

# Математическое моделирование

Лабораторная работа 1. Система контроля версий Git.

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## Цели и задачи работы

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Целью данной работы является изучение идеологии и применения средств контроля версий.

1. Создать учетную запись на `github.com`
2. Настроить репозиторий

## Процесс выполнения лабораторной работы

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Git — это система контроля версий (VCS), которая позволяет отслеживать и фиксировать изменения в коде: вы можете восстановить код в случае сбоя или откатить до более ранних версий.

Команды Git принимают вид `git` , где аргументом может быть путь к файлу.

```
pletho@VirtualBox:~$  
pletho@VirtualBox:~$ git config --global user.name "plethografcihd"  
pletho@VirtualBox:~$ git config --global user.email "1032215800@pfur.ru"  
pletho@VirtualBox:~$ git config --global core.quotepath false  
pletho@VirtualBox:~$ git config --global init.defaultBranch master  
pletho@VirtualBox:~$ git config --global core.autocrlf input  
pletho@VirtualBox:~$ git config --global core.safecrlf warn  
pletho@VirtualBox:~$
```

Рис. 1: Параметры

## Генерируем SSH-ключ

```
pletho@VirtualBox:~$  
pletho@VirtualBox:~$ ssh-keygen -t rsa -b 4096  
  
Generating public/private rsa key pair.  
Enter file in which to save the key (/home/pletho/.ssh/id_rsa): Created directory '/home/pletho/.ssh'.  
Enter passphrase (empty for no passphrase):  
Enter same passphrase again:  
Your identification has been saved in /home/pletho/.ssh/id_rsa  
Your public key has been saved in /home/pletho/.ssh/id_rsa.pub  
The key fingerprint is:  
SHA256:T6EUUm68XbvFPpo7hFFqK3XdgJ6dgs0LJHGZ0g85jPw pletho@VirtualBox  
The key's randomart image is:  
+---[RSA 4096]---+  
| .o+=.+ . |  
| +=0X ... |  
| ==.O+o.O. |  
| o +EBBoo.. |  
| S =.*o |  
| + o.O |  
| o o |  
| o.O |  
| +=.+ |  
+-----[SHA256]-----+  
pletho@VirtualBox:~$
```

Рис. 2: SSH-ключ



```
Change (N)ame, (C)omment, (E)mail or (O)kay/(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: /home/pletho/.gnupg/trustdb.gpg: trustdb created
gpg: key E75AC77AB4021835 marked as ultimately trusted
gpg: directory '/home/pletho/.gnupg/openpgp-revocs.d' created
gpg: revocation certificate stored as '/home/pletho/.gnupg/openpgp-revocs.d/9873B0A4601161CFDDE11C96E75A
C77AB4021835.rev'
public and secret key created and signed.

pub  rsa4096 2025-02-21 [SC]
    9873B0A4601161CFDDE11C96E75AC77AB4021835
uid                               plethografcibd <1032215800@pfur.ru>
sub  rsa4096 2025-02-21 [E]

pletho@VirtualBox:~$
```

Рис. 3: GPG-ключ

## Авторизуемся в github при помощи утилиты gh

```
pletho@VirtualBox:~$  
pletho@VirtualBox:~$ gh auth login  
  
? What account do you want to log into? GitHub.com  
? What is your preferred protocol for Git operations? SSH  
? Upload your SSH public key to your GitHub account? /home/pletho/.ssh/id_rsa.pub  
? Title for your SSH key: GitHub CLI  
? How would you like to authenticate GitHub CLI? Login with a web browser  
  
! First copy your one-time code: 77BC-51D7  
Press Enter to open github.com in your browser...  
✓ Authentication complete.  
- gh config set -h github.com git_protocol ssh  
✓ Configured git protocol  
✓ Uploaded the SSH key to your GitHub account: /home/pletho/.ssh/id_rsa.pub  
✓ Logged in as plethograficbd  
pletho@VirtualBox:~$
```

Рис. 4: Утилита gh

# Оформленный репозиторий.

The screenshot shows a GitHub repository named 'mathmod' which is public. It was generated from the template 'yamadharm/course-directory-student-template'. The repository is on the 'master' branch, has 1 branch and 0 tags. The commit history shows a recent commit by 'plethograficbd' with the message 'feat(main): make course structure' at 17c89d0, made 'now'. The commit includes several files: 'config', 'labs', 'presentation', 'project-group', 'template', '.gitattributes', '.gitignore', '.gitmodules', and 'CHANGELOG.md'. The 'config' and 'template' folders were committed '2 minutes ago', while the others were committed 'now'.

File/Folder	Commit Message	Commit Hash	Time
config	Initial commit	17c89d0	2 minutes ago
labs	feat(main): make course structure	17c89d0	now
presentation	feat(main): make course structure	17c89d0	now
project-group	feat(main): make course structure	17c89d0	now
template	Initial commit	17c89d0	2 minutes ago
.gitattributes	Initial commit	17c89d0	2 minutes ago
.gitignore	Initial commit	17c89d0	2 minutes ago
.gitmodules	Initial commit	17c89d0	2 minutes ago
CHANGELOG.md	Initial commit	17c89d0	2 minutes ago

Рис. 5: репозиторий

## Выводы по проделанной работе

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Мы приобрели практические навыки работы с системой контроля версий git и создали свой репозиторий.