
author Kirill Koifman <koifman.kirill@yandex.ru> 1707570026 +0300
committer Kirill Koifman <koifman.kirill@yandex.ru> 1707570026 +0300

Added index.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git cat-file -p d37b2ccca496b2b39c7bbdc40d4

100644 blob 8a3df81da2627a7b77bae3a87ae886120c9fb021    index.html
040000 tree ad27f58c2d240933acec53be0ffafaa4ca2498cc    lib

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git cat-file -p ad27f58c2d240933acec53be0ffa
100644 blob 57ba78ccbfb1c6d8bebdc0d14af2a70362a2ce5c    hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git cat-file -p 57ba78ccbfb1

<!-- Author: Koifman K. (koifman.kirill@yandex.ru) -->
<html>
  <head>
  </head>
  <body>
    <h1>Hello, World!</h1>
  </body>
</html>
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ |
```

РИС.41(получили содержимое файла hello.html последней версии)

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git cat-file -p 979b8b50201fe559159c
tree fb9b0ab3059cb93071e9532ba27c77e1183df85
parent 6dc9be17941b23f32cc188d91cc1e7bb75aed87c
author Kirill Koifman <koifman.kirill@yandex.ru> 1707569378 +0300
committer Kirill Koifman <koifman.kirill@yandex.ru> 1707569378 +0300
```

Moved hello.html to lib

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git cat-file -p 6dc9be17941b23f32cc188d91cc
tree ad27f58c2d240933acec53be0ffafaa4ca2498cc
parent 364ba0894386c43ae0577ddcad721ca56b512968
author Kirill Koifman <koifman.kirill@yandex.ru> 1707568987 +0300
committer Kirill Koifman <koifman.kirill@yandex.ru> 1707569080 +0300
```

Add an author/email comment

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git cat-file -p 364ba0894386c43ae0577ddcad
tree b994444e787c375d6cf39fe5914fb3783bbafdeb
parent 520b0d85de5cfbc9226ff5021c1cec5ae1ebab02
author Kirill Koifman <koifman.kirill@yandex.ru> 1707567617 +0300
committer Kirill Koifman <koifman.kirill@yandex.ru> 1707567617 +0300
```

Added HTML header

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git cat-file -p 520b0d85de5cfbc9226ff5021c1
tree d3918704023839f773437399537cee606e888840
parent 8662fa59a759a6a5ebbb96765f967a926d75bc63
author Kirill Koifman <koifman.kirill@yandex.ru> 1707567512 +0300
committer Kirill Koifman <koifman.kirill@yandex.ru> 1707567512 +0300
```

Added standard HTML page tags

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git cat-file -p 8662fa59a759a6a5ebbb96765f967
tree 629377ed8eb96afede9fd6cb7b48b1e4a1d3dc56
parent d33d9e43243edd5b7b042a619a6c88a62b509f48
author Kirill Koifman <koifman.kirill@yandex.ru> 1707567253 +0300
committer Kirill Koifman <koifman.kirill@yandex.ru> 1707567253 +0300
```

Added h1 tag

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git cat-file -p d33d9e43243edd5b7b042a
tree 523cd318fc3b74ad3852cd34a74720ad6f7dd422
author Kirill Koifman <koifman.kirill@yandex.ru> 1707567039 +0300
committer Kirill Koifman <koifman.kirill@yandex.ru> 1707567039 +0300
```

Initial Commit

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git cat-file -p 523cd318fc3b74ad3852cd34a7
100644 blob 8ab686eafeb1f44702738c8b0f24f2567c36da6d    hello.html
```

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git cat-file -p 8ab686eafeb1f44702738c8b0f2
Hello, World!
```

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

Рис.42

16. Создадим новую ветку (рис.43 - рис.46):

```

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git checkout -b style
Switched to a new branch 'style'

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git status
On branch style
nothing to commit, working tree clean

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ touch lib/style.css

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ code lib/style.css

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git add lib/style.css
fatal: CRLF would be replaced by LF in lib/style.css

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git config --global core.safecrlf warn

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git add lib/style.css
warning: in the working copy of 'lib/style.css', CRLF will be replaced by LF the next time Git touches it

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git commit -m "Added css stylesheet"
[style cd6c947] Added css stylesheet
 1 file changed, 4 insertions(+)
 create mode 100644 lib/style.css

```

РИС.43(переключимся на новую ветку и закоммитим изменения)

```

index.html # style.css X
C: > Users > koifm > hello > lib > # style.css > h1
1   h1 {
2     color: red;
3   }
4

```

РИС.44(создадим таблицу стилей в новой ветке)

```

hello.html X index.html # style.css
C: > Users > koifm > hello > lib > hello.html > html
1  <!-- Author: Koifman K. (koifman.kirill@yandex.ru) -->
2  <html>
3    <head>
4      <link type="text/css" rel="stylesheet" media="all" href="style.css" />
5    </head>
6    <body>
7      <h1>Hello, World!</h1>
8    </body>
9  </html>

```

РИС.45(изменим основную страницу)

```
hello.html index.html # style.css
C: > Users > koifm > hello > index.html > html > head > link
1 <html>
2   <head>
3     <link type="text/css" rel="stylesheet" media="all" href="style.css" />
4   </head>
5   <body>
6     <iframe src="lib/hello.html" width="200" height="200" />
7   </body>
8 </html>
```

Рис.46(изменим вторую страницу)

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git commit -m "Added css stylesheet"
[style cd6c947] Added css stylesheet
 1 file changed, 4 insertions(+)
 create mode 100644 lib/style.css

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ code lib/hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git add lib/hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git commit -m "Hello uses style.css"
[style c4067ff] Hello uses style.css
 1 file changed, 1 insertion(+)

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git add index.html
warning: in the working copy of 'index.html', CRLF will be replaced by LF the next time Git touches it

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git commit -m "Updated index.html"
[style d004405] Updated index.html
 1 file changed, 3 insertions(+)

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$
```

Рис.47(закоммитим изменения)

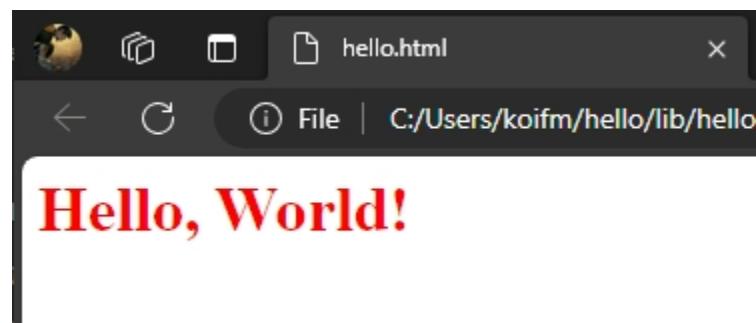


Рис.48(результатом hello.html)

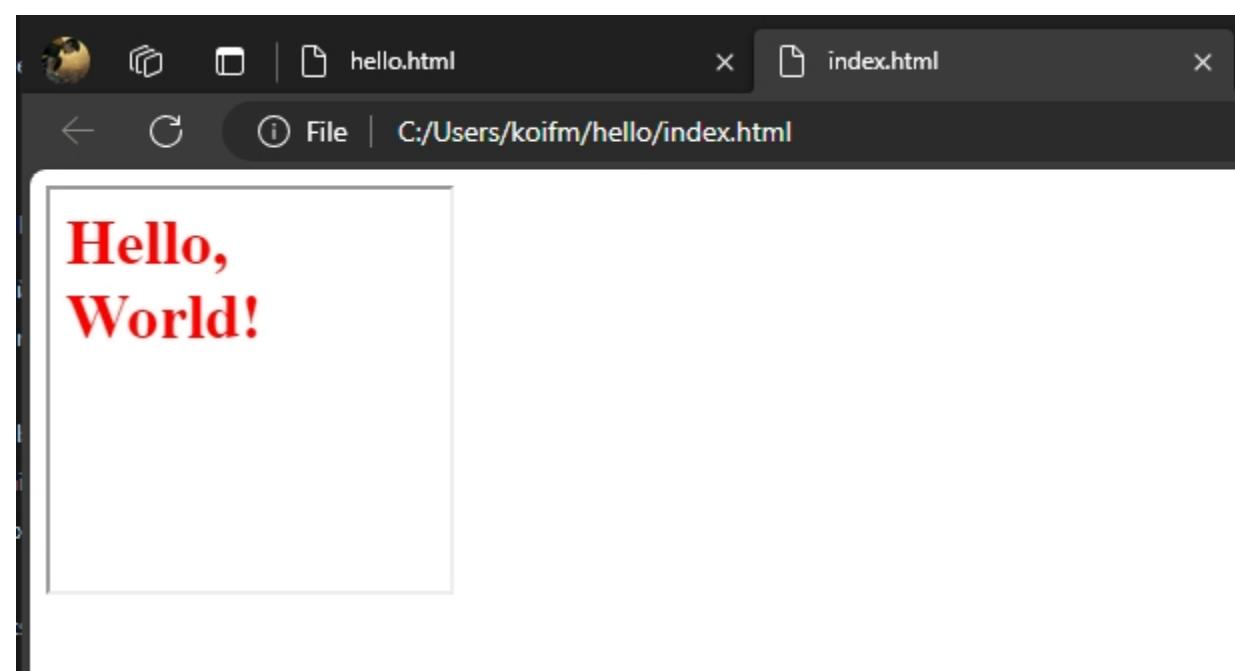


Рис.49(результатом index.html)

17. Теперь у нас есть 2 ветки, проверим информацию о них и попробуем произвести несколько оперций с ними (рис.50 - рис.54):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git log --all
commit d0044053735c0f82e0b6ec76c79d623e65b1f44b (HEAD -> style)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:22:08 2024 +0300

    Updated index.html

commit c4067fffebe4fa9a3a196c7b5c5e97395b12189a3
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:20:46 2024 +0300

    Hello uses style.css

commit cd6c94705dd99e7c5839fa49e11f9f4eef71a20d
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:17:47 2024 +0300

    Added css stylesheet

commit 63968f0265cee206d820640779d16b8f8d4076b4 (master)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:00:26 2024 +0300

    Added index.html

commit 979b8b50201fe559159c3350c22735250fba0516
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:49:38 2024 +0300

    Moved hello.html to lib

commit 6dc9be17941b23f32cc188d91cc1e7bb75aed87c
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:43:07 2024 +0300

    Add an author/email comment

commit 364ba0894386c43ae0577ddcad721ca56b512968 (tag: v1)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:20:17 2024 +0300

    Added HTML header

commit 520b0d85de5cfbc9226ff5021c1cec5ae1ebab02 (tag: v1-beta)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:18:32 2024 +0300

    Added standard HTML page tags

commit 8662fa59a759a6a5ebbb96765f967a926d75bc63
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:14:13 2024 +0300

    Added h1 tag

commit d33d9e43243edd5b7b042a619a6c88a62b509f48
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:10:39 2024 +0300

    Initial Commit

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$
```

Рис.50(информация о последних коммитах)

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git checkout master
Switched to branch 'master'

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ cat lib/hello.html
<!-- Author: Koifman K. (koifman.kirill@yandex.ru) -->
<html>
  <head>
  </head>
  <body>
    <h1>Hello, World!</h1>
  </body>
</html>
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git checkout style
Switched to branch 'style'

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ cat lib/hello.html
<!-- Author: Koifman K. (koifman.kirill@yandex.ru) -->
<html>
  <head>
    <link type="text/css" rel="stylesheet" media="all" href="style.css" />
  </head>
  <body>
    <h1>Hello, World!</h1>
  </body>
</html>
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$
```

Рис.51(переключимся на master и проверим содержимое hello.html, после чего вернёмся к style и сделаем тоже самое)

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git checkout master
Switched to branch 'master'

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ echo "This is the Hello World example from the git tutorial." > README.md

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git add README.md

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git commit -m "Added README"
[master 7dc7990] Added README
 1 file changed, 1 insertion(+)
 create mode 100644 README.md

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

Рис.52(вернёмся в master и добавим новый файл. И сделаем коммит)

19. Сделаем коммит изменения README.md в ветку master (рис.53):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log --graph --all
* commit 7dc79906433d5d3c8b0d0afccf6ec29d80481bea (HEAD -> master)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:26:34 2024 +0300

    Added README

* commit d0044053735c0f82e0b6ec76c79d623e65b1f44b (style)
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:22:08 2024 +0300
|
|     Updated index.html
|
* commit c4067fffebe4fa9a3a196c7b5c5e97395b12189a3
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:20:46 2024 +0300
|
|     Hello uses style.css
|
* commit cd6c94705dd99e7c5839fa49e11f9f4eeef71a20d
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:17:47 2024 +0300
|
|     Added css stylesheet
|
* commit 63968f0265cee206d820640779d16b8f8d4076b4
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:00:26 2024 +0300
|
|     Added index.html
|
* commit 979b8b50201fe559159c3350c22735250fba0516
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 15:49:38 2024 +0300
|
|     Moved hello.html to lib
|
* commit 6dc9be17941b23f32cc188d91cc1e7bb75aed87c
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 15:43:07 2024 +0300
```

РИС.53(теперь есть 2 отличные ветки)

20. Давайте сольём эти ветки в одну (рис.54):

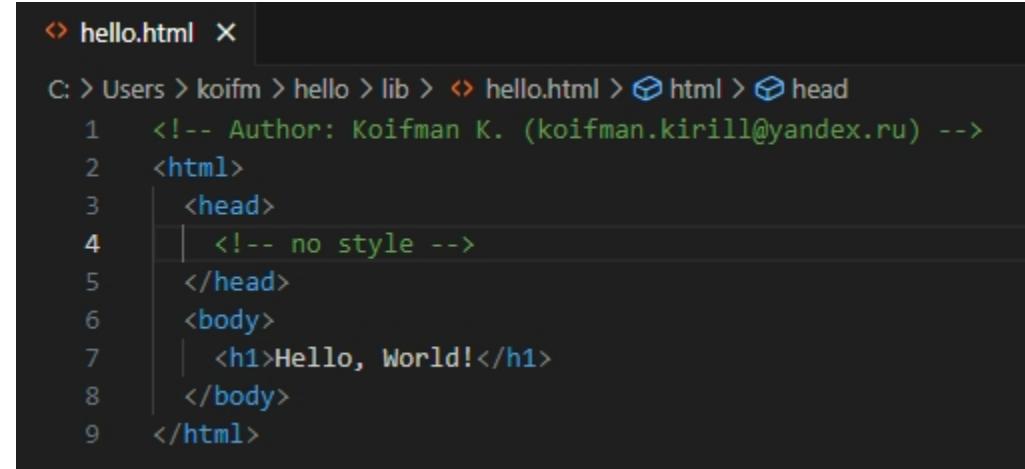
```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git checkout style
Switched to branch 'style'

koifm@DESKTOP-81UIP5P 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

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git log --graph --all
* commit f9f956ada9ca582bce4122987161bd727e92d517 (HEAD -> style)
| Merge: d004405 7dc7990
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:29:15 2024 +0300
|
|     Merge branch 'master' into style
|
* commit 7dc79906433d5d3c8b0d0afccf6ec29d80481bea (master)
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:26:34 2024 +0300
|
|     Added README
|
* commit d0044053735c0f82e0b6ec76c79d623e65b1f44b
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:22:08 2024 +0300
```

РИС.54(успешно слили ветки)

21. Создадим искусственный конфликт при слиянии веток (рис.55 - рис.56):



```
hello.html X
C: > Users > koifm > hello > lib > hello.html > html > head
1  <!-- Author: Koifman K. (koifman.kirill@yandex.ru) -->
2  <html>
3  | <head>
4  | | <!-- no style -->
5  | </head>
6  | <body>
7  | | <h1>Hello, World!</h1>
8  | </body>
9  </html>
```

РИС.55(внесём изменения в ветке master)

```

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git checkout master
Switched to branch 'master'

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ code lib/hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git add lib/hello.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git commit -m "Life is great"
[master 2e52c9c] Life is great
1 file changed, 1 insertion(+)

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log --graph --all
* commit 2e52c9c9256a6fcfa96568cbf941a7fd6838dd942 (HEAD -> master)
  Author: Kirill Koifman <koifman.kirill@yandex.ru>
  Date:   Sat Feb 10 16:31:10 2024 +0300

    Life is great

* commit f9f956ada9ca582bce4122987161bd727e92d517 (style)
  Merge: d004405 7dc7990
  Author: Kirill Koifman <koifman.kirill@yandex.ru>
  Date:   Sat Feb 10 16:29:15 2024 +0300

    Merge branch 'master' into style

* commit 7dc79906433d5d3c8b0d0afccf6ec29d80481bea
  Author: Kirill Koifman <koifman.kirill@yandex.ru>
  Date:   Sat Feb 10 16:26:34 2024 +0300

    Added README

* commit d0044053735c0f82e0b6ec76c79d623e65b1f44b
  Author: Kirill Koifman <koifman.kirill@yandex.ru>
  Date:   Sat Feb 10 16:22:08 2024 +0300

```

Рис.56(ветки вновь отделены)

22. Решим созданный нами конфликт при слиянии веток (рис.57 - рис.59):

```

hello.html X

C: > Users > koifm > hello > lib > hello.html > ...
1  <!-- Author: Koifman K. (koifman.kirill@yandex.ru) -->
2  <html>
3  | <head>
Accept Current Change | Accept Incoming Change | Accept Both Changes | Compare Changes
4  <<<<< HEAD (Current Change)
5  | <link type="text/css" rel="stylesheet" media="all" href="style.css" />
6  =====
7  | <!-- no style -->
8  >>>> master (Incoming Change)
9  | </head>
10 | <body>
11 | | <h1>Hello, World!</h1>
12 | </body>
13 </html>

```

Рис.57(в файле можно увидеть причину конфликта)

```
hello.html X  
C: > Users > koifm > hello > lib > hello.html > head  
1  <!-- Author: Koifman K. (koifman.kirill@yandex.ru) -->  
2  <html>  
3  | <head>  
4  | | <link type="text/css" rel="stylesheet" media="all" href="style.css" />  
5  | </head>  
6  | <body>  
7  | | <h1>Hello, World! Life is great</h1>  
8  | </body>  
9  </html>
```

РИС.58(отредактируем файл, чтобы исправить конфликт)

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)  
$ git checkout style  
Switched to branch 'style'  
  
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)  
$ git merge master  
Auto-merging lib/hello.html  
CONFLICT (content): Merge conflict in lib/hello.html  
Automatic merge failed; fix conflicts and then commit the result.  
  
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style|MERGING)  
$ code lib/hello.html  
  
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style|MERGING)  
$ git add lib/hello.html  
  
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style|MERGING)  
$ git commit -m "Merged master fixed conflict"  
[style 64fce59] Merged master fixed conflict  
  
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)  
$ git log --graph --all  
* commit 64fce5909d5f5ab08ed78a62fd6efa8b3ccd4e53 (HEAD -> style)  
|\ Merge: f9f956a 2e52c9c  
| | Author: Kirill Koifman <koifman.kirill@yandex.ru>  
| | Date: Sat Feb 10 16:34:49 2024 +0300  
| |  
| |     Merged master fixed conflict  
| |  
* commit 2e52c9c9256a6fc9a96568cbf941a7fd6838dd942 (master)  
| | Author: Kirill Koifman <koifman.kirill@yandex.ru>  
| | Date: Sat Feb 10 16:31:10 2024 +0300  
| |  
| |     Life is great  
| |  
* commit f9f956ada9ca582bce4122987161bd727e92d517  
| | Merge: d004405 7dc7990  
| | Author: Kirill Koifman <koifman.kirill@yandex.ru>  
| | Date: Sat Feb 10 16:29:15 2024 +0300  
| |  
| |     Merge branch 'master' into style  
| |  
* commit 7dc79906433d5d3c8b0d0afccf6ec29d80481bea  
| | Author: Kirill Koifman <koifman.kirill@yandex.ru>  
| | Date: Sat Feb 10 16:26:34 2024 +0300  
| |  
| |     Added README  
| |  
* commit d0044053735c0f82e0b6ec76c79d623e65b1f44b  
| | Author: Kirill Koifman <koifman.kirill@yandex.ru>  
| | Date: Sat Feb 10 16:22:08 2024 +0300
```

РИС.59(сделаем коммит. Ветки вновь успешно слились)

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git reset --hard d0044053735c0f82e0b6ec76c79d623e
HEAD is now at d004405 Updated index.html

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git log --graph --all
* commit 2e52c9256a6fcfa96568cbf941a7fd6838dd942 (master)
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:31:10 2024 +0300
|
|     Life is great
|
* commit 7dc79906433d5d3c8b0d0afccf6ec29d80481bea
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:26:34 2024 +0300
|
|     Added README
|
* commit d0044053735c0f82e0b6ec76c79d623e65b1f44b (HEAD -> style)
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:22:08 2024 +0300
|
|     Updated index.html
|
* commit c4067fffebe4fa9a3a196c7b5c5e97395b12189a3
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:20:46 2024 +0300
|
|     Hello uses style.css
|
* commit cd6c94705dd99e7c5839fa49e11f9f4eeef71a20d
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:17:47 2024 +0300
|
|     Added css stylesheet
|
* commit 63968f0265cee206d820640779d16b8f8d4076b4
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:00:26 2024 +0300
```

РИС.60(в истории большие нет коммитов слияний)

24. Также попробуем произвести сброс ветки style (рис.61 - рис.62):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git checkout master
Switched to branch 'master'

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log --graph
* commit 2e52c9c9256a6fca96568cbf941a7fd6838dd942 (HEAD -> master)
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:31:10 2024 +0300
|
|     Life is great

* commit 7dc79906433d5d3c8b0d0afcfcf6ec29d80481bea
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:26:34 2024 +0300
|
|     Added README

* commit 63968f0265cee206d820640779d16b8f8d4076b4
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:00:26 2024 +0300
|
|     Added index.html

* commit 979b8b50201fe559159c3350c22735250fba0516
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 15:49:38 2024 +0300
|
|     Moved hello.html to lib

* commit 6dc9be17941b23f32cc188d91cc1e7bb75aed87c
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 15:43:07 2024 +0300
|
|     Add an author/email comment

* commit 364ba0894386c43ae0577ddcad721ca56b512968 (tag: v1)
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 15:20:17 2024 +0300
|
|     Added HTML header

* commit 520b0d85de5cfbc9226ff5021c1cec5ae1ebab02 (tag: v1-beta)
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 15:18:32 2024 +0300
|
|     Added standard HTML page tags

* commit 8662fa59a759a6a5ebbb96765f967a926d75bc63
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 15:14:13 2024 +0300
|
|     Added h1 tag

* commit d33d9e43243edd5b7b042a619a6c88a62b509f48
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 15:10:39 2024 +0300
|
|     Initial Commit

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git reset --hard 7dc79906433d5d3c8b0d0afc
HEAD is now at 7dc7990 Added README

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log --graph --all
* commit 7dc79906433d5d3c8b0d0afccf6ec29d80481bea (HEAD -> master)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:26:34 2024 +0300

    Added README

* commit d0044053735c0f82e0b6ec76c79d623e65b1f44b (style)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:22:08 2024 +0300

    Updated index.html

* commit c4067fffebe4fa9a3a196c7b5c5e97395b12189a3
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:20:46 2024 +0300

    Hello uses style.css

* commit cd6c94705dd99e7c5839fa49e11f9f4eef71a20d
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:17:47 2024 +0300

    Added css stylesheet

* commit 63968f0265cee206d820640779d16b8f8d4076b4
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:00:26 2024 +0300

    Added index.html

* commit 979b8b50201fe559159c3350c22735250fba0516
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:49:38 2024 +0300

    Moved hello.html to lib

* commit 6dc9be17941b23f32cc188d91cc1e7bb75aed87c
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:43:07 2024 +0300

    Add an author/email comment

* commit 364ba0894386c43ae0577ddcad721ca56b512968 (tag: v1)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:20:17 2024 +0300

    Added HTML header

* commit 520b0d85de5cfbc9226ff5021c1cec5ae1ebab02 (tag: v1-beta)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:18:32 2024 +0300

    Added standard HTML page tags

* commit 8662fa59a759a6a5ebbb96765f967a926d75bc63
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:14:13 2024 +0300

    Added h1 tag

* commit d33d9e43243edd5b7b042a619a6c88a62b509f48
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:10:39 2024 +0300
```

Рис.62

25. Воспользуемся командой base, чтобы вернуться в точку до 1-го слияния и перенести изменения из ветки master в ветку style (рис.63):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git checkout style
Switched to branch 'style'

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git rebase master
Successfully rebased and updated refs/heads/style.

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git log --graph
* commit d157d8173565570e09d6e38d952b36c38d215a8f (HEAD -> style)
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:22:08 2024 +0300
|
|     Updated index.html
|
* commit f6568cd3c5f327fee9f22ef1c00ff455ed95470b
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:20:46 2024 +0300
|
|     Hello uses style.css
|
* commit cb0bdb2bc67c808dfc187b60920721237fae5004
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:17:47 2024 +0300
|
|     Added css stylesheet
|
* commit 7dc79906433d5d3c8b0d0afccf6ec29d80481bea (master)
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:26:34 2024 +0300
|
|     Added README
|
* commit 63968f0265cee206d820640779d16b8f8d4076b4
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 16:00:26 2024 +0300
|
|     Added index.html
|
* commit 979b8b50201fe559159c3350c22735250fba0516
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 15:49:38 2024 +0300
|
|     Moved hello.html to lib
|
* commit 6dc9be17941b23f32cc188d91cc1e7bb75aed87c
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 15:43:07 2024 +0300
|
|     Add an author/email comment
|
* commit 364ba0894386c43ae0577ddcad721ca56b512968 (tag: v1)
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 15:20:17 2024 +0300
|
|     Added HTML header
|
* commit 520b0d85de5cfbc9226ff5021c1cec5ae1ebab02 (tag: v1-beta)
| Author: Kirill Koifman <koifman.kirill@yandex.ru>
| Date:   Sat Feb 10 15:18:32 2024 +0300
|
|     Added standard HTML page tags
|
* commit 8662fa59a759a6a5ebbb96765f967a926d75hc63
```

РИС.63(репозиторий находится в состоянии до выполнения слияния)

26. Теперь сольём изменения style в ветку master (рис.64):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (style)
$ git checkout master
Switched to branch 'master'

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git merge style
Updating 7dc7990..d157d81
Fast-forward
 index.html      | 3  +++
 lib/hello.html  | 1 +
 lib/style.css   | 4 +///
 3 files changed, 8 insertions(+)
 create mode 100644 lib/style.css

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git log
commit d157d8173565570e09d6e38d952b36c38d215a8f (HEAD -> master, style)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:22:08 2024 +0300

    Updated index.html

commit f6568cd3c5f327fee9f22ef1c00ff455ed95470b
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:20:46 2024 +0300

    Hello uses style.css

commit cb0bdb2bc67c808dfc187b60920721237fae5004
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:17:47 2024 +0300

    Added css stylesheet

commit 7dc79906433d5d3c8b0d0afccf6ec29d80481bea
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:26:34 2024 +0300

    Added README

commit 63968f0265cee206d820640779d16b8f8d4076b4
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:00:26 2024 +0300

    Added index.html

commit 979b8b50201fe559159c3350c22735250fba0516
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:49:38 2024 +0300

    Moved hello.html to lib

commit 6dc9be17941b23f32cc188d91cc1e7bb75aed87c
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:43:07 2024 +0300

    Add an author/email comment

commit 364ba0894386c43ae0577ddcad721ca56b512968 (tag: v1)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 15:20:17 2024 +0300

    Added HTML header
```

РИС.64(*git* выполнил ускоренное слияние-перемотку без каких-либо конфликтов)

27. А сейчас займёмся клонированием репозитория (рис.65):

```

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ cd ..

koifm@DESKTOP-81UIP5P MINGW64 ~
$ pwd
/c/Users/koifm

koifm@DESKTOP-81UIP5P MINGW64 ~
$ ls
'3D Objects'      'Local Settings'@
AppData/          Music/
'Application Data'@ 'My Documents'@
ArcadeShooter/    NTUSER.DAT
Contacts/          NTUSER.DAT{63e2a990-3a13-11ee-83df-18473d05d1fa}.TM.blf
Cookies@          NTUSER.DAT{63e2a990-3a13-11ee-83df-18473d05d1fa}.TMContainer000000000000000000000001.regtrans-ms
Documents/         NTUSER.DAT{63e2a990-3a13-11ee-83df-18473d05d1fa}.TMContainer000000000000000000000002.regtrans-ms
Downloads/         NetHood@
Favorites/        Octave_tasks/
GNS3/              OneDrive/
Links/             PrintHood@

Recent@           'Visual Studio'/
'Saved Games'/
Searches/
SendTo@           ansel/
'Start Menu'@     hello/
Templates@        ntuser.dat.LOG1
Tracing/          ntuser.dat.LOG2
UnrealEngineProjects/
VSCode/            ntuser.ini
Videos/            py
'VirtualBox VMs'  source/
                           text.txt
                           work/

```

koifm@DESKTOP-81UIP5P MINGW64 ~
\$ git clone hello cloned_hello
Cloning into 'cloned_hello'...
done.

```

koifm@DESKTOP-81UIP5P MINGW64 ~
$ ls
'3D Objects'      'Local Settings'@
AppData/          Music/
'Application Data'@ 'My Documents'@
ArcadeShooter/    NTUSER.DAT
Contacts/          NTUSER.DAT{63e2a990-3a13-11ee-83df-18473d05d1fa}.TM.blf
Cookies@          NTUSER.DAT{63e2a990-3a13-11ee-83df-18473d05d1fa}.TMContainer000000000000000000000001.regtrans-ms
Documents/         NTUSER.DAT{63e2a990-3a13-11ee-83df-18473d05d1fa}.TMContainer000000000000000000000002.regtrans-ms
Downloads/         NetHood@
Favorites/        Octave_tasks/
GNS3/              OneDrive/
Links/             PrintHood@

Recent@           'Visual Studio'/
'Saved Games'/
Searches/
SendTo@           ansel/
'Start Menu'@     cloned_hello/
Templates@        hello/
Tracing/          ntuser.dat.LOG1
UnrealEngineProjects/
VSCode/            ntuser.dat.LOG2
Videos/            ntuser.ini
'VirtualBox VMs'  py
                           source/
                           text.txt
                           work/

```

koifm@DESKTOP-81UIP5P MINGW64 ~
\$

Рис.65(перейдём в рабочий каталог и клинируем репозиторий hello)

28. Проверим содержимое клонированного репозитория (рис.66):

```
koifm@DESKTOP-81UIP5P MINGW64 ~
$ cd cloned_hello/
koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ ;s
bash: syntax error near unexpected token `;'

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ ls
README.md index.html lib/

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ git log --all
commit d157d8173565570e09d6e38d952b36c38d215a8f (HEAD -> master, origin/style, origin/master, origin/HEAD)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:22:08 2024 +0300

    Updated index.html

commit f6568cd3c5f327fee9f22ef1c00ff455ed95470b
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:20:46 2024 +0300

    Hello uses style.css

commit cb0bdb2bc67c808dfc187b60920721237fae5004
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:17:47 2024 +0300

    Added css stylesheet

commit 7dc79906433d5d3c8b0d0afccf6ec29d80481bea
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:26:34 2024 +0300

    Added README
```

РИС.66(те же инфомрация и коммиты, что и у исходного репозитория)

29. Проверим, что такое origin (рис.67):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ git remote
origin

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ git remote show origin
* remote origin
  Fetch URL: C:/Users/koifm/hello
  Push  URL: C:/Users/koifm/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)

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ |
```

РИС.67(получили информацию об исходной репозитории)

30. Проверим доступные ветки в нашем репозитории (рис.68):

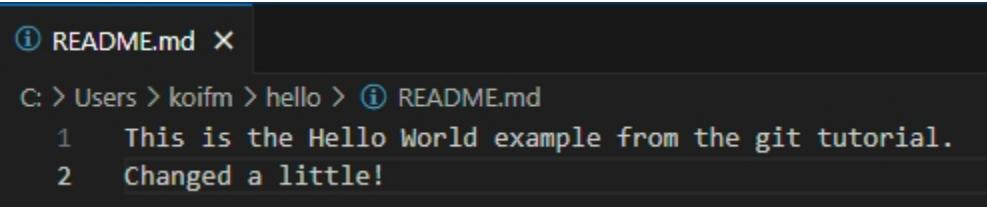
```
koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ git branch
* master

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ git branch -a
* master
  remotes/origin/HEAD -> origin/master
  remotes/origin/master
  remotes/origin/style

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$
```

РИС.68(можем увидеть как локальные ветки, так и удалённые)

31. Попробуем внести изменения в оригиналый репозиторий, после чего извлечём и сольём изменения из удалённой ветки в текущую (рис.69 - рис.72):



The screenshot shows a terminal window with the following content:

```
① README.md X
C: > Users > koifm > hello > ① README.md
1 This is the Hello World example from the git tutorial.
2 Changed a little!
```

РИС.69(изменим файл)

```

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ cd ../hello

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ code README.md

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git add README.md

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git commit -m "Changed README in original repo"
On branch master
nothing to commit, working tree clean

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git add README.md

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git commit -m "Changed README in original repo"
[master 7dc2330] Changed README in original repo
 1 file changed, 1 insertion(+)

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ cd ../cloned_hello

koifm@DESKTOP-81UIP5P MINGW64 ~/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 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 380 bytes | 76.00 KiB/s, done.
From C:/Users/koifm/hello
  d157d81..7dc2330  master      -> origin/master

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ git log -all
error: switch 'l' expects a numerical value

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ git log --all
commit 7dc2330bae1d6dd69da75a0a500a5aaa908aba6d (origin/master, origin/HEAD)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:52:10 2024 +0300

    Changed README in original repo

commit d157d8173565570e09d6e38d952b36c38d215a8f (HEAD -> master, origin/style)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:22:08 2024 +0300

    Updated index.html

commit f6568cd3c5f327fee9f22ef1c00ff455ed95470b
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:20:46 2024 +0300

    Hello uses style.css

commit cb0bdb2bc67c808dfc187b60920721237fae5004

```

Рис.70(добавим изменения и сделаем коммит)

```

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ cat README.md
This is the Hello World example from the git tutorial.

```

Рис.71(команда git fetch извлекла новые коммиты из удаленного репозитория, но не слила их с нашими наработками в локальных ветках)

32. Произведём слияние извлечённых изменения (рис.72):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ git merge origin/master
Updating d157d81..7dc2330
Fast-forward
 README.md | 1 +
 1 file changed, 1 insertion(+)

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ cat README.md
This is the Hello World example from the git tutorial.
Changed a little!
koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ git pull
Already up to date.

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ |
```

РИС.72(теперь изменения можно увидеть)

33. Давайте добавим наблюдателя, ветку которая будет отслеживать удалённую ветку (рис.73):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ git branch --track style origin/style
branch 'style' set up to track 'origin/style'.

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ git branch -a
* master
  style
    remotes/origin/HEAD -> origin/master
    remotes/origin/master
    remotes/origin/style

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ git log --max-count=2
commit 7dc2330bae1d6dd69da75a0a500a5aaa908aba6d (HEAD -> master, origin/master, origin/HEAD)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:52:10 2024 +0300

    Changed README in original repo

commit d157d8173565570e09d6e38d952b36c38d215a8f (origin/style, style)
Author: Kirill Koifman <koifman.kirill@yandex.ru>
Date:   Sat Feb 10 16:22:08 2024 +0300

    Updated index.html

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ |
```

РИС.73(Теперь мы можем видеть ветку style в списке веток и логе)

35. Создадим чистый репозиторий для расшаривания (рис.74)

```
koifm@DESKTOP-81UIP5P MINGW64 ~
$ git clone --bare hello hello.git
Cloning into bare repository 'hello.git'...
done.

koifm@DESKTOP-81UIP5P MINGW64 ~
$ ls hello.git
HEAD config description hooks/ info/ objects/ packed-refs refs/
koifm@DESKTOP-81UIP5P MINGW64 ~
$
```

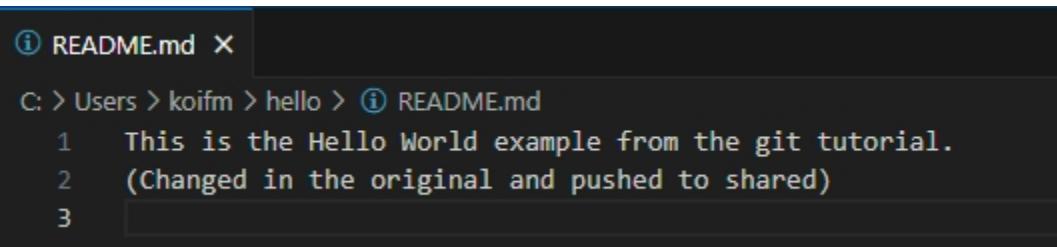
РИС.74

36. Добавим удалённый репозиторий к оригинальному (рис.75):

```
koifm@DESKTOP-81UIP5P MINGW64 ~
$ cd hello
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git remote add shared ../hello.git
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

РИС.75

37. Так как чистые репозитории, как правило, расшариваются на каком-нибудь сетевом сервере, нам необходимо отправить наши изменения в другие репозитории (рис.76 - рис.77):



```
① README.md ×
C: > Users > koifm > hello > ① README.md
1 This is the Hello World example from the git tutorial.
2 (Changed in the original and pushed to shared)
3
```

РИС.76(изменим файл)

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git checkout master
Already on 'master'
M README.md

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git add README.md

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ git commit -m "Added shared comment to readme"
[master 3c3c3aa] Added shared comment to readme
 1 file changed, 1 insertion(+), 1 deletion(-)

koifm@DESKTOP-81UIP5P MINGW64 ~/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), 409 bytes | 409.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To ../hello.git
 7dc2330..3c3c3aa  master -> master

koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$
```

РИС.77(отправим изменения)

38. А теперь извлечём эти изменения (рис.78):

```
koifm@DESKTOP-81UIP5P MINGW64 ~/hello (master)
$ cd ../cloned_hello

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ git remote add shared ../hello.git

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ git branch --track shared master
branch 'shared' set up to track 'master'.

koifm@DESKTOP-81UIP5P MINGW64 ~/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
Unpacking objects: 100% (3/3), 389 bytes | 77.00 KiB/s, done.
From ../hello
 * branch      master    -> FETCH_HEAD
 * [new branch] master    -> shared/master
Updating 7dc2330..3c3c3aa
Fast-forward
 README.md | 2 ++
 1 file changed, 1 insertion(+), 1 deletion(-)

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$ cat README.md
This is the Hello World example from the git tutorial.
(Changed in the original and pushed to shared)

koifm@DESKTOP-81UIP5P MINGW64 ~/cloned_hello (master)
$
```

РИС.78(получили отправленные изменения)

Спасибо за внимание!