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Институт цифровых
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Кафедра
компьютерных систем управления

Дисциплина «Основы системного программного обеспечения»

Отчет по лабораторной работе № 1

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1. Цель

Освоить основные принципы работы с платформой Git Hub.

2. Задачи работы

Создать учетную запись на github.com; создать репозиторий на платформе; создать локальный репозиторий; создать файлы и отправить их в репозиторий; создать несколько веток; осуществить совместное использование репозитория;

Создаем аккаунт на Git Hub, скачиваем Git, создаём репозиторий, создаём локальный репозиторий на компьютере.

Переходим в командную строку в командной строке войдем в аккаунт и объявим локальный репозиторий.

```
C:\Users\Acer\Documents\Sukhomlinov>git config --global user.name "Suden25d2"
C:\Users\Acer\Documents\Sukhomlinov>git config --global user.email suden25d2@mail.ru
C:\Users\Acer\Documents\Sukhomlinov>git init
Initialized empty Git repository in C:/Users/Acer/Documents/Sukhomlinov/.git/
```

Создадим файл test с фамилией, с помощью команды git status увидим, что в системе произошли изменения.

```
C:\Users\Acer\Documents\Sukhomlinov>git status
On branch master

No commits yet

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

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

Добавим и закоммитим файл.

```
C:\Users\Acer\Documents\Sukhomlinov>git add test.txt
C:\Users\Acer\Documents\Sukhomlinov>git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
       new file:   test.txt

C:\Users\Acer\Documents\Sukhomlinov>git commit -m "first commit"
[master (root-commit) 6f93385] first commit
 1 file changed, 1 insertion(+)
 create mode 100644 test.txt

C:\Users\Acer\Documents\Sukhomlinov>git status
On branch master
nothing to commit, working tree clean
```

Свяжем локальный и сетевой репозитории.

```
C:\Users\Acer\Documents\Sukhomlinov>git remote add origin https://github.com/Suden25d2/Lab1
```

Проверим к какому репозиторию мы подключены.

```
C:\Users\Acer\Documents\Sukhomlinov>git remote -v
origin https://github.com/Suden25d2/Lab1 (fetch)
origin https://github.com/Suden25d2/Lab1 (push)
```

Отправим файл на сервер.

```
C:\Users\Acer\Documents\Sukhomlinov>git push origin master
info: please complete authentication in your browser...
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (5/5), 507 bytes | 126.00 KiB/s, done.
Total 5 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Suden25d2/Lab1
  9f50455..cb7604e  master -> master
```

Проверим изменения.

```
C:\Users\Acer\Documents\Sukhomlinov>git log
commit cb7604ee00ed24fc2ef9979e3c76aeca9c88210f (HEAD -> master, origin/master)
Merge: 6f93385 9f50455
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 13:10:30 2023 +0300

    Merge branch 'master' of https://github.com/Suden25d2/Lab1

commit 6f9338510a82e4cde288f70b6a1e26e6d486e6af
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 13:08:12 2023 +0300

    first commit

commit 9f50455d511bf47f45316bfe125d8684d656b90e
Author: Suden25d2 <131962874+Suden25d2@users.noreply.github.com>
Date: Thu Apr 27 12:49:26 2023 +0300

    Initial commit
```

Создадим новую ветку second и перейдем в нее.

```

C:\Users\Acer\Documents\Sukhomlinov>git branch second

C:\Users\Acer\Documents\Sukhomlinov>git branch
* master
  second

C:\Users\Acer\Documents\Sukhomlinov>git checkout second
Switched to branch 'second'

```

Создадим новый файл new_file, добавим, закоммитим и отправим на сервер.

```

C:\Users\Acer\Documents\Sukhomlinov>git add test_new.txt

C:\Users\Acer\Documents\Sukhomlinov>git status
On branch second
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   test_new.txt

```

```

C:\Users\Acer\Documents\Sukhomlinov>git commit -m "first commit"
[second 1b3d779] first commit
 1 file changed, 1 insertion(+)
 create mode 100644 test_new.txt

C:\Users\Acer\Documents\Sukhomlinov>git status
On branch second
nothing to commit, working tree clean

```

```

C:\Users\Acer\Documents\Sukhomlinov>git remote add origin https://github.com/Suden25d2/Lab1
error: remote origin already exists.

C:\Users\Acer\Documents\Sukhomlinov>git pull origin second
fatal: couldn't find remote ref second

C:\Users\Acer\Documents\Sukhomlinov>git push origin second
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 269 bytes | 134.00 KiB/s, done.
Total 2 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'second' on GitHub by visiting:
remote:   https://github.com/Suden25d2/Lab1/pull/new/second
remote:
To https://github.com/Suden25d2/Lab1
 * [new branch]      second -> second

```


Переключимся на основную ветку и объединим ей со второй веткой

```
C:\Users\Acer\Documents\Sukhomlinov>git checkout master
Switched to branch 'master'

C:\Users\Acer\Documents\Sukhomlinov>git merge second
Updating cb7604e..1b3d779
Fast-forward
 test_new.txt | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 test_new.txt
```

Удаляем вторую ветку

```
C:\Users\Acer\Documents\Sukhomlinov>git branch -d second
Deleted branch second (was 1b3d779).
```

Создадим новую ветку и переключимся на нее. Редактируем файл test_new. Добавим и закоммитим.

```
C:\Users\Acer\Documents\Sukhomlinov>git branch newdev

C:\Users\Acer\Documents\Sukhomlinov>git branch
* master
  newdev
```

```
C:\Users\Acer\Documents\Sukhomlinov>git checkout newdev
Switched to branch 'newdev'

C:\Users\Acer\Documents\Sukhomlinov>git add test_new.txt

C:\Users\Acer\Documents\Sukhomlinov>git commit -m "first commit"
[newdev ce26f47] first commit
 1 file changed, 1 insertion(+), 1 deletion(-)

C:\Users\Acer\Documents\Sukhomlinov>git checkout master
Switched to branch 'master'

C:\Users\Acer\Documents\Sukhomlinov>git merge newdev
Updating 1b3d779..ce26f47
Fast-forward
 test_new.txt | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)
```

Переключимся на основную ветку, обновим файл и объединим ветки.

```

C:\Users\Acer\Documents\Sukhomlinov>git checkout master
Switched to branch 'master'

C:\Users\Acer\Documents\Sukhomlinov>git merge newdev
Updating 1b3d779..ce26f47
Fast-forward
 test_new.txt | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)

C:\Users\Acer\Documents\Sukhomlinov>git checkout newdev
Switched to branch 'newdev'

C:\Users\Acer\Documents\Sukhomlinov>git add test_new.txt

C:\Users\Acer\Documents\Sukhomlinov>git commit -m "first commit"
[newdev f2bdf6d] first commit
 1 file changed, 1 insertion(+), 1 deletion(-)

```

Попробуем добавить изменения в файле, находясь в разных ветках, и попробуем вновь их объединить. Появятся ошибки.

```

C:\Users\Acer\Documents\Sukhomlinov>git checkout master
Switched to branch 'master'

C:\Users\Acer\Documents\Sukhomlinov>git add test_new.txt

C:\Users\Acer\Documents\Sukhomlinov>git commit -m "first commit"
[master 730a09f] first commit
 1 file changed, 1 insertion(+), 1 deletion(-)

C:\Users\Acer\Documents\Sukhomlinov>git merge newdev
Auto-merging test_new.txt
CONFLICT (content): Merge conflict in test_new.txt
Automatic merge failed; fix conflicts and then commit the result.

```

Просмотрим изменения.

```

C:\Users\Acer\Documents\Sukhomlinov>git diff
diff --cc test_new.txt
index 395c1cb,03509fa..0000000
--- a/test_new.txt
+++ b/test_new.txt
@@@ -1,1 -1,1 +1,5 @@@
- Denis Aleksandrovichhhh
- Denis Aleksandrovi
++<<<<<<< HEAD
++Denis Aleksandrovichhhh
++=====
++Denis Aleksandrovi
++>>>>>>> newdev

```

Отредактируем файл и отправим на сервер.

```
C:\Users\Acer\Documents\Sukhomlinov>git add test_new.txt

C:\Users\Acer\Documents\Sukhomlinov>git commit -m "first commit"
[master a2ac6b9] first commit

C:\Users\Acer\Documents\Sukhomlinov>git push origin master
Enumerating objects: 14, done.
Counting objects: 100% (14/14), done.
Delta compression using up to 8 threads
Compressing objects: 100% (8/8), done.
Writing objects: 100% (12/12), 937 bytes | 312.00 KiB/s, done.
Total 12 (delta 5), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (5/5), completed with 1 local object.
To https://github.com/Suden25d2/Lab1
   cb7604e..a2ac6b9  master -> master
```

Удалим вторую ветку.

```
C:\Users\Acer\Documents\Sukhomlinov>git branch -d newdev
Deleted branch newdev (was f2bdf6d).
```

Также удалим другую ветку.

```
C:\Users\Acer\Documents\Sukhomlinov>git push origin --delete second
To https://github.com/Suden25d2/Lab1
- [deleted]          second
```

Попробуем вернуть файл с одно из предыдущих состояний.


```

C:\Users\Acer\Documents\Sukhomlinov>git log
commit a2ac6b9a8d43dd74da04bb68fa90285dcd128cb6 (HEAD -> master, origin/master)
Merge: 730a09f f2bdf6d
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 13:44:05 2023 +0300

    first commit

commit 730a09fa345ba3e3e276e02a541dbd9c41df0303
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 13:37:47 2023 +0300

    first commit

commit f2bdf6da6ee1cdf691aa7e1cf3e43bff8bcc3d27
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 13:36:42 2023 +0300

    first commit

commit ce26f472de81bd9cb6a70d731e635ba3c5df96e8
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 13:34:17 2023 +0300

    first commit

commit 1b3d779fbd5a1ad7894c4dd24a855037fdd32e6
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 13:24:47 2023 +0300

    first commit

commit cb7604ee00ed24fc2ef9979e3c76aeca9c88210f
Merge: 6f93385 9f50455
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 13:10:30 2023 +0300

    Merge branch 'master' of https://github.com/Suden25d2/Lab1

commit 6f9338510a82e4cde288f70b6a1e26e6d486e6af
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 13:08:12 2023 +0300

    first commit

```

```

C:\Users\Acer\Documents\Sukhomlinov>git checkout 1b3d779
Note: switching to '1b3d779'.

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 1b3d779 first commit

```


Отредактируем файл test. Уберём файлы из области закрепления. Затем снова добавим в область закрепления и закомитим, но еще не отправляем на сервер, можно вызвать ту же команду и тогда все, что осталось незакомиченным будет удалено.

```
C:\Users\Acer\Documents\Sukhomlinov>git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   test.txt
```

```
C:\Users\Acer\Documents\Sukhomlinov>git reset HEAD
Unstaged changes after reset:
M       test.txt

C:\Users\Acer\Documents\Sukhomlinov>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:   test.txt

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

C:\Users\Acer\Documents\Sukhomlinov>git add .

C:\Users\Acer\Documents\Sukhomlinov>git commit -m "first commit"
[master 9e3b400] first commit
 1 file changed, 1 insertion(+), 1 deletion(-)

C:\Users\Acer\Documents\Sukhomlinov>git reset HEAD

C:\Users\Acer\Documents\Sukhomlinov>git status
On branch master
nothing to commit, working tree clean
```

Изменим комментарий первого коммита.

```
C:\Users\Acer\Documents\Sukhomlinov>git commit --amend
[master 7e60f6b] change comment new
Date: Thu Apr 27 14:14:04 2023 +0300
1 file changed, 1 insertion(+), 1 deletion(-)

C:\Users\Acer\Documents\Sukhomlinov>git log
commit 7e60f6b43f8f7978430d098565c8a62b4a20b449 (HEAD -> master)
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 14:14:04 2023 +0300

    change comment new

commit 9e3b40075af0c41162206f19ce9468090285502c
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 14:08:14 2023 +0300

    first commit

commit a2ac6b9a8d43dd74da04bb68fa90285dcd128cb6 (origin/master)
Merge: 730a09f f2bdf6d
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 13:44:05 2023 +0300

    first commit

commit 730a09fa345ba3e3e276e02a541dbd9c41df0303
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 13:37:47 2023 +0300

    first commit

commit f2bdf6da6ee1cdf691aa7e1cf3e43bff8bcc3d27
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 13:36:42 2023 +0300

    first commit

commit ce26f472de81bd9cb6a70d731e635ba3c5df96e8
Author: Suden25d2 <suden25d2@mail.ru>
Date: Thu Apr 27 13:34:17 2023 +0300

    first commit
```

Для запрета отправки определенных файлов создадим файл под названием «.gitignore»

И запишем в не все запрещенные файлы.

```
C:\Users\Acer\Documents\Sukhomlinov>git status
On branch master
Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
    deleted:    .gitignore.txt
    deleted:    test_ignore.txt

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    ignore.gitignore
    test_ignore2.txt

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

C:\Users\Acer\Documents\Sukhomlinov>git add ignore.gitignore

C:\Users\Acer\Documents\Sukhomlinov>git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   ignore.gitignore

Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
    deleted:    .gitignore.txt
    deleted:    test_ignore.txt

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    test_ignore2.txt
```

```
C:\Users\Acer\Documents\Sukhomlinov>git commit -m "first commit"
[master 76056fa] first commit
1 file changed, 1 insertion(+)
create mode 100644 ignore.gitignore
```



```
C:\Users\Acer\Documents\Sukhomlinov>git push origin master
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 280 bytes | 140.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/Suden25d2/Lab1
   a64f6cb..76056fa  master -> master

C:\Users\Acer\Documents\Sukhomlinov>git status
On branch master
Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        deleted:    .gitignore.txt
        deleted:    test_ignore.txt

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        test_ignore2.txt

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


Для совместной работы с репозитрием необходимо предоставление доступа. После предоставления доступа клонируем репозиторий на локальный диск и делаем изменения файла.

```
C:\Users\Acer\Documents\Chuykin\1>git clone https://github.com/chuykin-ilya/LR1
Cloning into 'LR1'...
remote: Enumerating objects: 25, done.
remote: Counting objects: 100% (25/25), done.
remote: Compressing objects: 100% (12/12), done.
remote: Total 25 (delta 7), reused 19 (delta 4), pack-reused 0
Receiving objects: 100% (25/25), done.
Resolving deltas: 100% (7/7), done.

C:\Users\Acer\Documents\Chuykin\1>git status
fatal: not a git repository (or any of the parent directories): .git

C:\Users\Acer\Documents\Chuykin\1>cd LR1

C:\Users\Acer\Documents\Chuykin\1\LR1>git status
On branch master
Your branch is up to date with 'origin/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:   test_new.txt

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

C:\Users\Acer\Documents\Chuykin\1\LR1>git add test_new.txt

C:\Users\Acer\Documents\Chuykin\1\LR1>git status
On branch master
Your branch is up to date with 'origin/master'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   test_new.txt

C:\Users\Acer\Documents\Chuykin\1\LR1>git commit -m "first commit"
[master 3317951] first commit
 1 file changed, 1 insertion(+), 1 deletion(-)

C:\Users\Acer\Documents\Chuykin\1\LR1>git push origin master
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 293 bytes | 146.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/chuykin-ilya/LR1
 d80d05f..3317951 master -> master
```

Вывод: в ходе работы были освоены основные принципы работы с Git и github.com.