

Лабораторная работа №2

Операционные системы

Никуленков С.С

01 января 1970

Российский университет дружбы народов, Москва, Россия

Объединённый институт ядерных исследований, Дубна, Россия

Изучить идеологию и применение средств контроля версий. Освоить умения по работе с git.

1. Создать базовую конфигурацию для работы с git.
2. Создать ключ SSH.
3. Создать ключ PGP.
4. Настроить подписи git.
5. Зарегистрироваться на Github.
6. Создать локальный каталог для выполнения заданий по предмету.

Устанавливаю git: `dnf install git`

```
Cloning into 'study_2024-2025_os-intro'...
The authenticity of host 'github.com (140.82.121.3)' 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])? yes
Warning: Permanently added 'github.com' (ED25519) to the list of known hosts.
git@github.com: Permission denied (publickey).
fatal: Could not read from remote repository.

Please make sure you have the correct access rights
and the repository exists.
```

Рис. 1: установка

Устанавливаю gh: dnf install gh

```
Fedora 40 - x86_64
Fedora 40 openh264 (From Cisco) - x86_64
Fedora 40 - x86_64 - Updates
Fedora 40 - x86_64 - Updates
google-chrome
google-chrome
RPM Fusion for Fedora 40 - Nonfree - NVIDIA Driver
RPM Fusion for Fedora 40 - Nonfree - NVIDIA Driver
RPM Fusion for Fedora 40 - Nonfree - Steam
RPM Fusion for Fedora 40 - Nonfree - Steam
Package git-2.44.0-1.fc40.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
root@vbox:/home/ssnikulenkova# dnf install gh
Last metadata expiration check: 0:00:16 ago on Sat 08 Mar 2025 03:26:58 PM MSK.
Dependencies resolved.
=====
Package                                Architecture                               Version
Installing:
gh                                      x86_64                                     2.65.0-1.fc40
Transaction Summary
=====
Install 1 Package

Total download size: 11 M
Installed size: 50 M
Is this ok [y/N]: y
Downloading Packages:
gh-2.65.0-1.fc40.x86_64.rpm
=====
Total
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      : gh-2.65.0-1.fc40.x86_64
  Installing     : gh-2.65.0-1.fc40.x86_64
  Running scriptlet: gh-2.65.0-1.fc40.x86_64
Installed:
gh-2.65.0-1.fc40.x86_64
```

Рис. 2: установка

Базовая настройка git

Задаю имя и email для моего репозитория: `git config --global user.name "Nikulenkov Stepan"`
`git config --global user.email "stepannikulenkov@gmail.com"` Настраиваю utf-8 в выводе сообщений git: `git config --global core.quotePath false` Настраиваю верификацию и подписание коммитов git Задаю имя начальной ветки (будем называть её master): `git config --global init.defaultBranch master` Параметр autocrlf: `git config --global core.autocrlf input` Параметр safecrlf: `git config --global core.safecrlf warn`

```
root@vbox:/home/ssnikulenkov# git config --global user.name "Stepan Nikulenkov"
root@vbox:/home/ssnikulenkov# git config --global user.email "stepannikulenkov@gmail.com"
root@vbox:/home/ssnikulenkov# git config --global core.quotePath false
root@vbox:/home/ssnikulenkov# git config --global init.defaultBranch master
root@vbox:/home/ssnikulenkov# git config --global core.autocrlf input
root@vbox:/home/ssnikulenkov# git config --global core.safecrlf warn
```

Рис. 3: базовая настройка git

Создание ключей

Создаю ключи ssh по алгоритму rsa с ключём размером 4096 бит: `ssh-keygen -t rsa -b 4096` по алгоритму ed25519: `ssh-keygen -t ed25519` Создаю ключи pgp Генерируем ключ `gpg --full-generate-key`

```
-----[RSA 4096]-----  
|.++      0 0. |  
|==+      . 0 0 |  
|0.0.      +   |  
|+.0       0   |  
|+.0+ S. . . |  
|0 0+0+ 0 .   |  
|. =0.0.0. .   |  
|E+=0.+0 .    |  
|.BB...*+...   |  
-----[SHA256]-----  
root@vbox:/home/ssnikulenkova# gpg --full-generate-key  
gpg (GnuPG) 2.4.4; Copyright (C) 2024 g10 Code GmbH  
This is free software: you are free to change and redistribute it.  
There is NO WARRANTY, to the extent permitted by law.  
  
gpg: directory '/root/.gnupg' created  
Please select what kind of key you want:  
  (1) RSA and RSA  
  (2) DSA and Elgamal  
  (3) DSA (sign only)  
  (4) RSA (sign only)  
  (9) ECC (sign and encrypt) *default*  
 (10) ECC (sign only)  
 (14) Existing key from card  
Your selection? 1  
RSA keys may be between 1024 and 4096 bits long.  
What keysizes do you want? (3072) 4096  
Requested keysizes is 4096 bits  
Please specify how long the key should be valid.  
    0 = key does not expire  
    <n> = key expires in n days  
    <n>w = key expires in n weeks  
    <n>m = key expires in n months  
    <n>y = key expires in n years  
Key is valid for? (0) 0
```



Рис. 5: окно подтверждения


```
wp8iG7DSyS353SFuD7tzoczt9YK0KASpvw+N1GwLwUC/MzJy1xAmc9nV3bjmbd3K
5a3bNte1Mo/1vt0MApamhF7FRZbDn33th8Lx4CZJ34t+st2oNfjnd6pzQ10NbwSH
j26p0KlIa17oF2WuIs3Yzh2p7UghG2/xNF4NmmIKffa1tH1M5tsA1vfpdH0n+x4J
RuWFrGg6ck7ARkI6Lm/sFB+CPfny26gtmOr+qN5Rg7uLzoyeyLXKNsf404NrnPri
hkmCeGaTdSQsqk0dY30H+/3254cmIdrapVrnd43T0Eb8aKR+nh/T03AwRnuJbpc
xCEXTheHPJVhECqL5xbMA8cMoP17SngA1q+s0DZSF9v9g5X5mXv2qEtsyjs1jKaR
xSNaZ+XH0futv+hyLUFYacT0AT+Bee4cXSUL55CbXfz147KrT4WX6Vvsd1CQ71XJ
T9edZ59IaH08pLmEx0+k9WSq/NTR8D7kecVVH+ERGARY3H4P6gV9+GjZLhsPAM06
hYsxnzBtTVSP11XkMcDpABEBAAGJAjYEGAEIACAWIQRy9HFNCrgTEV1gTGKLKnw
TyxqPwUCZ8w6/AIbDAACRCLKnwTyxqP9BHD/4pVmvAhOfc4pLtn/0y9nKay/b
kxTW3zN6vNEVbj6v7WB2uyXtuVnnW4s0cAmBc3Y0Y1Z62PbGhyMX+20UIkQzM8f
JgdCbsa3k1dSYWTZdPTmyj01vFQhHhL+L37uyGfb5MHhh2DrkLJZtu31ExmaDNSA
W9v1Be6JQdOyvH0x4jHzUG/LxPyUJ5QN7zqPzG+meDCg0LYr2mIgCB8/jCDH6Zi
pkbtPuQZYM3o0Rwrs/D1WRKeSUSIEWY/sszVALXAHhyStRm475W5J3L/zS5LUAKz
EtvbZzEBkUHsqvEMoY8V1bLfgXzP6UppL4M1tn8KkYUWFItXgZbbe+CNFyHojveT
fDStWzGsy102wKvsL0aQsvaWMaauYp0eNGhgF33RoRB4xg+2MacXGWBzU3xbdHab
pHimAKAm0U6onzlt0cigdYoaPLieXS9B13zz1FjQNS1d+qDN2aInh59GTeyhjcw/
hJrYrEQDHI56k3LDpfBMPvyatJtTb8l3dd/TXzfHap15SuQsUTShn7bsBHBZ/Cc
qrC7YPdE0tCnNDfjR8h2YmA6Hjs9ZMKF/BMI2wxc/Cb+6Gz0V4apTU2qA/aWce/
b8fBKc81jlpSG4507jsm4rHjbqkt10Y/rY7itU9z1zYnaaNAcFOXReTlvZ22dKB
L4urtinZay5yG6igBA==
=c8fC
-----END PGP PUBLIC KEY BLOCK-----
root@vbox:/home/ssnikulenkova# git config --global user.signingKey *C
root@vbox:/home/ssnikulenkova# git config --global user.signingKey 8B2A7AF04F2C6A3F
root@vbox:/home/ssnikulenkova# git config --global commit.gpgsign true
root@vbox:/home/ssnikulenkova# git config --global gpg.program $(which gpg2)
```

Рис. 6: ключ

Добавление ключей

Выводим список ключей и копируем отпечаток приватного ключа. Скопировал сгенерированный PGP ключ в буфер обмена:

```
gpg --armor --export | xclip -sel clip
```

Перехожу в настройки GitHub , нажимаю на кнопку New GPG key и вставьте полученный ключ в поле ввода.

```
Available commands:
  login
  logout
  refresh
  setup-git
  status
  switch
  token

root@vbox:/home/ssnikulenkov# gh auth login
? Where do you use GitHub? GitHub.com
? What is your preferred protocol for Git operations on this host? SSH
? Upload your SSH public key to your GitHub account? /root/.ssh/id_ed25519.pub
? Title for your SSH key: sway
? How would you like to authenticate GitHub CLI? Login with a web browser

: First copy your one-time code: EDD1-3844
Press Enter to open https://github.com/login/device in your browser...
```

```
GraphQL: Could not clone: Name already exists on this account (cloneTemplateRepository)
ssnikulenkov@vbox:~/work/study/2024-2025/Операционные системы$ git clone --recursive git@github.com:stepannikule
kov/study_2024-2025_os-intro.git os-intro
Cloning into 'os-intro'...
remote: Enumerating objects: 36, done.
remote: Counting objects: 100% (36/36), done.
remote: Compressing objects: 100% (35/35), done.
remote: Total 36 (delta 1), reused 21 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (36/36), 19.37 KiB | 483.00 KiB/s, done.
Resolving deltas: 100% (1/1), done.
Submodule 'template/presentation' (https://github.com/yamadharma/academic-presentation-markdown-template.git) re
gistered for path 'template/presentation'
Submodule 'template/report' (https://github.com/yamadharma/academic-laboratory-report-template.git) registered f
or path 'template/report'
Cloning into '/home/ssnikulenkov/work/study/2024-2025/Операционные системы/os-intro/template/presentation'...
remote: Enumerating objects: 111, done.
remote: Counting objects: 100% (111/111), done.
remote: Compressing objects: 100% (77/77), done.
remote: Total 111 (delta 42), reused 100 (delta 31), pack-reused 0 (from 0)
Receiving objects: 100% (111/111), 102.17 KiB | 1.16 MiB/s, done.
Resolving deltas: 100% (42/42), done.
Cloning into '/home/ssnikulenkov/work/study/2024-2025/Операционные системы/os-intro/template/report'...
remote: Enumerating objects: 142, done.
remote: Counting objects: 100% (142/142), done.
remote: Compressing objects: 100% (97/97), done.
remote: Total 142 (delta 60), reused 121 (delta 39), pack-reused 0 (from 0)
```

Рис. 8: добавление ключа

Авторизуюсь через браузер

Создание репозитория

создание репозитория курса на основе шаблона прописываю команды для создания репозитория:

```
mkdir -p ~/work/study/2024-2025/"Операционные системы" cd  
~/work/study/2024-2025/"Операционные системы" gh repo create study_2024-2025_os-intro  
-template=yamadharma/course-directory-student-template -public git clone -recursive  
git@github.com:/study_2024-2025_os-intro.git os-intro
```

```
ssnikulenkov@vbox:~/work/study/2024-2025/Операционные системы/os-intro$ ls  
CHANGELOG.md  COURSE  Makefile  README.en.md  README.md  
config        LICENSE  package.json  README.git-flow.md  template  
ssnikulenkov@vbox:~/work/study/2024-2025/Операционные системы/os-intro$ rm package.json  
ssnikulenkov@vbox:~/work/study/2024-2025/Операционные системы/os-intro$ nano COURSE  
ssnikulenkov@vbox:~/work/study/2024-2025/Операционные системы/os-intro$ echo os-intro > COURSE  
ssnikulenkov@vbox:~/work/study/2024-2025/Операционные системы/os-intro$ make prepare  
ssnikulenkov@vbox:~/work/study/2024-2025/Операционные системы/os-intro$ git add .  
ssnikulenkov@vbox:~/work/study/2024-2025/Операционные системы/os-intro$ git commit -am 'feat(main): make course s  
tructure'  
[master 577f0ef] feat(main): make course structure  
405 files changed, 98413 insertions(+), 14 deletions(-)  
create mode 100644 labs/README.md  
create mode 100644 labs/README.ru.md  
create mode 100644 labs/lab01/presentation/.projectile  
create mode 100644 labs/lab01/presentation/.texlabroot  
create mode 100644 labs/lab01/presentation/Makefile  
create mode 100644 labs/lab01/presentation/image/kulyabov.jpg  
create mode 100644 labs/lab01/presentation/presentation.md  
create mode 100644 labs/lab01/report/Makefile  
create mode 100644 labs/lab01/report/bib/cite.bib
```

Настройка каталога курса

Перехожу в каталог курса:

```
cd ~/work/study/2024-2025/“Операционные системы”/os-intro
```

Удаляю лишние файлы:

```
rm package.json
```

Создаю необходимые каталоги:

```
echo os-intro > COURSE make
```

Отправляю файлы на сервер:

```
git add . git commit -am 'feat(main): make course structure' git push
```

```
ssnikulenkov@vbox:~/work/study/2024-2025/Операционные системы/os-intro$ git push
Enumerating objects: 40, done.
Counting objects: 100% (40/40), done.
Delta compression using up to 4 threads
Compressing objects: 100% (30/30), done.
Writing objects: 100% (30/30), 341.67 KiB | 2.87 MiB/s, done.
```

Я изучил идеологию и применение средств контроля версий. Освоил умения по работе с git.