



UNIVERSITY
OF CRETE

CS-100 – Git Tutorial

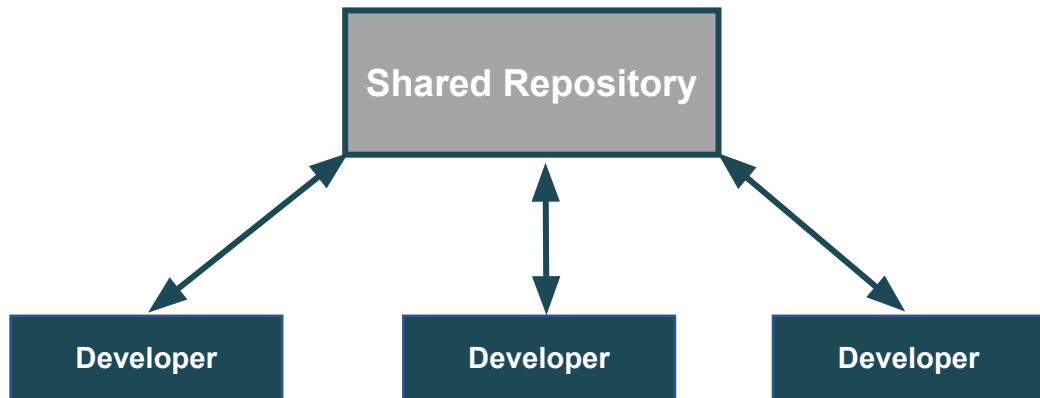
Iacovos G. Kolokasis
University of Crete
kolokasis@csd.uoc.gr

Outline

- What is git
- How to join CS100 group
- What are ssh keys and how to use them
- How to fork a project
- Make a 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 Login to CSD Git?



- Go to csd gitlab: <https://gitlab-csd.datacenter.uoc.gr>

Computer Science Department, University of Crete



Pilot installation of GitLab, a web-based Git-repository manager.

GitLab Community Edition

Open source software to collaborate on code

Manage Git repositories with fine-grained access controls that keep your code secure. Perform code reviews and enhance collaboration with merge requests. Each project can also have an issue tracker and a wiki.

1

LDAP

Standard

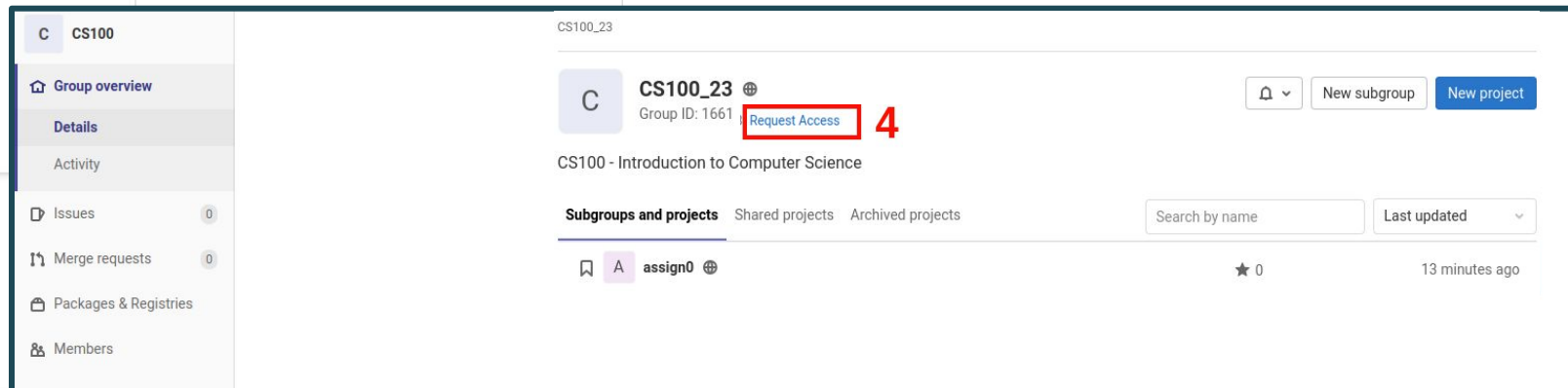
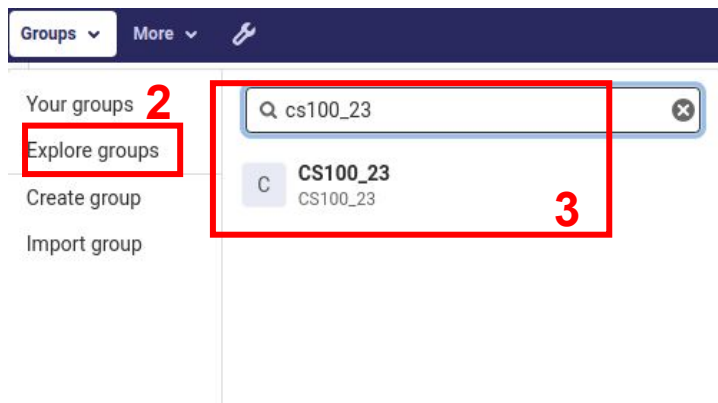
LDAP Username

Password

☐ Remember me

Sign in

How to Join CS100 Group?



Generating ssh-keys

- Run: `ssh-keygen -t rsa -b 2048 -C "kolokasis@ics.forth.gr"`
- Press enter in the next three options
- Run: `cat ~/.ssh/id_rsa.pub`
- Copy the printed text

```
[root@desktop ~]# ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/root/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_rsa.
Your public key has been saved in /root/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:vvDbwVF2YHAoSCxnjhNojc4oEenLJCYgGcsGNyI2Gyw root@desktop.example.com
The key's randomart image is:
+----[RSA 2048]-----+
|B0o+ o.. .o+      |
|E=B.+ = . .o .    |
|*X  B  .  o .     |
|*+o o .   o .     |
|B . . S .         |
| o      . . .      |
|      . . o        |
|      o o .        |
|      +..         |
+-----[SHA256]-----+
```

Enter passphrase here, if required

Location of Public Key

Location of Private Key

Add ssh-keys in your Account

The screenshot shows the GitLab user settings page for 'Iacovos Kolokasis'. The page is divided into three main sections, each with a red box and a number indicating the steps to add an SSH key:

- 1**: A red box highlights the user profile icon in the top navigation bar.
- 2**: A red box highlights the 'Preferences' option in the user settings dropdown menu.
- 3**: A red box highlights the 'SSH Keys' option in the left sidebar of the 'User Settings' page.

The 'User Settings' page is titled 'User Settings > Preferences'. It features a search bar and two main sections:

- Navigation theme**: Customizes the appearance of the application header and navigation sidebar. It includes a grid of color swatches with radio buttons for selection: Indigo (selected), Light Indigo, Blue, Light Blue, Green, Light Green, Red, Light Red, Dark, Light, and Dark Mode (alpha).
- Syntax highlighting theme**: Customizes the appearance of the syntax. It includes a grid of color swatches with radio buttons for selection: White (selected), Dark, and Solarized Light.

The 'SSH Keys' section is currently empty, showing a table with columns for 'Name', 'Fingerprint', and 'Actions'.

Add ssh-keys in your Account

User Settings > SSH Keys

Q Search 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'. Do not paste your private SSH key, as that can compromise your identity.

Typically starts with "ssh-ed25519 ..." or "ssh-rsa ..."

Title

e.g. My MacBook key

Give your individual key a title. This will be publicly visible.

Expires at

mm/dd/yyyy

Key can still be used after expiration.

Add key

4

5

How to Fork a Repository

The screenshot shows the GitLab interface for the 'CS100' group. The left sidebar contains navigation links: 'Group overview', 'Details', 'Activity', 'Issues' (0), 'Merge requests' (0), 'Kubernetes', 'Packages & Registries', 'Members', and 'Settings'. The main content area displays the 'CS100_23' group with 'Group ID: 1661'. Below this, the title 'CS100 - Introduction to Computer Science' is shown. A red box highlights the 'Subgroups and projects' tab, which lists a subgroup 'A assign0' with 0 stars and was updated 16 minutes ago. A large red number '1' is placed to the right of the red box. The top navigation bar includes 'GitLab', 'Projects', 'Groups', 'More', a search bar, and user profile icons.

How to Fork a Repository

CS100_23 > assign0

 **assign0** 

Project ID: 9486

  Star 0  Fork 0

2 Commits 1 Branch 0 Tags 184 KB Files 184 KB Storage

master assign0 / +

History Find file Web IDE Clone






Update README.md

Jack Kolokasis authored 26 minutes ago

292dcd46

README Auto DevOps enabled Add LICENSE Add CHANGELOG Add CONTRIBUTING

Name	Last commit	Last update
 README.md	Update README.md	26 minutes ago
 main.c	Initial commit	27 minutes ago
 private.py	Initial commit	27 minutes ago

README.md

Assignment0: Hello World

Make Repository Private and Add TAs as Members

You can make the repo private and add TAs as members by hand or using the private.py script

By Hand

2

CS100_23 > assign0 > 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 for fork the project



Iacovos Kolokasis

Select

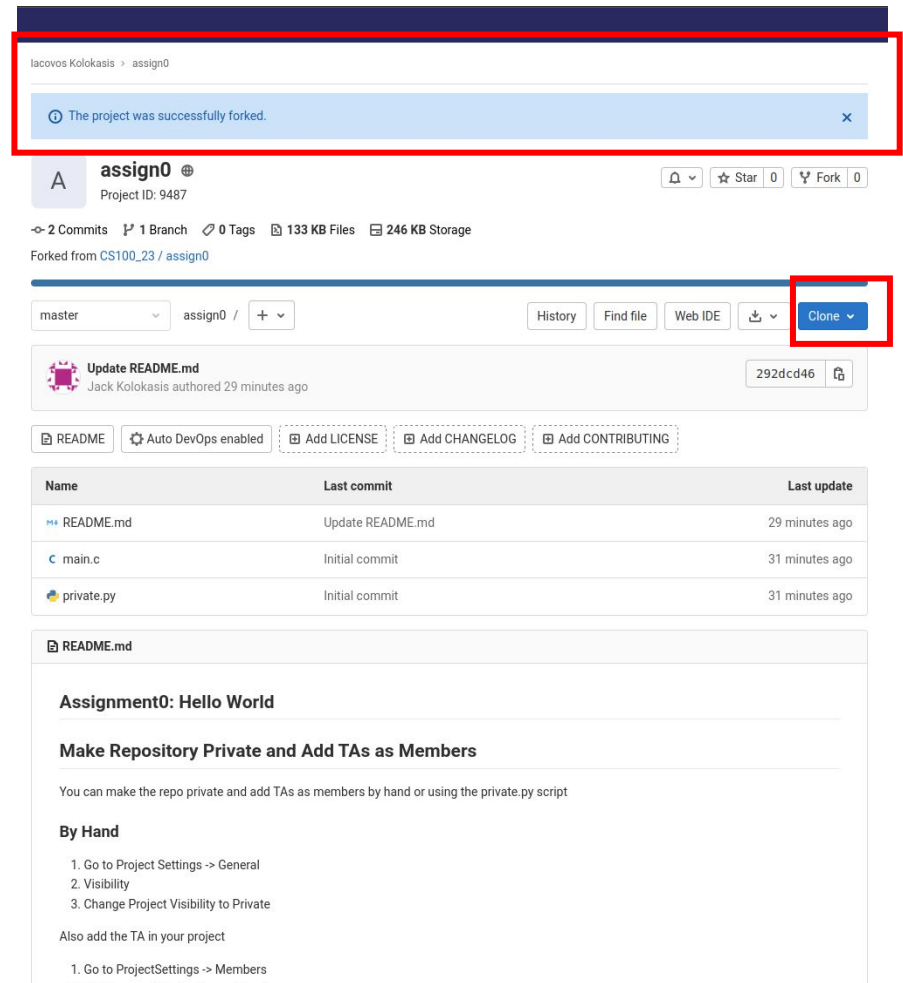
Groups and subgroups

3

Search by name


Info About Fork

- You need to fork each assignment **only once!**
- If you want to download your project in different devices (e.g., laptop, desktop PC) you need to clone it



Iacovos Kolokasis > assign0

The project was successfully forked.

assign0 
Project ID: 9487


🔔 0 ⭐ Star 0 🍴 Fork 0

↔ 2 Commits 🌿 1 Branch 🏷 0 Tags 📄 133 KB Files 💾 246 KB Storage




Forked from CS100_23 / assign0


master - assign0 / +

History Find file Web IDE 📄 Clone

 **Update README.md**
Jack Kolokasis authored 29 minutes ago 292dcd46

📖 README ⚙ Auto DevOps enabled 📄 Add LICENSE 📄 Add CHANGELOG 📄 Add CONTRIBUTING

Name	Last commit	Last update
 README.md	Update README.md	29 minutes ago
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 README.md

Assignment0: Hello World

Make Repository Private and Add TAs as Members

You can make the repo private and add TAs as members by hand or using the private.py script

By Hand

1. Go to Project Settings -> General
2. Visibility
3. Change Project Visibility to Private

Also add the TA in your project

1. Go to ProjectSettings -> Members

Make your Project Private

- To make your 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 to do these steps on every assignment


Using private.py

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

`python3 private.py -t <accessToken> -p <projectID>`

Iacovos Kolokasis > assign0

The project was successfully forked.

assign0 
Project ID: 9487

2 Commits 1 Branch 0 Tags 133 KB Files 246 KB Storage

Forked from 100_23 / assign0

master assign0 / +

History Find file Web IDE Clone

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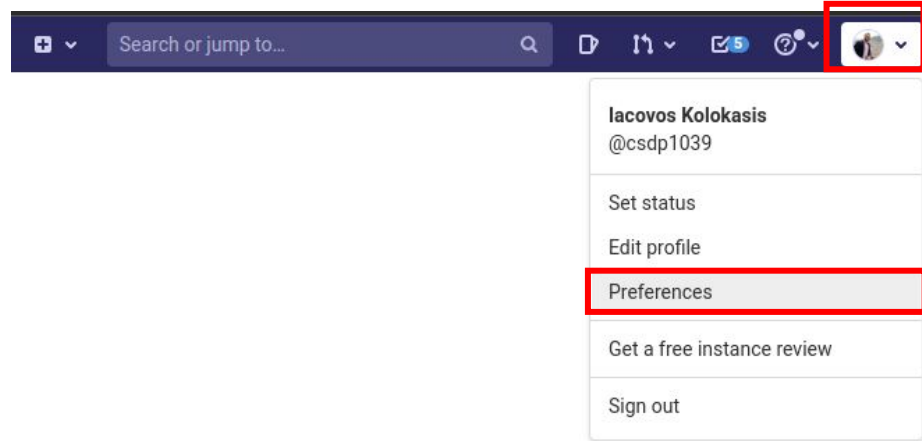
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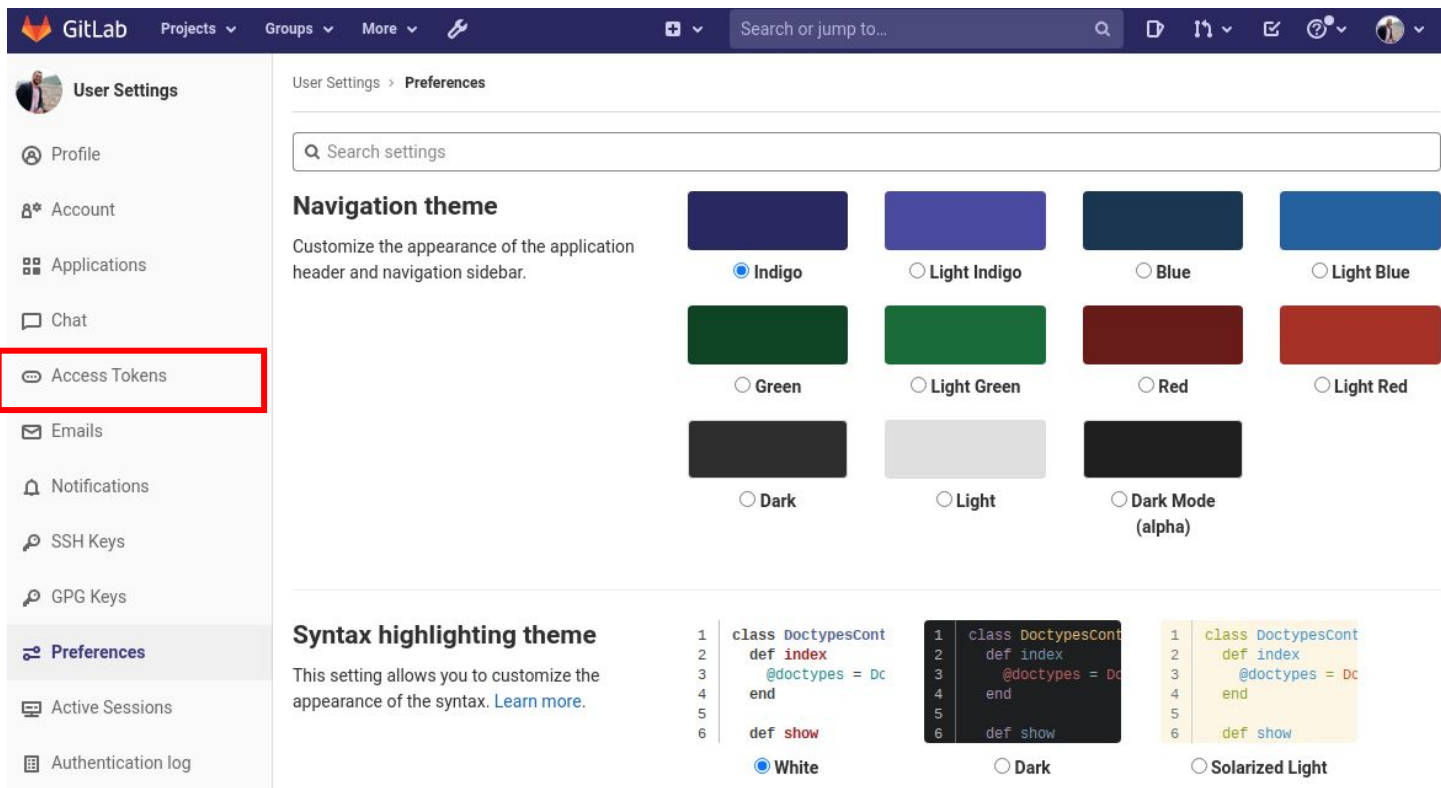
Also add the TA in your project

1. Go to ProjectSettings -> Members

Generating an Access Token



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 > **Preferences**

Search settings

Navigation theme

Customize the appearance of the application header and navigation sidebar.

<input checked="" type="radio"/> Indigo	<input type="radio"/> Light Indigo	<input type="radio"/> Blue	<input type="radio"/> Light Blue
<input type="radio"/> Green	<input type="radio"/> Light Green	<input type="radio"/> Red	<input type="radio"/> Light Red
<input type="radio"/> Dark	<input type="radio"/> Light	<input type="radio"/> Dark Mode (alpha)	

Syntax highlighting theme

This setting allows you to customize the appearance of the syntax. [Learn more.](#)

<input checked="" type="radio"/> White	<input type="radio"/> Dark	<input type="radio"/> Solarized Light
----------------------------------------	----------------------------	---------------------------------------

```
1 class DoctypesCont
2   def index
3     @doctypes = Dc
4   end
5
6   def show
```

Generating an Access Token

User Settings > Access Tokens

Search settings

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

Enter the name of your application, and we'll return a unique personal access token.

Name

Expires at

Scopes

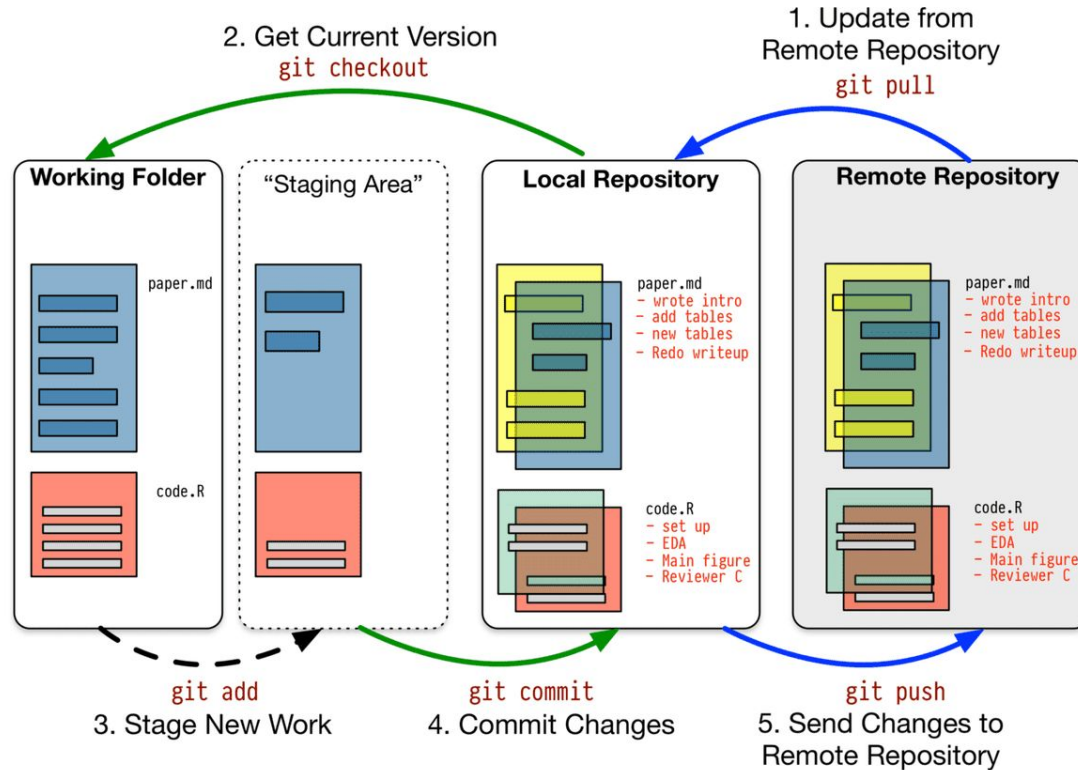
- ☐ **api**
Grants complete read/write access to the API, including all groups and projects, the container registry, and the package registry.
- ☐ **read_user**
Grants read-only access to the authenticated user's profile through the /user API endpoint, which includes username, public email, and full 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**
Grants write access to container registry images on private projects.
- ☐ **sudo**
Grants permission to perform API actions as any user in the system, when authenticated as an admin user.

Create personal access token

Add your name e.g., Iacovos Kolokasis

Select all the options

How does Git Work?



How to Use Git?

- To download a git repo run
- To stage a file run
- To commit staged files run
- To save your code in the server run
- To turnin your code run "\$make turnin"
- To delete a previous turnin run "\$make undoTurnin"

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

Thank you for your attention

Iacovos G. Kolokasis

University of Crete & ICS – FORTH

www.csd.uoc.gr/~kolokasis

kolokasis@ics.forth.gr

