

System Programming (ELEC462)

Lab #1

Dukyun Nam

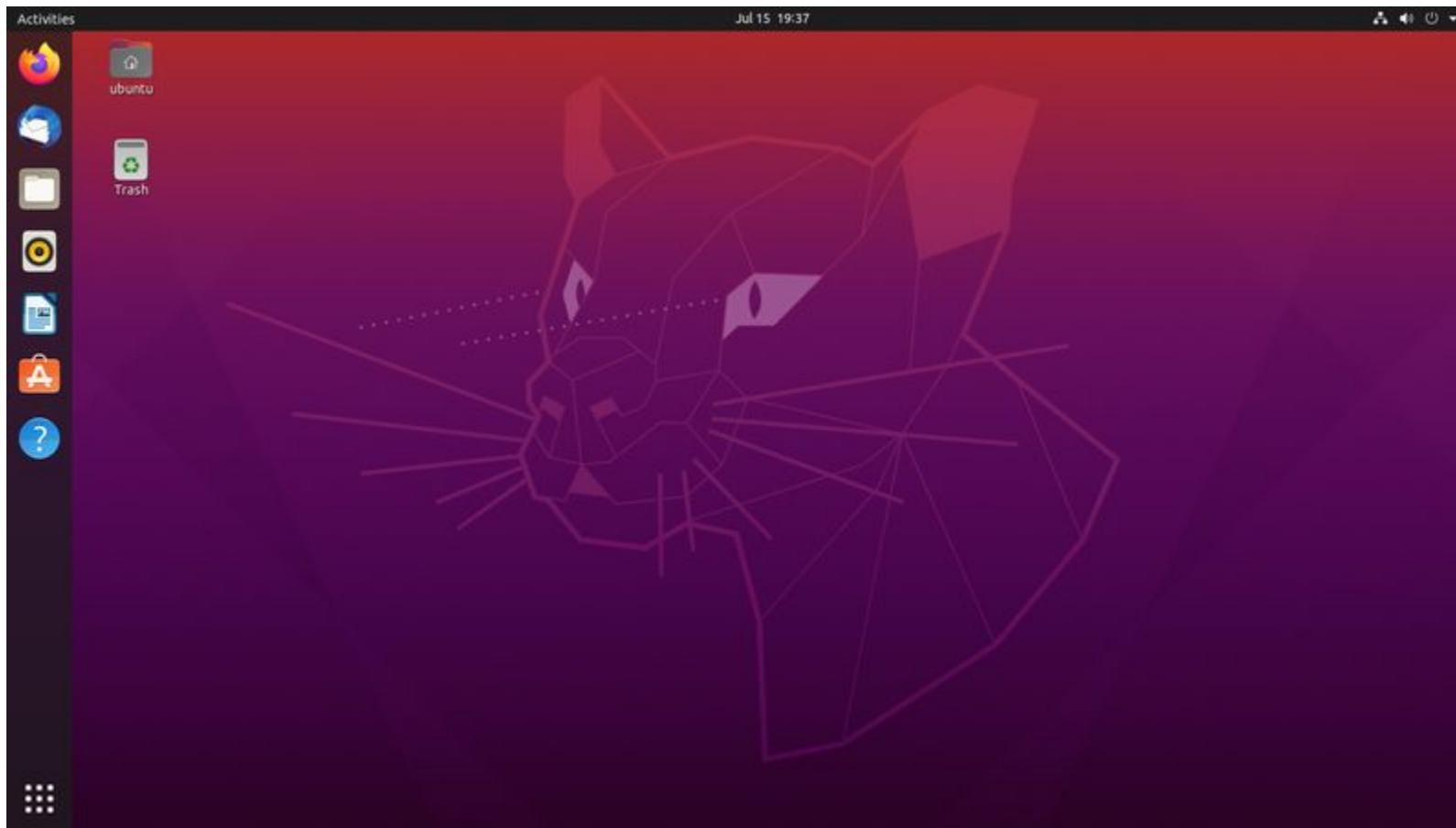
KNU

Contents

- Part 1: Use Ubuntu
 - 1) Linux box
 - 2) Virtual lab on LMS
 - 3) Windows Subsystem for Linux (WSL)
- Part 2: Write a Hello world
- Submission
- Optional: Mount a remote directory
 - Google Drive
 - GitHub

Part 1: Use Ubuntu

- Option 1) Use a Linux box itself



Part 1: Use Ubuntu (cont.)

- Option 2) Virtual lab on LMS
 - Virtual Desktop Infrastructure

홈

수업 계획서

출결/학습 현황

강의콘텐츠

강의자료실

문의게시판

성적

열린게시판

가상실습실

ClassMix

사용자 및 그룹

ON 가상실습실 이용 가능

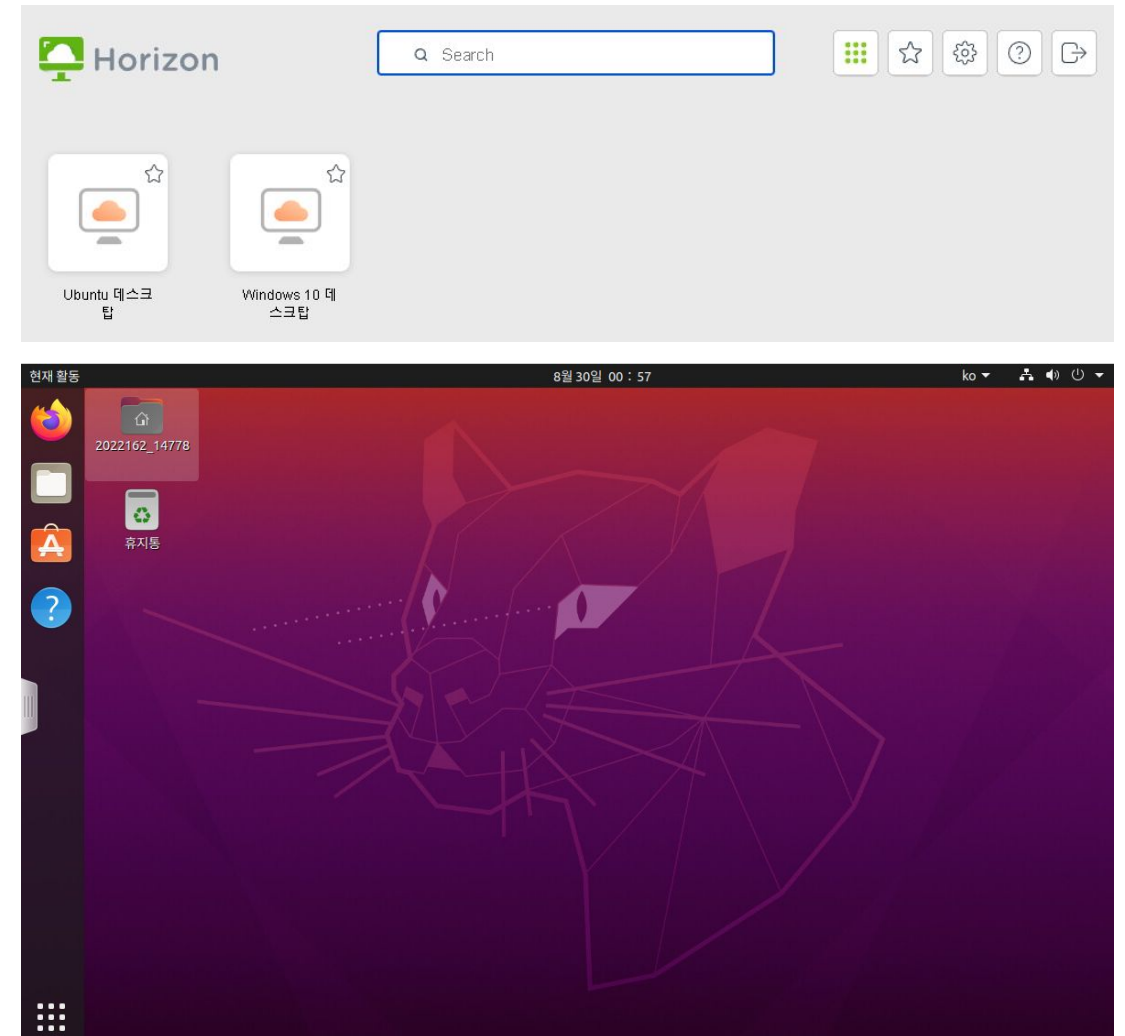
🕒 과목 이용가능시간

목요일 : 10:00 ~ 11:00
목요일 : 09:00 ~ 10:00
목요일 : 11:00 ~ 12:00
목요일 : 12:00 ~ 13:00

🕒 자율학습 이용가능시간

최대 2시간 이용 가능합니다
Windows 사용 현황 0 / 280
Linux 사용 현황 1 / 170

🖥️ 가상실습실 접속하기



Part 1: Use Ubuntu (cont.)

- Option 3) Windows Subsystem for Linux
 - <https://docs.microsoft.com/en-us/windows/wsl/>
 - “Windows Subsystem for Linux (WSL) lets developers run a GNU/Linux environment directly on Windows, unmodified, without the overhead of a traditional virtual machine or dual-boot setup.”

```
# Install WSL in an administrator PowerShell or Windows Command Prompt
C:\Users\user> wsl --install

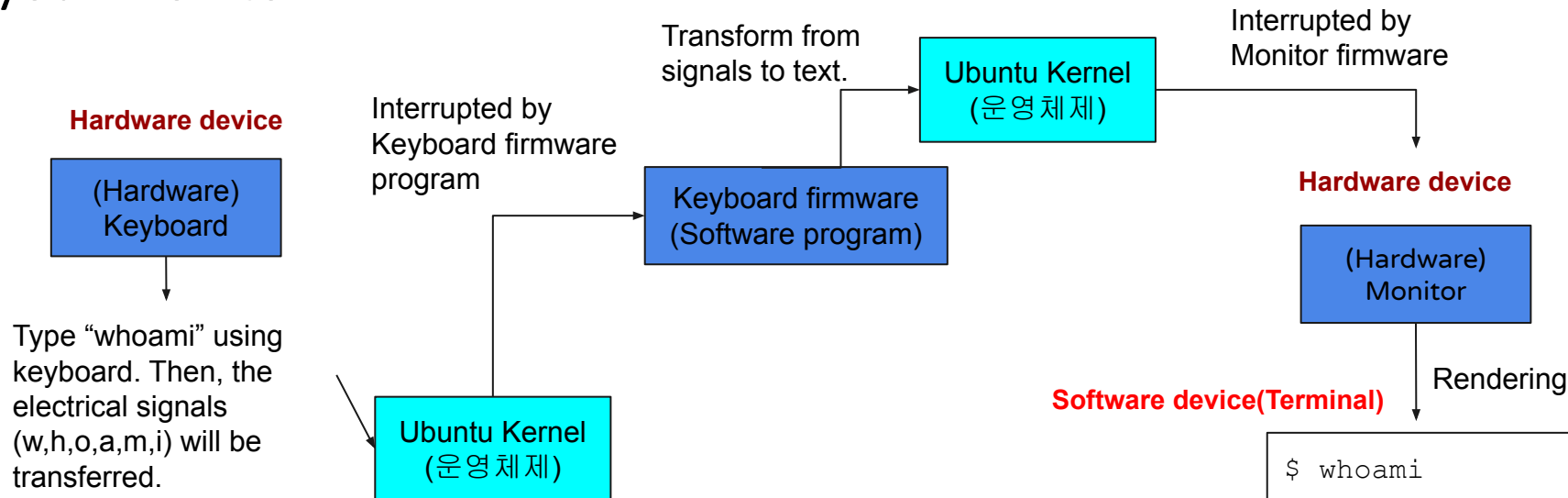
# To see the available Linux distros
C:\Users\user> wslconfig.exe /l
```

Part 2: Hello World

- Procedure
 - Step 1: Open up a terminal
 - Step 2: Make and go to a specific directory
 - Step 3: Create a file using an editor program, called `vim`
 - Step 4: Write some code in `vim` editor
 - Step 5: Quit the editor
 - Step 6: Compile the code
 - Step 7: Run the code on Terminal

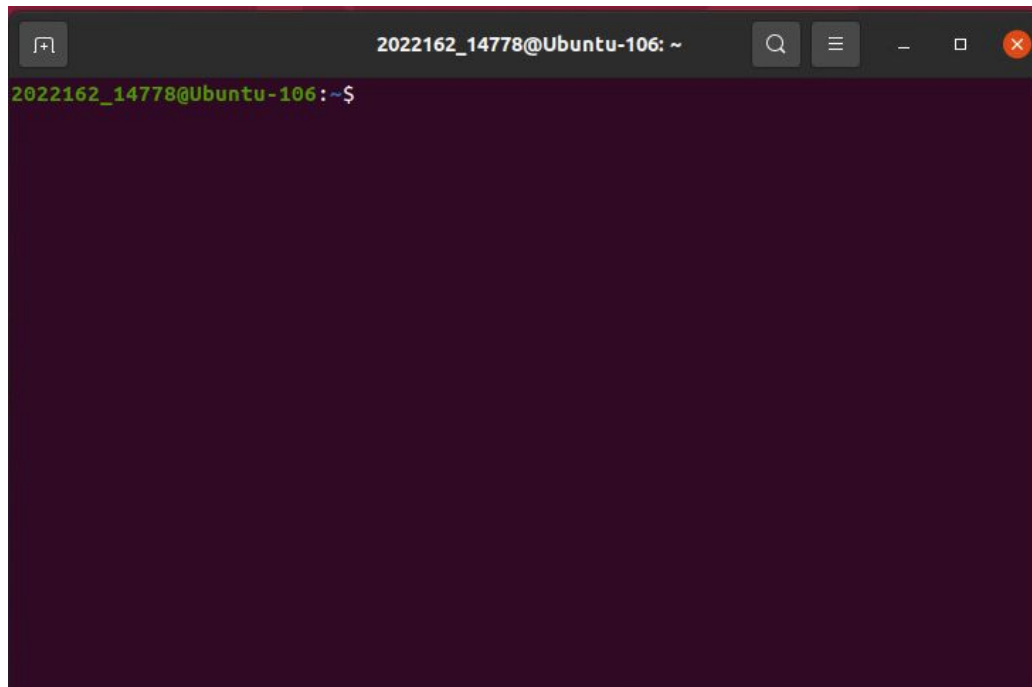
Part 2: Hello World (cont.)

- What is *Terminal*?
 - Terminal is called *device*
 - e.g., Devices: mouse, keyboard, speaker, and wireless network(WiFi)
 - If you type some text on Terminal using keyboard, the text will appear to your monitor



Part 2: Hello World (cont.)

- Step 1) Open up a terminal
 - `username@hostname:<path>$`
 - Prompt (\$): accept a "command line" typed by the user terminated by the `Enter` key

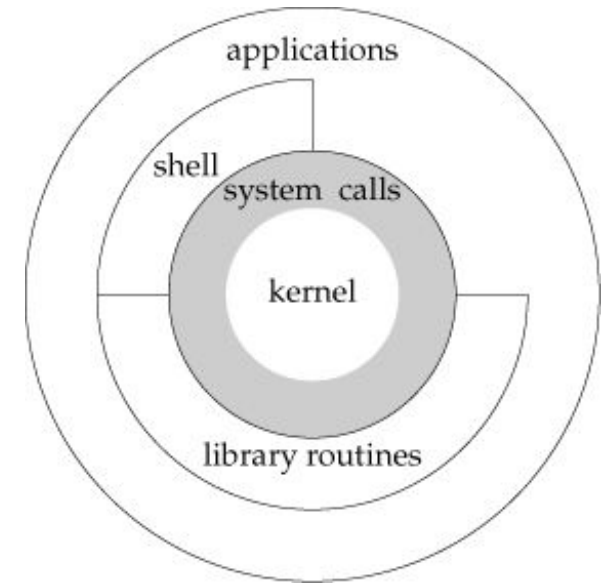
A screenshot of a terminal window. The title bar at the top reads "2022162_14778@Ubuntu-106: ~". The terminal content shows the prompt "2022162_14778@Ubuntu-106:~\$" in green text on a dark purple background.

```
$ whoami
$ lsb_release -a
No LSB modules are available.
Distributor ID: Ubuntu
Description:    Ubuntu 20.04.5 LTS
Release:        20.04
Codename:       focal

$ uname -a
```


Part 2: Hello World (cont.)

- What is a “shell”?
 - After logging in, Linux/Unix starts another program called the shell
 - The shell interprets commands the user types and manages their execution
 - The shell communicates with the internal part of the operating system called the **kernel**
 - The most popular shells are: tcsh, csh, korn, and bash
 - The differences are most times subtle
 - Shell commands are **CASE SENSITIVE!**



Part 2: Hello World (cont.)

- Step 2~7) Live demo
 - Sample commands

```
# Writing a helloworld program
$ mkdir lab1
$ cd lab1
$ vi helloworld.c
$ gcc helloworld.c
$ ./a.out
```

Lab #1: Submission

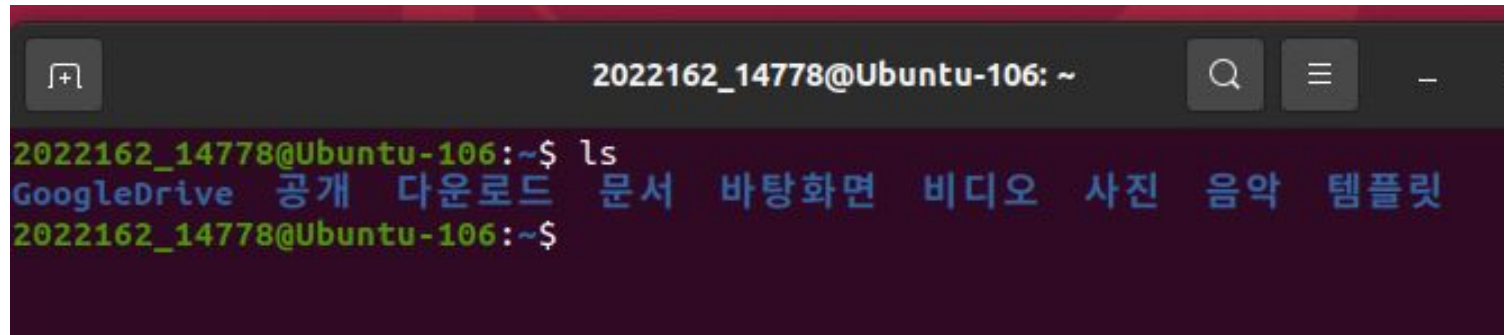
- How to submit?
 - Make sure you have your code and screenshot in a directory (`lab1`):
`helloworld.c` and `helloworld.jpg` (png)
 - Change your directory name (`lab1`) to another using a series of the following commands:
 - `cd ..`
 - `mv lab1 lab1_s<Your_Student_ID>`
 - Assume your ID is 2022000000.
 - An example command: `mv lab1 lab1_s2022000000`
 - Zip your folder:
 - `zip -r lab1_s2022000000.zip lab1_s2022000000`
 - Upload the zipped directory (`lab1_s2022000000.zip`) into LMS

Optional

Mount a Remote Directory

- Option 1) Google Drive
 - Use *google-drive-ocamlfuse* which is one of filesystems in a user space

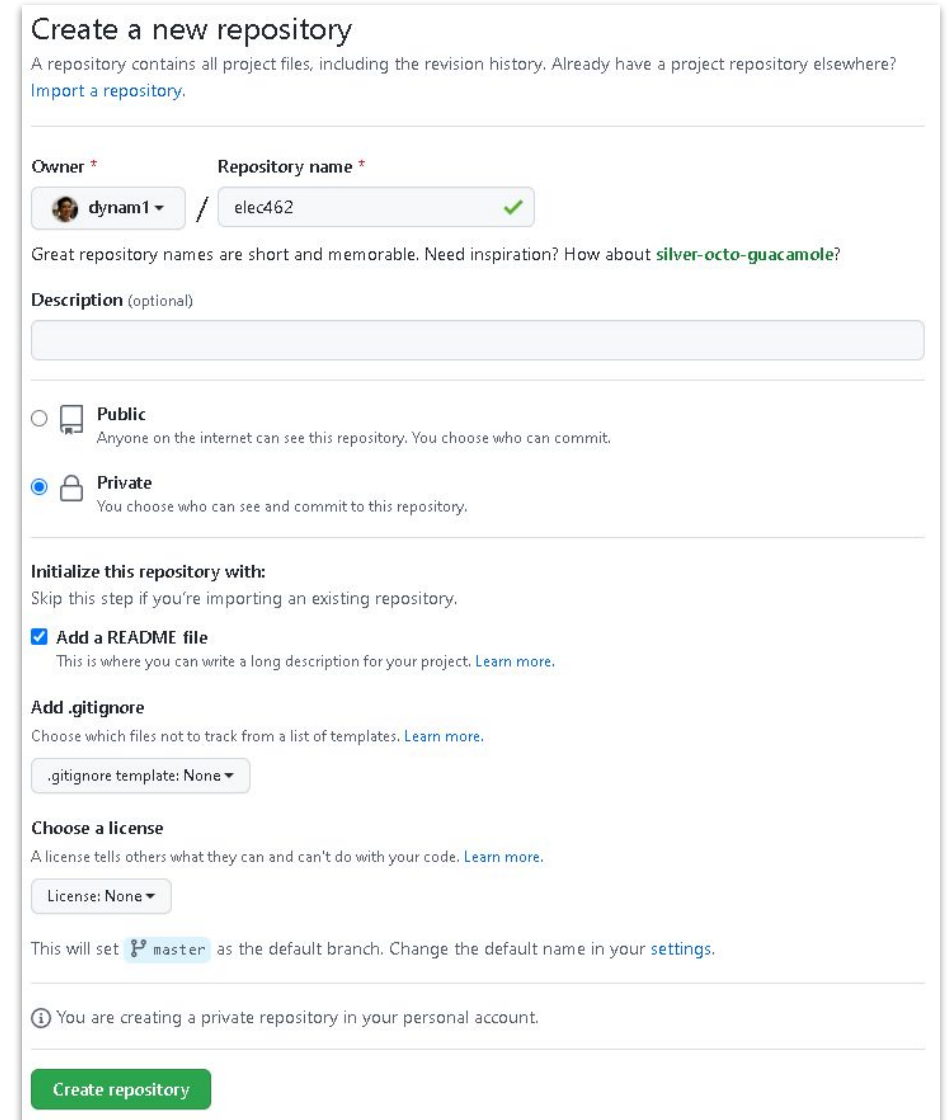
```
$ sudo add-apt-repository ppa:alessandro-strada/ppa
$ sudo apt update
$ sudo apt install google-drive-ocamlfuse
$ mkdir ~/GoogleDrive
$ google-drive-ocamlfuse ~/GoogleDrive
```

A terminal window screenshot from a user named 2022162_14778 on a machine named Ubuntu-106. The terminal shows the command 'ls' being executed, which lists the contents of the ~/GoogleDrive directory. The output shows several folders and files: 'GoogleDrive', '공개' (Public), '다운로드' (Downloads), '문서' (Documents), '바탕화면' (Desktop), '비디오' (Videos), '사진' (Pictures), '음악' (Music), and '템플릿' (Templates). The terminal has a dark background with green and blue text.

```
2022162_14778@Ubuntu-106: ~
2022162_14778@Ubuntu-106:~$ ls
GoogleDrive  공개  다운로드  문서  바탕화면  비디오  사진  음악  템플릿
2022162_14778@Ubuntu-106:~$
```

Mount a Remote Directory (cont.)

- Option 2) GitHub
 - 1. Sign up for GitHub
 - 2. Create a private repository
 - Repository name: “elec462”
 - 3. Generate a personal access token
 - 4. Clone a repository with the token
 - 5. Use it



The screenshot shows the GitHub 'Create a new repository' page. At the top, it says 'Create a new repository' and provides a brief explanation of what a repository is. Below this, there are two main sections: 'Owner' and 'Repository name'. The 'Owner' is set to 'dynam1' and the 'Repository name' is 'elec462', which is marked as valid with a green checkmark. A suggestion for a repository name, 'silver-octo-guacamole', is shown below. The 'Description' field is optional and currently empty. The 'Visibility' section has two options: 'Public' (selected with a radio button) and 'Private' (selected with a radio button). The 'Initialize this repository with' section includes a checkbox for 'Add a README file' (checked) and a dropdown for '.gitignore template' set to 'None'. The 'Choose a license' section has a dropdown for 'License' set to 'None'. At the bottom, there is a green 'Create repository' button. A note at the bottom states: 'You are creating a private repository in your personal account.'

Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)

Owner * Repository name *

dynam1 / elec462 ✓

Great repository names are short and memorable. Need inspiration? How about [silver-octo-guacamole](#)?

Description (optional)

☐ Public
Anyone on the internet can see this repository. You choose who can commit.

☒ Private
You choose who can see and commit to this repository.

Initialize this repository with:

Skip this step if you're importing an existing repository.

☒ Add a README file
This is where you can write a long description for your project. [Learn more.](#)

Add .gitignore

Choose which files not to track from a list of templates. [Learn more.](#)

.gitignore template: None ▼

Choose a license

A license tells others what they can and can't do with your code. [Learn more.](#)

License: None ▼

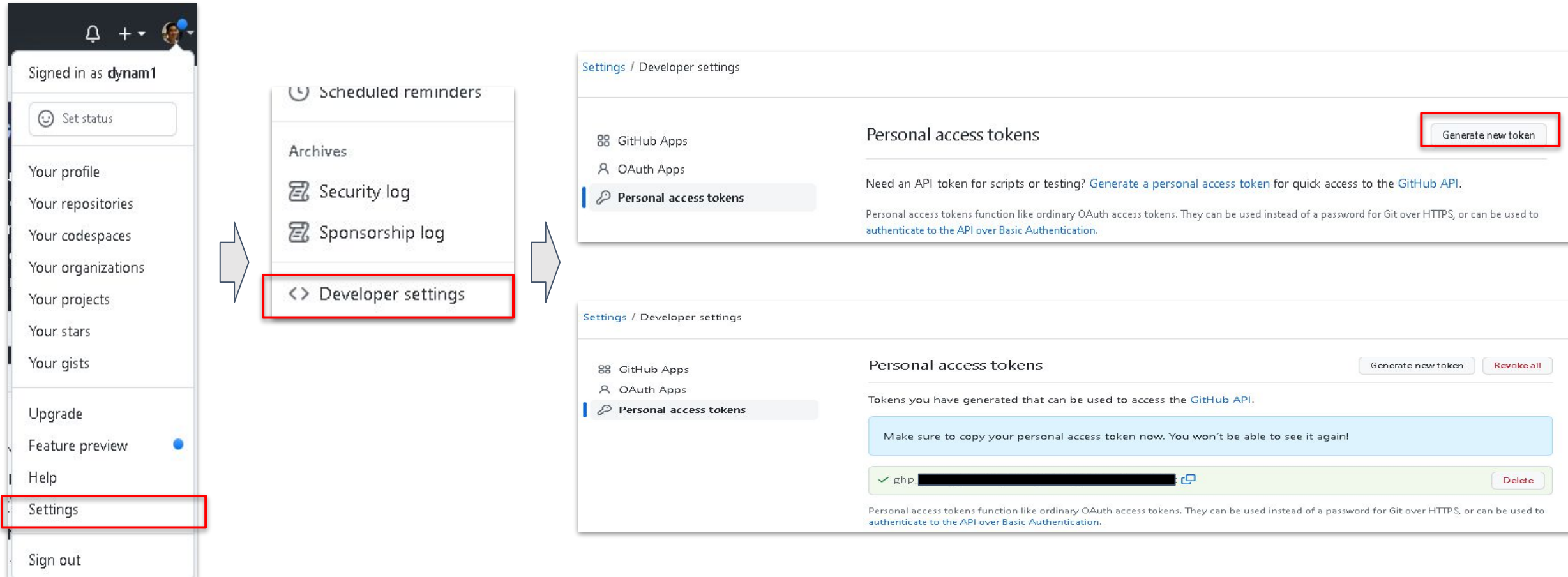
This will set `master` as the default branch. Change the default name in your [settings](#).

Create repository

ⓘ You are creating a private repository in your personal account.

Mount a Remote Directory (cont.)

- Generate a personal access token



Mount a Remote Directory (cont.)

- Config

```
$ git config --global user.email " dukyun.nam@gmail.com"  
$ git config --global user.name " Dukyun Nam"  
$ git config credential.helper store
```

- Clone

```
# example: git clone https://github.com/dynam1/elec462.git  
$ git clone https://github.com/ username/repo.git  
Username: your_username  
Password: your_token
```

- Commit & push

```
$ git add .  
$ git commit -m "lab1"  
$ git push
```