Lecture #3. 2D 렌더링

2D 게임 프로그래밍

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학습 내용

- 2D 게임의 정의
- 2D 게임의 기본 요소
- Pico2d 설치
- 캐릭터 이미지의 렌더링과 이동

2D 게임?

게임이란?

- "가상 월드에 존재하는 여러 객체들의 상호작용"

게임의 기본 구성 요소

- 배경
- 캐릭터, 오브젝트
- UI – GUI, 입력(키,마우스,터치, …)
- AI
- 사운드

2D 게임?

- 현재 진행 중인 게임 가상 월드의 내용을 화면에 2D 그림으로 보여주는 것
- 배경,캐릭터(오브젝트)의 표현(렌더링)을 2D 이미지들의 조합으로 구성함!

2D 게임의 기본 요소

2D 게임 개발 접근법

- **플랫폼 종속적 방법**
  - Direct X
  - OpenGL
  - Simple Frame Buffer

- **플랫폼 독립적 방법, Cross Platform**
  - Unity
  - Unreal
  - COCOS2D
  - SDL
  - 그 외의 범용 2D 렌더링 라이브러리

SDL(Simple DirectMedia Layer)

SDL이란?

- 크로스 플랫폼 멀티미디어 라이브러리.
- 비디오, 오디오 및 사용자 입력을 처리하는 API로 구성.
- 기본적으로 2D 그래픽 라이브러리. 3D는 OpenGL을 통해서 지원.

SDL이 지원하는 플랫폼

- PC: Windows, Linux, Mac OS
- Phone: Android, iOS,

라이센싱(SDL 2.0)

- zlib license
- 자유롭게 상용 게임을 개발할 수 있슴.
- SDL1.2 → GNU LGPL 라이센싱

홈페이지

- www.libsdl.org

2D 게임 개발 환경 구성

필수 환경

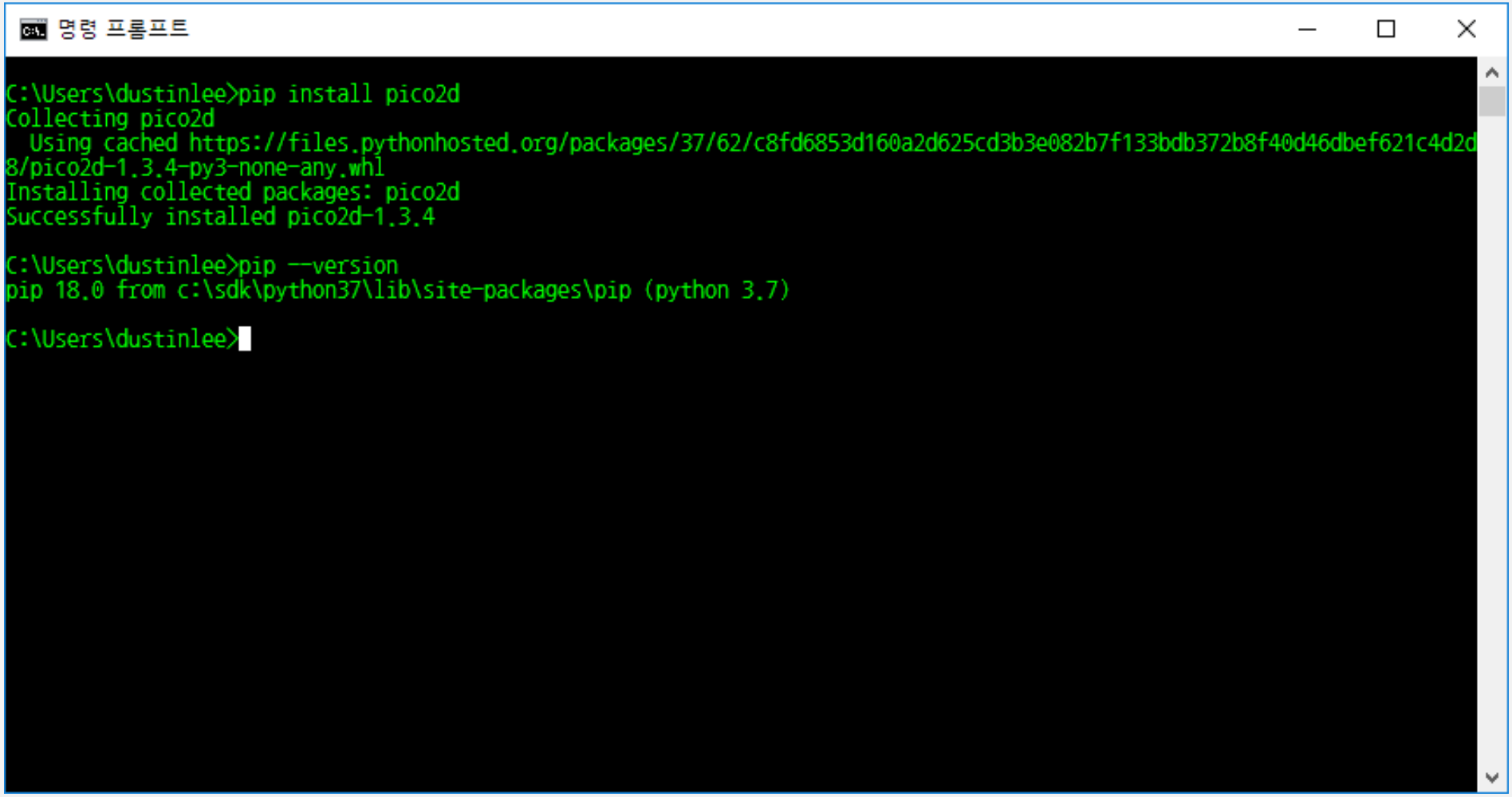
- Windows 10 64 bit
- Python 3.7.0+
- Git / TortoiseGit

2D 그래픽 라이브러리

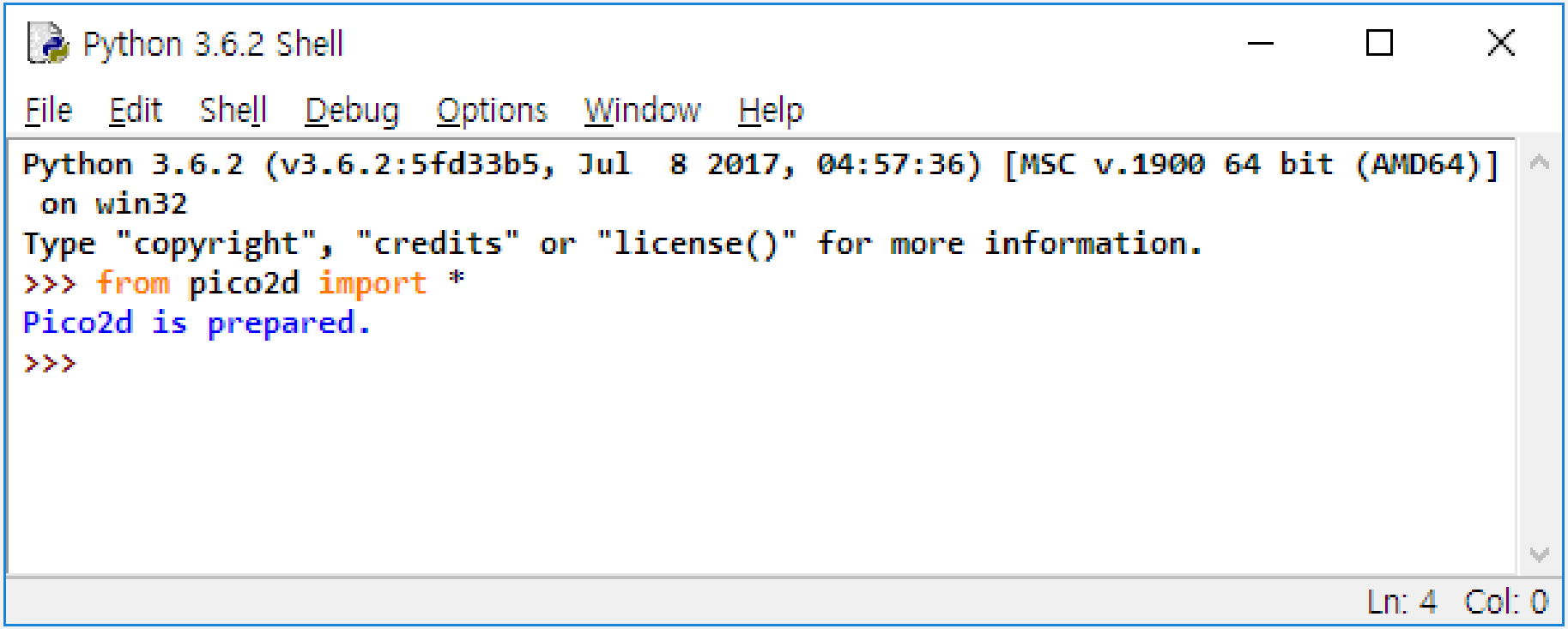
- pico2d – 내부에 SDL라이브러리와 PySDL2 라이브러리를 포함.

pico2d 의 설치 – pip 이용

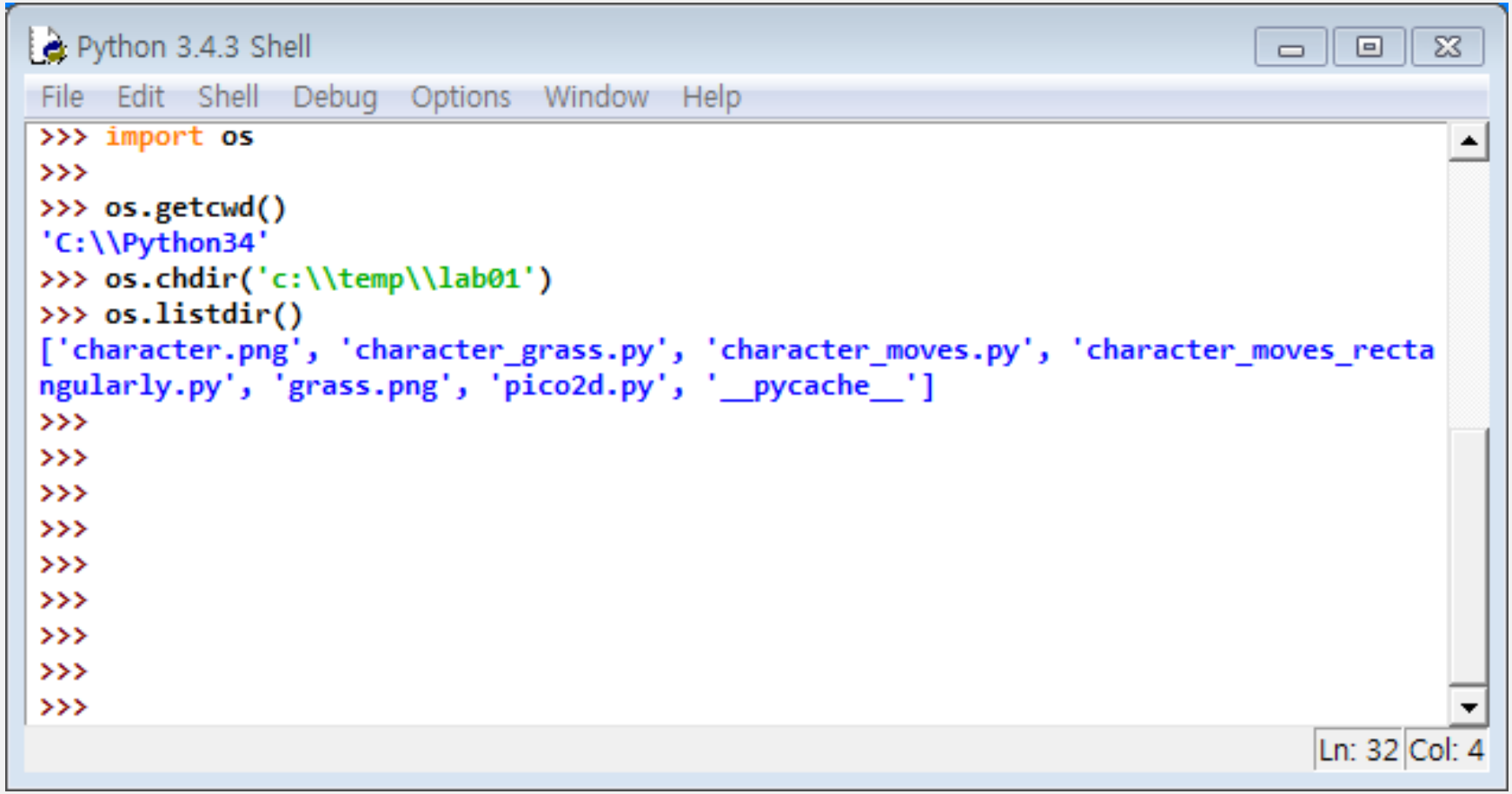
- cmd 창에서, “pip install pico2d” 를 입력
  - 경우에 따라서, pip 자체를 update 할 필요가 있음.
  - pip가 실행되지 않는 경우는, python을 다시 설치해야 함.



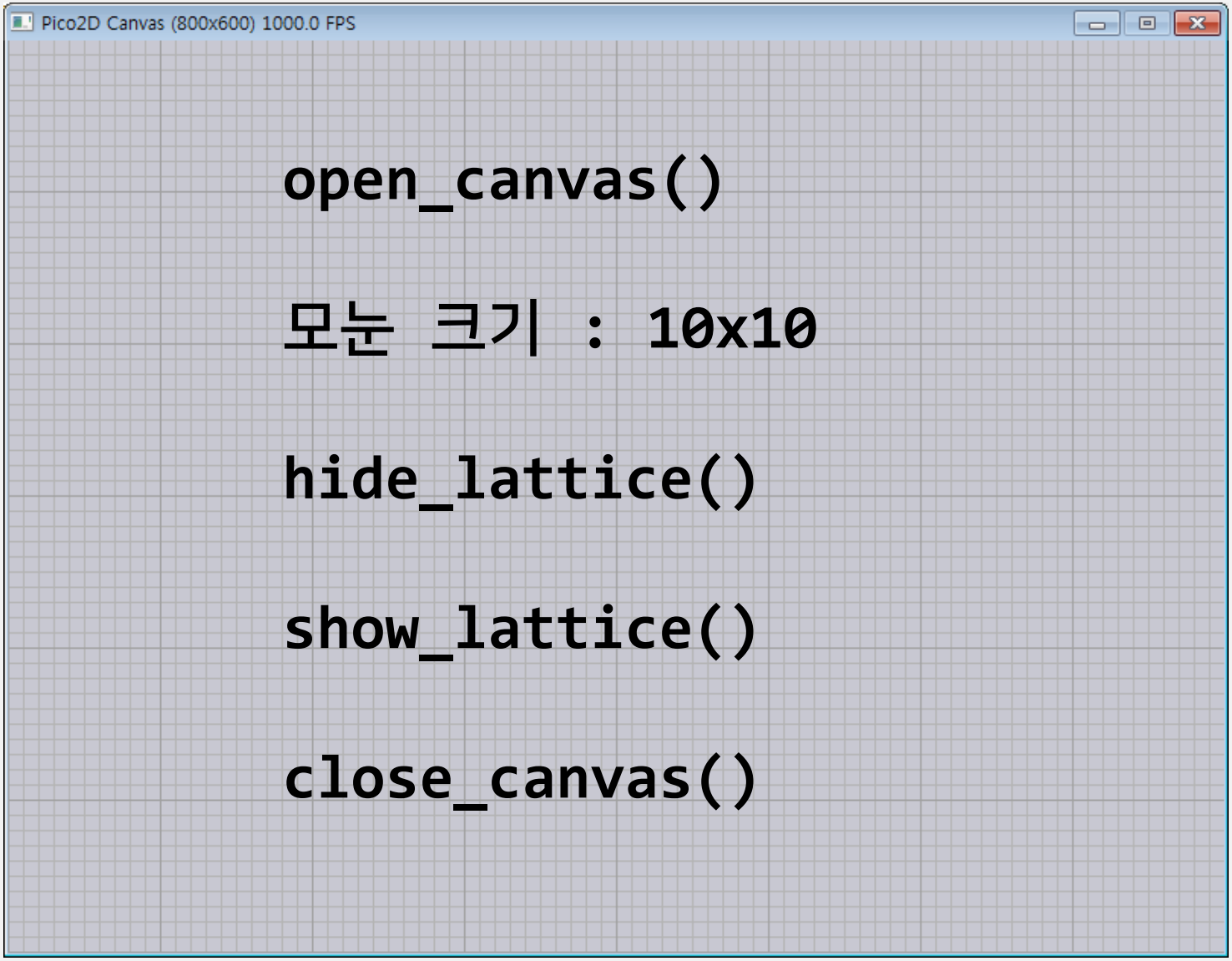
Pico2d 라이브러리 설치 완료 확인



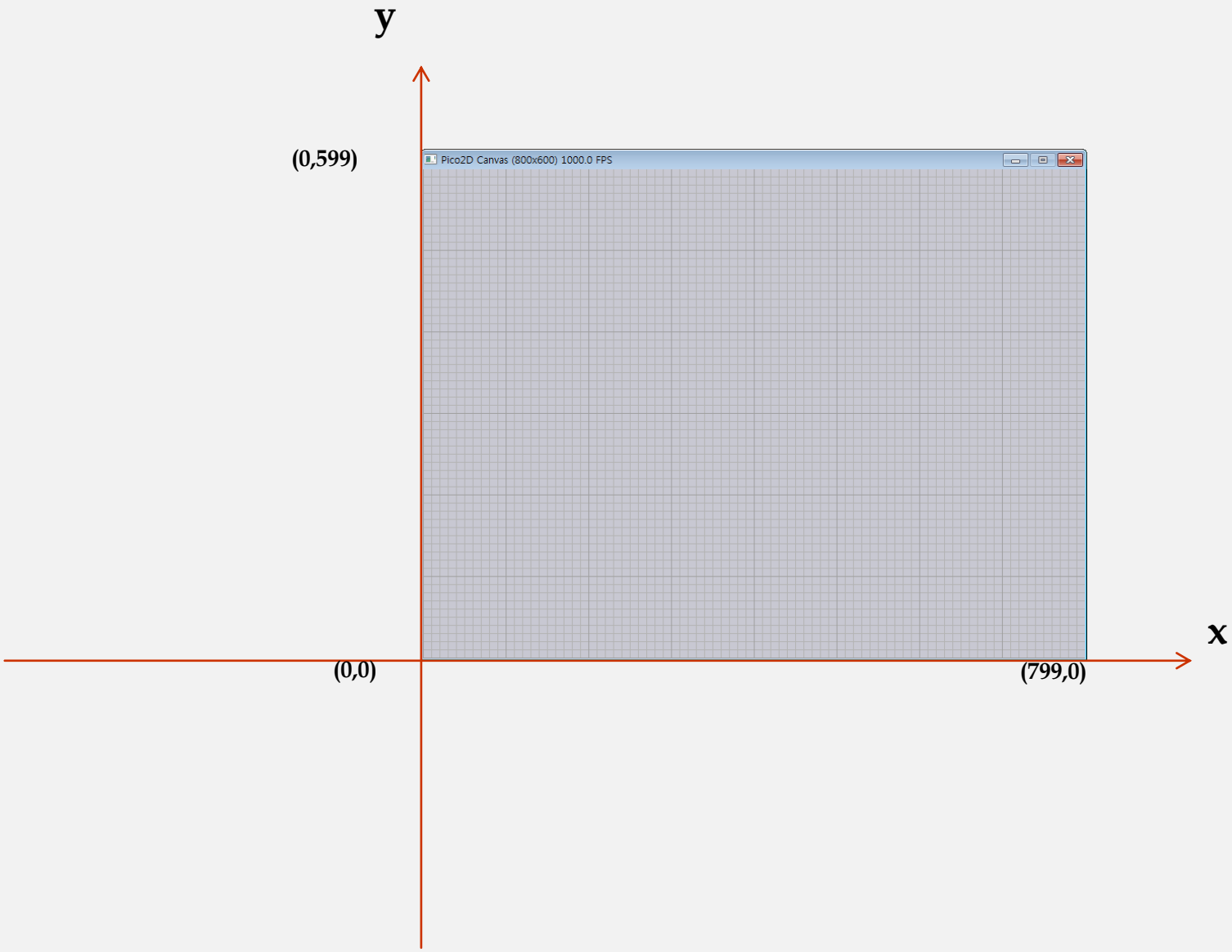
OS 모듈을 이용한 Working Directory 설정



캔버스 열기 – open_canvas(800,600)



캔버스의 좌표계



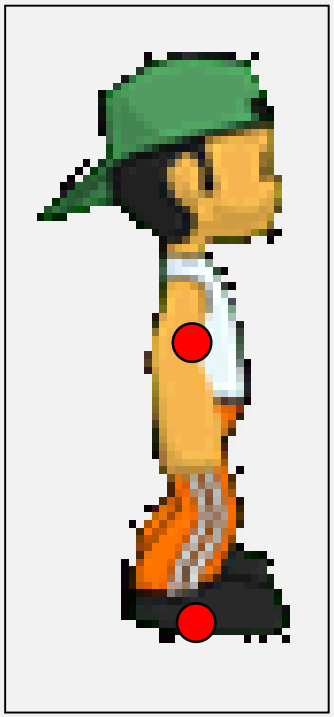
이미지 포맷

JPG vs PNG

우리의 주인공

```
>>> image = load_image('character.png')
```

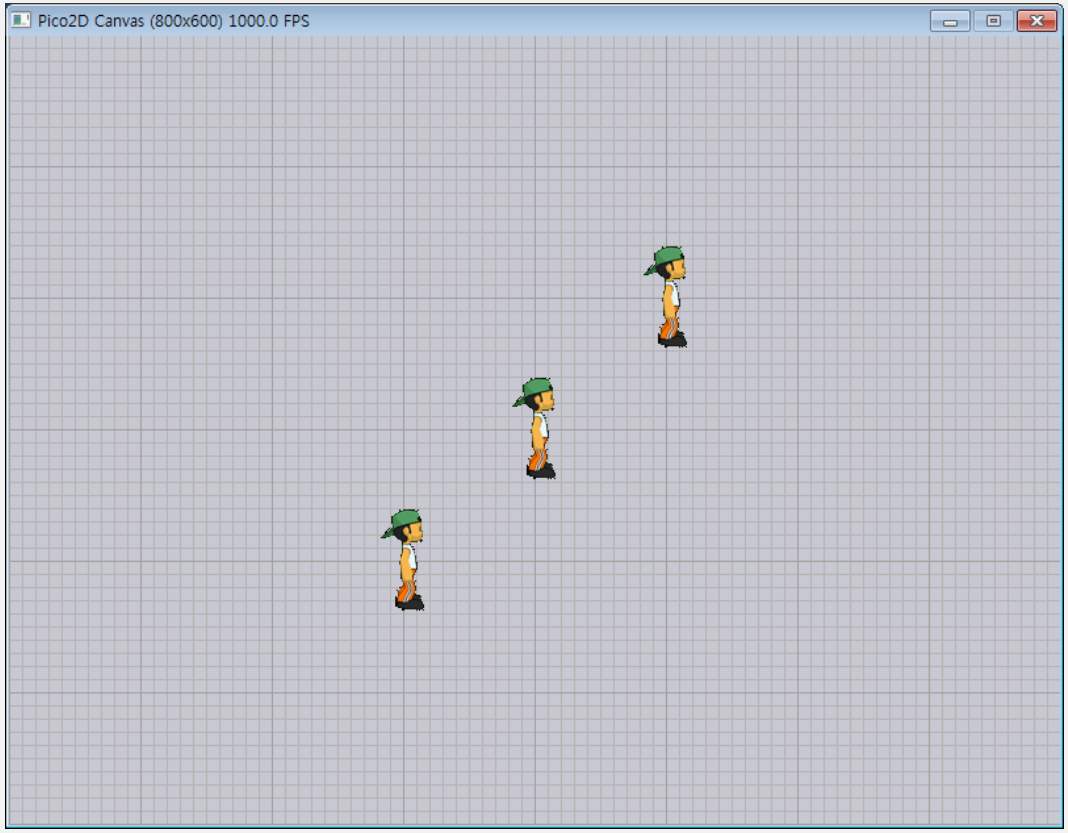
피봇(Pivot)



여기가 피봇입니다.

이 점을 피봇으로 삼기도 합니다

몇 명 더 그려 봅시다~

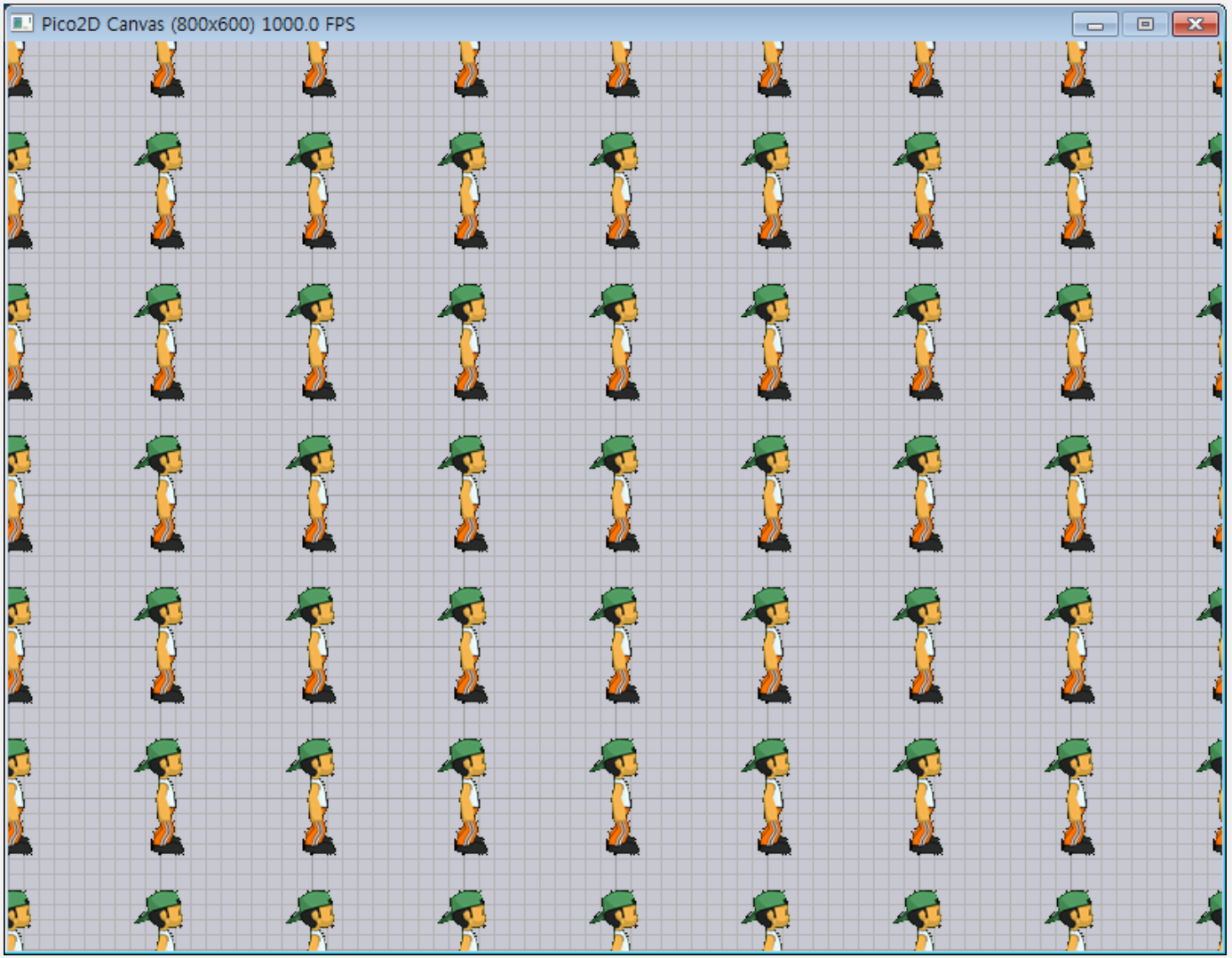


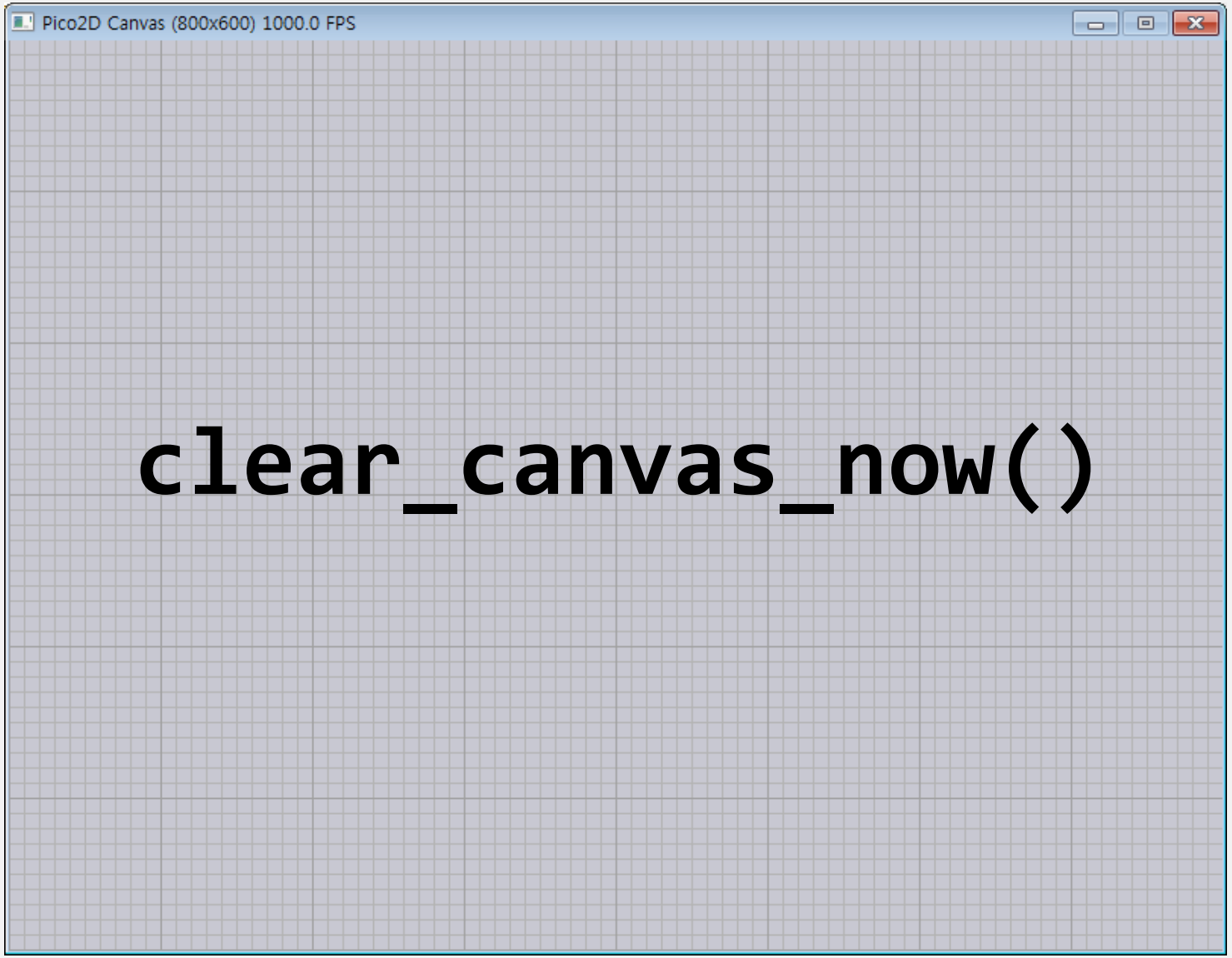

```
>>> image.draw_now(300,200)
>>> image.draw_now(500,400)
```

떼로 그리기

```
>>> for x in range(0,9):
        for y in range (0, 7):
            image.draw_now(x * 100, y * 100)
```

캐릭터 떼!



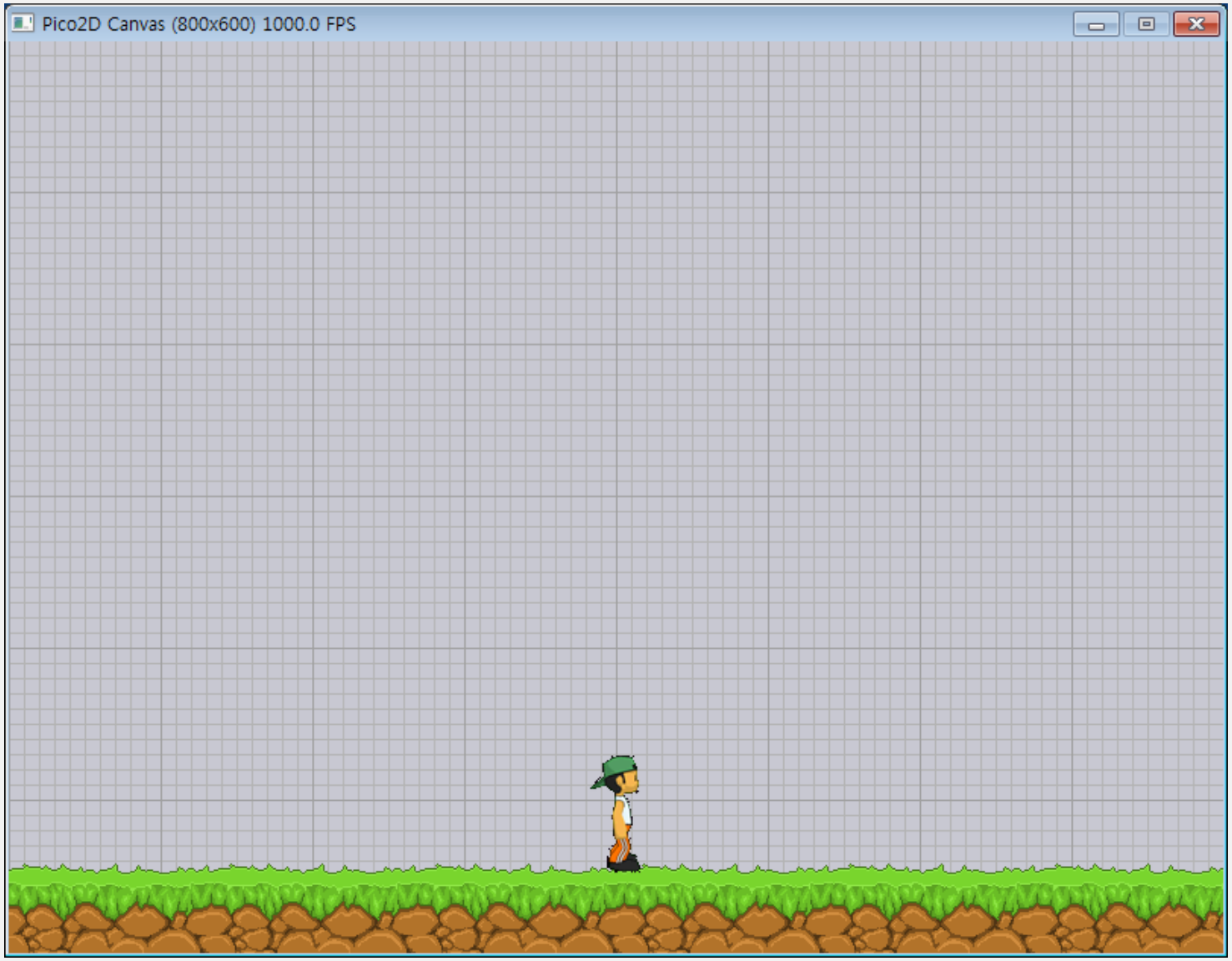


Character_moves.py

캐릭터 이동

character_grass.py


```
from pico2d import *

open_canvas()

grass = load_image('grass.png')
character = load_image('character.png')

grass.draw_now(400, 30)
character.draw_now(400, 90)

delay(5)

close_canvas()
```



character_moves.py


```
from pico2d import *

open_canvas()

grass = load_image('grass.png')
character = load_image('character.png')

x = 0
while (x < 800):
    clear_canvas_now()
    grass.draw_now(400, 30)
    character.draw_now(x, 90)
    x = x + 2
    delay(0.01)

close_canvas()
```

게임 루프

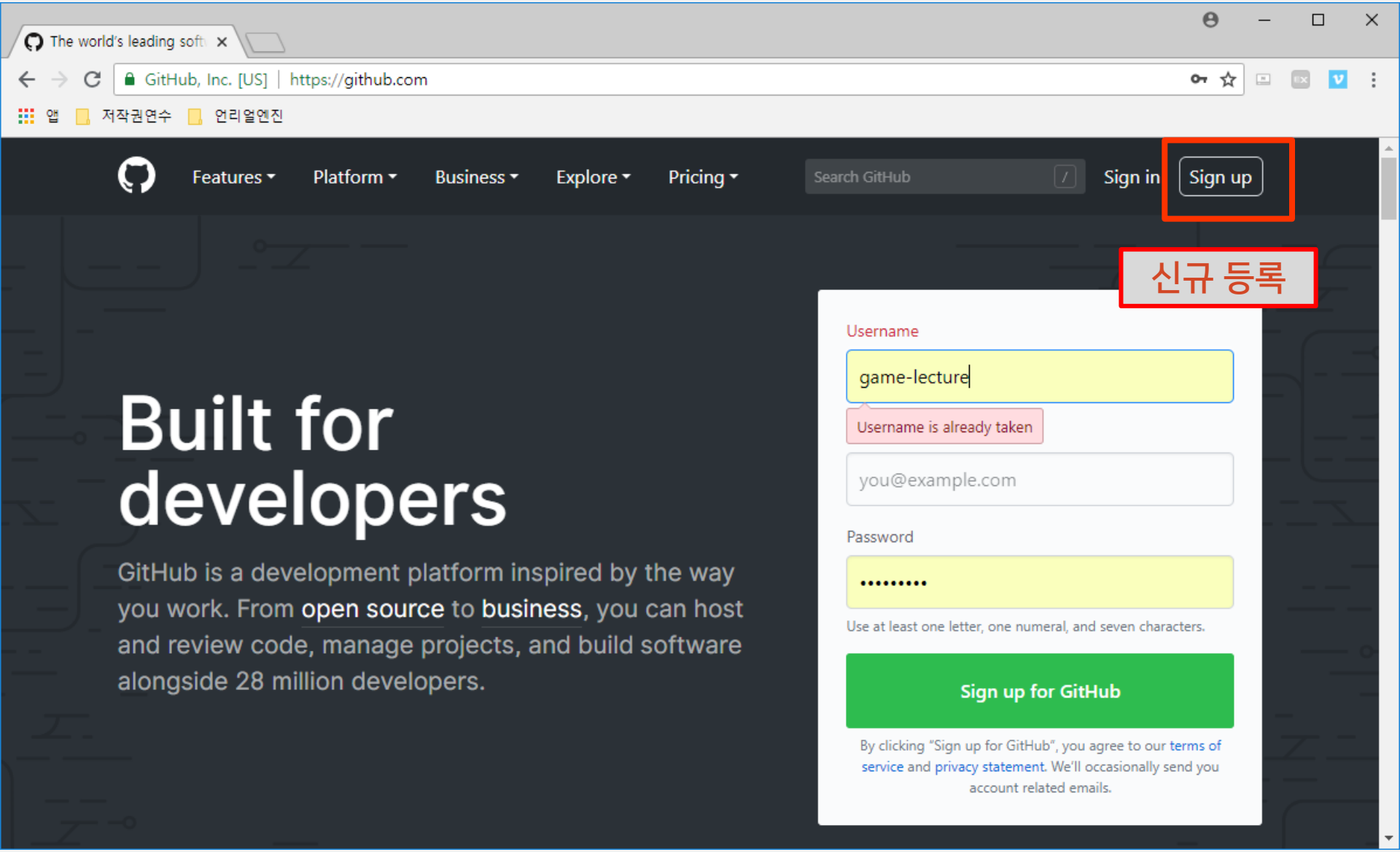
```
x = 0
while (x < 800):
    clear_canvas_now()
    grass.draw_now(400, 30)
    character.draw_now(x, 90)

    x = x + 2

    delay(0.01)
```

Game Rendering

Game Logic

초간단 Github 사용

깃허브 페이지 https://github.com



Create your personal account

Username

daehyun-lee-dev

This will be your username. You can add the name of your organization later.

Email address

daehyun.lee.dev@gmail.com

We'll occasionally send updates about your account to this inbox. We'll never share your email address with anyone.

Password

••••••••

Use at least one lowercase letter, one numeral, and seven characters.

Verify account

By clicking "Create an account" below, you agree to our terms of service and privacy statement. We'll occasionally send you account related emails.

Create an account

Completed
Set up a personal account

Step 2:
Choose your plan

Choose your personal plan

- (●) Unlimited public repositories for free.
- ( ) **Unlimited private repositories** for $7/month. (view in KRW)

Don't worry, you can cancel or upgrade at any time.

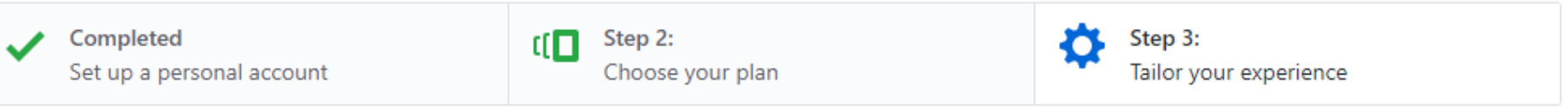
☐ **Help me set up an organization next**

Organizations are separate from personal accounts and are best suited for businesses who need to manage permissions for many employees.
Learn more about organizations

☐ **Send me updates on GitHub news, offers, and events**

Unsubscribe anytime in your email preferences. Learn more

Continue



How would you describe your level of programming experience?

- ○ Totally new to programming
- ○ Somewhat experienced
- ◉ Very experienced

What do you plan to use GitHub for? (check all that apply)

- ☐ Development
- ☑ School projects
- ☐ Project Management
- ☐ Design
- ☐ Research
- ☐ Other (please specify)

Which is closest to how you would describe yourself?

- ○ I'm a hobbyist
- ◉ I'm a professional
- ○ I'm a student
- ○ Other (please specify)

What are you interested in?

computer ⊗ game ⊗

e.g. tutorials, android, ruby, web-development, machine-learning, open-source

Submit skip this step

Learn Git and GitHub without any code!

Using the Hello World guide, you'll create a repository, start a branch, write comments, and open a pull request.

Read the guide | Start a project

Our new Terms of Service and Privacy Statement are in effect.

Repositories | New repository

You don't have any repositories yet!

Browse activity | Discover repositories

Discover interesting projects and people to populate your personal news feed.

Your news feed helps you keep up with recent activity on repositories you watch and people you follow.

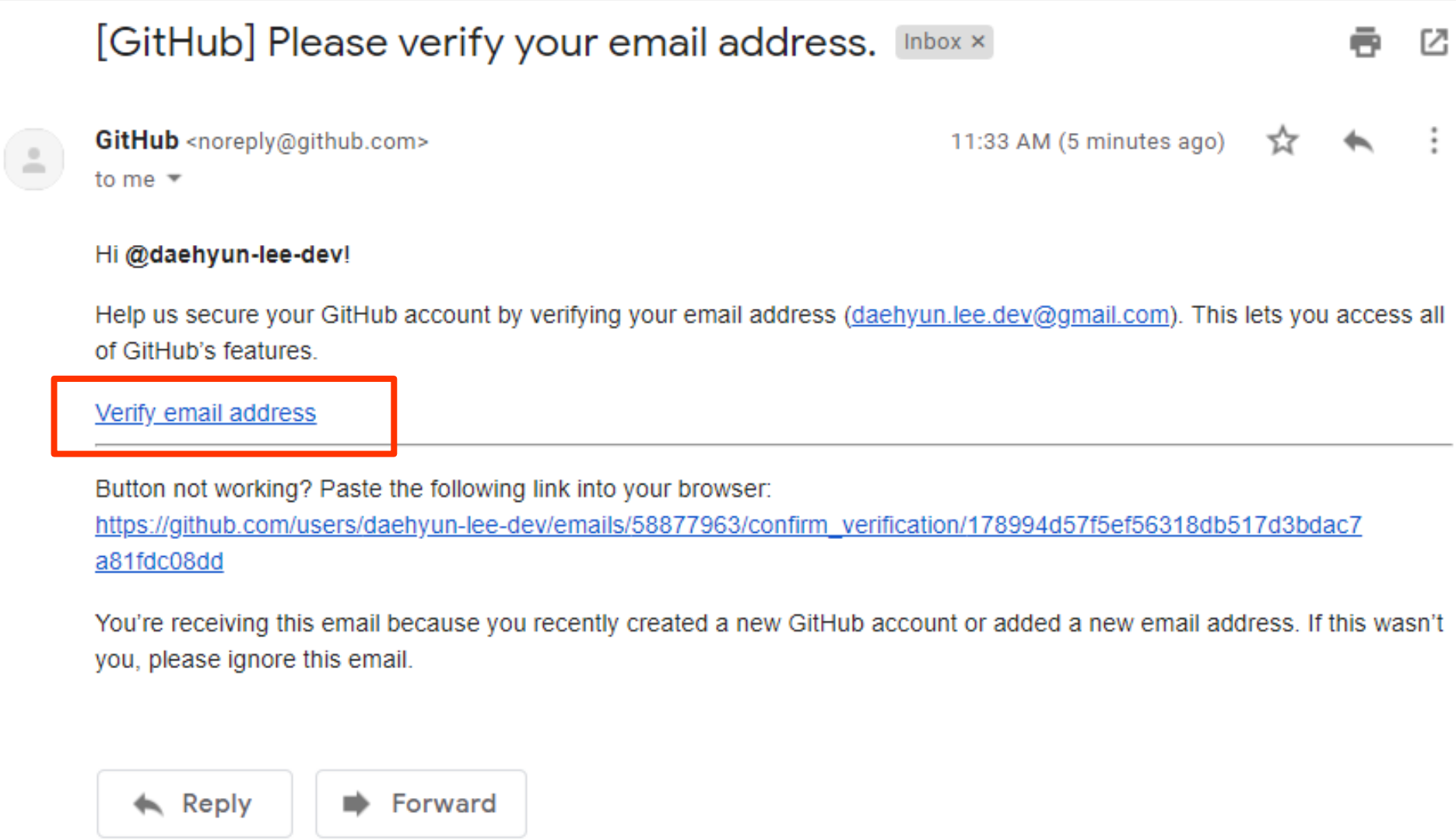
Explore GitHub

Please verify your email address

Before you can contribute on GitHub, we need you to verify your email address.
An email containing verification instructions was sent to **daehyun.lee.dev@gmail.com**.

Didn't get the email? Resend verification email or change your email settings.

메일 주소 확인



[GitHub] Please verify your email address. Inbox ×

GitHub <noreply@github.com> 11:33 AM (5 minutes ago)

to me

Hi **@daehyun-lee-dev**!

Help us secure your GitHub account by verifying your email address (daehyun.lee.dev@gmail.com). This lets you access all of GitHub's features.

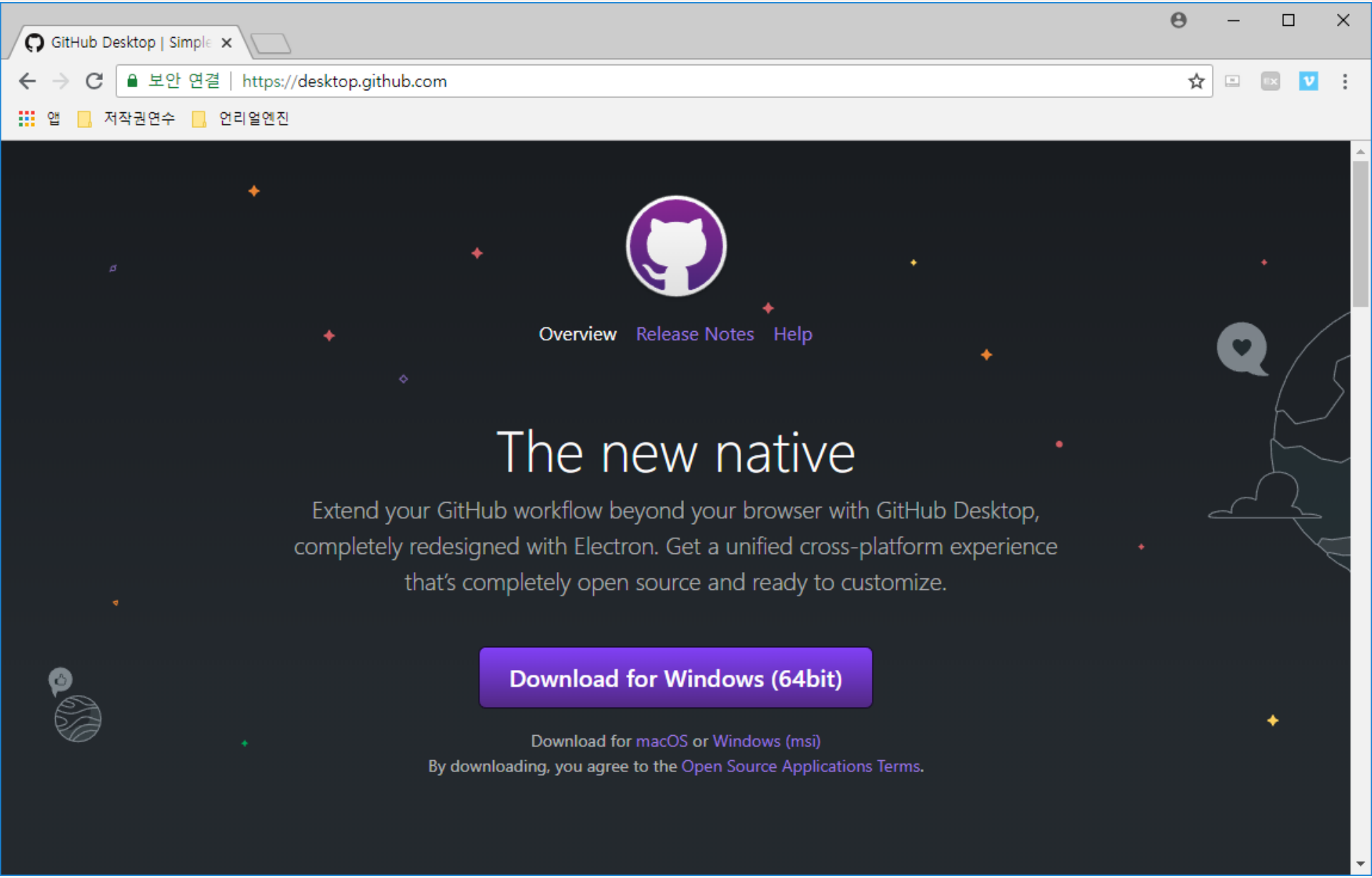
Verify email address

Button not working? Paste the following link into your browser:
https://github.com/users/daehyun-lee-dev/emails/58877963/confirm_verification/178994d57f5ef56318db517d3bdac7a81fdc08dd

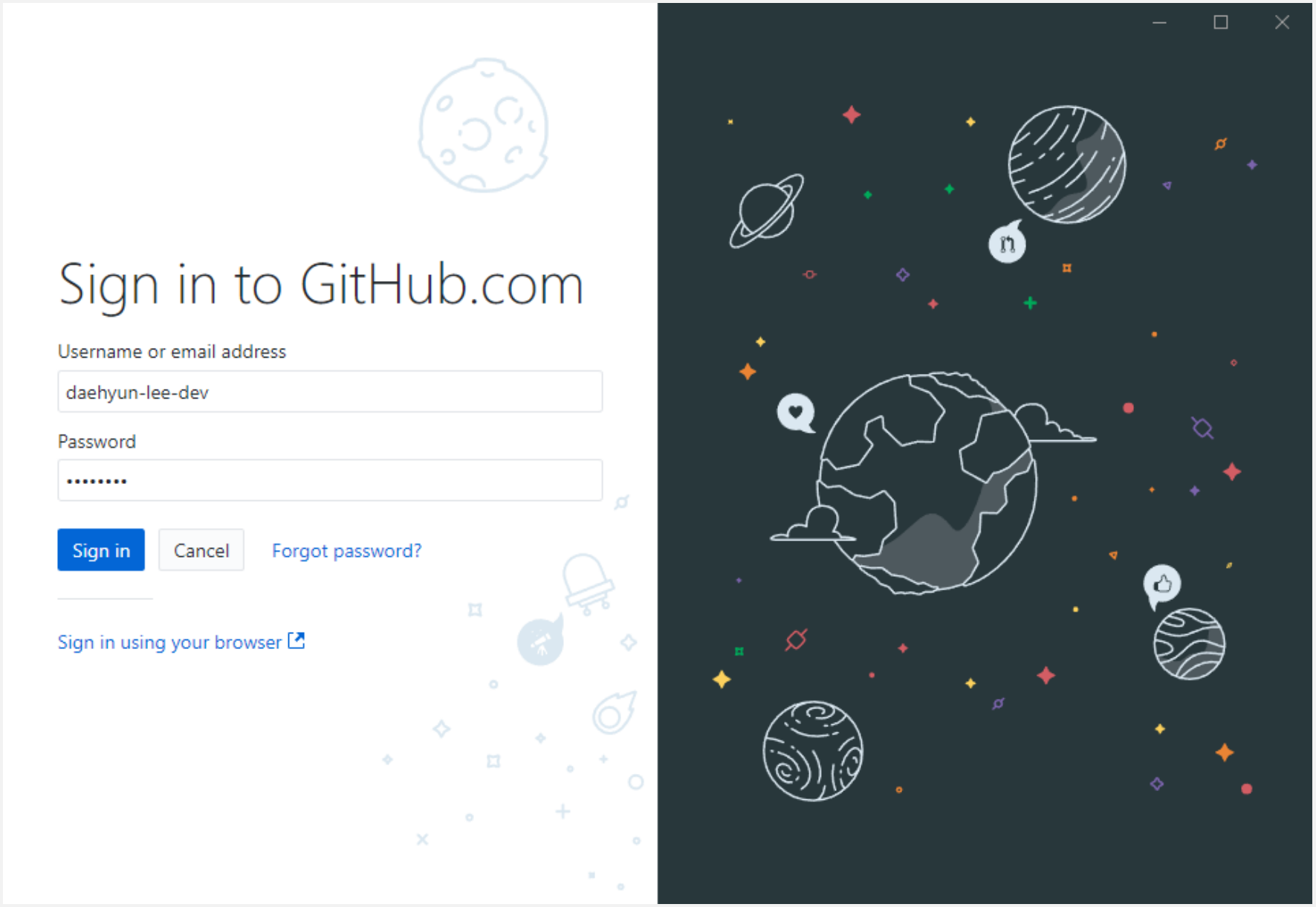
You're receiving this email because you recently created a new GitHub account or added a new email address. If this wasn't you, please ignore this email.

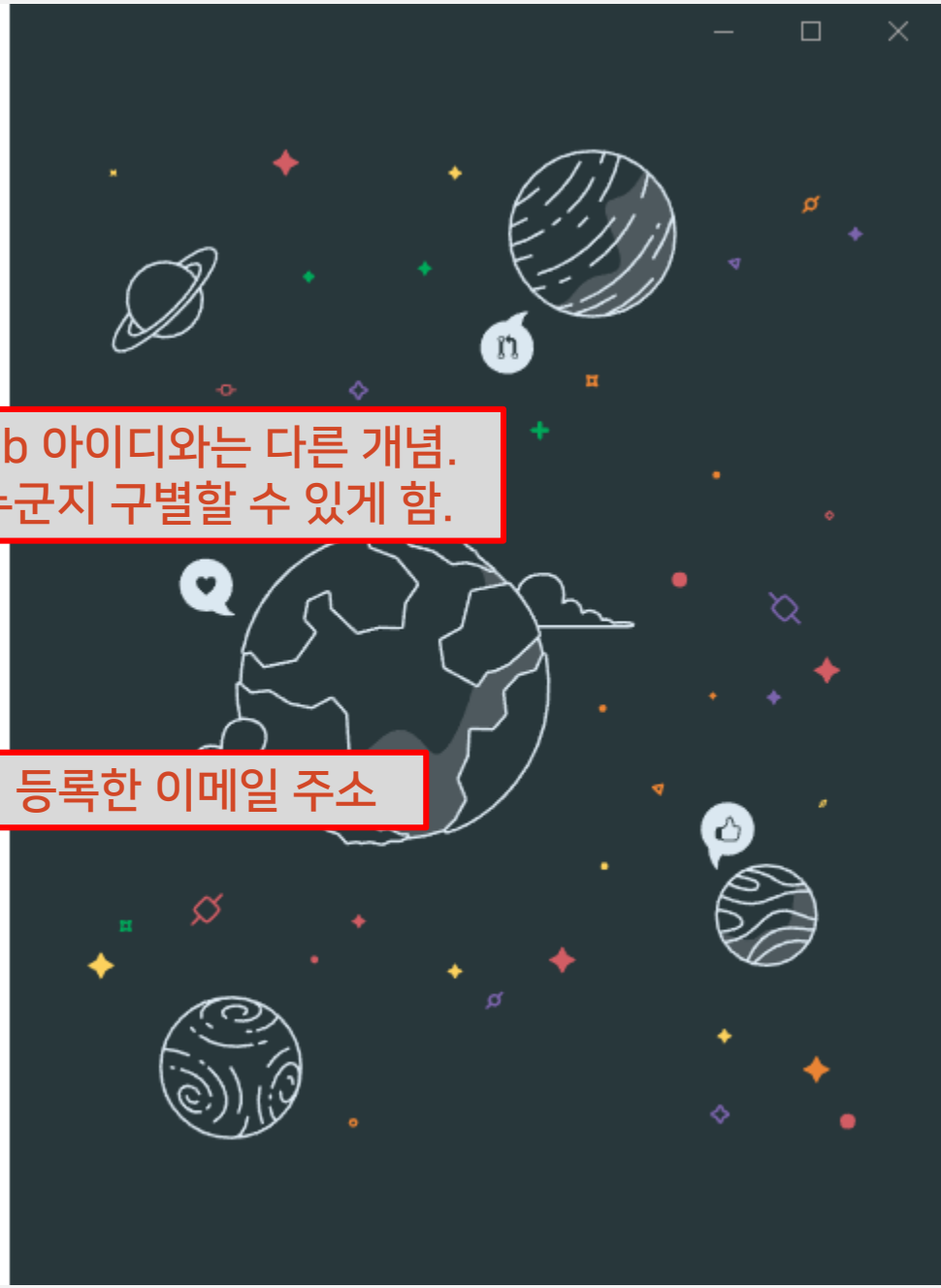
Reply Forward

Github Desktop 설치



Github Desktop Login





Configure Git

This is used to identify the comm
able to see this information if yo

Name

daehyunlee(XPS13)

Email

daehyun.lee.dev@gmail.com

Continue Cancel

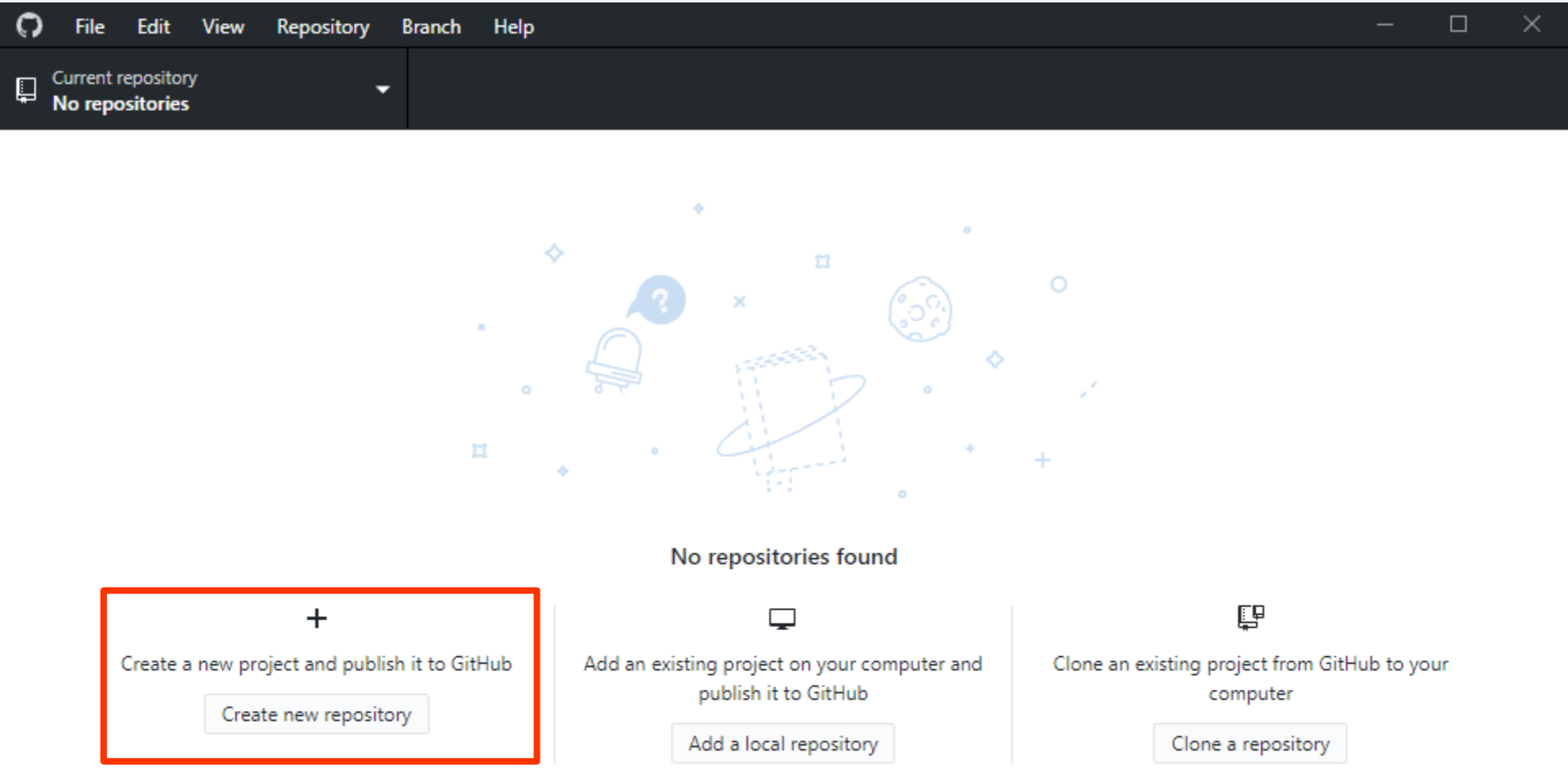
Example commit

Fix all the things

daehyunlee(XPS13) committed 30 minutes ago

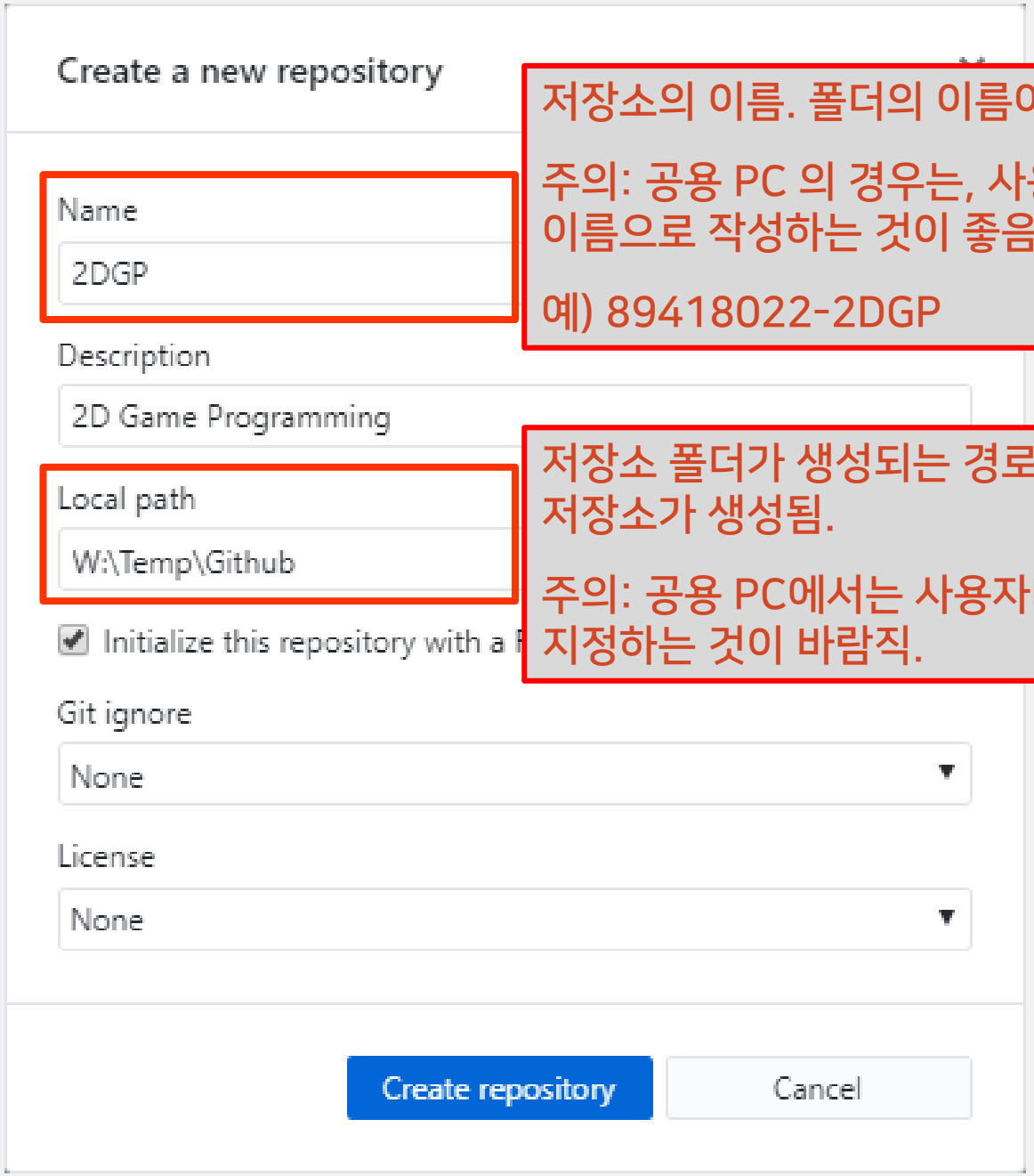
사용자의 이름. Github 아이디와는 다른 개념.
실제로 올린 사람이 누군지 구별할 수 있게 함.

Github 계정 만들 때, 등록한 이메일 주소



내 PC 에 새로운 저장소(repository)를 생성.

내 PC에 만들어지는 저장소를 Local Repository라고 함.



저장소의 이름. 폴더의 이름이 됨.

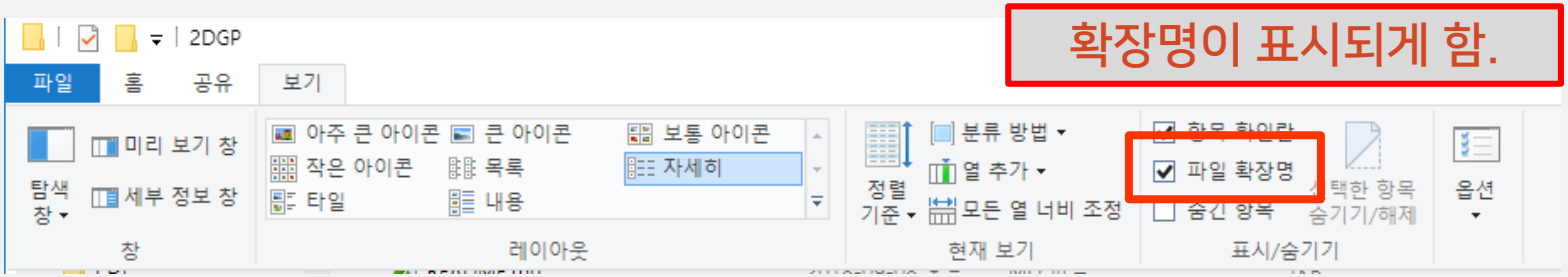
주의: 공용 PC 의 경우는, 사용자마다 구별되는 이름으로 작성하는 것이 좋음.

예) 89418022-2DGP

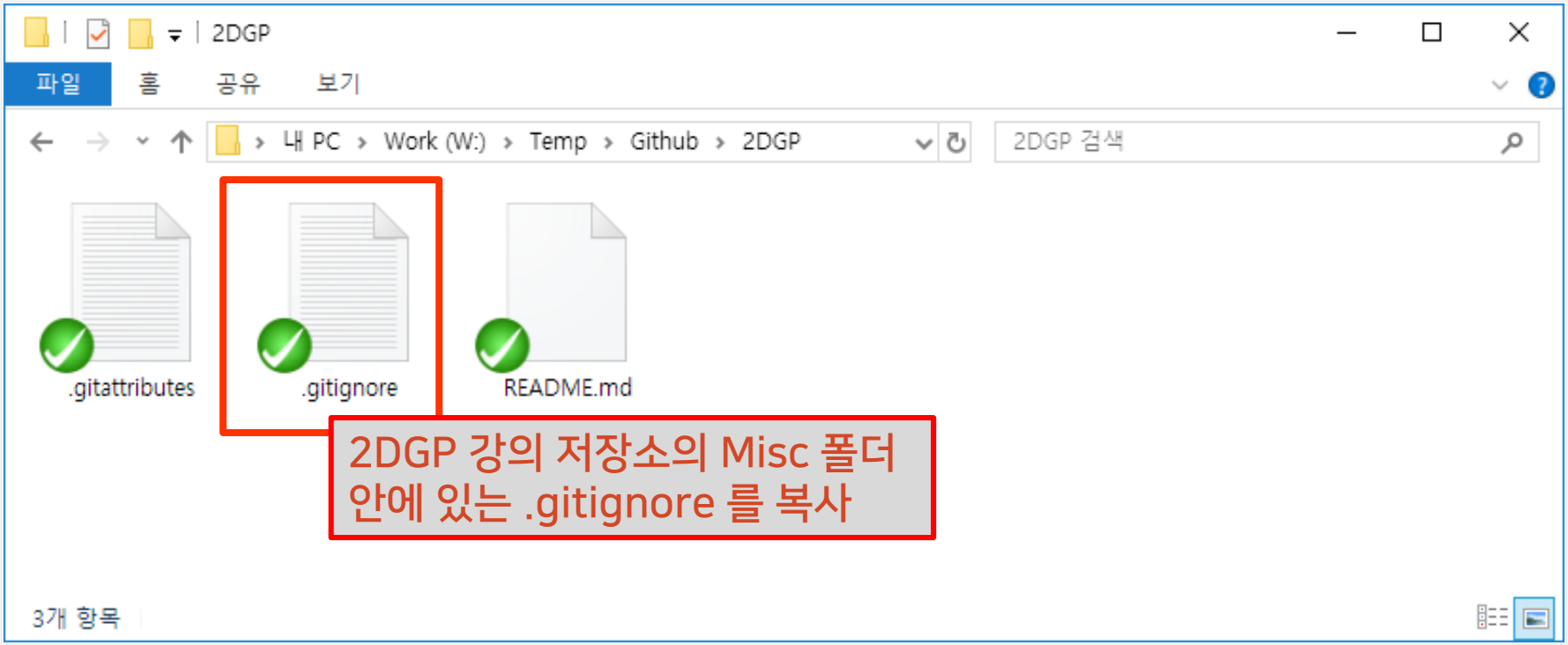
저장소 폴더가 생성되는 경로. 이 경로 아래에 저장소가 생성됨.

주의: 공용 PC에서는 사용자마다 다르게 지정하는 것이 바람직.

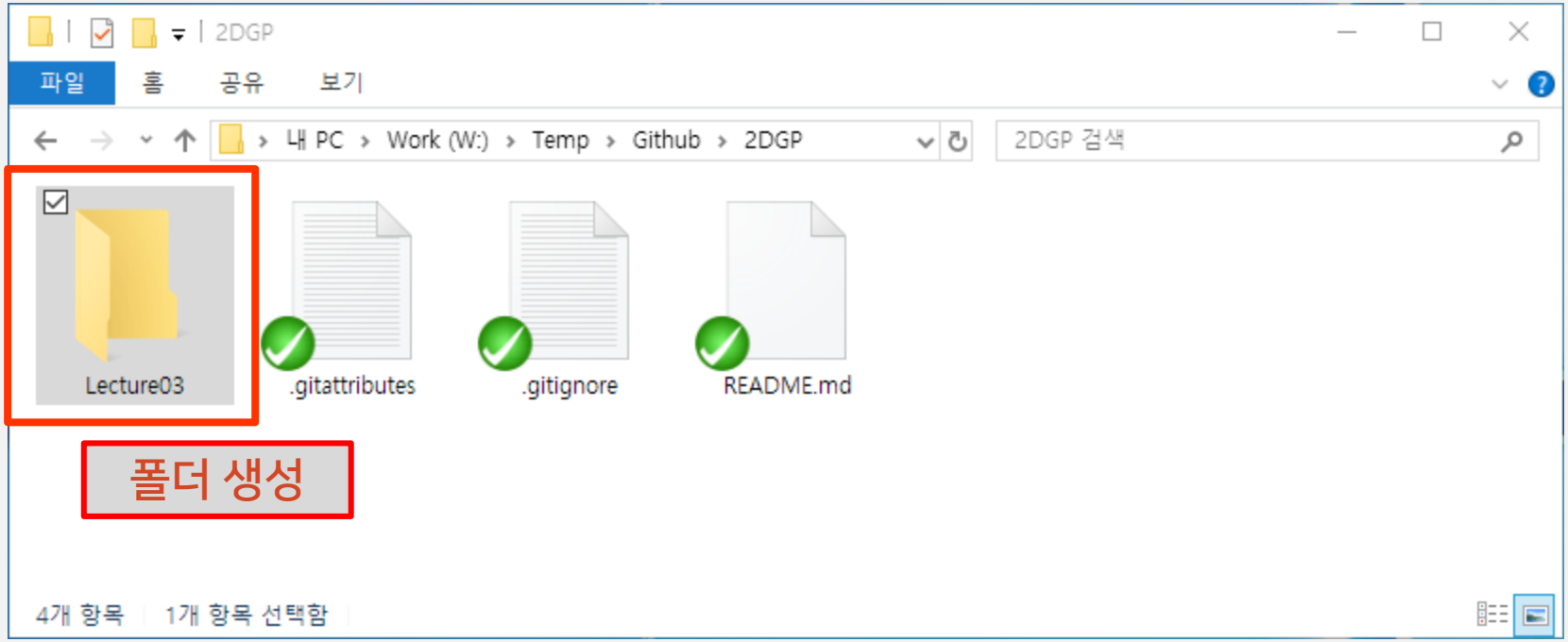
생성된 저장소

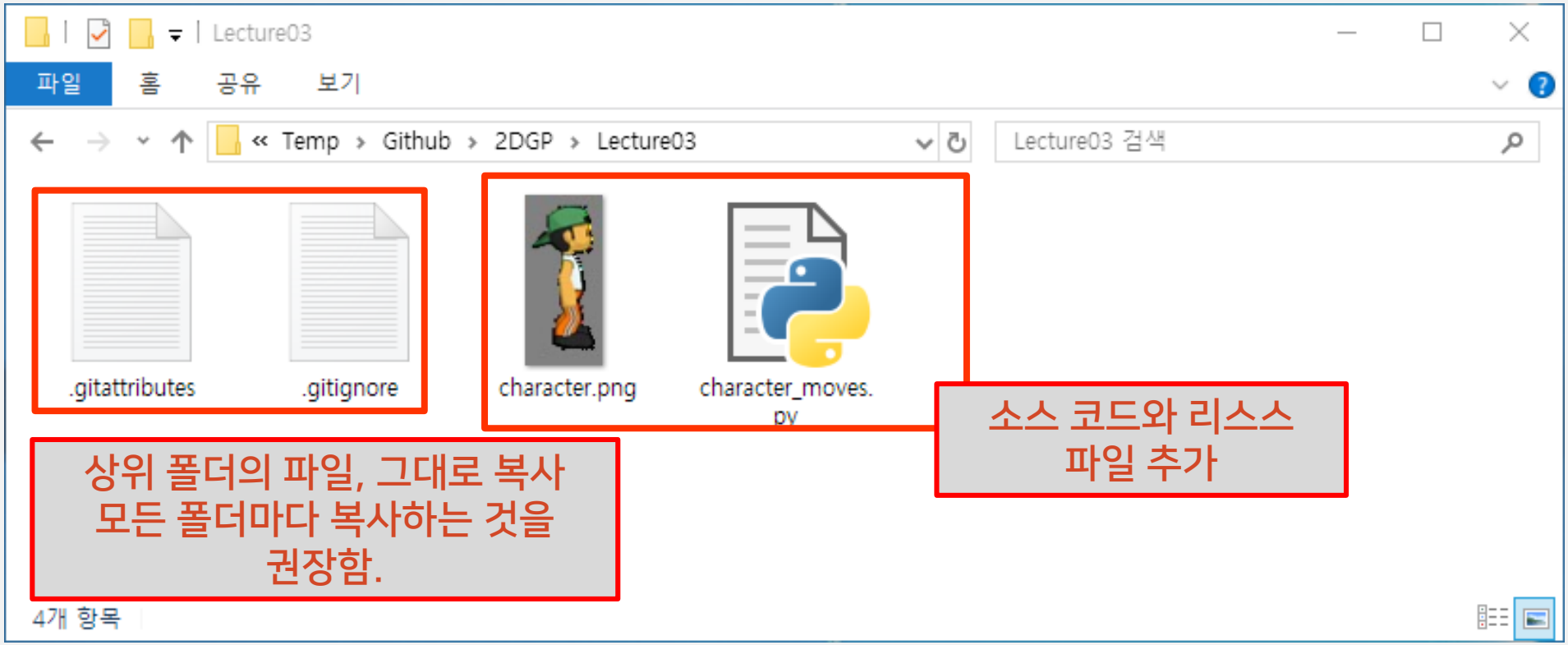


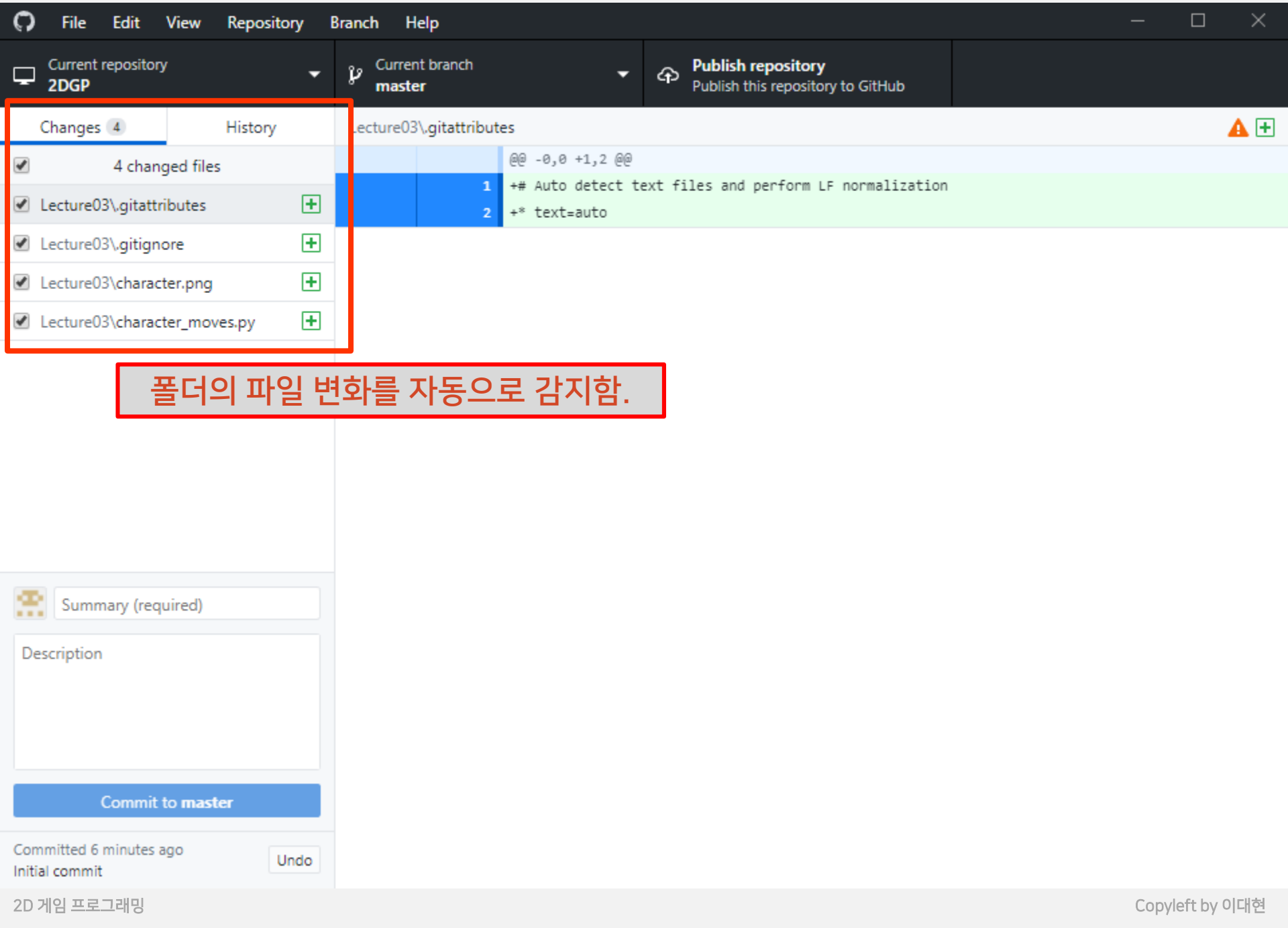
확장명이 표시되게 함.

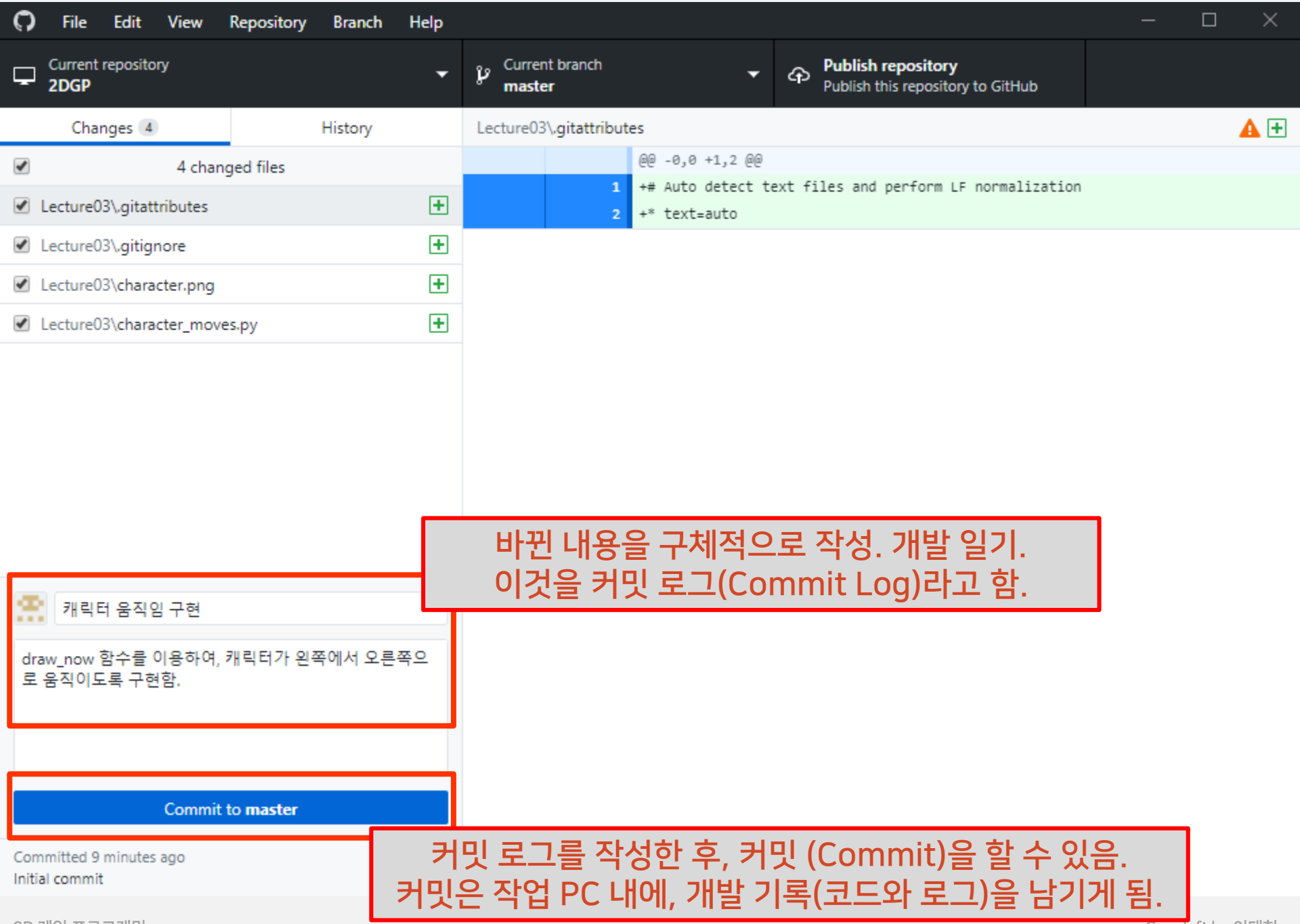


2DGP 강의 저장소의 Misc 폴더 안에 있는 .gitignore 를 복사



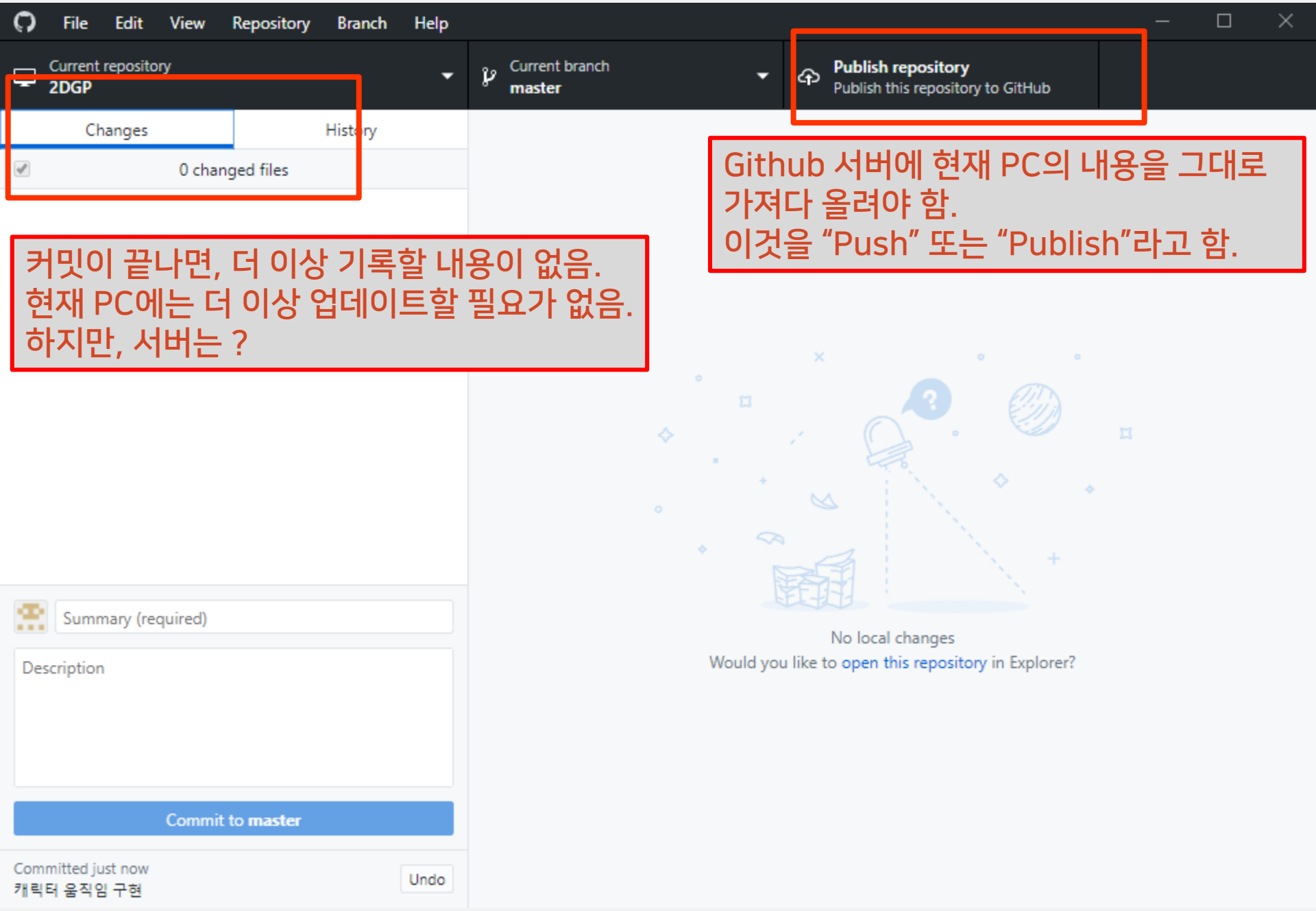






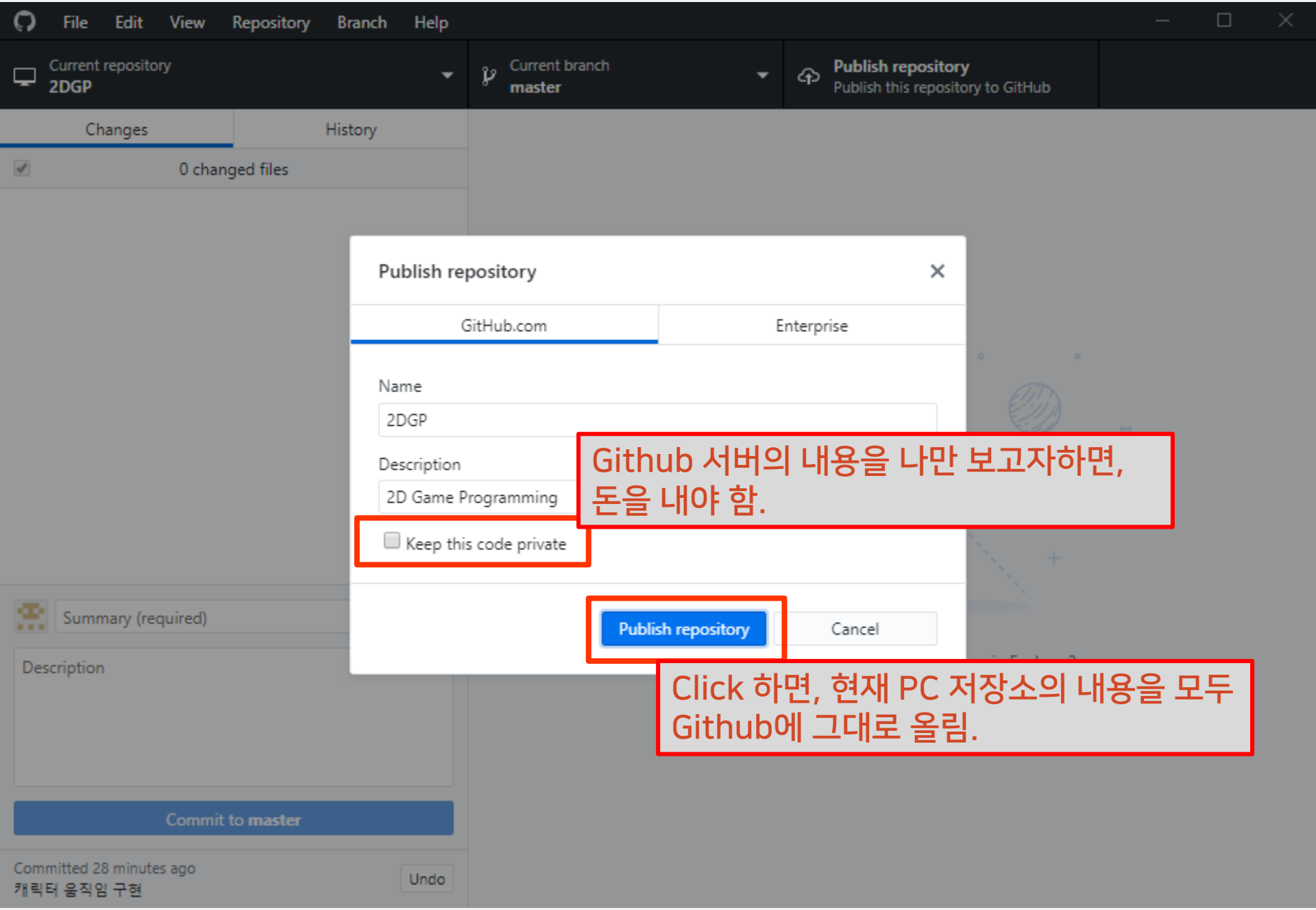
바뀐 내용을 구체적으로 작성. 개발 일기.
이것을 커밋 로그(Commit Log)라고 함.

커밋 로그를 작성한 후, 커밋 (Commit)을 할 수 있음.
커밋은 작업 PC 내에, 개발 기록(코드와 로그)을 남기게 됨.



커밋이 끝나면, 더 이상 기록할 내용이 없음.
현재 PC에는 더 이상 업데이트할 필요가 없음.
하지만, 서버는 ?

Github 서버에 현재 PC의 내용을 그대로 가져다 올려야 함.
이것을 “Push” 또는 “Publish”라고 함.



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2D Game Programming

Edit

Add topics

2 commits | 1 branch | 0 releases | 1 contributor

Branch: master | New pull request | Create new file | Upload files | Find file | Clone or download

daehyun-lee-dev 캐릭터 움직임 구현 ... Latest commit 14fd374 29 minutes ago

Lecture03	캐릭터 움직임 구현	29 minutes ago
.gitattributes	Initial commit	38 minutes ago
.gitignore	Initial commit	38 minutes ago
README.md	Initial commit	38 minutes ago

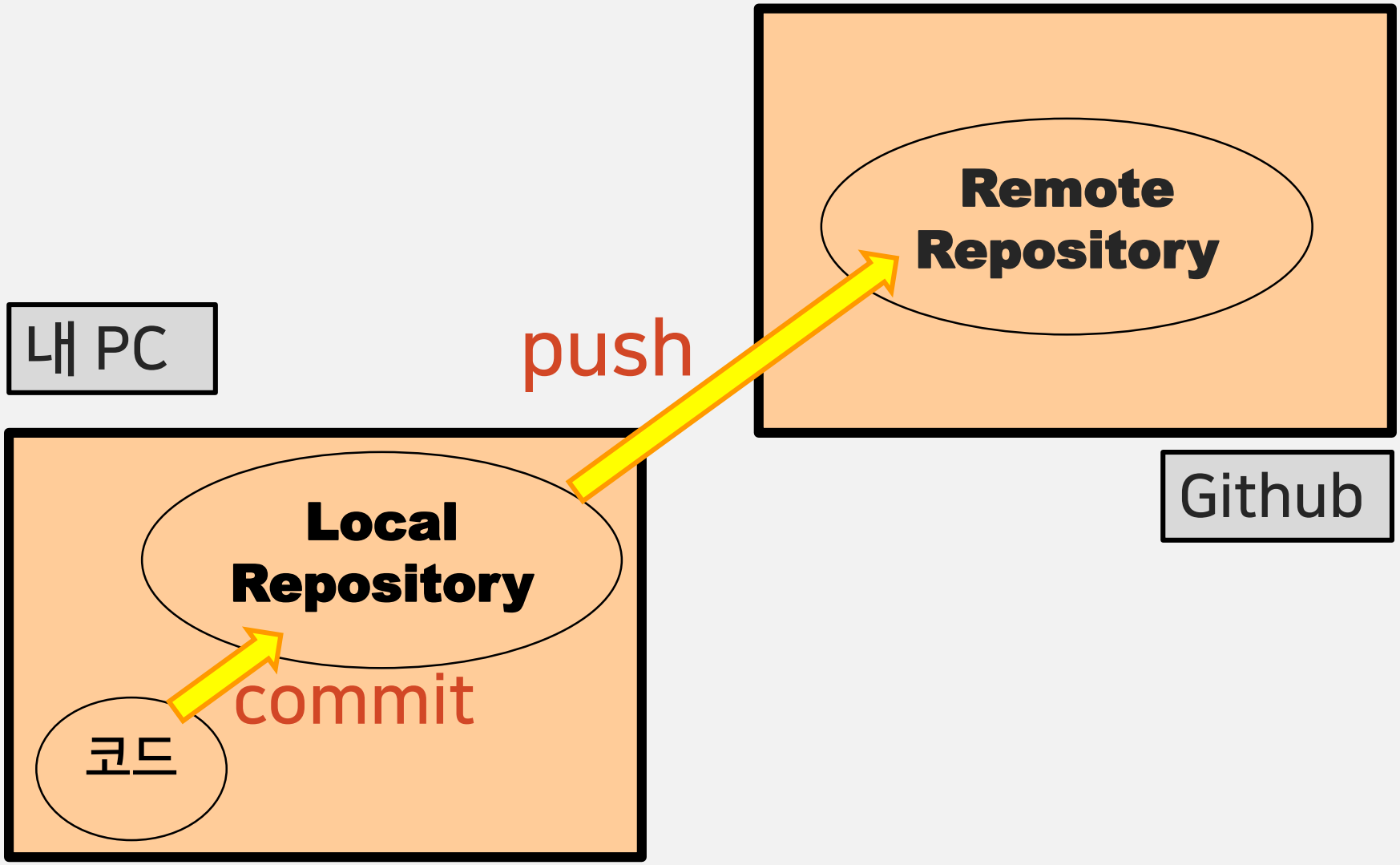
README.md

2DGP

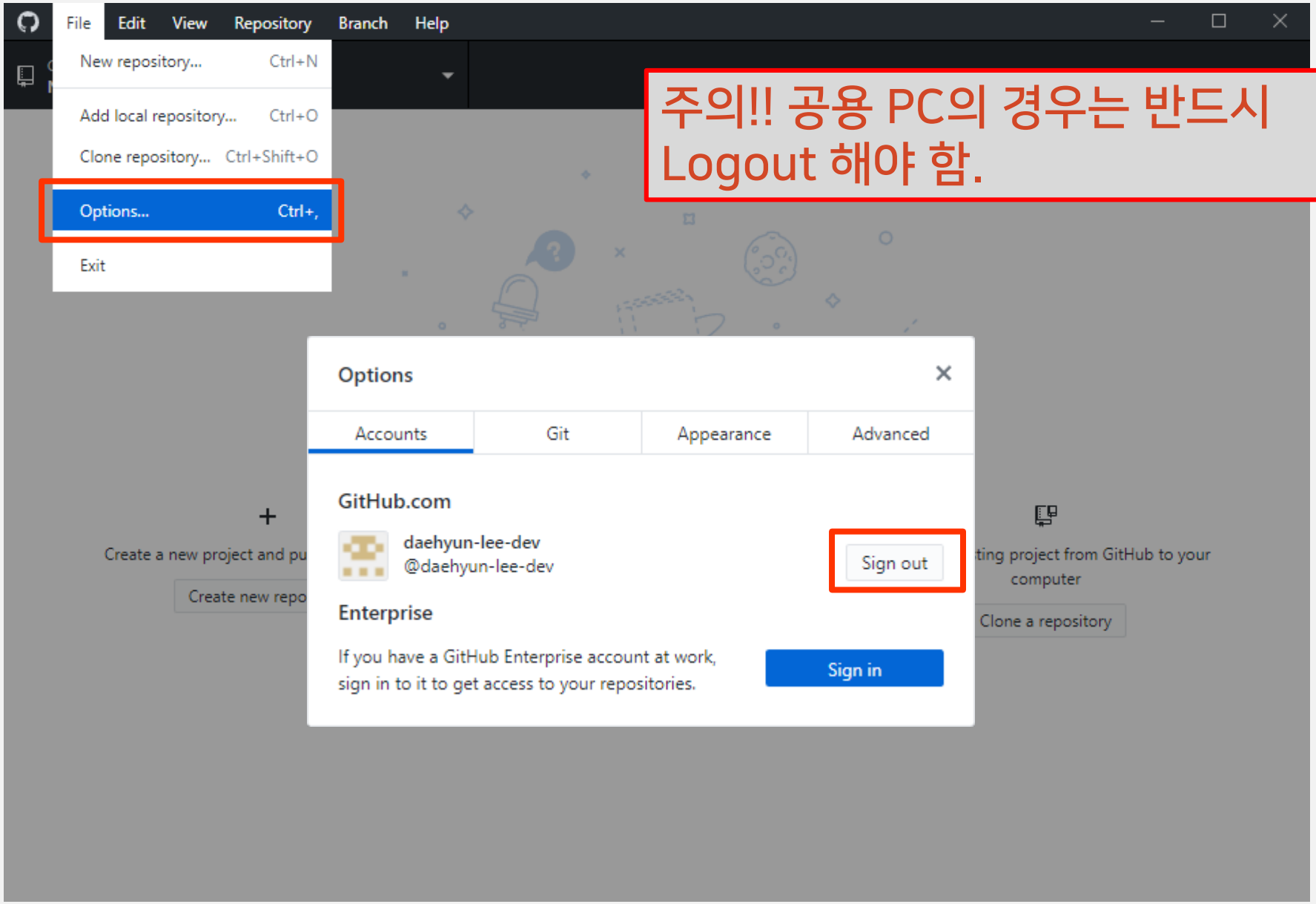
Github 서버 홈페이지에 접속하면, PC 저장소와 동일한 저장소가 만들어짐.

서버의 저장소를 “Remote Repository”라고 함.

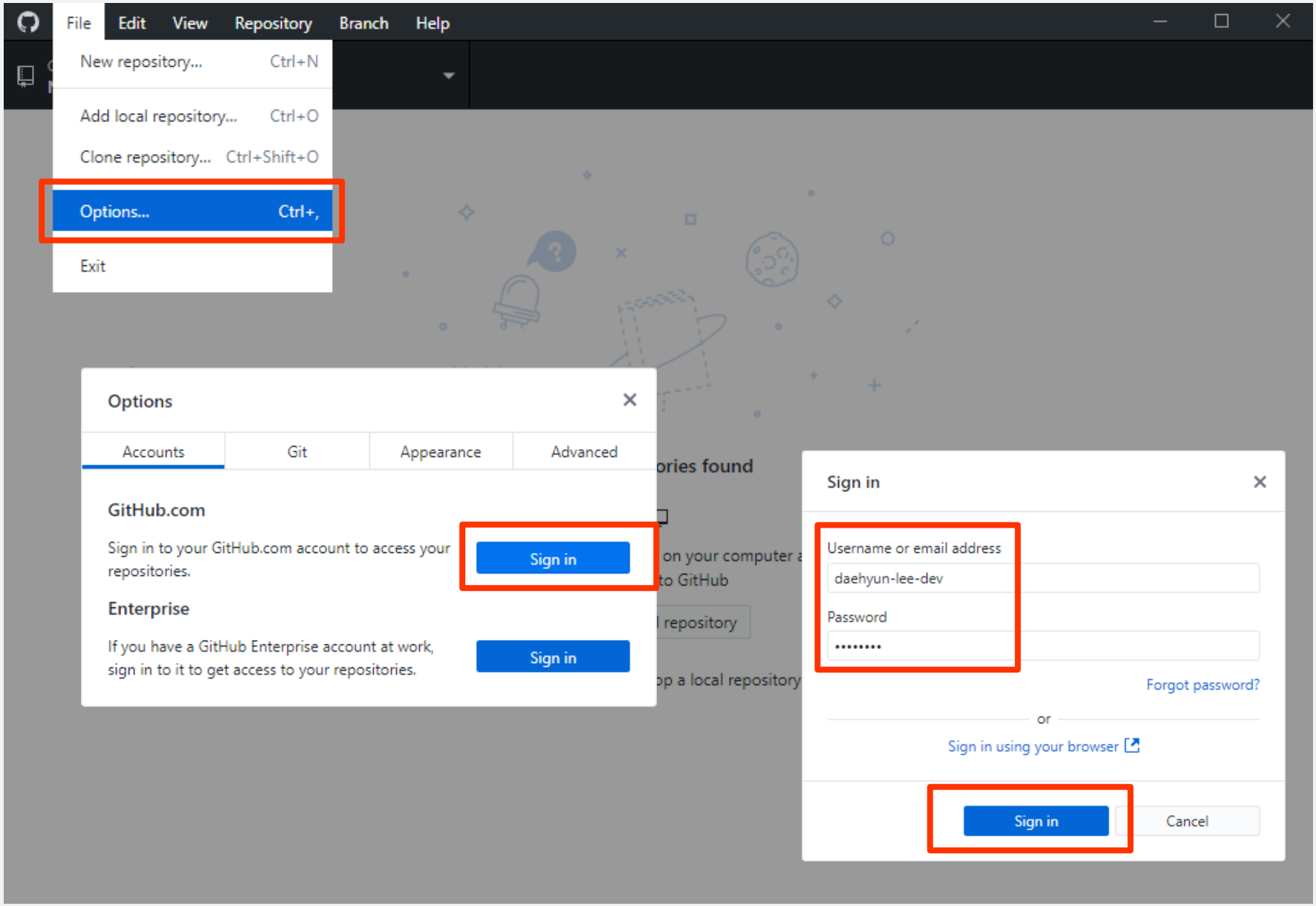
Commit 과 Push



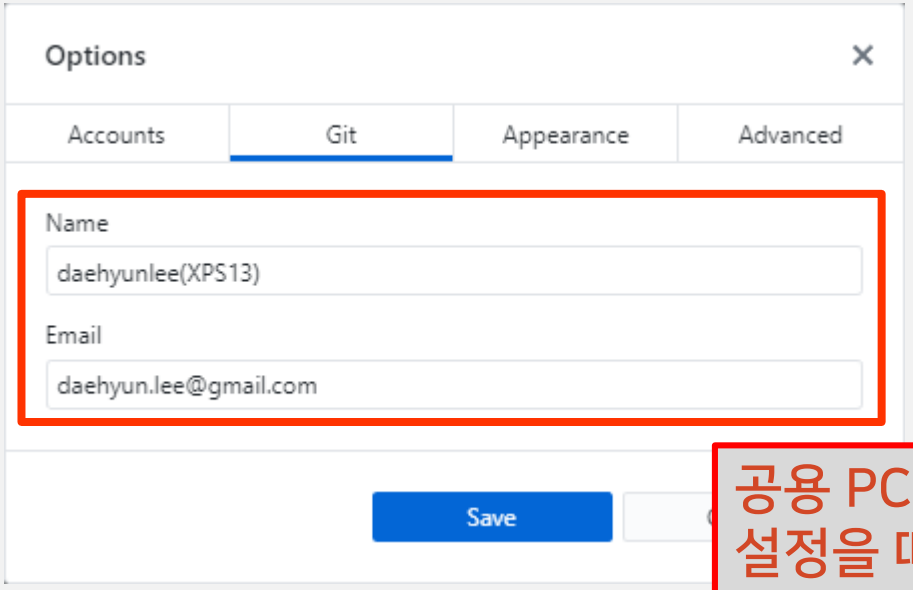
Github Desktop Logout



Github Desktop Login



공용 PC에서 Publish 할 때, Git 사용자 설정 재확인



공용 PC의 경우, 접속자(위치)는 git 설정을 따라 감. 반드시 자신의 정보도 그 때 그 때 재설정해야 함.