

## Week 02 - Setting up Git and GitHub

Louis Botha, louis.botha@tuni.fi



### MacOS, WSL and Linux

You can check if you have git installed by `git --version` on the command line.

```
git --version
git version 2.37.1
```

On a Mac, the easiest is to install git with homebrew, `brew install git`

### WSL and Linux


On WSL, the easiest way is to use the Linux distribution package manager, eg. Ubuntu and Debian  
`sudo apt install git`

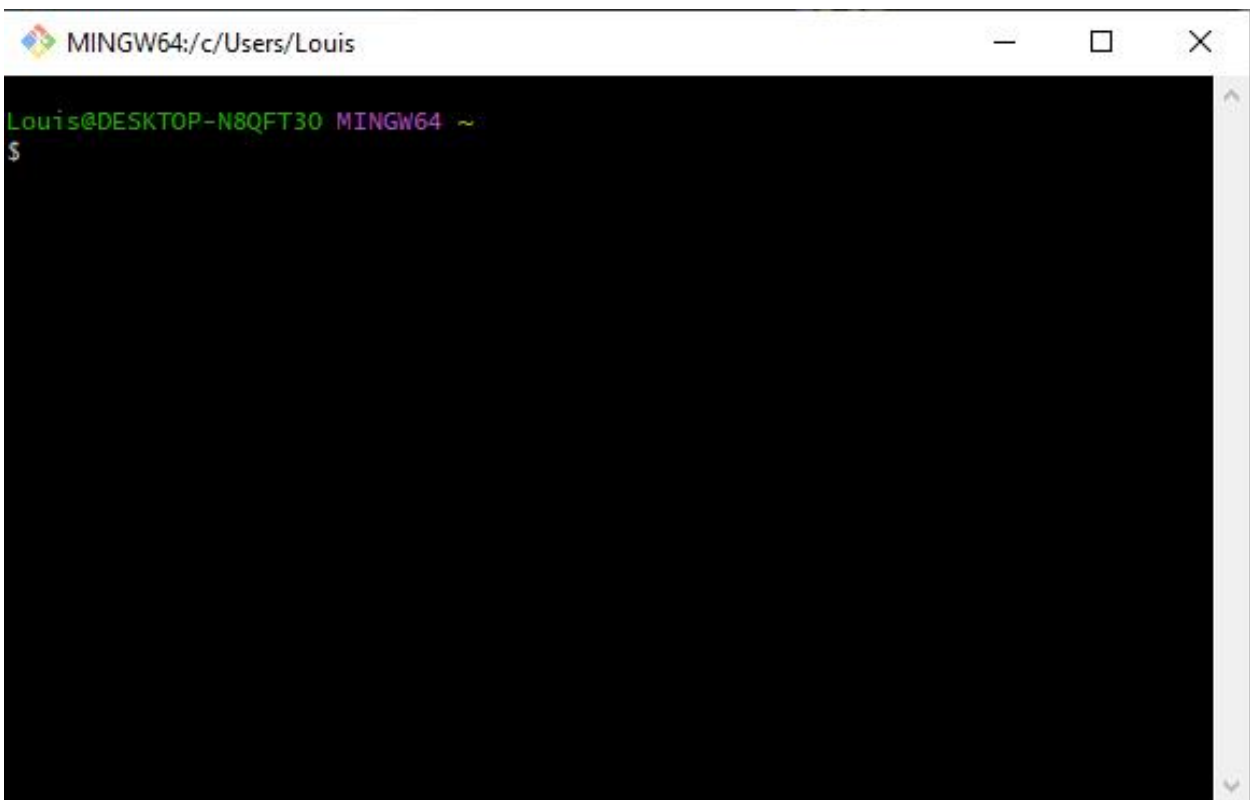
Sometimes the git version in the Ubuntu distributions can be old. You can add the following to an Ubuntu distribution to get the latest stable git version.

```
sudo add-apt-repository ppa:git-core/ppa
sudo apt update
sudo apt install git
```

```
~ git --version  
git version 2.37.1  
~
```


## Windows

On Windows, the easiest way to get git, is to use the [Git Bash installer](#) and use the  Git Bash command line.



In the terminal type the following `git --version`, if the you see a version number for git then git bash was installed successfully.

```
$ git --version  
git version 2.37.2.windows.2
```

.  *I would recommend using Git Bash on Windows*

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[MISSING IMAGE: , ]

Why Use an SSH Key? When working with a GitHub/GitLab repository, you'll often need to identify yourself to GitHub/GitLab using your username and password. An SSH key is **an alternate way to identify yourself that doesn't require you to enter you username and password every time.**



## Setting up SSH with GitHub

The process is similar regardless of the operating system.

If you haven't created an account on  [GitHub](https://github.com) yet, now is the time to register.

.  *I recommend using a personal email when registering and not your @tuni.fi.*

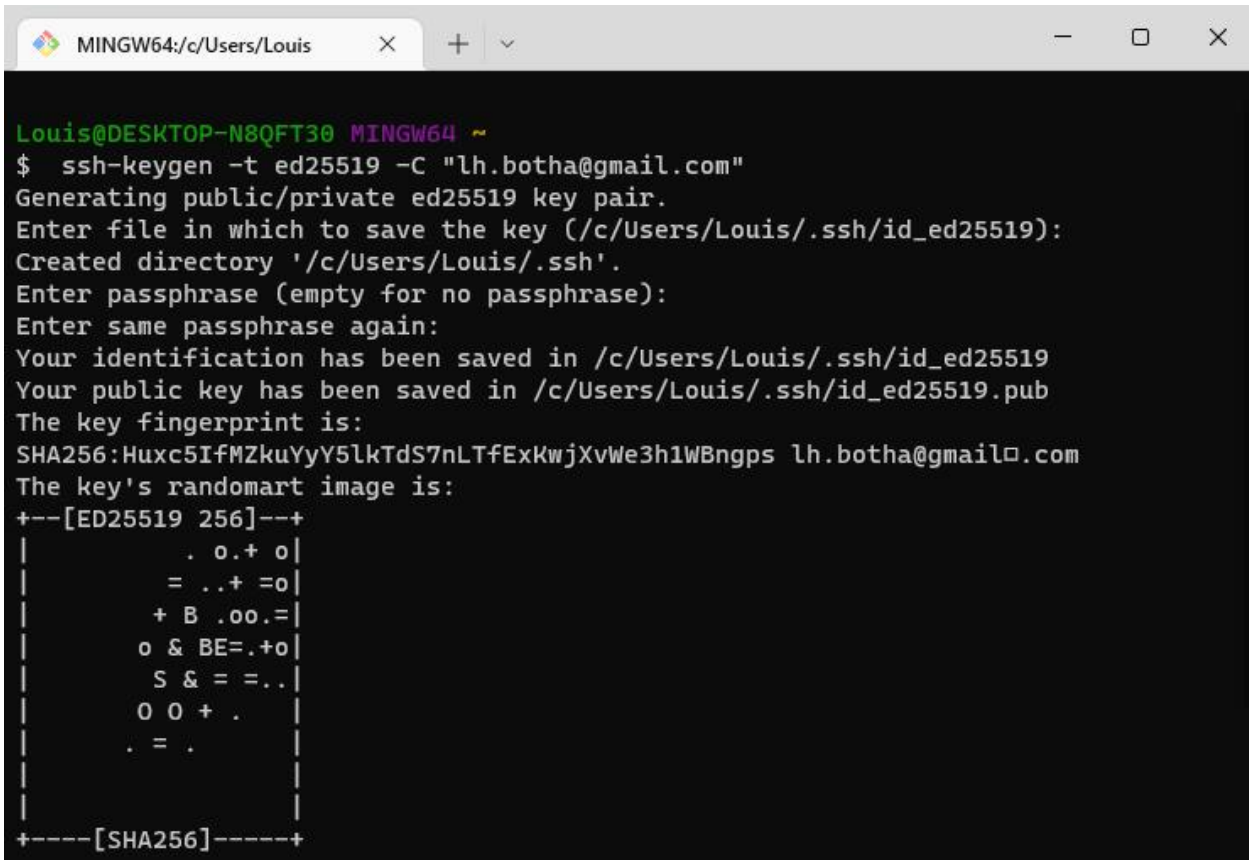
1. **First we need to generate a SSH key. Open a terminal.**

.  *If you already have a SSH key then just add it to  GitHub and test it.*

Paste the text below, substituting in your GitHub email address.

```
$ ssh-keygen -t ed25519 -C "your_email@example.com"
```

- accept the default name
- accept the default location
- **skip the passphrase**, otherwise you need to enter it always which defeats the point

A screenshot of a Windows terminal window titled 'MINGW64:/c/Users/Louis'. The terminal shows the execution of the 'ssh-keygen' command to generate an ED25519 key pair for the email 'lh.botha@gmail.com'. The output includes prompts for saving the key, creating a directory, and entering a passphrase. It also displays the key's fingerprint (SHA256) and a randomart image. The randomart image is a square composed of characters like '.', 'o', '+', '=', and 'B', representing the key's visual fingerprint.

```
Louis@DESKTOP-N8QFT30 MINGW64 ~
$ ssh-keygen -t ed25519 -C "lh.botha@gmail.com"
Generating public/private ed25519 key pair.
Enter file in which to save the key (/c/Users/Louis/.ssh/id_ed25519):
Created directory '/c/Users/Louis/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /c/Users/Louis/.ssh/id_ed25519
Your public key has been saved in /c/Users/Louis/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:Huxc5IfMZkuYyY5lkTdS7nLTfExKwjXvWe3h1WBngps lh.botha@gmail.com
The key's randomart image is:
+--[ED25519 256]--+
|      . o . + o |
|      = . . + =o |
|      + B .oo.= |
|      o & BE=.+o |
|      S & = =.. |
|      O O + . |
|      . = . |
|      |
+-----[SHA256]-----+
```

The terminal should show similar output once the key was generated.

Copy your new ssh key to the clipboard:

// Windows

```
cat ~/.ssh/id_ed25519.pub | clip
```

// macOS

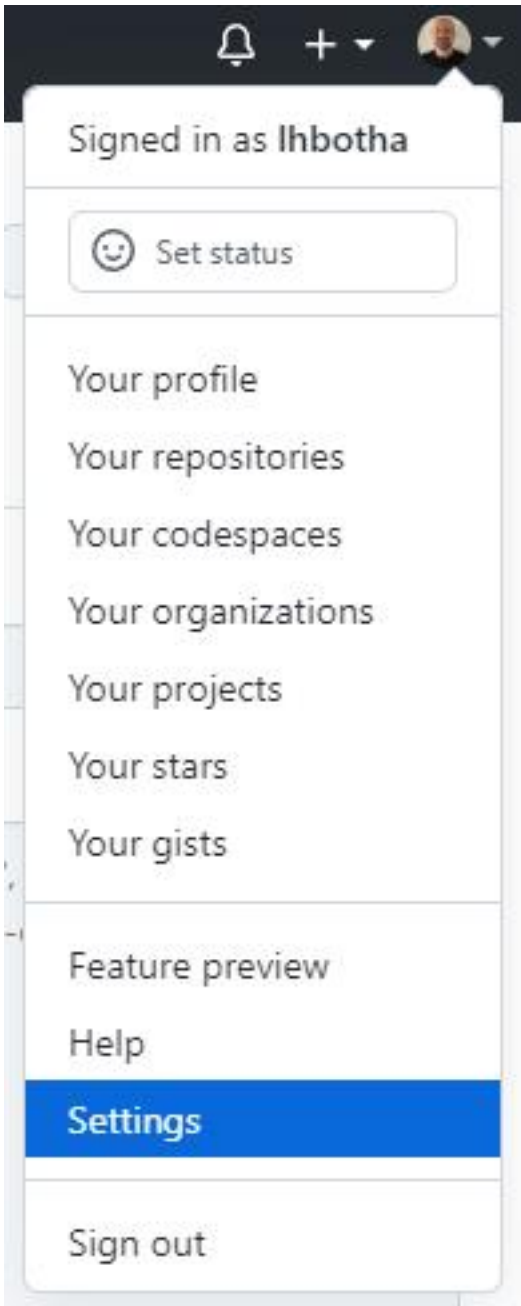
```
tr -d '\n' < ~/.ssh/id_ed25519.pub | pbcopy
```

// Linux (requires the xclip package)

```
xclip -sel clip < ~/.ssh/id_ed25519.pub
```

## 2. Next step is to add the ssh key to your GitHub account.

Open [github.com](https://github.com) in a browser window. In the upper-right corner of any page, click your profile photo, then click **Settings**.





In the "Access" section of the sidebar, click **SSH and GPG keys**.





**Louis Botha**

Your personal account

 Public profile

 Account


 Appearance


 Accessibility


 Notifications

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Access

 Billing and plans

 Emails

 Password and  
authentication

 SSH and GPG keys

 Organizations

 Moderation 

Click **New SSH key** or **Add SSH key**.

## SSH keys

New SSH key

This is a list of SSH keys associated with your account. Remove any keys that you do not recognize.

### Authentication Keys

Give a descriptive name for the key. Normally the key will be on a specific machine, might be useful that the name gives an idea where the key is from.

## SSH keys / Add new

Title



Desktop

Key

```
ssh-ed25519  
AAAAC3NzaC1lZDI1NTE5AAAAIANcC9ZsMqwB8Jj5JemmZkA+HXeIVgAPilbNi1t3M+xV  
lh.botha@gmail |.com
```

Add SSH key

After clicking the Add SSK key button, you should see your key on the list.



**Desktop**

SHA256:Huxc5IfMZkuYyY51kTdS7nLTfExKwjXvWe3h1WBngps

Added on Aug 19, 2022

Never used — Read/write

Delete

### 3. Test the key is recognized and works

Now you can verify that the ssh key authentication works by trying to log into github with ssh:

```
ssh -T git@github.com
```

We need to approve the identity of the github server. (When connecting to any machine with ssh for the first time, you will need to do this)

```
Louis@DESKTOP-N8QFT30 MINGW64 ~  
$ ssh -T git@github.com  
The authenticity of host 'github.com (140.82.121.4)' 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
```


If everything was done correctly you should get the following reply:

```
ssh -T git@github.com
```

```
Hi <your_github_username>! You've successfully authenticated, but GitHub  
does not provide shell access.
```


```
Louis@DESKTOP-N8QFT30 MINGW64 ~  
$ ssh -T git@github.com  
Hi lhbotha! You've successfully authenticated, but GitHub does not provide shel  
l access.
```

You should now be ready to clone your first repository.

You can mark Week 02 - 4 as done on the exercise and attendance  sheet.



Note

- If you already have a SSH key then just add it to  GitHub and test it.
- If you switch machine then you will need to generate a SSH key on that machine.



GitHub official instructions, note that there is different tabs per operating system.

- [Generate key](#)
- [Adding key to !\[\]\(93b46f02aeb0dec7325ae721eddb1f5c\_img.jpg\) GitHub account](#)



- [Testing the key](#)