

Знакомство с системой контроля версий git

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Цели и задачи работы

Цель лабораторной работы

Изучить работу с системой контроля версий git.

Задачи лабораторной работы

1. Создать учетную запись на `github.com`
2. Создать и настроить репозиторий
3. Изучить механизм управления версиями, ветками.

Процесс выполнения лабораторной работы

Создание учетной записи и репозитория на github.com

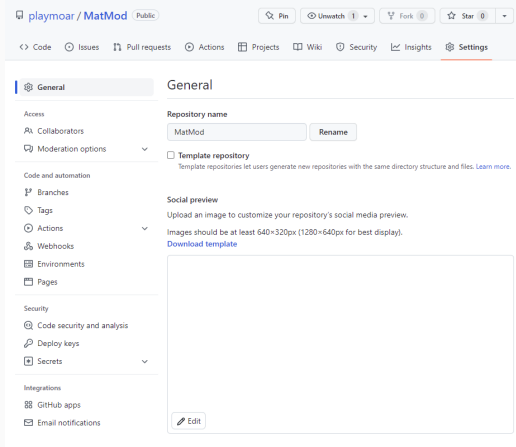


Figure 1: Создание репозитория

Инициализация локального репозитория

Создан файл README.md, установлены имя пользователя и e-mail, сделан первый commit.

```
PS F:\MatMod> git init
Initialized empty Git repository in F:/MatMod/.git/
PS F:\MatMod> echo "# MatMod labs" >> README.md
PS F:\MatMod> git add README.md
PS F:\MatMod> git config -- global user.name "playmoar"
error: key does not contain a section: global
PS F:\MatMod> git config -- global user.name playmoar
error: key does not contain a section: global
PS F:\MatMod> git config --global user.name playmoar
PS F:\MatMod> git config --global user.email "playmoar@icloud.com"
PS F:\MatMod> git commit -m "First commit"
```

Figure 2: Инициализация репозитория, README, commit

Создание SSH-ключа

Создан SSH-ключ. Созданный ключ добавлен в настройках пользователя github.com.

```
PS F:\NetMod> ssh-keygen -C "playmoar@icloud.com"
Generating public/private rsa key pair.
Enter file in which to save the key (C:\Users\Alexander\.ssh\id_rsa):
Created directory 'C:\Users\Alexander\.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in C:\Users\Alexander\.ssh\id_rsa.
Your public key has been saved in C:\Users\Alexander\.ssh\id_rsa.pub.
The key fingerprint is:
SHA256:5GEnFC3b8AawrkD4jGZfQnJa3XruhyepYbDkEXfBZag playmoar playmoar@icloud.com
The key's randomart image is:
+--[RSA 3072]-----
|.o.i.oo
|+..+..+
|..B*+..+
|ong+..B
|..+ S
|..+
|o..+..o
|o..o..o
|..+
|..+
+-----[SHA256]-----
PS F:\NetMod> cat ~/.ssh/id_rsa.pub
cat : Не удается найти нуте "F:\NetMod\~\.ssh\id_rsa.pub", так как он не существует.
тырока:1: синтаксис
+ cat ~\.ssh\id_rsa.pub
+ CategoryInfo          : ObjectNotFound: (F:\NetMod\~\.ssh\id_rsa.pub:String) [Get-Content], ItemNotFoundException
+ FullyQualifiedErrorId : PathNotFound,Microsoft.PowerShell.Commands.GetContentCommand

PS F:\NetMod> cd C:\
PS C:\> cat ~/.ssh/id_rsa.pub
cat : Не удается найти нуте "C:\~\.ssh\id_rsa.pub", так как он не существует.
тырока:1: синтаксис
+ cat ~\.ssh\id_rsa.pub
+ CategoryInfo          : ObjectNotFound: (C:\~\.ssh\id_rsa.pub:String) [Get-Content], ItemNotFoundException
+ FullyQualifiedErrorId : PathNotFound,Microsoft.PowerShell.Commands.GetContentCommand

PS C:\> cat ~/.ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQGDGcJdo3UyNlxtbGwP7Bz7jDv+BCRDYf4qpr71sEioC7BP0Dz3BwVW4Uj3dnBR4jdvtWp9111z/RzrV5bDz9
Wf+08H4Qpce0K+eVbuaC09F123y7jYFu09r1zCz7ufecwK3Kp8AmuK1T6G1eb2A/Kq3711Pmc3/4wQz4pZ4tzcPq9J6t8Cp5n8BmNc311178dL4UfmxAg88c1Sh
B4Qe1f5MYT:0d1Hok1R15VW1s6FRGs23abmtHpvUsKPrapK84aUQKw0dHfz0zQ6VP50GdMwg1nICNLvYvFPz0z16tR17p6K3UuyM400H+kp873w2zXep2dcF7UL
np+31t1Bh4tMfcgch/+Jae1khgqf6b6Cp5ZyNrcrtaM01Q20321ngg41aHfVwXh3Ln1KgtspHcIXrW7qQcUeaq8KvN3LCmfvm3A+56t0T1qNwbX7+ud1Qr0pP+6S5B
wZc1L7/SLu0ubF0= playmoar playmoar@icloud.com
```

Figure 3: Создание SSH-ключа на устройстве

Отправка файлов в репозиторий

Загружены файлы лицензионного соглашения и gitignore.
Получен доступ к сетевому репозиторию, загруженные
файлы отправлены в репозиторий.

```
PS F:\MatMod> git remote add origin git@github.com:playmoar/MatMod.git
PS F:\MatMod> wget https://creativecommons.org/licenses/by/4.0/legalcode.txt -O LICENSE
PS F:\MatMod> wget https://www.toptal.com/developers/gitignore/api/python -O .gitignore
PS F:\MatMod> git add .
warning: LF will be replaced by CRLF in .gitignore.
The file will have its original line endings in your working directory
warning: LF will be replaced by CRLF in LICENSE.
The file will have its original line endings in your working directory
PS F:\MatMod> git commit -am "added license and gitignore"
[master fbec9b1] added license and gitignore
2 files changed, 563 insertions(+)
create mode 100644 .gitignore
create mode 100644 LICENSE
PS F:\MatMod> git push -u origin master
The authenticity of host 'github.com (140.82.121.4)' can't be established.
ED25519 key fingerprint is SHA256:+DiY3wvvV6TuJJhbpZisF/zLDA0zPMSvHdkr4UvCOqU.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? y
Please type 'yes', 'no' or the fingerprint: yes
Warning: Permanently added 'github.com' (ED25519) to the list of known hosts.
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Delta compression using up to 4 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (7/7), 7.80 KiB | 1.95 MiB/s, done.
Total 7 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:playmoar/MatMod.git
 * [new branch]      master -> master
branch 'master' set up to track 'origin/master'.
PS F:\MatMod> git push
Everything up-to-date
```

Figure 4: Загрузка файлов

Управление ветками и версиями

Создана тестовая ветка, начат и завершён тестовый релиз.

```
PS F:\Method> git flow init
which branch should be used for bringing forth production releases?
  master
branch name for production releases: [master]
branch name for "next release" development: [develop]

How to name your supporting branch prefixes?
feature branches? [feature/]
bugfix branches? [bugfix/]
release branches? [release/]
hotfix branches? [hotfix/]
support branches? [support/]
version tag prefix? [] v
Hooks and filters directory? [F:\Method\.git\hooks]
PS F:\Method> git branch
* master
PS F:\Method> git flow release start 1.0.0
Switched to a new branch 'release/1.0.0'

Summary of actions:
- A new branch 'release/1.0.0' was created, based on 'develop'
- You are now on branch 'release/1.0.0'

Follow-up actions:
- Bump the version number now!
- Start committing last-minute fixes in preparing your release
  when done, run

    git flow release finish '1.0.0'

PS F:\Method> echo "1.0.0" >> version
PS F:\Method> git add
Nothing specified, nothing added.
hint: Maybe you wanted to say 'git add .'
hint: Turn this message off by running
hint: 'git config advice.addedPaths false'
PS F:\Method> git add .
PS F:\Method> git commit -m "version bump to 1.0.0"
[release/1.0.0 c0d4f30] main: added version 1.0.0
1 file changed, 0 insertions(+), 0 deletions(-)
create mode 100644 version
PS F:\Method> git flow release finish -m "v 1.0.0"
Switched to branch 'master'
Your branch is up to date with 'origin/master'.
Merge made by the 'ort' strategy.
version 1.0.0 -> 1 bytes
1 file changed, 0 insertions(+), 0 deletions(-)
create mode 100644 version
Already on 'master'
Your branch is ahead of 'origin/master' by 2 commits.
(use 'git push' to publish your local commits)
Switched to branch 'develop'
Merge made by the 'ort' strategy.
version 1.0.0 -> 1 bytes
1 file changed, 0 insertions(+), 0 deletions(-)
create mode 100644 version
Deleted branch release/1.0.0 (was c0d4f30).

Summary of actions:
- Release branch 'release/1.0.0' has been merged into 'master'
- The release was tagged 'v1.0.0'
- Release tag 'v1.0.0' has been back-merged into 'develop'
- Release branch 'release/1.0.0' has been locally deleted
- You are now on branch 'develop'
```

Figure 5: Инициализация git-flow, тестовый релиз

Отправка внесённых изменений в репозиторий

```
PS F:\MatMod> git push --all
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 4 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (5/5), 495 bytes | 495.00 KiB/s, done.
Total 5 (delta 3), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (3/3), completed with 1 local object.
To github.com:playmoar/MatMod.git
   fbec9b1..158ac55  master -> master
   * [new branch]    develop -> develop
PS F:\MatMod> git push --tags
Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 153 bytes | 153.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:playmoar/MatMod.git
   * [new tag]       v1.0.0 -> v1.0.0
PS F:\MatMod>
```

Figure 6: Отправка изменений в репозиторий

Итоги

Изучена работа с системой контроля версий git, приобретены навыки создания и управления репозиторием, ветками и релизами.