

Научное программирование

Лабораторная работа №1.

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Содержание

1	Цель работы	5
2	Задание	6
3	Выполнение лабораторной работы	7
3.1	Результаты выполнения лабораторной работы. Установил git-flow в Ubuntu	7
3.2	Установил gh	8
3.3	Задал базовую настройку git. Настроил utf-8 в выводе сообщений гит.	9
3.4	Создайте ключи ssh по алгоритму rsa с ключём размером 4096 бит по алгоритму ed25519	10
3.5	Создайте ключи pgp Генерируем ключ	11
3.6	Добавление PGP ключа в GitHub	11
3.7	Настройка автоматических подписей коммитов git	13
3.8	Настройка gh	14
3.9	Необходимо создать шаблон рабочего пространства.	15
3.10	Перейдите в каталог курса:	15
3.11	Отправьте файлы на сервер	17
4	Выводы	19

List of Figures

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List of Tables

1 Цель работы

Освоить на практике использование системы контроля версий Git.

2 Задание

- Создать базовую конфигурацию для работы с git.
- Создать ключ SSH.
- Создать ключ PGP.
- Настроить подписи git.
- Зарегистрироваться на Github.
- Создать локальный каталог для выполнения заданий по предмету.

3 Выполнение лабораторной работы

3.1 Результаты выполнения лабораторной работы.

Установил git-flow в Ubuntu

```
pi@pi-dell-lin:~$ sudo apt install git-flow
[sudo] password for pi:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  pandoc-data
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  git-flow
0 upgraded, 1 newly installed, 0 to remove and 108 not upgraded.
Need to get 38,8 kB of archives.
After this operation, 330 kB of additional disk space will be used.
Get:1 http://ru.archive.ubuntu.com/ubuntu focal/universe amd64 git-flow all 1.12.3-1 [38,8 kB]
Fetched 38,8 kB in 1s (74,7 kB/s)
Selecting previously unselected package git-flow.
(Reading database ... 366822 files and directories currently installed.)
Preparing to unpack .../git-flow_1.12.3-1_all.deb ...
Unpacking git-flow (1.12.3-1) ...
Setting up git-flow (1.12.3-1) ...
pi@pi-dell-lin:~$ git flow
usage: git flow <subcommand>

Available subcommands are:
  init      Initialize a new git repo with support for the branching model.
  feature   Manage your feature branches.
  bugfix    Manage your bugfix branches.
  release   Manage your release branches.
  hotfix    Manage your hotfix branches.
  support   Manage your support branches.
  version   Shows version information.
  config    Manage your git-flow configuration.
  log       Show log deviating from base branch.
```

Figure 3.1: 1

3.2 Установил gh

```
pi@pi-dell-lin:~$ sudo snap install gh
Download snap "gh" (502) from channel "stable"
gh 2.6.0-15-g1a10fd5a from Casper (casper-dcl) installed
pi@pi-dell-lin:~$ gh
Work seamlessly with GitHub from the command line.

USAGE
  gh <command> <subcommand> [flags]

CORE COMMANDS
  auth:      Authenticate gh and git with GitHub
  browse:    Open the repository in the browser
  codespace: Connect to and manage your codespaces
  gist:      Manage gists
  issue:     Manage issues
  pr:        Manage pull requests
  release:   Manage releases
  repo:      Manage repositories

ACTIONS COMMANDS
  run:       View details about workflow runs
  workflow:  View details about GitHub Actions workflows

ADDITIONAL COMMANDS
  alias:     Create command shortcuts
  api:       Make an authenticated GitHub API request
  completion: Generate shell completion scripts
  config:    Manage configuration for gh
  extension: Manage gh extensions
  gpg-key:   Manage GPG keys
  help:     Help about any command
  search:    Search for repositories, issues, pull requests and users
  secret:    Manage GitHub secrets
  ssh-key:   Manage SSH keys

HELP TOPICS
  actions:  Learn about working with GitHub Actions
  environment: Environment variables that can be used with gh
  formatting: Formatting options for JSON data exported from gh
  mintty:   Information about using gh with MinTTY
  reference: A comprehensive reference of all gh commands

FLAGS
  --help      Show help for command
  --version   Show gh version

EXAMPLES
  $ gh issue create
  $ gh repo clone cli/cli
  $ gh pr checkout 321

LEARN MORE
  Use 'gh <command> <subcommand> --help' for more information about a command.
  Read the manual at https://cli.github.com/manual

FEEDBACK
```

Figure 3.2: 2

3.3 Задал базовую настройку git. Настроил utf-8 в выводе сообщений гит.

Зададим имя начальной ветки (будем называть её master). Настроил верификацию и подписание коммитов git.

```
auth:      Authenticate gh and git with GitHub
browse:    Open the repository in the browser
codespace: Connect to and manage your codespaces
gist:      Manage gists
issue:     Manage issues
pr:        Manage pull requests
release:   Manage releases
repo:      Manage repositories

ACTIONS COMMANDS
run:       View details about workflow runs
workflow:  View details about GitHub Actions workflows

ADDITIONAL COMMANDS
alias:     Create command shortcuts
api:       Make an authenticated GitHub API request
completion: Generate shell completion scripts
config:    Manage configuration for gh
extension: Manage gh extensions
gpg-key:   Manage GPG keys
help:      Help about any command
search:    Search for repositories, issues, pull requests and users
secret:    Manage GitHub secrets
ssh-key:   Manage SSH keys

HELP TOPICS
actions:   Learn about working with GitHub Actions
environment: Environment variables that can be used with gh
formatting: Formatting options for JSON data exported from gh
mintty:    Information about using gh with MinTTY
reference:  A comprehensive reference of all gh commands

FLAGS
--help     Show help for command
--version  Show gh version

EXAMPLES
$ gh issue create
$ gh repo clone cli/cli
$ gh pr checkout 321

LEARN MORE
Use 'gh <command> <subcommand> --help' for more information about a command.
Read the manual at https://cli.github.com/manual

FEEDBACK
Open an issue using 'gh issue create -R github.com/cli/cli'
```

Figure 3.3: 3

3.4 Создайте ключи ssh по алгоритму rsa с ключём размером 4096 бит по алгоритму ed25519

```
ssh-key:      Manage SSH keys

HELP TOPICS
actions:      Learn about working with GitHub Actions
environment:  Environment variables that can be used with gh
formatting:   Formatting options for JSON data exported from gh
mintty:       Information about using gh with MinTTY
reference:    A comprehensive reference of all gh commands

FLAGS
--help        Show help for command
--version     Show gh version

EXAMPLES
$ gh issue create
$ gh repo clone cli/cli
$ gh pr checkout 321

LEARN MORE
Use 'gh <command> <subcommand> --help' for more information about a command.
Read the manual at https://cli.github.com/manual

FEEDBACK
Open an issue using 'gh issue create -R github.com/cli/cli'

Generating public/private rsa key pair.
Enter file in which to save the key (/home/pi/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/pi/.ssh/id_rsa
Your public key has been saved in /home/pi/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:TfGE63Uk9EjhgedHSSZiGVCFnYR0tuHxJeivtDY1N04 pi@pi-dell-lin
The key's randomart image is:
+---[RSA 4096]---+
|      .o*&X+o. |
|      .%B**=  |
|      *.O+*.  |
|      o* + o   |
|      S..o o   |
|      o + E    |
|      . + = .  |
|      = .      |
|      . .      |
+---[SHA256]-----+
pi@pi-dell-lin:~$ ls ~/.ssh
id_ed25519 id_ed25519.pub id_rsa id_rsa.pub known_hosts
pi@pi-dell-lin:~$
```

Figure 3.4: 4

3.5 Создайте ключи ргр Генерируем ключ

```
Change (N)ame, (C)omment, (E)mail or (O)key/(Q)uit? q
gpg: Key generation canceled.
sigpi-dell-lin:~$ gpg --full-generate-key
gpg (GnuPG) 2.2.19; Copyright (C) 2019 Free Software Foundation, Inc.
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.

Please select what kind of key you want:
(1) RSA and RSA (default)
(2) DSA and Elgamal
(3) DSA (sign only)
(4) RSA (sign only)
(14) Existing key from card
Your selection? 1
RSA keys may be between 1024 and 4096 bits long.
What keysize do you want? (3072) 4096
Requested keysize 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
Key does not expire at all
Is this correct? (y/N) y

GnuPG needs to construct a user ID to identify your key.

Change (N)ame, (C)omment, (E)mail or (O)key/(Q)uit? o
We need to generate a lot of random bytes. It is a good idea to perform
some other action (type on the keyboard, move the mouse, utilize the
disks) during the prime generation; this gives the random number
generator a better chance to gain enough entropy.
We need to generate a lot of random bytes. It is a good idea to perform
some other action (type on the keyboard, move the mouse, utilize the
disks) during the prime generation; this gives the random number
generator a better chance to gain enough entropy.
gpg: key E608895A4E9D4D60 marked as ultimately trusted
gpg: directory '/home/pl/.gnupg/openpgp-revocs.d' created
gpg: revocation certificate stored as '/home/pl/.gnupg/openpgp-revocs.d/5D16A4778F9974E32E65027DE608895A4E9D4D60.rev'
public and secret key created and signed.

pub   rsa4096 2022-09-17 [SC]
      5D16A4778F9974E32E65027DE608895A4E9D4D60
```

Figure 3.5: 5

3.6 Добавление PGP ключа в GitHub

Выводим список ключей и копируем отпечаток приватного ключа Скопируйте ваш сгенерированный PGP ключ в буфер обмена

```

disks) during the prime generation; this gives the random number
generator a better chance to gain enough entropy.
gpg: key E608895A4E9D4D60 marked as ultimately trusted
gpg: directory '/home/pi/.gnupg/openpgp-revocs.d' created
gpg: revocation certificate stored as '/home/pi/.gnupg/openpgp-revocs.d/5D16A4778F9974E32E65027DE608895A4E9D4D60.rev'
public and secret key created and signed.

pub   rsa4096 2022-09-17 [SC]
      5D16A4778F9974E32E65027DE608895A4E9D4D60
uid    Ivan Podnoglunnyl <mascomen4@gmail.com>
sub    rsa4096 2022-09-17 [E]

pi@pi-dell-lin:~$ gpg --list-secret-keys --keyid-format LONG
gpg: checking the trustdb
gpg: marginals needed: 3 completes needed: 1 trust model: pgp
gpg: depth: 0 valid: 1 signed: 0 trust: 0-, 0q, 0n, 0m, 0f, 1u
/home/pi/.gnupg/pubring.kbx
-----
sec   rsa4096/E608895A4E9D4D60 2022-09-17 [SC]
      5D16A4778F9974E32E65027DE608895A4E9D4D60
uid    Ivan Podnoglunnyl <mascomen4@gmail.com>
ssb    rsa4096/7B2A322C8094FA60 2022-09-17 [E]

pi@pi-dell-lin:~$ gpg --armor --export <E608895A4E9D4D60> | xclip -sel clip
bash: syntax error near unexpected token `|'
pi@pi-dell-lin:~$ gpg --armor --export <E608895A4E9D4D60> | xclip -sel clip
bash: syntax error near unexpected token `|'
pi@pi-dell-lin:~$ gpg --armor --export E608895A4E9D4D60 | xclip -sel clip

Command 'xclip' not found, but can be installed with:

sudo apt install xclip

pi@pi-dell-lin:~$ sudo apt install xclip
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  pandoc-data
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  xclip
0 upgraded, 1 newly installed, 0 to remove and 108 not upgraded.
Need to get 18,4 kB of archives.
After this operation, 60,4 kB of additional disk space will be used.
Get:1 http://ru.archive.ubuntu.com/ubuntu focal/universe amd64 xclip amd64 0.13-1 [18,4 kB]
Fetched 18,4 kB in 0s (216 kB/s)
Selecting previously unselected package xclip.
(Reading database ... 366887 files and directories currently installed.)
Preparing to unpack .../xclip_0.13-1_amd64.deb ...
Unpacking xclip (0.13-1) ...
Setting up xclip (0.13-1) ...
Processing triggers for man-db (2.9.1-1) ...
pi@pi-dell-lin:~$ gpg --armor --export E608895A4E9D4D60 | xclip -sel clip
pi@pi-dell-lin:~$

```

Figure 3.6: 6

3.7 Настройка автоматических подписей коммитов git

```
gpg: directory '/home/pi/.gnupg/openpgp-revocs.d' created
gpg: revocation certificate stored as '/home/pi/.gnupg/openpgp-revocs.d/5D16A4778F9974E32E65027DE608895A4E9D4D60.rev'
public and secret key created and signed.

pub   rsa4096 2022-09-17 [SC]
      5D16A4778F9974E32E65027DE608895A4E9D4D60
uid           Ivan Podnogilnyi <nascomen4@gmail.com>
sub   rsa4096 2022-09-17 [E]

pi@pi-dell-lin:~$ gpg --list-secret-keys --keyid-format LONG
gpg: checking the trustdb
gpg: marginal: needed: 3 completes needed: 1 trust model: pgp
gpg: depth: 0 valid: 1 signed: 0 trust: 0-, 0q, 0n, 0m, 0f, 1u
/home/pi/.gnupg/pubring.kbx
-----
sec   rsa4096/E608895A4E9D4D60 2022-09-17 [SC]
      5D16A4778F9974E32E65027DE608895A4E9D4D60
uid
ssb   rsa4096/7B2A322C8094FA60 2022-09-17 [E]

pi@pi-dell-lin:~$ gpg --armor --export <E608895A4E9D4D60> | xclip -sel clfp
bash: syntax error near unexpected token '<'
pi@pi-dell-lin:~$ gpg --armor --export <E608895A4E9D4D60> | xclip -sel clfp
bash: syntax error near unexpected token '<'
pi@pi-dell-lin:~$ gpg --armor --export E608895A4E9D4D60 | xclip -sel clfp
Command 'xclip' not found, but can be installed with:

sudo apt install xclip

pi@pi-dell-lin:~$ sudo apt install xclip
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  pandoc-data
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  xclip
0 upgraded, 1 newly installed, 0 to remove and 108 not upgraded.
Need to get 18,4 kB of archives.
After this operation, 60,4 kB of additional disk space will be used.
Get:1 http://ru.archive.ubuntu.com/ubuntu focal/universe amd64 xclip amd64 0.13-1 [18,4 kB]
Fetched 18,4 kB in 0s (216 kB/s)
Selecting previously unselected package xclip.
(Reading database ... 366887 files and directories currently installed.)
Preparing to unpack .../xclip_0.13-1_amd64.deb ...
Unpacking xclip (0.13-1) ...
Setting up xclip (0.13-1) ...
Processing triggers for man-db (2.9.1-1) ...
pi@pi-dell-lin:~$ gpg --armor --export E608895A4E9D4D60 | xclip -sel clfp
pi@pi-dell-lin:~$ git config --global user.signingKey E608895A4E9D4D60
pi@pi-dell-lin:~$ git config --global commit.gpgsign true
pi@pi-dell-lin:~$ git config --global gpg.program $(which gpg2)
pi@pi-dell-lin:~$
```

Figure 3.7: 8

3.8 Настройка gh

```
gpg: depth: 0 valid: 1 signed: 0 trust: 0-, 0q, 0n, 0m, 0f, 1u
/home/pi/.gnupg/pubring.kbx
-----
sec   rsa4096/E608895A4E9D4D60 2022-09-17 [SC]
uid
ssb   rsa4096/7B2A322C8094FA60 2022-09-17 [E]

pi@pi-dell-lin:~$ gpg --armor --export <E608895A4E9D4D60> | xclip -sel clip
bash: syntax error near unexpected token `|'
pi@pi-dell-lin:~$ gpg --armor --export <E608895A4E9D4D60> | xclip -sel clip
bash: syntax error near unexpected token `|'
pi@pi-dell-lin:~$ gpg --armor --export E608895A4E9D4D60 | xclip -sel clip

Command 'xclip' not found, but can be installed with:

sudo apt install xclip

pi@pi-dell-lin:~$ sudo apt install xclip
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  pandoc-data
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  xclip
0 upgraded, 1 newly installed, 0 to remove and 108 not upgraded.
Need to get 18,4 kB of archives.
After this operation, 60,4 kB of additional disk space will be used.
Get:1 http://ru.archive.ubuntu.com/ubuntu/focal/universe amd64 xclip amd64 0.13-1 [18,4 kB]
Fetched 18,4 kB in 0s (216 kB/s)
Selecting previously unselected package xclip.
(Reading database ... 366887 files and directories currently installed.)
Preparing to unpack .../xclip_0.13-1_amd64.deb ...
Unpacking xclip (0.13-1) ...
Setting up xclip (0.13-1) ...
Processing triggers for man-db (2.9.1-1) ...
pi@pi-dell-lin:~$ gpg --armor --export E608895A4E9D4D60 | xclip -sel clip
pi@pi-dell-lin:~$ git config --global user.signingKey E608895A4E9D4D60
pi@pi-dell-lin:~$ git config --global commit.gpgsign true
pi@pi-dell-lin:~$ git config --global gpg.program $(which gpg2)
pi@pi-dell-lin:~$ gh auth login
? What account do you want to log into? GitHub.com
? What is your preferred protocol for Git operations? HTTPS
? Authenticate Git with your GitHub credentials? Yes
? How would you like to authenticate GitHub CLI? Login with a web browser

! First copy your one-time code: 77BD-E5F6
Press Enter to open github.com in your browser...
✓ Authentication complete.
- gh config set -h github.com git_protocol https
✓ Configured git protocol
```

Figure 3.8: 9

3.9 Необходимо создать шаблон рабочего пространства.

```

fetched 18.4 KB in 0s (216 KB/s)
Selecting previously unselected package xclip.
(Reading database ... 366887 files and directories currently installed.)
Preparing to unpack .../xclip_0.13-1_amd64.deb ...
Unpacking xclip (0.13-1) ...
Setting up xclip (0.13-1) ...
Processing triggers for man-db (2.9.1-1) ...
masmen@deli:~$ gpg --armor --export E608B95A4E904D06 | xclip -sel clip
masmen@deli:~$ git config --global user.signingkey E608B95A4E904D06
masmen@deli:~$ git config --global commit.gpgsign true
masmen@deli:~$ git config --global gpg.program S(which gpg2)
masmen@deli:~$ gh auth login
? What account do you want to log into? GitHub.com
? What is your preferred protocol for Git operations? HTTPS
? Authenticate Git with your GitHub credentials? yes
? How would you like to authenticate GitHub CLI? Login with a web browser

  First copy your one-time code: 77B0-ESF6
Press Enter to open github.com in your browser...
  Authentication complete.
  gh config set -h github.com git_protocol https
  Configured git protocol
  Logged in as masmen4
masmen@deli:~$ cd education/pfur_masters/science_prog/
masmen@deli:~/education/pfur_masters/science_prog$ gh repo create study_2022-2023_sci_prog --template=yamadharma/course-directory-student-template --public
  Created repository masmen4/study_2022-2023_sci_prog on GitHub
masmen@deli:~/education/pfur_masters/science_prog$ git clone --recursive git@github.com:masmen4/study_2022-2023_sci_prog.git sciprogram
Cloning into 'sciprogram' ...
fatal: remote error:
  masmen4@github.com:study_2022-2023_sci_prog is not a valid repository name
  Visit https://support.github.com/ for help
masmen@deli:~/education/pfur_masters/science_prog$ git clone --recursive git@github.com:masmen4/study_2022-2023_sci_prog.git sciprogram
Cloning into 'sciprogram' ...
remote: Enumerating objects: 26, done.
remote: Counting objects: 100% (26/26), done.
remote: Compressing objects: 100% (25/25), done.
remote: Total 26 (delta 0), reused 17 (delta 0), pack-reused 0
Receiving objects: 100% (26/26), 16.00 KiB | 8.00 MiB/s, done.
Submodule 'template/presentation' (https://github.com/yamadharma/academic-presentation-markdown-template.git) registered for path 'template/presentation'
Submodule 'template/report' (https://github.com/yamadharma/academic-laboratory-report-template.git) registered for path 'template/report'
Cloning into '/home/pf/education/pfur_masters/science_prog/sciprogram/template/presentation'...
remote: Enumerating objects: 71, done.
remote: Counting objects: 100% (71/71), done.
remote: Compressing objects: 100% (49/49), done.
remote: Total 71 (delta 23), reused 60 (delta 20), pack-reused 0
Cloning into '/home/pf/education/pfur_masters/science_prog/sciprogram/template/report'...
remote: Enumerating objects: 78, done.
remote: Counting objects: 100% (78/78), done.
remote: Compressing objects: 100% (52/52), done.
remote: Total 78 (delta 31), reused 69 (delta 22), pack-reused 0
Submodule path 'template/presentation': checked out '2783b47423792d472694aaf7555a563dce51a25'
Submodule path 'template/report': checked out 'df7b2ef80f8def3b9a49f8695277469a1a7842a'
masmen@deli:~/education/pfur_masters/science_prog$ ls
sciprogram
masmen@deli:~/education/pfur_masters/science_prog$
```

Figure 3.9: 10

3.10 Перейдите в каталог курса:

Удалите лишние файлы. Создайте необходимые каталоги

```

Submodule path 'template/report': checked out 'df7b2ef80f8def3b9a496f8695277469a1a7842a'
pi@pi-dell-lin:~/education/pfur_masters/science_prog$ ls
labs  scirprog
pi@pi-dell-lin:~/education/pfur_masters/science_prog$ cd scirprog
bash: cd: scirprog: No such file or directory
pi@pi-dell-lin:~/education/pfur_masters/science_prog$ cd scirprog/
pi@pi-dell-lin:~/education/pfur_masters/science_prog/scirprog$ rm package.json
pi@pi-dell-lin:~/education/pfur_masters/science_prog/scirprog$ make COURSE=scirprog
pi@pi-dell-lin:~/education/pfur_masters/science_prog/scirprog$ git add .
pi@pi-dell-lin:~/education/pfur_masters/science_prog/scirprog$ git commit -am 'feat(main): make course structure'
[master 50d46ed] feat(main): make course structure
146 files changed, 13464 insertions(+), 14 deletions(-)
create mode 100644 labs/lab1/presentation/Makefile
create mode 100644 labs/lab1/presentation/image/kulyabov.jpg
create mode 100644 labs/lab1/presentation/presentation.md
create mode 100644 labs/lab1/report/Makefile
create mode 100644 labs/lab1/report/bib/cite.bib
create mode 100644 labs/lab1/report/image/placemg_800_600_tech.jpg
create mode 100644 labs/lab1/report/pandoc/csl/gost-r-7-0-5-2008-numeric.csl
create mode 100644 labs/lab1/report/report.md
create mode 100644 labs/lab2/presentation/Makefile
create mode 100644 labs/lab2/presentation/image/kulyabov.jpg
create mode 100644 labs/lab2/presentation/presentation.md
create mode 100644 labs/lab2/report/Makefile
create mode 100644 labs/lab2/report/bib/cite.bib
create mode 100644 labs/lab2/report/image/placemg_800_600_tech.jpg
create mode 100644 labs/lab2/report/pandoc/csl/gost-r-7-0-5-2008-numeric.csl
create mode 100644 labs/lab2/report/report.md
create mode 100644 labs/lab3/presentation/Makefile
create mode 100644 labs/lab3/presentation/image/kulyabov.jpg
create mode 100644 labs/lab3/report/Makefile
create mode 100644 labs/lab3/report/bib/cite.bib
create mode 100644 labs/lab3/report/image/placemg_800_600_tech.jpg
create mode 100644 labs/lab3/report/pandoc/csl/gost-r-7-0-5-2008-numeric.csl
create mode 100644 labs/lab3/report/report.md
create mode 100644 labs/lab4/presentation/Makefile
create mode 100644 labs/lab4/presentation/image/kulyabov.jpg
create mode 100644 labs/lab4/presentation/presentation.md
create mode 100644 labs/lab4/report/Makefile
create mode 100644 labs/lab4/report/bib/cite.bib
create mode 100644 labs/lab4/report/image/placemg_800_600_tech.jpg
create mode 100644 labs/lab4/report/pandoc/csl/gost-r-7-0-5-2008-numeric.csl
create mode 100644 labs/lab4/report/report.md
create mode 100644 labs/lab5/presentation/Makefile
create mode 100644 labs/lab5/presentation/image/kulyabov.jpg
create mode 100644 labs/lab5/presentation/presentation.md
create mode 100644 labs/lab5/report/Makefile
create mode 100644 labs/lab5/report/bib/cite.bib
create mode 100644 labs/lab5/report/image/placemg_800_600_tech.jpg
create mode 100644 labs/lab5/report/pandoc/csl/gost-r-7-0-5-2008-numeric.csl
create mode 100644 labs/lab5/report/report.md
create mode 100644 labs/lab6/presentation/Makefile
create mode 100644 labs/lab6/presentation/image/kulyabov.jpg
create mode 100644 labs/lab6/presentation/presentation.md
create mode 100644 labs/lab6/report/Makefile

```

Figure 3.10: 11

3.11 Отправьте файлы на сервер

```
create mode 100644 project-personal/stage1/report/bib/cite.bib
create mode 100644 project-personal/stage1/report/image/placeimg_800_600_tech.jpg
create mode 100644 project-personal/stage1/report/pandoc/csl/gost-r-7-0-5-2008-numeric.csl
create mode 100644 project-personal/stage1/report/report.md
create mode 100644 project-personal/stage2/presentation/Makefile
create mode 100644 project-personal/stage2/presentation/image/kulyabov.jpg
create mode 100644 project-personal/stage2/presentation/presentation.md
create mode 100644 project-personal/stage2/report/Makefile
create mode 100644 project-personal/stage2/report/bib/cite.bib
create mode 100644 project-personal/stage2/report/image/placeimg_800_600_tech.jpg
create mode 100644 project-personal/stage2/report/pandoc/csl/gost-r-7-0-5-2008-numeric.csl
create mode 100644 project-personal/stage2/report/report.md
create mode 100644 project-personal/stage3/presentation/Makefile
create mode 100644 project-personal/stage3/presentation/image/kulyabov.jpg
create mode 100644 project-personal/stage3/presentation/presentation.md
create mode 100644 project-personal/stage3/report/Makefile
create mode 100644 project-personal/stage3/report/bib/cite.bib
create mode 100644 project-personal/stage3/report/image/placeimg_800_600_tech.jpg
create mode 100644 project-personal/stage3/report/pandoc/csl/gost-r-7-0-5-2008-numeric.csl
create mode 100644 project-personal/stage3/report/report.md
create mode 100644 project-personal/stage4/presentation/Makefile
create mode 100644 project-personal/stage4/presentation/image/kulyabov.jpg
create mode 100644 project-personal/stage4/presentation/presentation.md
create mode 100644 project-personal/stage4/report/Makefile
create mode 100644 project-personal/stage4/report/bib/cite.bib
create mode 100644 project-personal/stage4/report/image/placeimg_800_600_tech.jpg
create mode 100644 project-personal/stage4/report/pandoc/csl/gost-r-7-0-5-2008-numeric.csl
create mode 100644 project-personal/stage4/report/report.md
create mode 100644 project-personal/stage5/presentation/Makefile
create mode 100644 project-personal/stage5/presentation/image/kulyabov.jpg
create mode 100644 project-personal/stage5/presentation/presentation.md
create mode 100644 project-personal/stage5/report/Makefile
create mode 100644 project-personal/stage5/report/bib/cite.bib
create mode 100644 project-personal/stage5/report/image/placeimg_800_600_tech.jpg
create mode 100644 project-personal/stage5/report/pandoc/csl/gost-r-7-0-5-2008-numeric.csl
create mode 100644 project-personal/stage5/report/report.md
create mode 100644 project-personal/stage6/presentation/Makefile
create mode 100644 project-personal/stage6/presentation/image/kulyabov.jpg
create mode 100644 project-personal/stage6/presentation/presentation.md
create mode 100644 project-personal/stage6/report/Makefile
create mode 100644 project-personal/stage6/report/bib/cite.bib
create mode 100644 project-personal/stage6/report/image/placeimg_800_600_tech.jpg
create mode 100644 project-personal/stage6/report/pandoc/csl/gost-r-7-0-5-2008-numeric.csl
create mode 100644 project-personal/stage6/report/report.md
pi@pi-dell-lin:~/education/pfur_masters/science_prog/sciprog$ git push
Enumerating objects: 22, done.
Counting objects: 100% (22/22), done.
Delta compression using up to 12 threads
Compressing objects: 100% (18/18), done.
Writing objects: 100% (21/21), 311.70 KiB | 2.49 MiB/s, done.
Total 21 (delta 2), reused 0 (delta 0)
remote: Resolving deltas: 100% (2/2), completed with 1 local object.
```

Figure 3.11: 12

Контрольные вопросы:

1. Система контроля версий предназначена для ведения истории изменений. Каждое изменение добавляется через коммиты, и составляет дерево коммитов. В любой момент времени можно вернуться на любую ноду дерева
2. Хранилище - удаленный сервер, на котором хранится проект с гит файлами, commit - изменение в проект, которое затем должно быть подтверждено командой git push. История - дерево всех коммитов. Рабочая копия - создается с помощью git clone, копия на локальной машине, в которую вносятся изменения. Они могут быть загружены на сервер через коммиты.

3. Централизованные системы используют единственный сервер, содержащий все версии файлов, и некоторое количество клиентов, которые получают файлы из этого централизованного хранилища. Примеры: CVS, Subversion и Perforce
4. При единоличной работе с хранилищем применяются такие же правила как и при работе с общим хранилищем (см. пункт 5)
5. При работе с общим хранилищем необходимо для каждой функции строго добавлять новую ветку feature, реализовывать её и сливать с веткой develop
6. Защищает исходный код от потери, обеспечивает командную работу, помогает отменить изменения, распределённая работа
7. git add, git commit, git push, git remote, git clone, git flow, git branch, git merge, git checkout, git pull, git init, git config
8. Если нужно вести систему контроля, но в целом мы не делимся кодом с командой, и нам не нужно иметь доступ к коду с разных устройств, которые практически никак не связаны с нашей локальной сетью, то можно использовать локальные репозитории. В противном случае нужно использовать удаленные репозитории
9. Ветви - отдельные истории в СКВ, которые позволяют вести разработки параллельно. Над двумя ветками могут работать две разные команды, а затем их можно слить в одну
10. Через файл .gitignore. Топик: <https://git-scm.com/docs/gitignore> Зачем? Потому что некоторые файлы могут быть слишком большими: бинарники, словари, видео, изображения

4 Выводы

Освоил на практике применение методов шифрования Цезаря и Атбаша.