



# HY-255

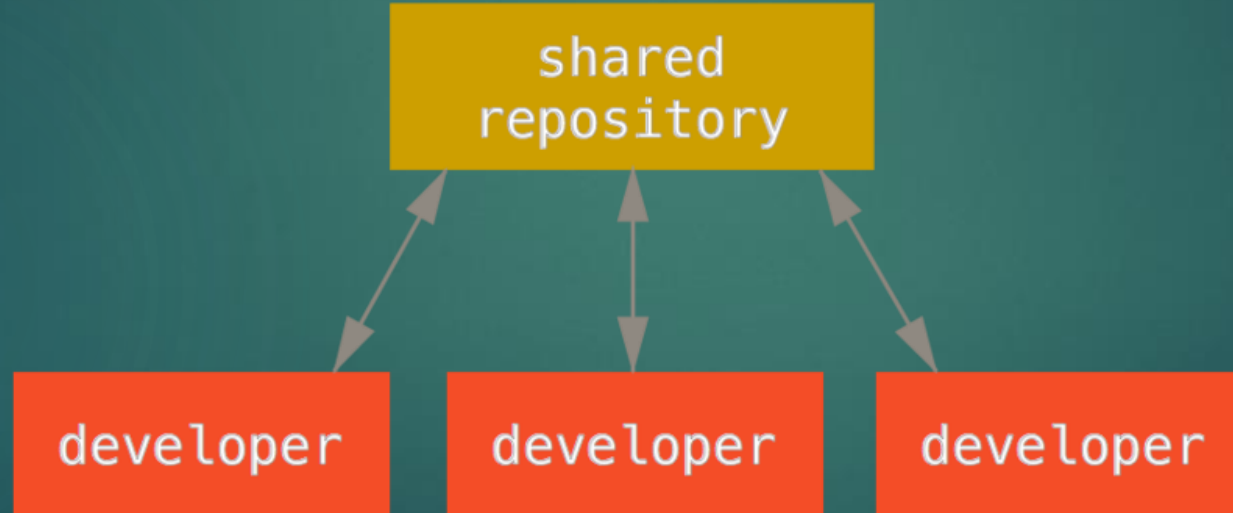
# Git Tutorial

# Outline

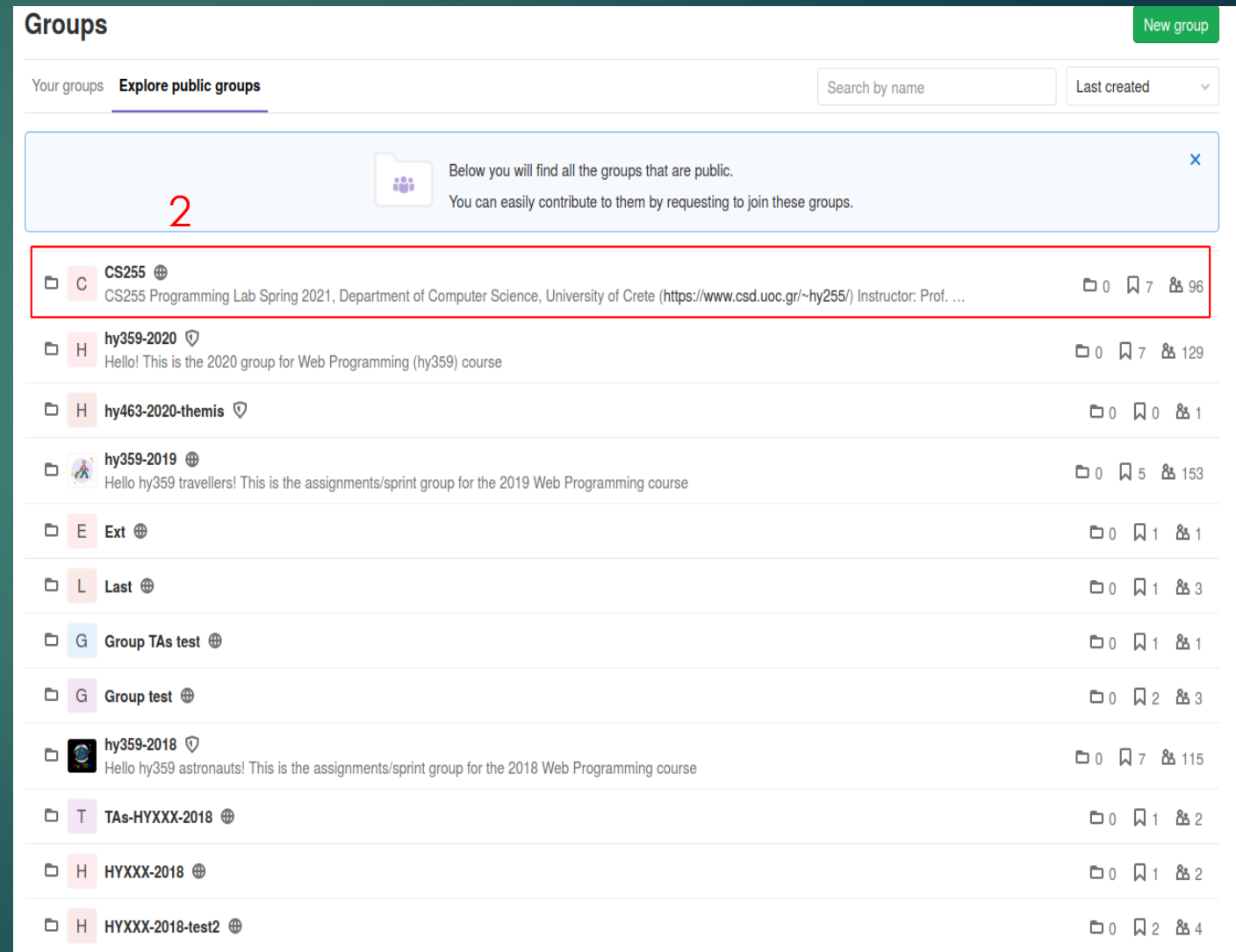
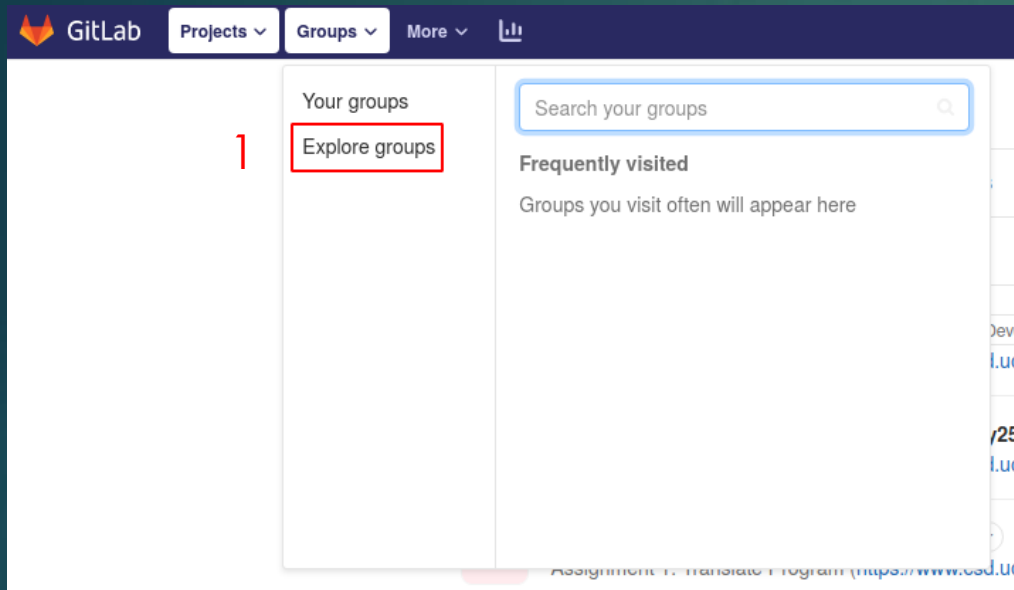
- ▶ What is git
- ▶ How to join HY-255 group
- ▶ What are ssh keys and how to use them
- ▶ How to fork a project
- ▶ Make project private and add TAs as members
- ▶ How to use private.py
- ▶ How to use git

# What is git?

- ▶ Version control system
- ▶ Track file history
- ▶ Shared among multiple users



# How to join HY-255 group



# How to join HY-255 group

The screenshot shows the GitLab interface for the CS255 group. The left sidebar contains navigation links: Group overview, Details (selected), Activity, Issues (0), Merge Requests (0), and Members. The main content area displays the group details for CS255 (Group ID: 441). A red box highlights the 'Request Access' button, with a red number '3' above it. Below the group details, there is a section for 'Subgroups and projects' with tabs for 'Shared projects' and 'Archived projects'. A search bar and a 'Last created' dropdown are also present. The list of subgroups includes:

Subgroup Name	Description	Stars	Created
hy255_as6	Assignment 6: Systems Security: Buffer Overrun Attack ( <a href="https://www.csd.uoc.gr/~hy255/as6">https://www.csd.uoc.gr/~hy255/as6</a> )	0	4 days ago
hy255_as5	Assignment 5: C and Assembly Code Tutorial: Computing Sums ( <a href="https://www.csd.uoc.gr/~hy255/as5">https://www.csd.uoc.gr/~hy255/as5</a> )	0	4 days ago
hy255_as4	Assignment 4: Sudoku checker, solver, and generator ( <a href="https://www.csd.uoc.gr/~hy255/as4">https://www.csd.uoc.gr/~hy255/as4</a> )	0	4 days ago
hy255_as3	Assignment 3: ADTs: Abstract Data Types (Symbol Table) ( <a href="https://www.csd.uoc.gr/~hy255/as3">https://www.csd.uoc.gr/~hy255/as3</a> )	0	4 days ago
hy255_as2	Assignment 2: A string module ( <a href="https://www.csd.uoc.gr/~hy255/as2">https://www.csd.uoc.gr/~hy255/as2</a> )	0	4 days ago
hy255_as1	Assignment 1: Translate Program ( <a href="https://www.csd.uoc.gr/~hy255/as1">https://www.csd.uoc.gr/~hy255/as1</a> )	0	2 days ago
hy255_as0	Assignment 0	0	4 days ago

# Generating ssh-keys

- ▶ `ssh-keygen -t rsa -b 2048 -C "csdemail@csd.uoc.gr"`
- ▶ Press enter in the next three options

```
Generating public/private rsa key pair.  
Enter file in which to save the key (/home/gxanth/.ssh/id_rsa):  
Enter passphrase (empty for no passphrase):  
Enter same passphrase again:
```

# Generating ssh-keys

- ▶ Run `cat .ssh/id_rsa.pub`
- ▶ Copy the printed text

```
Enter same passphrase again:
Your identification has been saved in /home/gxanth/.ssh/id_rsa
Your public key has been saved in /home/gxanth/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:bKnYBc7oJ27tM6AAz9c7LFtjAlbT5Yn/f3aj810DC14 gxanth@csd.uoc.gr
The key's randomart image is:
```

```
+---[RSA 2048]-----+
```

```
|
|      .
|      . + .
|      o + o
|      . = + .
|.oo ..o S      .
|..oooo.+ . . E ..|
| . o=+B.  o o . o|
|  ..o*B.   o ooo.|
|   .o+..+   .++oo|
+-----[SHA256]-----+
```

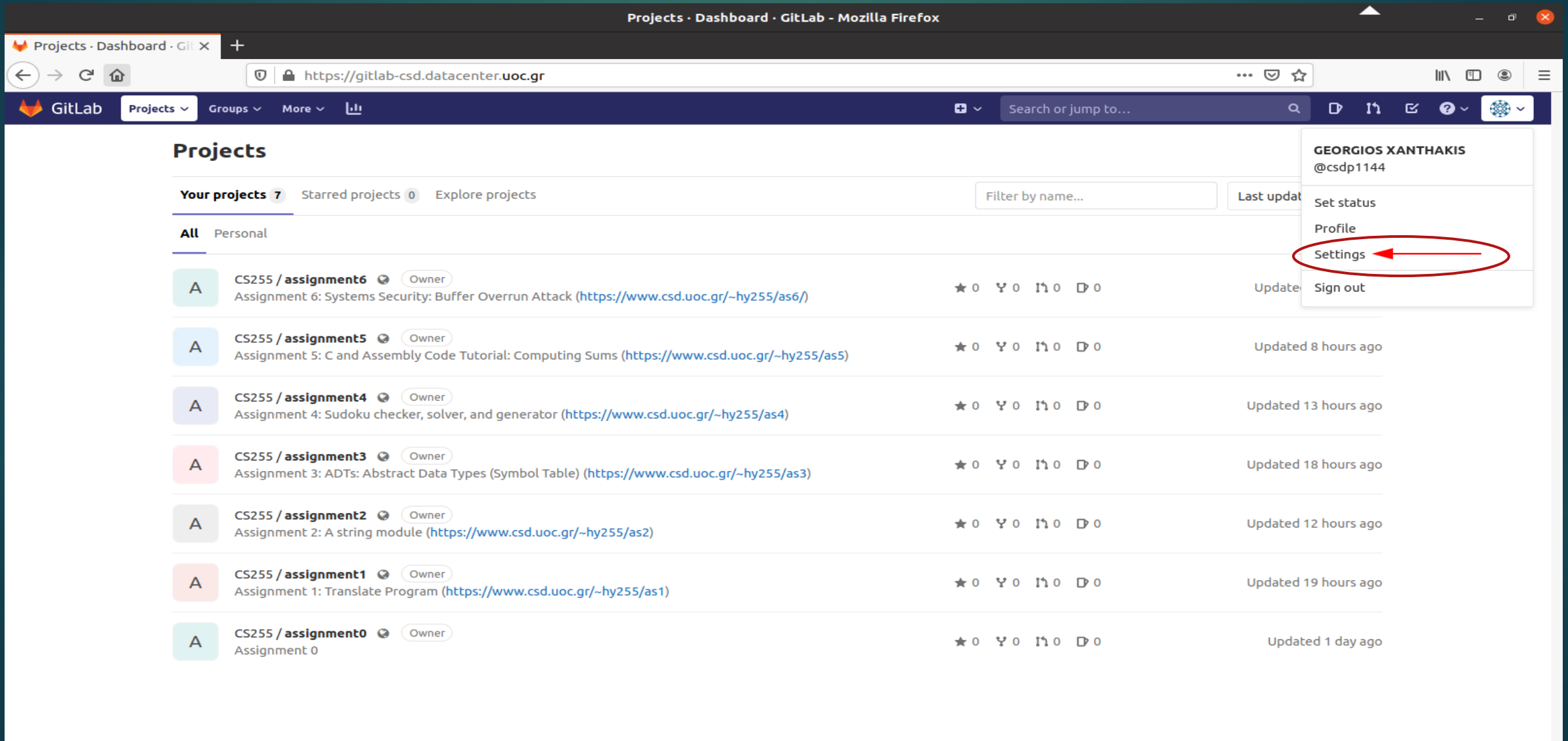
```
gxanth@gxanth:~$ cat .ssh/id_rsa.pub
```

```
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQCAQC+IvR0xk67Yom1VGLK1W1TsRxIeQW+bs3YQod53KsC
HtrymM7sAkUBt2RXovZm99c4KHwCyIWOIZ4KiMuXMWLJUtxfImh0jG+PQdRtD1N5pY9895kDg+Hlv2sI
NojIf/2ecfGG1QTB15Vbw6cmwLssea8pXwQeMffiyVvVJWEASKvc/YbiQQcgzaIbg4U42npGItdk+xv5
hiS80GGdhuQHfFJx2GqccsZYBKGX4duV+HUIemhcVK16zp+Jj7J2S5lv0qUTxZU+1xT+ezec1Z7n58bx
BfzRiODr729gOAzFMVvVuMXhLFwdhDeHv8uXOMF6SvsRATFiBy/mss0KBixD gxanth@csd.uoc.gr
```



# Add ssh-keys in your account

► Go to settings



The screenshot shows the GitLab Projects dashboard in a Mozilla Firefox browser. The address bar displays the URL `https://gitlab-csd.datacenter.uoc.gr`. The page title is "Projects · Dashboard · GitLab". The navigation bar includes "GitLab", "Projects", "Groups", and "More". A search bar is present with the text "Search or jump to...".

The main content area is titled "Projects" and shows a list of "Your projects" (7 total). The projects are listed in a table with columns for project name, description, and last update. The projects are:

- CS255 / assignment6 (Assignment 6: Systems Security: Buffer Overrun Attack)
- CS255 / assignment5 (Assignment 5: C and Assembly Code Tutorial: Computing Sums)
- CS255 / assignment4 (Assignment 4: Sudoku checker, solver, and generator)
- CS255 / assignment3 (Assignment 3: ADTs: Abstract Data Types (Symbol Table))
- CS255 / assignment2 (Assignment 2: A string module)
- CS255 / assignment1 (Assignment 1: Translate Program)
- CS255 / assignment0 (Assignment 0)

A user profile menu is open on the right side of the page, showing the user's name "GEORGIOS XANTHAKIS" and email "@csdp1144". The menu options are "Set status", "Profile", "Settings", and "Sign out". The "Settings" option is highlighted with a red circle and a red arrow pointing to it.



# Add ssh-keys in your account

Activities Firefox Web Browser

Φεβ 10 22:11

User Settings · GitLab - Mozilla Firefox

https://gitlab-csd.datacenter.uoc.gr/profile

GitLab Projects Groups More

User Settings

- Profile
- Account
- Applications
- Chat
- Access Tokens
- Emails
- Notifications
- SSH Keys**
- GPG Keys
- Preferences
- Active Sessions
- Authentication log

User Settings > Edit Profile

### Public Avatar

You can upload your avatar here or change it at [gravatar.com](https://gravatar.com)

**Upload new avatar**

Choose file... No file chosen

The maximum file size allowed is 200KB.

### Current status

This emoji and message will appear on your profile and throughout the interface.

**Your status**

What's your status?

### Main settings

This information will appear on your profile  
Some options are unavailable for LDAP accounts

**Full name**

GEORGIOS XANTHAKIS

Enter your name, so people you know can recognize you

**Email**

csdp1144@csd.uoc.gr

Your email address was automatically set based on your LDAP account

**Public email**

Do not show on profile

This email will be displayed on your public profile

**Commit email**

csdp1144@csd.uoc.gr

This email will be used for web based operations, such as edits and merges. [Learn more](#)

**Skype**

404

« Collapse sidebar

# Add ssh-keys in your account

- ▶ Copy your ssh key in 1 and add your key with 2.

The screenshot shows the GitLab User Settings page for SSH Keys. The sidebar on the left contains the following navigation items: Profile, Account, Applications, Chat, Access Tokens, Emails, Notifications, **SSH Keys** (highlighted), GPG Keys, Preferences, Active Sessions, and Authentication log. The main content area is titled 'SSH Keys' and includes a description: 'SSH keys allow you to establish a secure connection between your computer and GitLab.' Below this, there is a section 'Add an SSH key' with instructions: 'To add an SSH key you need to [generate one](#) or use an [existing key](#).' The 'Key' section contains a text area for pasting the public SSH key, which is highlighted by a red box labeled '1'. The text area contains the following text: 

```
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAQACiVROXk67Yom1VGLK1W1TsRxlQW+bs3YQod53Ks
CHtrymM7sAkUBt2RXovZm99c4KHwCylWOIZ4KimuXMWLJUtXflmh0jG+PQdRtD1N5pY9895kd
g+Hlv2sINojlf/2ecfGG1QTB15Vbw6cmwLssea8pXwQeMffiyVvVJWEASKvc
/YbiQQcgzaibg4U42npGltDK+xv5hiS8OGGdhuQHffJx2GqccsZYBKGX4duV+HUIemhcVK16zp+Jj
7J2S5lv0qUTxZU+1xT+ezec1Z7n58bxBfzRiODr729gOAzFMVvVuMXhLFwdhDeHv8uXOMF6SvsR
ATFiBy/mssOKBixD gxanth@csd.uoc.gr
```

 Below the text area, there are two input fields: 'Title' (containing 'gxanth@csd.uoc.gr') and 'Expires at' (containing 'mm / dd / yyyy'). A red box labeled '2' highlights the 'Add key' button. At the bottom, there is a section 'Your SSH keys (0)' with a message: 'There are no SSH keys with access to your account.'

GitLab User Settings

SSH Keys

SSH keys allow you to establish a secure connection between your computer and GitLab.

**Add an SSH key**

To add an SSH key you need to [generate one](#) or use an [existing key](#).

**Key**

Paste your public SSH key, which is usually contained in the file '~/.ssh/id\_ed25519.pub' or '~/.ssh/id\_rsa.pub' and begins with 'ssh-ed25519' or 'ssh-rsa'. Don't use your private SSH key.

ssh-rsa  
AAAAB3NzaC1yc2EAAAADAQABAAQACiVROXk67Yom1VGLK1W1TsRxlQW+bs3YQod53Ks  
CHtrymM7sAkUBt2RXovZm99c4KHwCylWOIZ4KimuXMWLJUtXflmh0jG+PQdRtD1N5pY9895kd  
g+Hlv2sINojlf/2ecfGG1QTB15Vbw6cmwLssea8pXwQeMffiyVvVJWEASKvc  
/YbiQQcgzaibg4U42npGltDK+xv5hiS8OGGdhuQHffJx2GqccsZYBKGX4duV+HUIemhcVK16zp+Jj  
7J2S5lv0qUTxZU+1xT+ezec1Z7n58bxBfzRiODr729gOAzFMVvVuMXhLFwdhDeHv8uXOMF6SvsR  
ATFiBy/mssOKBixD gxanth@csd.uoc.gr

**Title** gxanth@csd.uoc.gr **Expires at** mm / dd / yyyy



Give your individual key a title







**Add key**

**Your SSH keys (0)**

There are no SSH keys with access to your account.

# How to fork a repo

 **GitLab** Projects Groups More 

Search or jump to...      

H hy255\_as1

Project overview

Details

Activity

Releases

Repository

Issues 0

Merge Requests 0

Packages

Analytics

Wiki

Snippets


Settings

Add SSH key




Don't show again


CS255 > hy255\_as1 > Details






H

**hy255\_as1** 

Project ID: 1734

  Star 0  Fork 27



 5 Commits  1 Branch  0 Tags  307 KB Files  307 KB Storage


Assignment 1: Translate Program (<https://www.csd.uoc.gr/~hy255/as1>)


master assignment1 / +


History






Find file







Web IDE


 Clone

 **Update README.md**  
Jack Kolokasis authored 3 days ago

e09c9ea1 


 README  Auto DevOps enabled  Add LICENSE  Add CHANGELOG  Add CONTRIBUTING


Name	Last commit	Last update
 src	Init commit	1 week ago
 tests	Init commit	1 week ago
 .gitignore	Add Readme	1 week ago
 Makefile	Update Makefile	1 week ago
 README.md	Update README.md	3 days ago
 private.py	Add private.py script	3 days ago



 README.md






**Assignment1: Translate Program**

# How to fork a repo


 **GitLab**


Projects ▾ Groups ▾ More ▾ 


 ▾ Search or jump to... 


    ▾  ▾


**H** **hy255\_as1**


 Project overview


 Repository


 Issues 0


 Merge Requests 0

 Packages

 Analytics

 Wiki

 Snippets


 Settings

CS255 > hy255\_as1 > **Fork project**

## Fork project

A fork is a copy of a project.  
Forking a repository allows you to make changes without affecting the original project.

Select a namespace to fork the project

  
**GEORGIOS XANTHAKIS**

# Info about fork

- ▶ You need to fork each assignment only once!
- ▶ If you want to download your project in different devices you need to clone

# What happens when you do not use private.py

- ▶ To make the project private
  - ▶ Go to Project Settings -> General
  - ▶ Visibility
  - ▶ Change Project Visibility to Private
- ▶ To add the TAs in your project
  - ▶ Go to Project Settings -> Members
  - ▶ Add each TA as a Developer
- ▶ But we can avoid doing these steps on every assignment

# Using private.py

- ▶ Run `pip3 install --upgrade python-gitlab --user`
- ▶ Copy your access token and the assignment's project id

The screenshot displays the GitLab web interface for a project named 'hy255\_as1'. The project was successfully forked from CS255. The project ID is 1781, which is circled in red. The project description is 'Assignment 1: Translate Program (https://www.csd.uoc.gr/~hy255/as1)'. The project was forked from CS255 / hy255\_as1. The project has 5 commits, 1 branch, 0 tags, 0 bytes of files, and 0 bytes of storage. The project is currently on the master branch. The project has a README, Auto DevOps is enabled, and there are buttons to add a LICENSE, CHANGELOG, and CONTRIBUTING file. The project is owned by Jack Kolokasis, who authored it 2 days ago. The project ID is 1781.

The terminal window at the bottom shows the command to run private.py with the access token and project ID:

```
gxanth@kernel:~/gitfolders/assignment1
^ ~ /gitfolders/assignment1 on w p master > python3 private.py -t qKyZ5HM-Vxb63JFhFYJ6 -p 1781
```

The access token is `qKyZ5HM-Vxb63JFhFYJ6` and the project ID is `1781`.



# Generating an Access Token

The screenshot shows the GitLab web interface. At the top, the navigation bar includes the GitLab logo, 'Projects' (selected), 'Groups', 'More', and a search bar. The main content area is titled 'Projects' and shows a list of projects under the 'Your projects' tab. The sidebar on the right displays the user profile for 'GEORGIOS XANTHAKIS' with links for 'Set status', 'Profile', 'Settings' (highlighted with a red circle and arrow), and 'Sign out'.

**Projects** New project

**Your projects** 24 **Starred projects** 0 **Explore projects**  **Last updated** ▼

**All** **Personal**

H	EVANGELOS YFANTIS / <b>hy255_as1</b> <span>Developer</span>	★ 0	👤 0	🔖 0	📄 0	Updated 3 hours ago
Assignment 1: Translate Program ( <a href="https://www.csd.uoc.gr/~hy255/as1">https://www.csd.uoc.gr/~hy255/as1</a> )						
H	ALEXANDROS EMMANOUIL ANTONAKAKIS / <b>hy255_as1</b> <span>Developer</span>	★ 0	👤 0	🔖 0	📄 0	Updated 3 hours ago
Assignment 1: Translate Program ( <a href="https://www.csd.uoc.gr/~hy255/as1">https://www.csd.uoc.gr/~hy255/as1</a> )						
H	ELEFTERIOS NTAFOITIS KONTOGIANNIS / <b>hy255_as1</b> <span>Developer</span>	★ 0	👤 0	🔖 0	📄 0	Updated 3 hours ago
Assignment 1: Translate Program ( <a href="https://www.csd.uoc.gr/~hy255/as1">https://www.csd.uoc.gr/~hy255/as1</a> )						
H	IASON FILIPPOS NTAGIANNIS / <b>hy255_as1</b> <span>Developer</span>	★ 0	👤 0	🔖 0	📄 0	Updated 7 hours ago
Assignment 1: Translate Program ( <a href="https://www.csd.uoc.gr/~hy255/as1">https://www.csd.uoc.gr/~hy255/as1</a> )						
H	CHRISTINA REPOU / <b>hy255_as1</b> <span>Developer</span>	★ 0	👤 0	🔖 0	📄 0	Updated 8 hours ago
Assignment 1: Translate Program ( <a href="https://www.csd.uoc.gr/~hy255/as1">https://www.csd.uoc.gr/~hy255/as1</a> )						
H	ALEXANDROS GKEKAS / <b>hy255_as1</b> <span>Developer</span>	★ 0	👤 0	🔖 0	📄 0	Updated 10 hours ago
Assignment 1: Translate Program ( <a href="https://www.csd.uoc.gr/~hy255/as1">https://www.csd.uoc.gr/~hy255/as1</a> )						
H	EMMANOUIL FILIPPAKIS / <b>hy255_as1</b> <span>Developer</span>	★ 0	👤 0	🔖 0	📄 0	Updated 23 hours ago
Assignment 1: Translate Program ( <a href="https://www.csd.uoc.gr/~hy255/as1">https://www.csd.uoc.gr/~hy255/as1</a> )						
H	THEODORA SABALOU / <b>hy255_as1</b> <span>Developer</span>	★ 0	👤 0	🔖 0	📄 0	Updated 1 day ago
Assignment 1: Translate Program ( <a href="https://www.csd.uoc.gr/~hy255/as1">https://www.csd.uoc.gr/~hy255/as1</a> )						
H	ALEXANDROS PAPADOPOULOS / <b>hy255_as1</b> <span>Developer</span>	★ 0	👤 0	🔖 0	📄 0	Updated 1 day ago
Assignment 1: Translate Program ( <a href="https://www.csd.uoc.gr/~hy255/as1">https://www.csd.uoc.gr/~hy255/as1</a> )						
H	AUREL SHEHAJ / <b>hy255_as1</b> <span>Developer</span>	★ 0	👤 0	🔖 0	📄 0	Updated 1 day ago
Assignment 1: Translate Program ( <a href="https://www.csd.uoc.gr/~hy255/as1">https://www.csd.uoc.gr/~hy255/as1</a> )						

**GEORGIOS XANTHAKIS**  
@csdp1144


[Set status](#)


[Profile](#)


[Settings](#)







[Sign out](#)


# Generating an Access Token


 GitLab


Projects ▾ Groups ▾ More ▾ 


 ▾ Search or jump to...


     ▾  ▾


 User Settings


 Profile


 Account


 Applications


 Chat


 Access Tokens


 Emails


 Notifications


 SSH Keys

 GPG Keys

 Preferences

 Active Sessions


 Authentication log

 Collapse sidebar

User Settings > Edit Profile

### Public Avatar

You can upload your avatar here or change it at [gravatar.com](https://gravatar.com)



#### Upload new avatar



Choose file... No file chosen

The maximum file size allowed is 200KB.

### Current status

This emoji and message will appear on your profile and throughout the interface.

#### Your status

 What's your status? 

### Main settings

This information will appear on your profile  
Some options are unavailable for LDAP accounts

#### Full name

GEORGIOS XANTHAKIS

Enter your name, so people you know can recognize you

#### User ID

404

#### Email

csdp1144@csd.uoc.gr

Your email address was automatically set based on your LDAP account

#### Public email

Do not show on profile ▾

This email will be displayed on your public profile

#### Commit email

csdp1144@csd.uoc.gr ▾

This email will be used for web based operations, such as edits and merges. [Learn more](#)

#### Skype

# Generating an Access Token

**User Settings**

- Profile
- Account
- Applications
- Chat
- Access Tokens**
- Emails
- Notifications
- SSH Keys
- GPG Keys
- Preferences
- Active Sessions
- Authentication log

User Settings > Access Tokens

Revoked personal access token test!

### Personal Access Tokens

You can generate a personal access token for each application you use that needs access to the GitLab API.

You can also use personal access tokens to authenticate against Git over HTTP. They are the only accepted password when you have Two-Factor Authentication (2FA) enabled.

#### Add a personal access token

Pick a name for the application, and we'll give you a unique personal access token.

**Name**  
my\_token 1

**Expires at**  
YYYY-MM-DD

**Scopes**

- ☒ **api**  
Grants complete read/write access to the API, including all groups and projects, the container registry, and the package registry.
- ☒ **read\_user**  
Grants read-only access to the authenticated user's profile through the /user API endpoint, which includes username, public email, and full name. Also grants access to read-only API endpoints under /users.
- ☒ **read\_api**  
Grants read access to the API, including all groups and projects, the container registry, and the package registry.
- ☒ **read\_repository**  
Grants read-only access to repositories on private projects using Git-over-HTTP or the Repository Files API.
- ☒ **write\_repository**  
Grants read-write access to repositories on private projects using Git-over-HTTP (not using the API).
- ☒ **read\_registry**  
Grants read-only access to container registry images on private projects.
- ☒ **write\_registry**  
Write Registry

2

Create personal access token 3

#### Active Personal Access Tokens (0)

This user has no active Personal Access Tokens.


#### Feed token

Your feed token is used to authenticate you when your RSS reader loads a personalized RSS feed or when your calendar application loads a personalized calendar, and is included

**Feed token**  
ZcWEsCXZG-sd1zFkCyt

Keep this token secret. Anyone who gets ahold of it can read activity and issue RSS feeds or your calendar feed as if they were you. You should reset it if that ever happens.


# Generating an Access Token


 GitLab

Projects ▾

Groups ▾

More ▾



 User Settings

Profile

Account

Applications

Chat

**Access Tokens**

Emails

Notifications

SSH Keys

GPG Keys

Preferences

Active Sessions

Authentication log

User Settings > Access Tokens

Your new personal access token has been created.

**Personal Access Tokens**

You can generate a personal access token for each application you use that needs access to the GitLab API.

You can also use personal access tokens to authenticate against Git over HTTP. They are the only accepted password when you have Two-Factor Authentication (2FA) enabled.

**Your New Personal Access Token**

qKyZ5HM-Vxb63JFhFYJ6

Make sure you save it - you won't be able to access it again.

**Add a personal access token**

Pick a name for the application, and we'll give you a unique personal access token.

Name

Expires at

YYYY-MM-DD

Scopes

■ api

Grants complete read/write access to the API, including all groups and projects, the container registry, and the package registry.

■ read\_user

Grants read-only access to the authenticated user's profile through the /user API endpoint, which includes username, public email, and full name. Also grants access to read-only API endpoints under /users.

■ read\_api

Grants read access to the API, including all groups and projects, the container registry, and the package registry.

■ read\_repository

Grants read-only access to repositories on private projects using Git-over-HTTP or the Repository Files API.

■ write\_repository

Grants read-write access to repositories on private projects using Git-over-HTTP (not using the API).

■ read\_registry

Grants read-only access to container registry images on private projects.

■ write\_registry

Write Registry

Create personal access token

**Active Personal Access Tokens (1)**

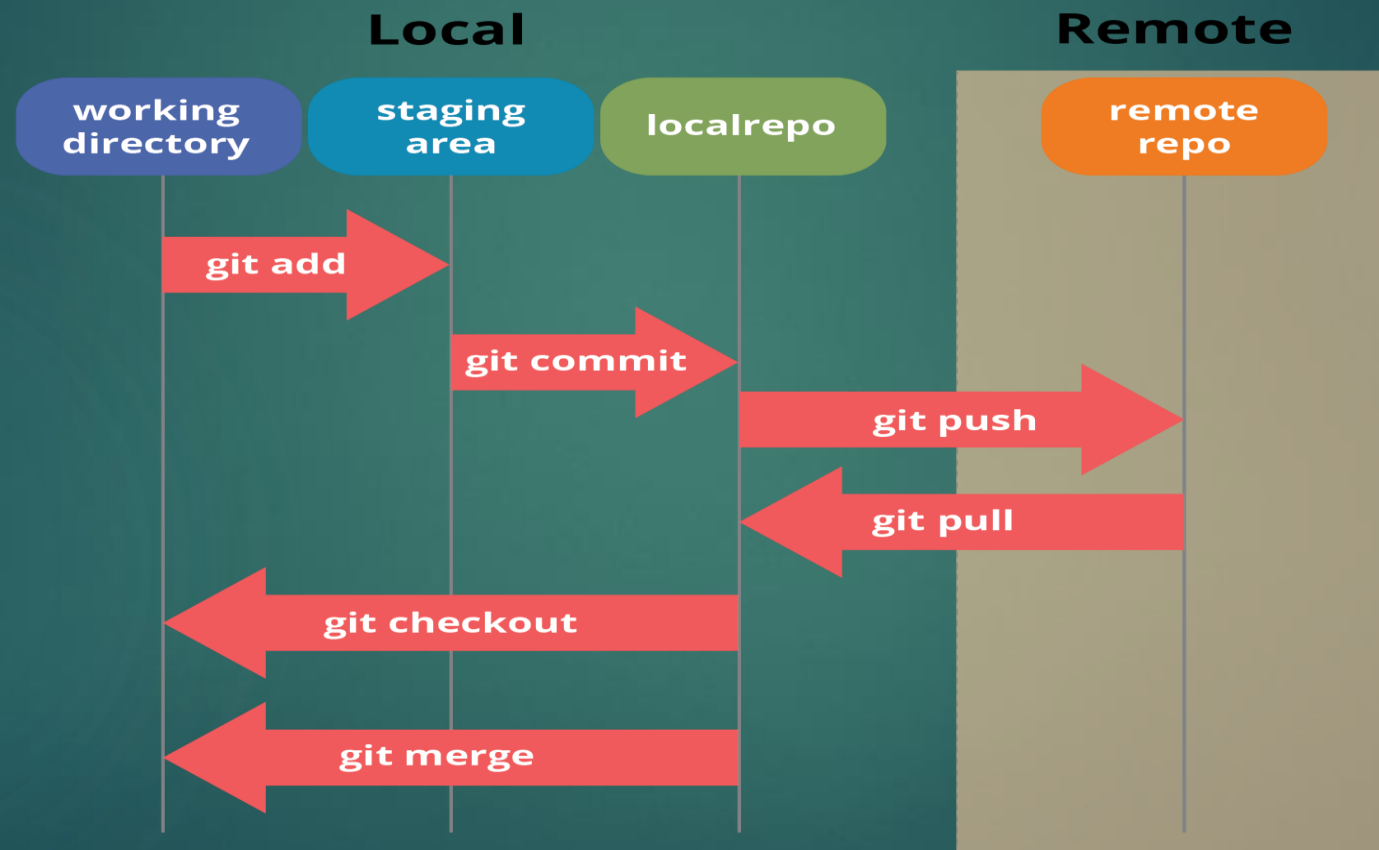
Name	Created	Expires	Scopes
------	---------	---------	--------

COPY THIS

Save this in a file for future use

« Collapse sidebar

# How git works?



# How to use git?

- ▶ To download a git repo run
  - ▶ `git clone git@gitlab-csd.datacenter.uoc.gr:csdp1144/assignment1.git`
- ▶ To stage a file run
  - ▶ `git add file`
- ▶ To commit staged files run
  - ▶ `git commit -m "Your commit message"`
- ▶ To save your code in the server run
  - ▶ `git push`
- ▶ To turn in your code you have 2 options
  - ▶ make turnin
  - ▶ `git tag assignment1; git push origin -tags`
- ▶ To delete a previous tagged commit
  - ▶ `git tag -d assignment1`
  - ▶ `git push origin :refs/tags/assignment1`

# Guidelines

- ▶ commit often - at least one commit for each step
- ▶ pay attention to your commit messages
  - ▶ describe precisely the purpose of the commit
  - ▶ commit only relevant files and modifications... !!!
- ▶ push frequently
  - ▶ in case something goes wrong with your PC/laptop