

# 전공별 AI 활용

## git 사용법



# 학습 목표

- Git을 설치할 수 있다.
- Git의 명령어를 이용하여 버전 관리를 할 수 있다.
- Github에 원격 저장소를 생성 할 수 있다.
- Github에 자신의 프로젝트의 버전 관리를 할 수 있다.

1. Git이란
2. Git의 명령어
3. Git의 설치
4. Github 사용
5. IDE를 이용한 git 사용

# 1. Git이란



- VCS(Version Control System)
- Git은 소스코드를 효과적으로 관리하기 위한 분산형 버전 관리 시스템
- 변경된 방식의 링크를 저장하는 형식
- 로컬과 원격 모두 지원
- 용량이 적고 속도가 빠르다.
- 프로그램의 협업, 통합, 빌드, 테스트, 배포등의 과정을 운영하는 DevOps의 기본이 되는 도구로 각광
  - 빠른속도
  - 단순한 구조
  - 비선형적인 개발(동시 다발적인 브랜치
  - 완벽한 분산

- Working Directory
  - 작업디렉토리, Git으로 관리할 프로그램 소스나 파일들이 위치
- Repository
  - git init 명령으로 생성되는 작업 디렉토리의 정보가 저장되는 곳
  - .git 폴더안에서 관리됨
- Staging Area(Index)
  - Working Directory에서 작업된 내용이 Repository로 저장되기 전에 보관되는 분비 영역, Index라고도 한다.
  - Git add -> Staging Area
  - Git commit -> Repository
- Stash
  - 마무리 되지 않은 파일들을 잠시 stack에 저장
- Branch
  - 버전 관리 단위. 지점, 분점이라 생각하면 됨
  - 초기 생성된 main에서 수개 ~ 수천개의 branch로 분기 가능

## 2. Git의 명령어



- `git init` : git 초기화, .git 하위 디렉토리 생성
- `git clone` : 기존 소스 코드 다운로드/복제
- `git fork` : 다른 계정의 repository를 내 계정으로 복사
- `git add` : commit에 변경 사항 추가
- `git commit -m "message"` : commit 생성, 실제 변경 확정
- `git status` : 파일 상태 확인
- `git branch` : branch 목록
- `git branch <branch>` : 새 branch 생성(local)
- `git checkout / git checkout -b <branch>` : branch 생성 및 이동
- `git remote add origin <remote branch>` : 원격 주소 등록
- `git push origin <remote branch>` : 원격 주소에 업로드
- `git pull` : 원격 저장소 변경 가져와서 병합(fetch, merge)
- `git checkout --<파일명>` : 로컬의 변경사항을 변경 전으로 되돌림
- `git fetch origin` : 원격에 저장된 git 프로젝트의 현 상태를 다운로드

# 3. Git의 설치

- Linux – Redhat 계열
  - sudo dnf install git
- Linux – Debian 계열
  - sudo apt install git
- Windows
  - <https://git-scm.com/downloads>

```
root@DKU:~  
[root@DKU ~]# dnf info git  
Last metadata expiration check: 2:13:35 ago on Mon 01 Nov 2021 10:48:34 AM UTC.  
Available Packages  
Name      : git  
Version   : 2.27.0  
Release   : 1.el8  
Architecture: x86_64  
Size      : 163 k  
Source    : git-2.27.0-1.el8.src.rpm  
Repository: appstream  
Summary   : Fast Version Control System  
URL       : https://git-scm.com/  
License   : GPLv2  
Description: Git is a fast, scalable, distributed revision control system with  
: an unusually rich command set that provides both high-level  
: operations and full access to internals.  
:  
: The git rpm installs common set of tools which are usually using  
: with small amount of dependencies. To install all git packages,  
: including tools for integrating with other SCMs, install the  
: git-all meta-package.  
  
[root@DKU ~]# dnf install git  
Last metadata expiration check: 2:13:50 ago on Mon 01 Nov 2021 10:48:34 AM UTC.  
Dependencies resolved.  
  
=====
```

Package	Arch	Version	Repo	Size
Installing:				
git	x86_64	2.27.0-1.el8	appstream	163 k
Installing dependencies:				
git-core	x86_64	2.27.0-1.el8	appstream	5.7 M
git-core-doc	noarch	2.27.0-1.el8	appstream	2.5 M
perl-Carp	noarch	1.42-396.el8	baseos	29 k
perl-Data-Dumper	x86_64	2.167-399.el8	baseos	57 k
perl-Digest	noarch	1.17-395.el8	appstream	26 k



The screenshot shows the Git website with the following sections:

- About**: --local-branching-on-the-cheap
- Documentation**
- Downloads**: Links to macOS, Windows, and Linux/Unix download pages. A large monitor graphic displays the latest source release **2.33.1** with a "Download for Windows" button.
- Older releases**: Available and the Git source repository is on GitHub.
- GUI Clients**: Git comes with built-in GUI tools (git-gui, gitk), but there are several third-party tools for users looking for a platform-specific experience. Link: View GUI Clients -->
- Logos**: Various Git logos in PNG (bitmap) and EPS (vector) formats are available for use in online and print projects. Link: View Logos -->
- Git via Git**: If you already have Git installed, you can get the latest development version via Git itself. Command: git clone https://github.com/git/git. You can also always browse the current contents of the git repository using the web interface.

### 3. Git의 설치 - Windows



#### Downloading Git



##### Your download is starting...

You are downloading the latest (2.33.1) 64-bit version of Git for Windows. This is the most recent maintained build. It was released 19 days ago, on 2021-10-13.

[Click here to download manually, if your download hasn't started.](#)

##### Other Git for Windows downloads

Git for Windows Setup

~~32-bit Git for Windows Setup.~~

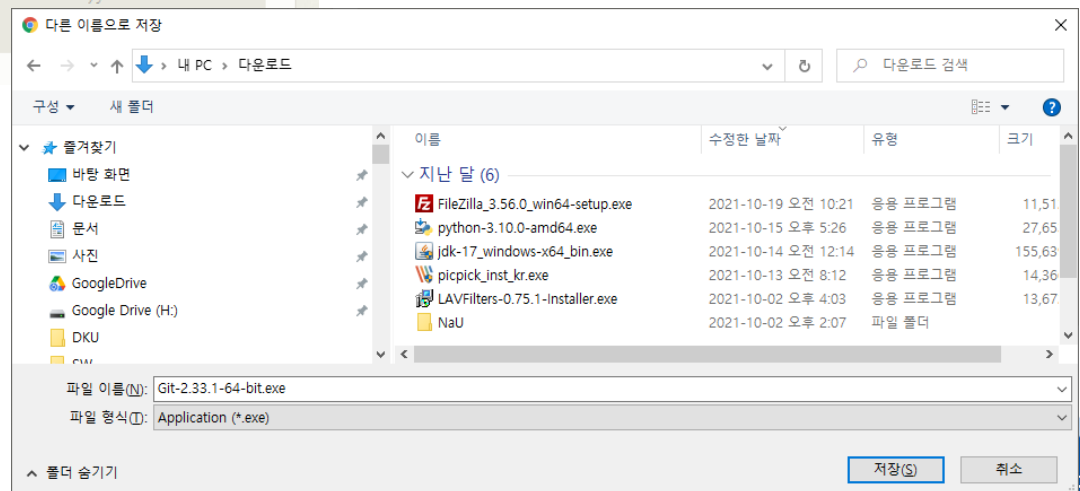
64-bit Git for Windows Setup.

~~Git for Windows Portable ("thumb drive edition")~~

~~32-bit Git for Windows Portable.~~

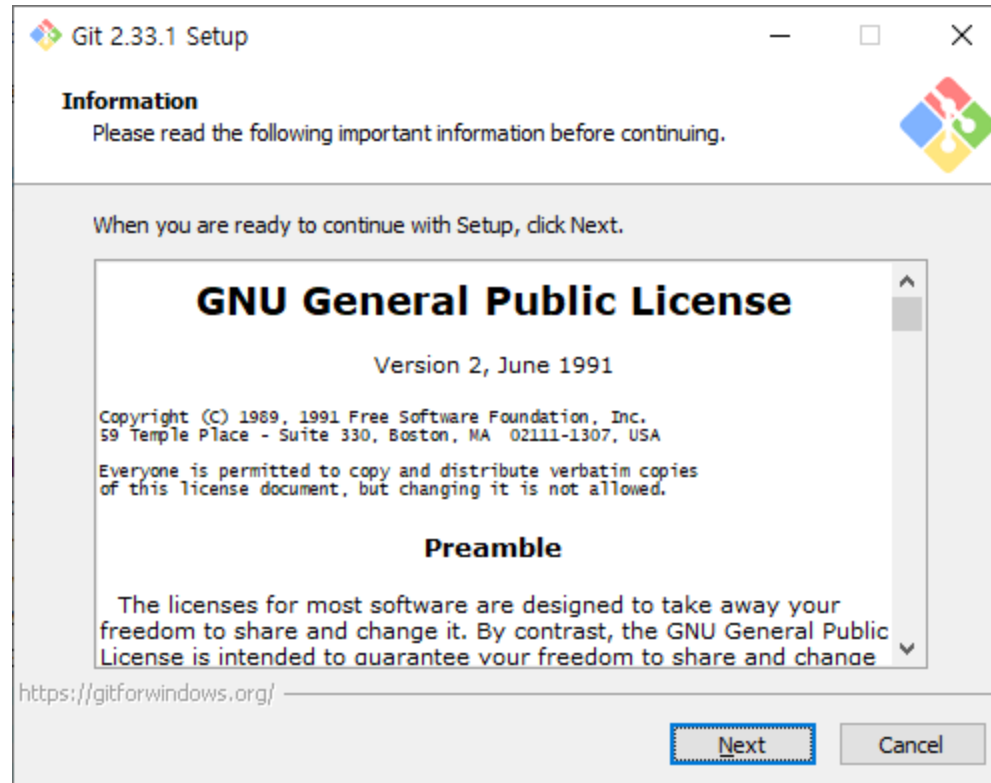
64-bit Git for Windows Portable.

The current source code release is version 2.33.1. If you want the newer version, you can build it from [the source code](#).

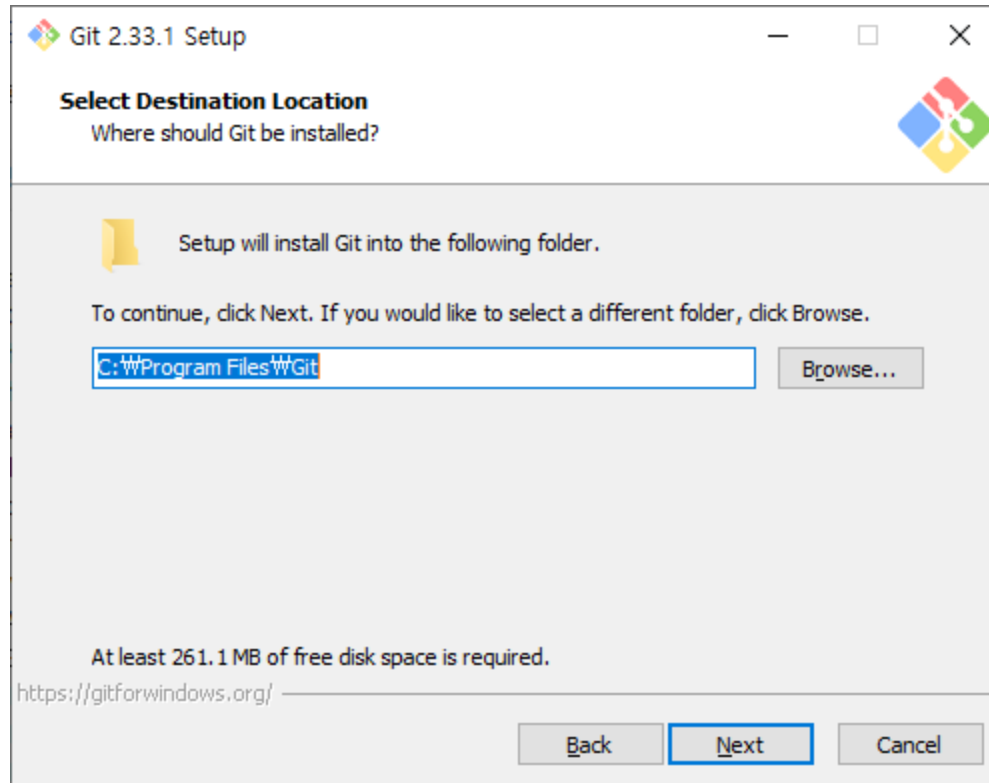




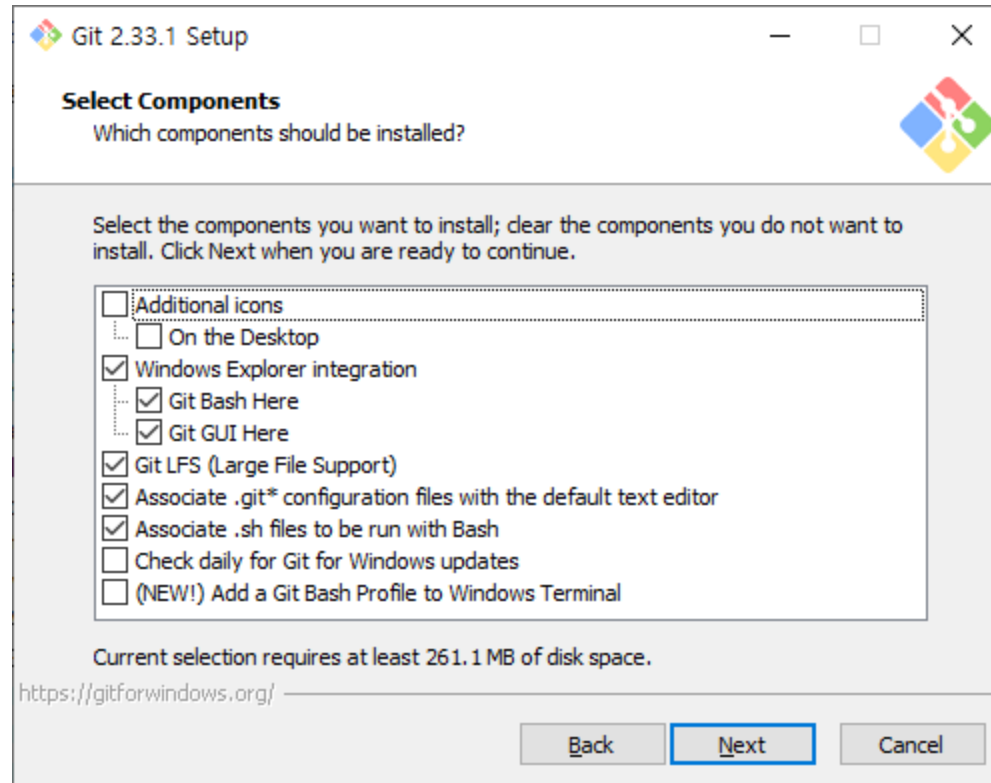
### 3. Git의 설치 - windows



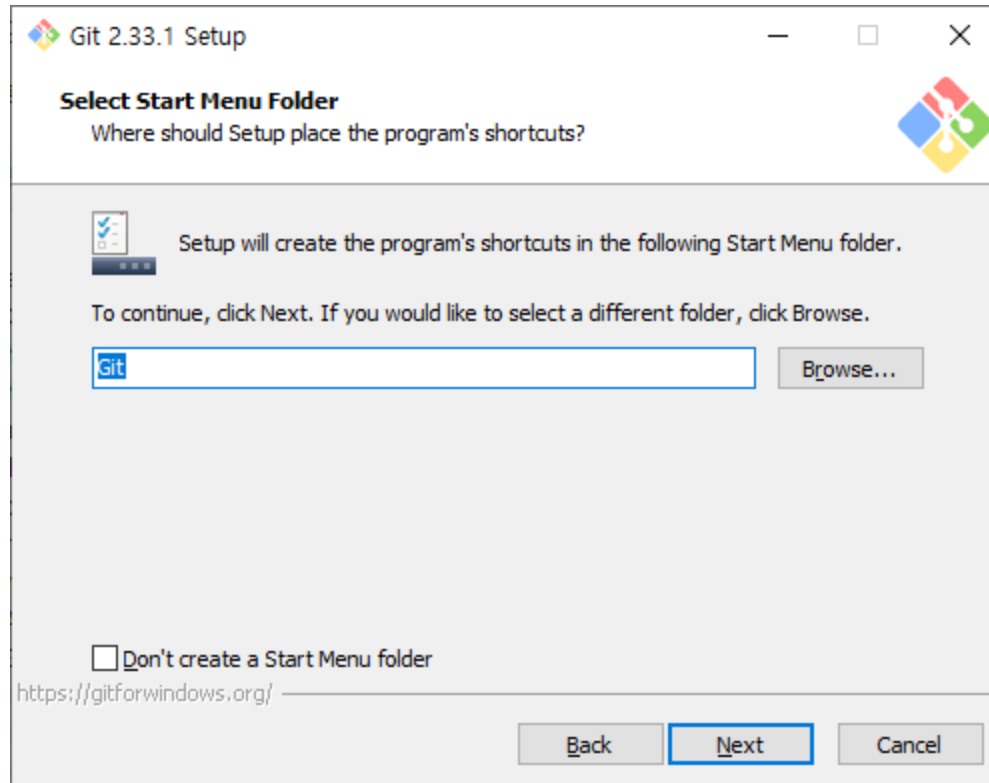
### 3. Git의 설치 - windows



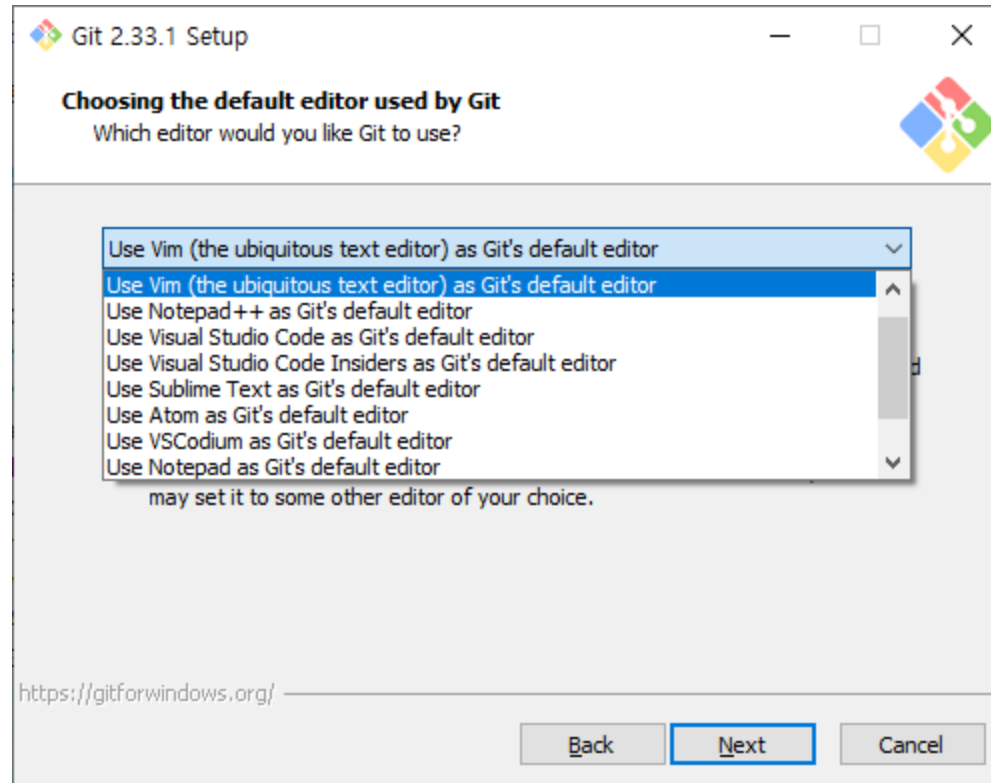
### 3. Git의 설치 - windows



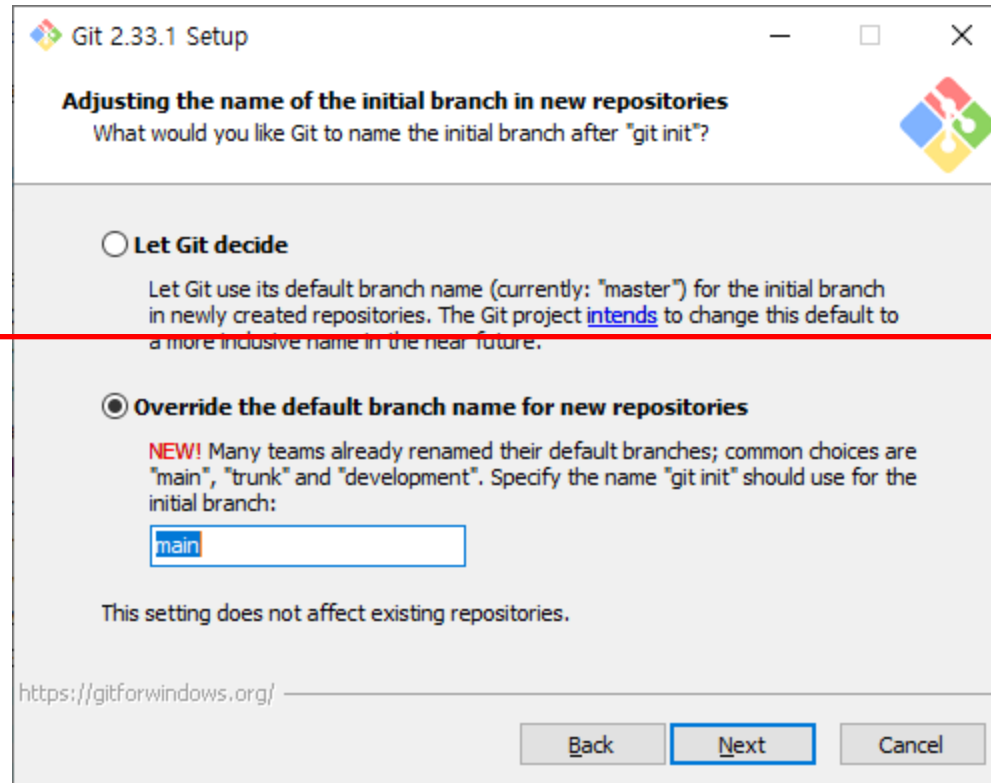
### 3. Git의 설치 - windows



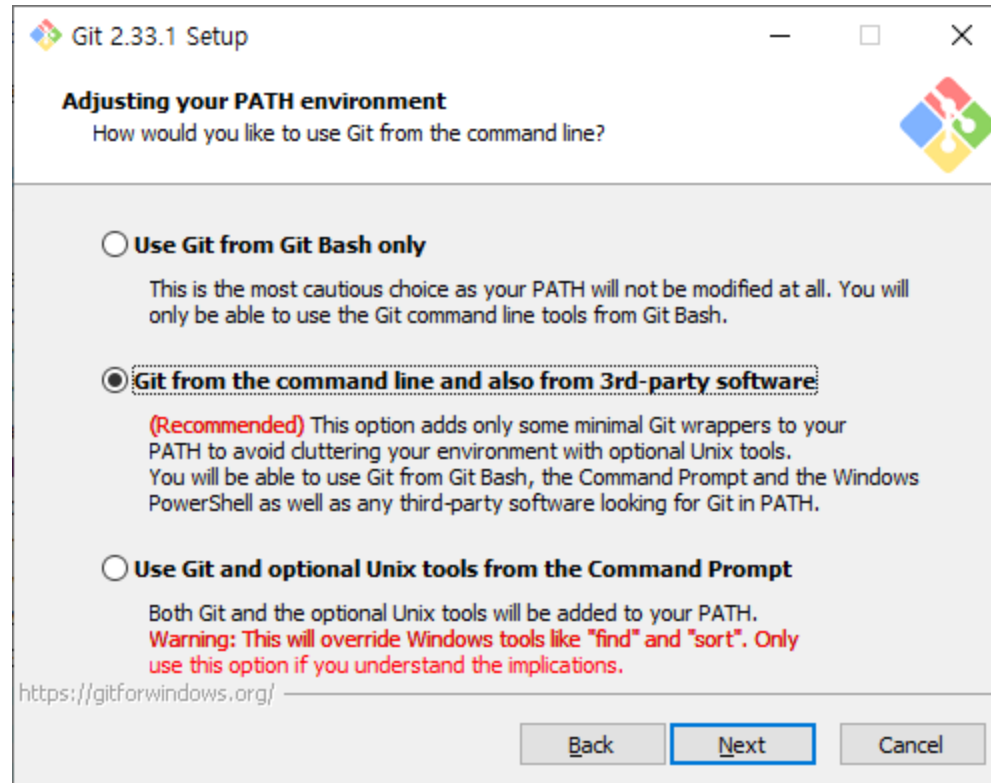
### 3. Git의 설치 - windows



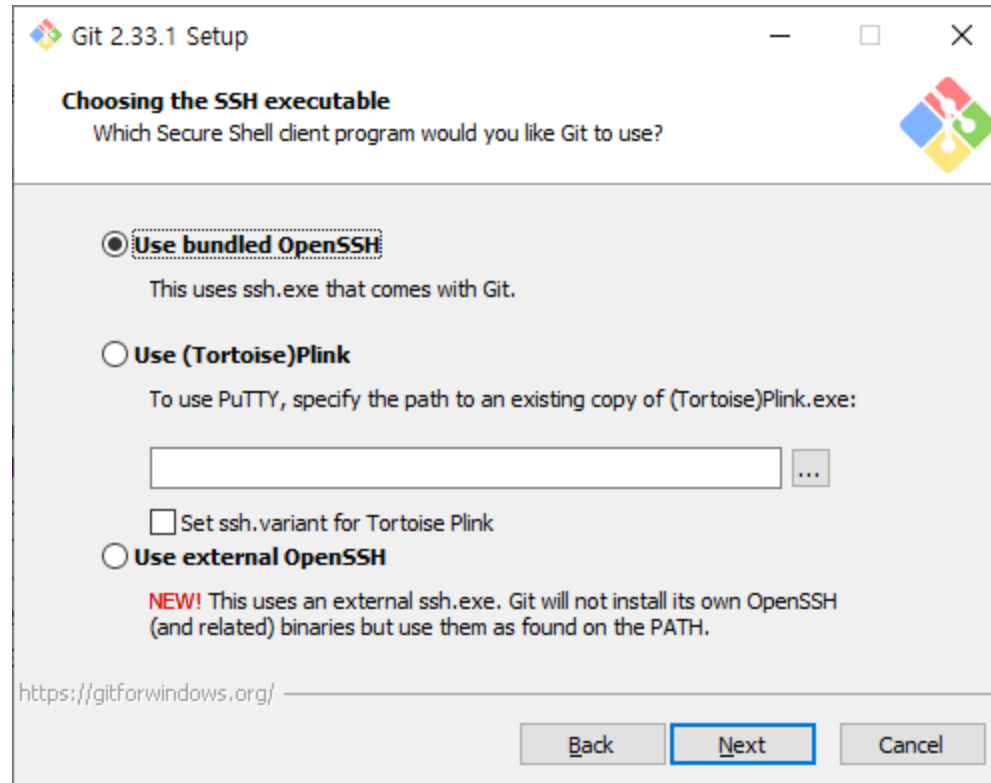
### 3. Git의 설치 - windows



### 3. Git의 설치 - windows

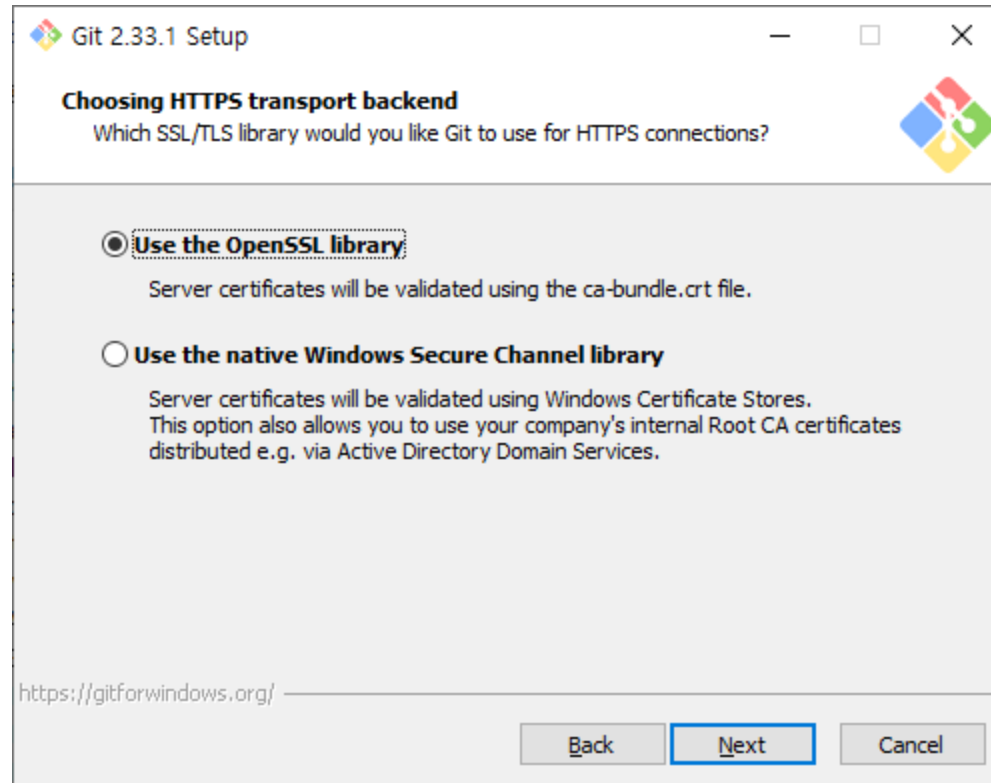


### 3. Git의 설치 - windows

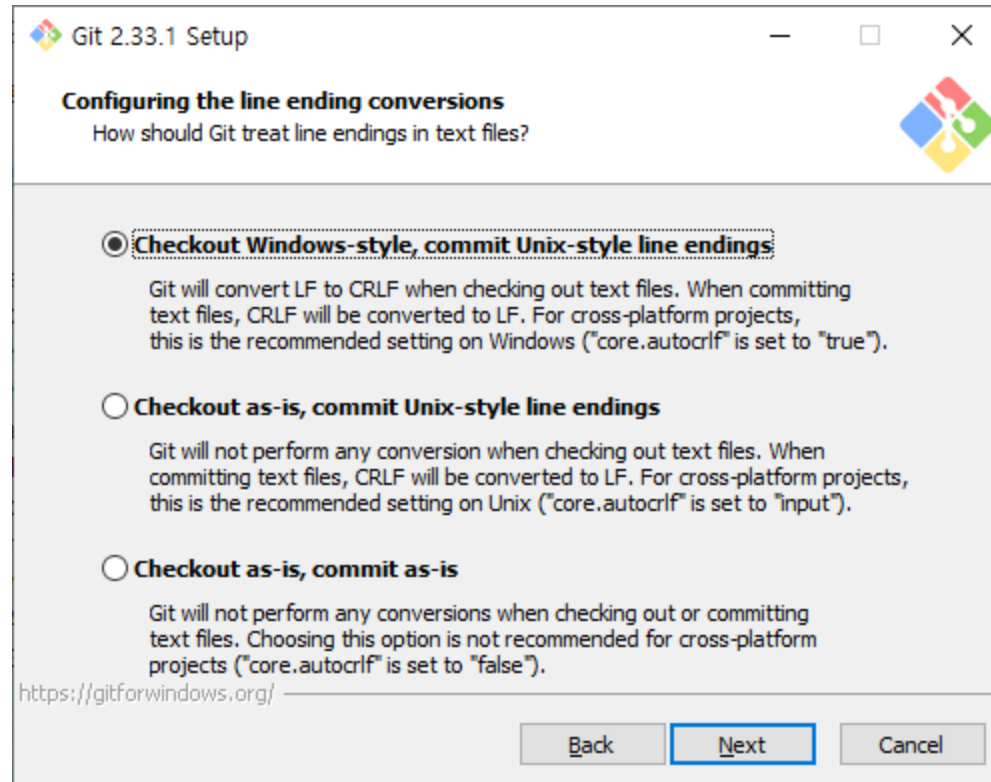




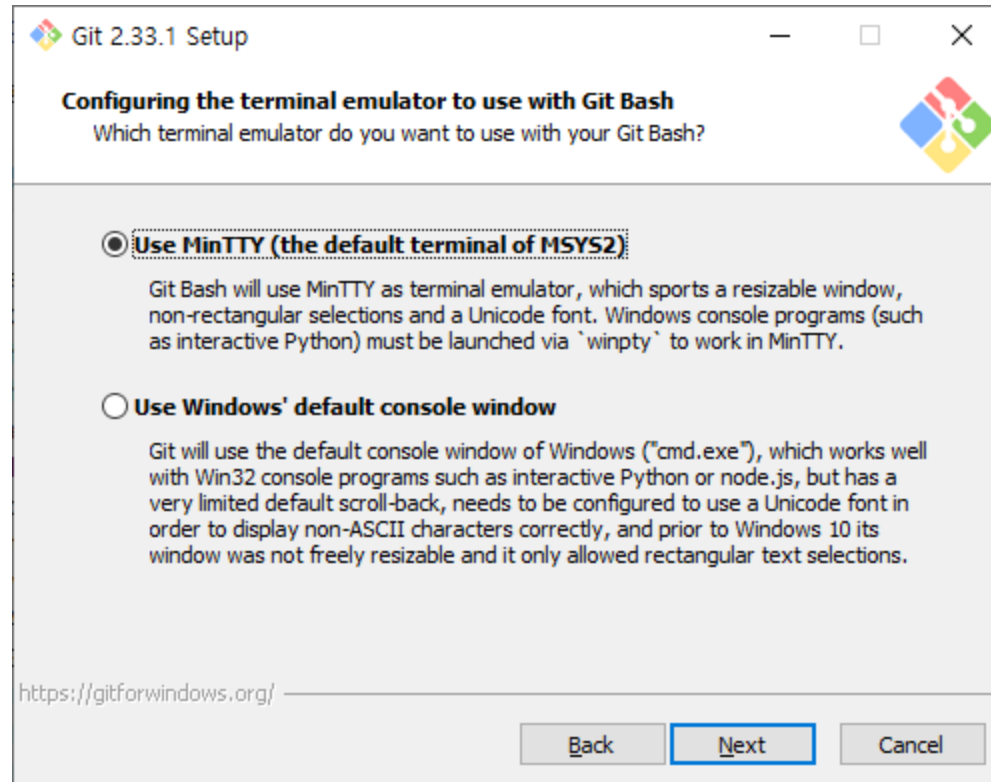
### 3. Git의 설치 - windows



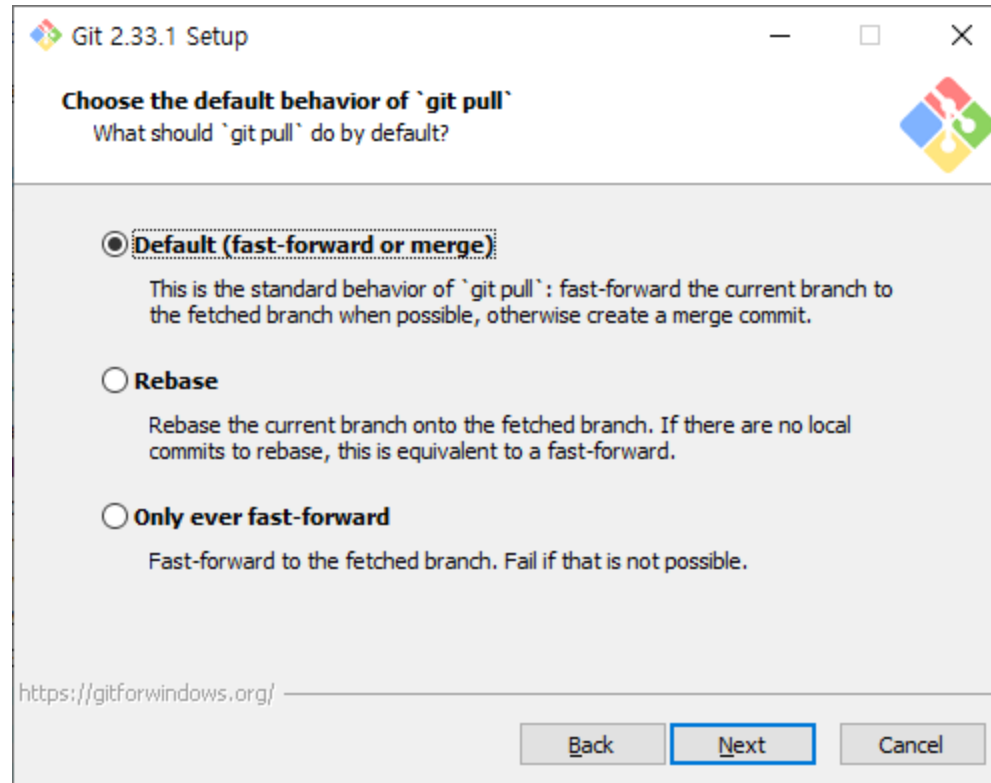
### 3. Git의 설치 - windows



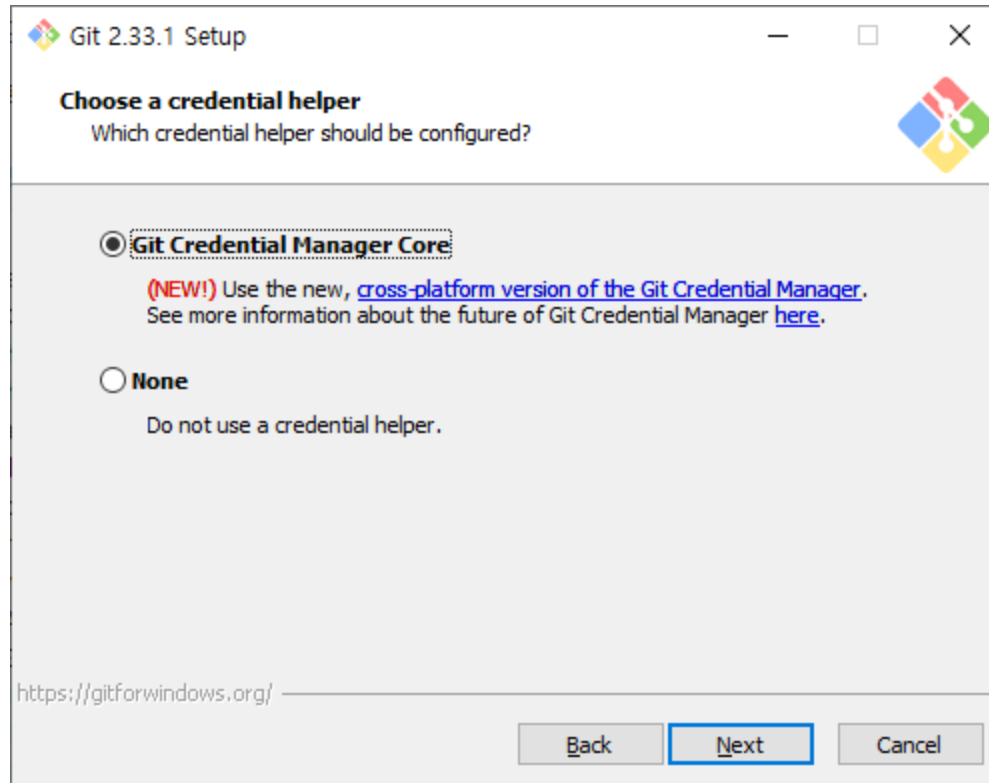
### 3. Git의 설치 - windows



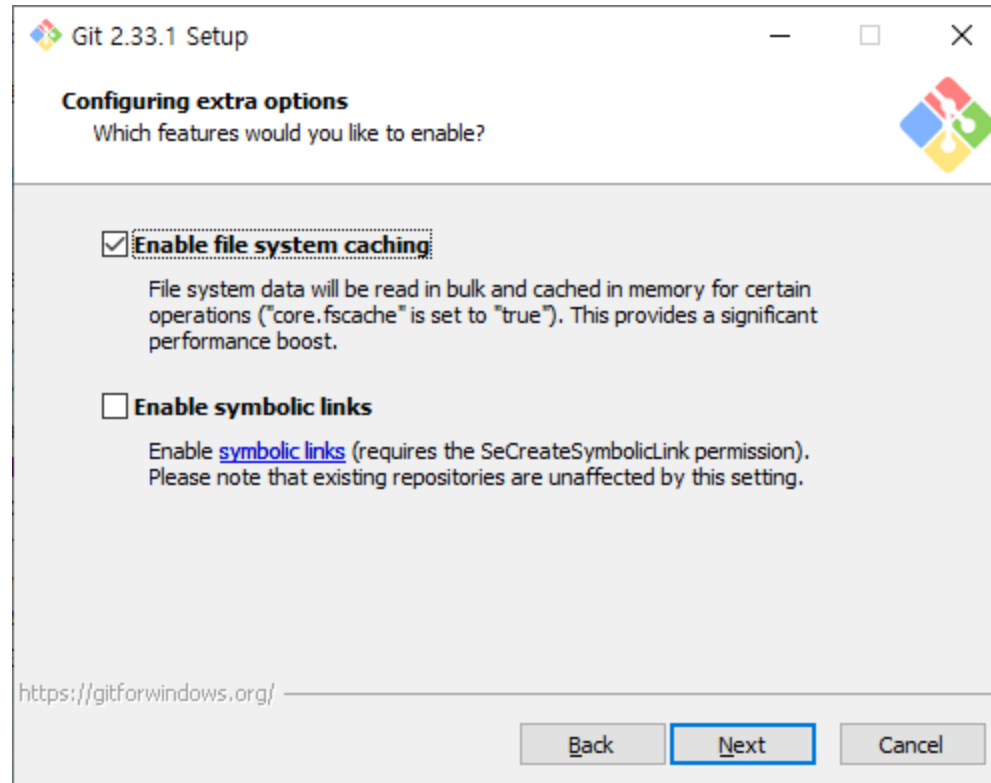
### 3. Git의 설치 - windows



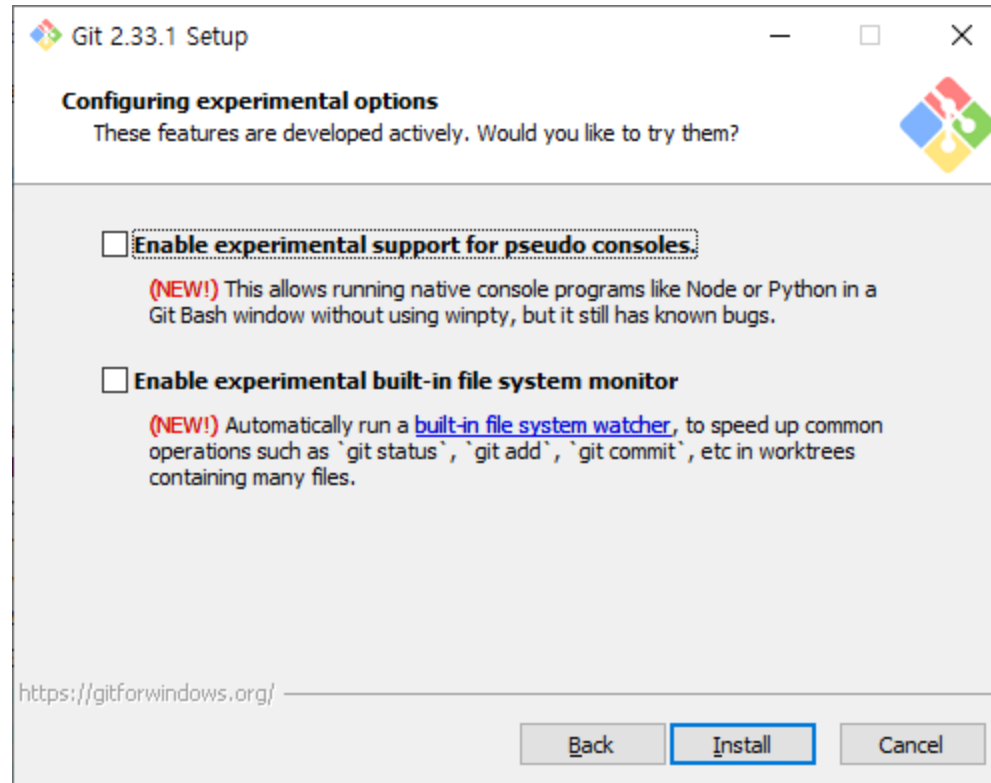
### 3. Git의 설치 - windows



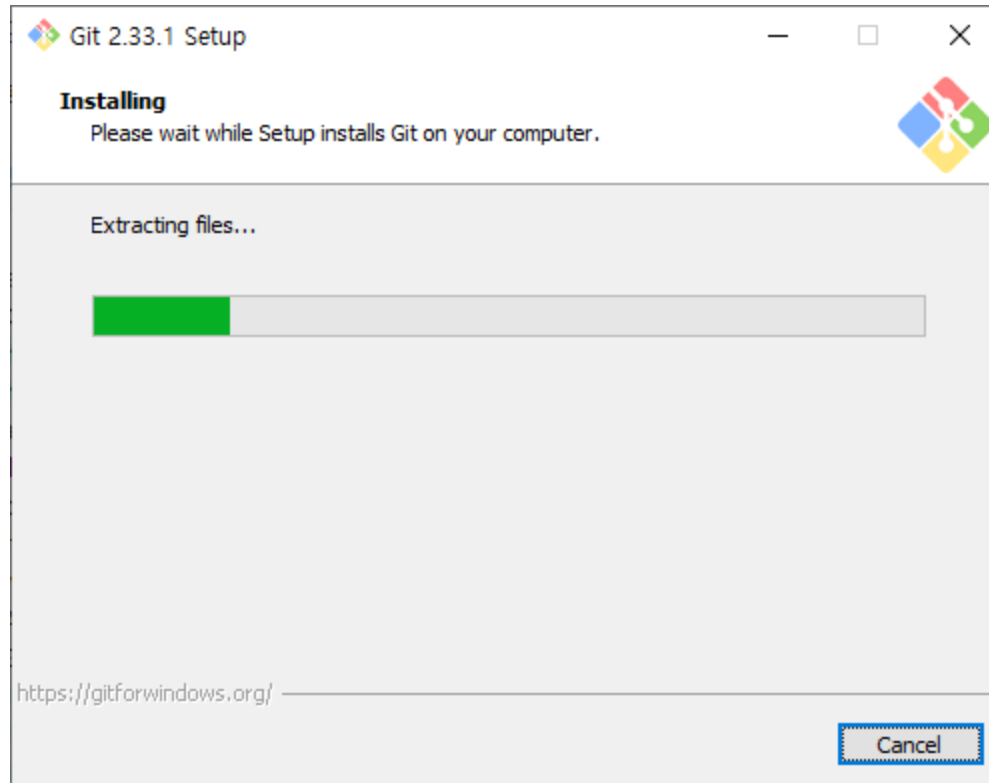
### 3. Git의 설치 - windows



### 3. Git의 설치 - windows

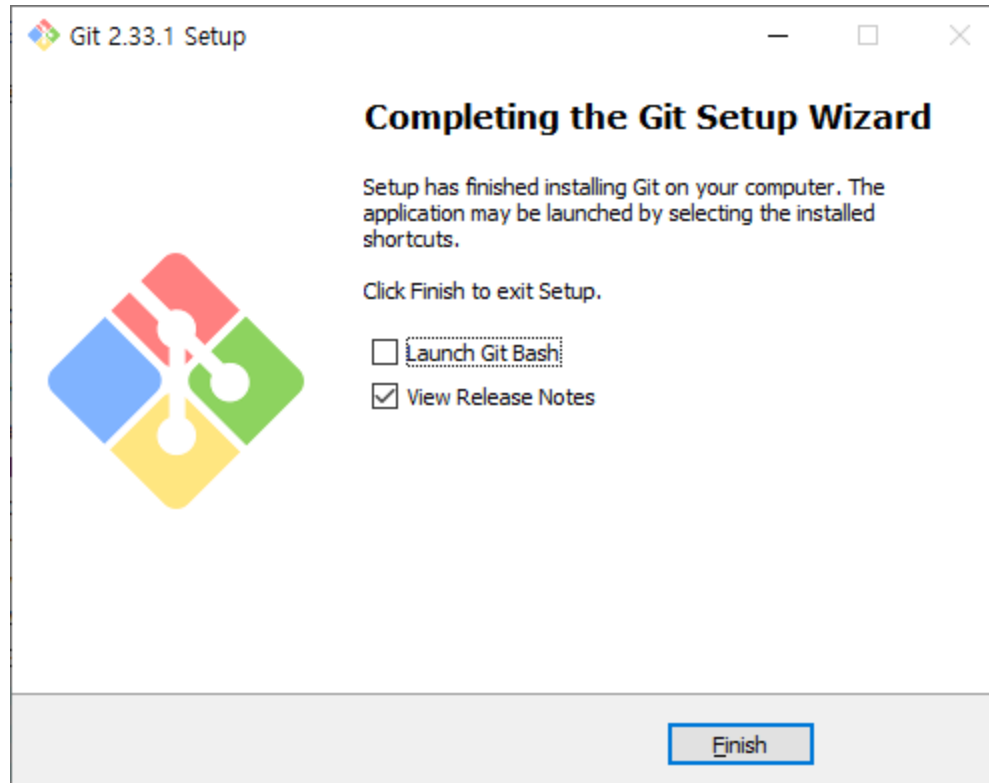


### 3. Git의 설치 - windows





### 3. Git의 설치 - windows



### 3. Git의 설치 - windows



```
명령 프롬프트
Microsoft Windows [Version 10.0.19043.1288]
(c) Microsoft Corporation. All rights reserved.

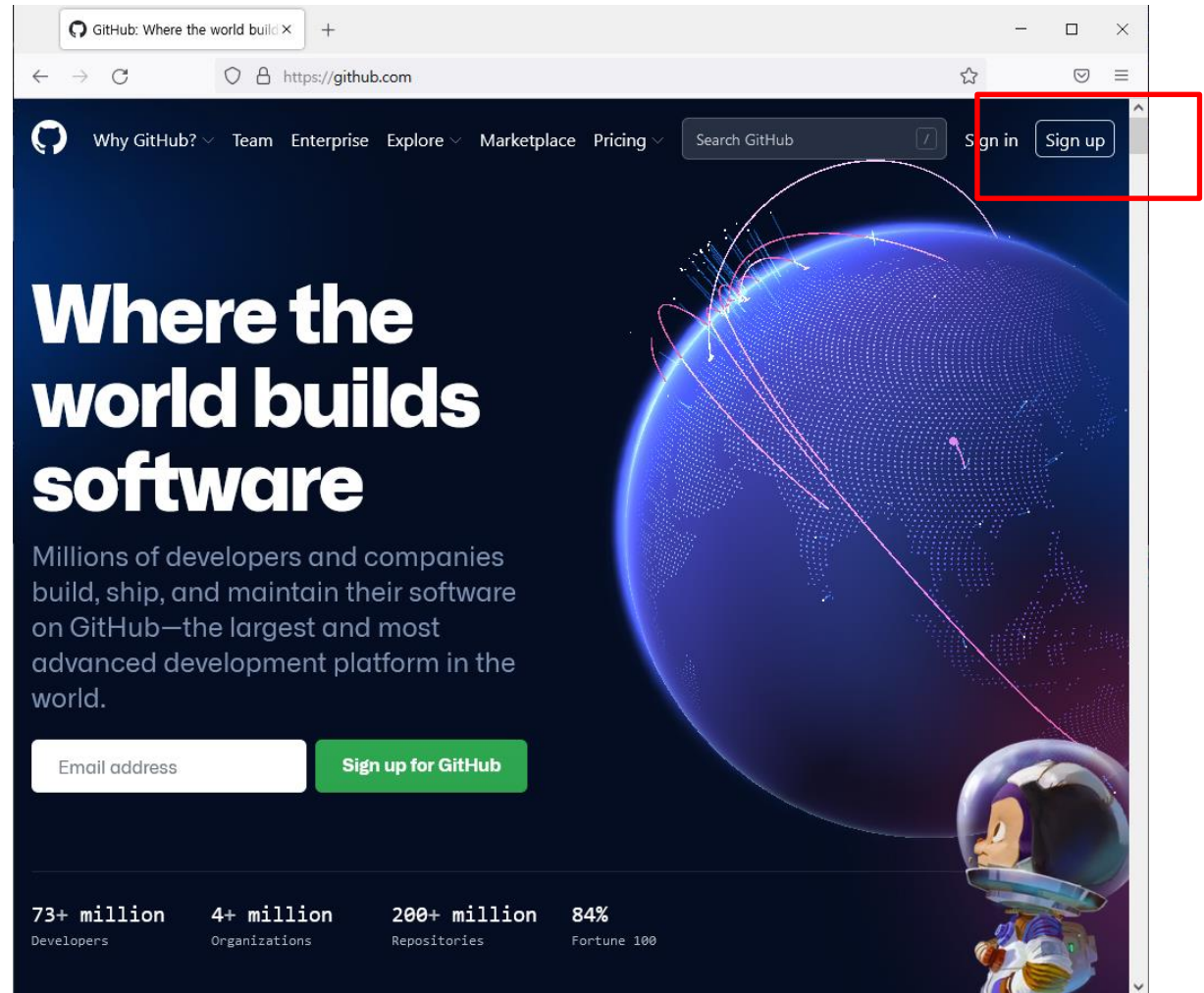
C:\Users\BBOK>git --version
git version 2.33.1.windows.1

C:\Users\BBOK>_
```

## 4. Github 사용



- github.com



## 4. Github 사용 - 가입



Join GitHub · GitHub

← → ↻ 🔒 🔑 🔗 https://github.com/signup?ref\_cta=Sign+up&ref\_loc=header+logged+out&ref\_page=%2F&... ☆

🐙 Already have an account? [Sign in](#) →

Welcome to GitHub!  
Let's begin the adventure

**Enter your email**  
✓ bokmoon.jung@gmail.com

**Create a password**  
✓ ●●●●●●●●

**Enter a username**  
✗ bokmoon

Would you like to receive product updates and announcements via email?  
Type "y" for yes or "n" for no  
→ n

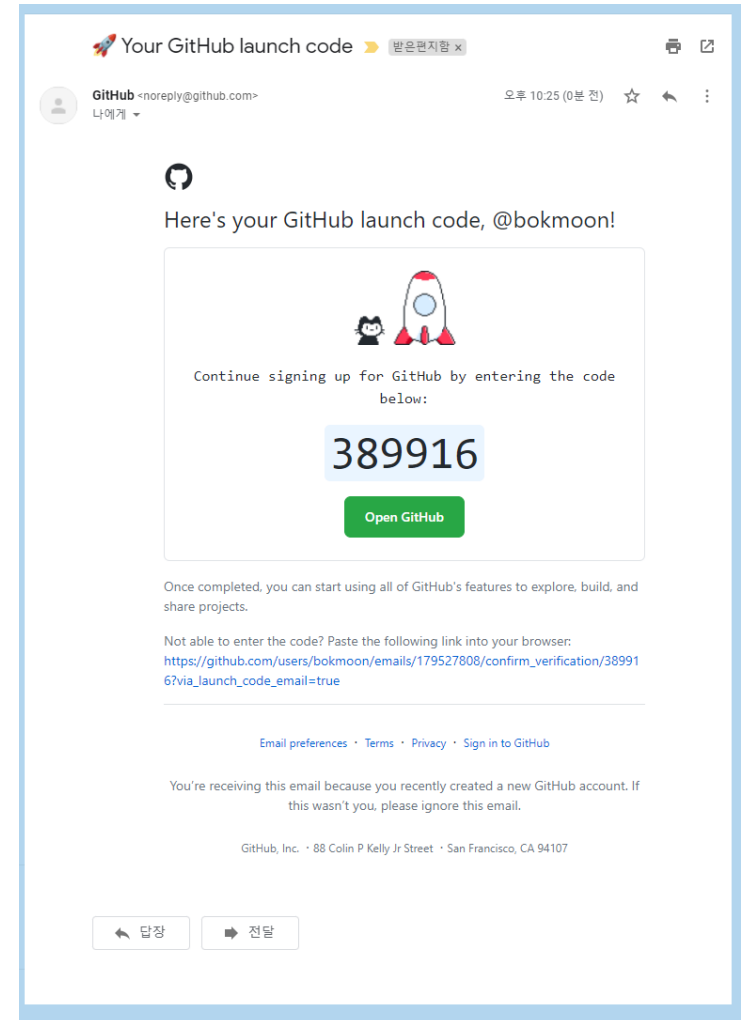
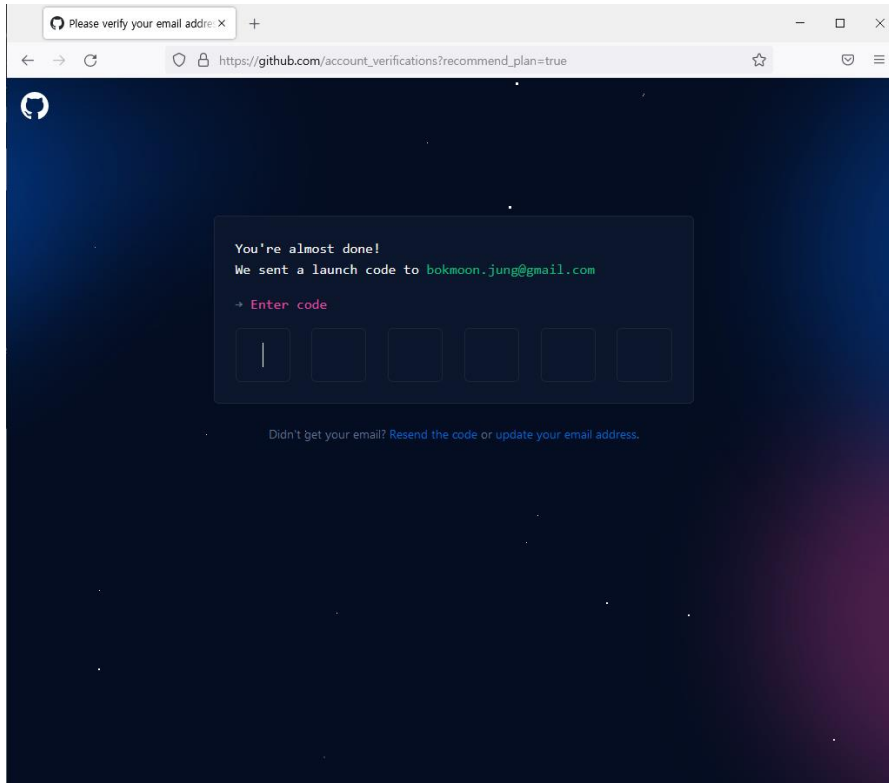
[Continue](#)

By creating an account, you agree to the [Terms of Service](#). For more information about GitHub's privacy practices, see the [GitHub Privacy Statement](#). We'll occasionally send you account-related emails.

## 4. Github 사용 - 가입

A screenshot of a web browser window showing the GitHub sign-up page. The browser's address bar displays the URL: https://github.com/signup?ref\_cta=Sign+up&ref\_loc=header+logged+out&ref\_page=%2F&... The page has a dark blue background. It shows the following steps completed: 1. 'Enter a username' with a green checkmark and the text 'bokmoon'. 2. 'Would you like to receive product updates and announcements via email?' with a green checkmark and the text 'n'. 3. 'Verify your account' with a large green checkmark in the center of a white box. At the bottom, there is a white button labeled 'Create account'.

# 4. Github 사용 - 가입



## 4. Github 사용 - 가입



The screenshot shows the GitHub join/welcome page in a web browser. The browser's address bar shows the URL <https://github.com/join/welcome>. The page has a dark blue background with the GitHub logo in the top left. On the left side, there is a large 'Welcome to GitHub' text in light blue, with a smaller 'We are glad you're here.' below it. On the right side, there is a white card with a form. The form has two sections: 'How many team members will be working with you?' and 'Are you a student or teacher?'. The first section has six buttons: 'Just me', '2 - 5', '5 - 10', '10 - 20', '20 - 50', and '50+'. The second section has two buttons: 'Student' and 'Teacher'. Below these buttons is a large blue 'Continue' button. At the bottom of the page, there is a link that says 'Skip personalization'.

How many team members will be working with you?

This will help us guide you to the tools that are best suited for your projects.

Just me 2 - 5 5 - 10

10 - 20 20 - 50 50+

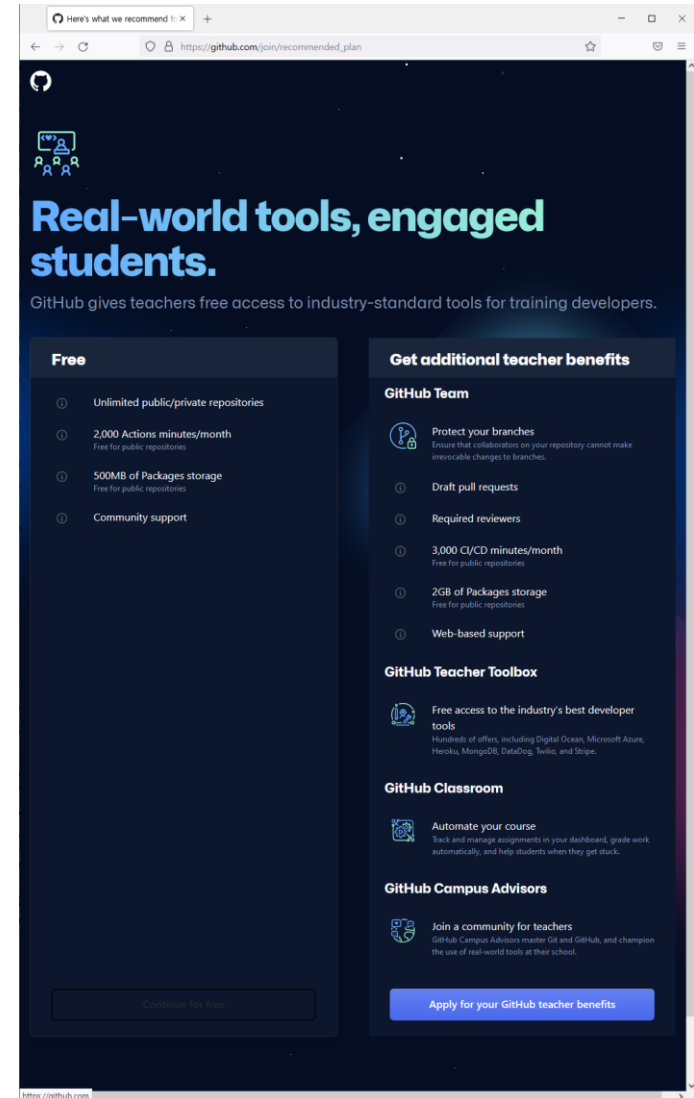
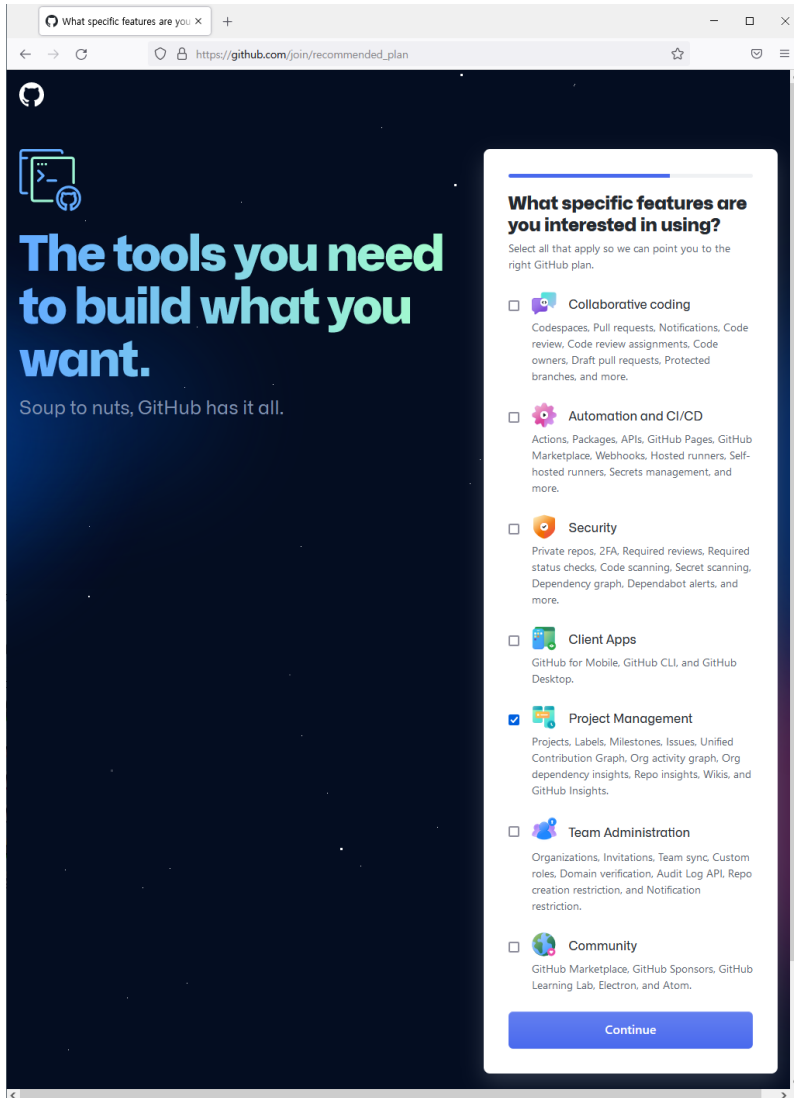
Are you a student or teacher?

Student Teacher

Continue

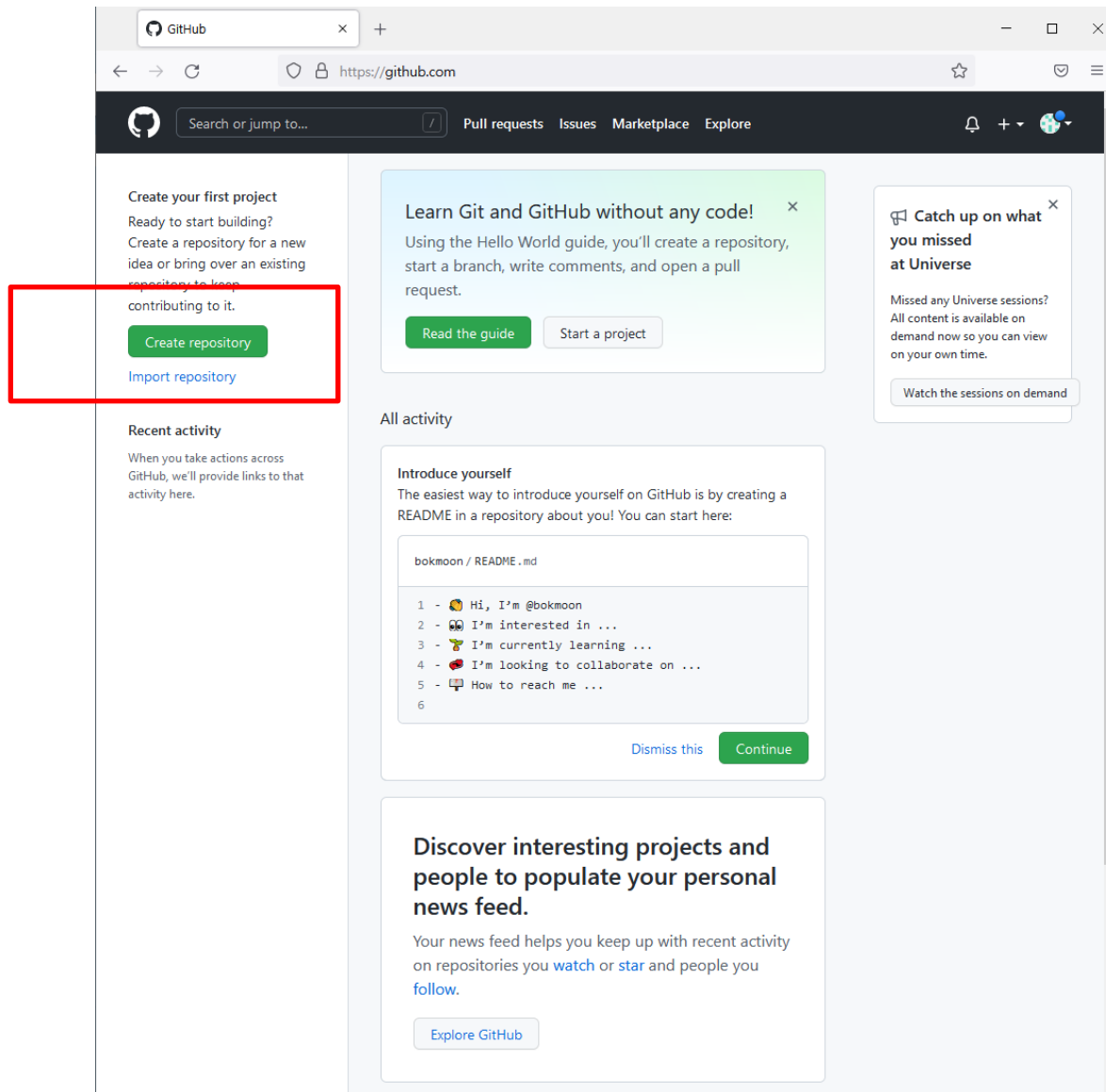
Skip personalization

# 4. Github 사용 - 가입





## 4. Github 사용 - 가입



# 4. Github 사용 – create repository



Create a New Repository

https://github.com/new

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 \*

bokmoon aitest ✓

Great repository names are short, unique, and memorable. Need inspiration? How about [upgraded-chainsaw](#)?

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.](#)

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

Create repository

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# 4. Github 사용 – create repository



The screenshot shows the GitHub web interface for a new repository named 'aitest' by user 'bokmoon'. The browser address bar shows 'https://github.com/bokmoon/aitest'. The repository is currently public, with 1 watch, 0 stars, and 0 forks. The 'Code' tab is selected, showing instructions for setting up the repository. The instructions include a 'Quick setup' section with a 'Set up in Desktop' button and a URL 'https://github.com/bokmoon/aitest.git'. Below this, there are two sections for creating a new repository or pushing an existing one from the command line, each with a copy icon. The first section shows the following commands: 

```
echo "# aitest" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin https://github.com/bokmoon/aitest.git
git push -u origin main
```

 The second section shows the following commands: 

```
git remote add origin https://github.com/bokmoon/aitest.git
git branch -M main
git push -u origin main
```

 At the bottom, there is a section for importing code from another repository, with a note that you can initialize the repository with code from a Subversion, Mercurial, or TFS project, and an 'Import code' button. A 'ProTip!' at the bottom suggests using the URL for this page when adding GitHub as a remote.

bokmoon/aitest

Search or jump to... Pull requests Issues Marketplace Explore

bokmoon / aitest Public

Unwatch 1 Star 0 Fork 0

<> Code Issues Pull requests Actions Projects Wiki Security Insights

**Quick setup — if you've done this kind of thing before**

Set up in Desktop or HTTPS SSH `https://github.com/bokmoon/aitest.git`

Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).

**...or create a new repository on the command line**

```
echo "# aitest" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin https://github.com/bokmoon/aitest.git
git push -u origin main
```

**...or push an existing repository from the command line**

```
git remote add origin https://github.com/bokmoon/aitest.git
git branch -M main
git push -u origin main
```

**...or import code from another repository**

You can initialize this repository with code from a Subversion, Mercurial, or TFS project.

Import code

**ProTip!** Use the URL for this page when adding GitHub as a remote.

## 4. Github 사용 – create repository



...or create a new repository on the command line

```
echo "# aitest" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin https://github.com/bokmoon/aitest.git
git push -u origin main
```

...or push an existing repository from the command line

```
git remote add origin https://github.com/bokmoon/aitest.git
git branch -M main
git push -u origin main
```

## 4. Github사용 - git init



```
명령 프롬프트
C:\Users>cd ..
C:\>cd DKUAI
C:\DKUAI>dir
C 드라이브의 볼륨: OS
볼륨 일련 번호: 92BE-9589

C:\DKUAI 디렉터리

2021-11-01 오후 10:38 <DIR> .
2021-11-01 오후 10:38 <DIR> ..
                0개 파일                0 바이트
                2개 디렉터리 100,174,471,168 바이트 남음

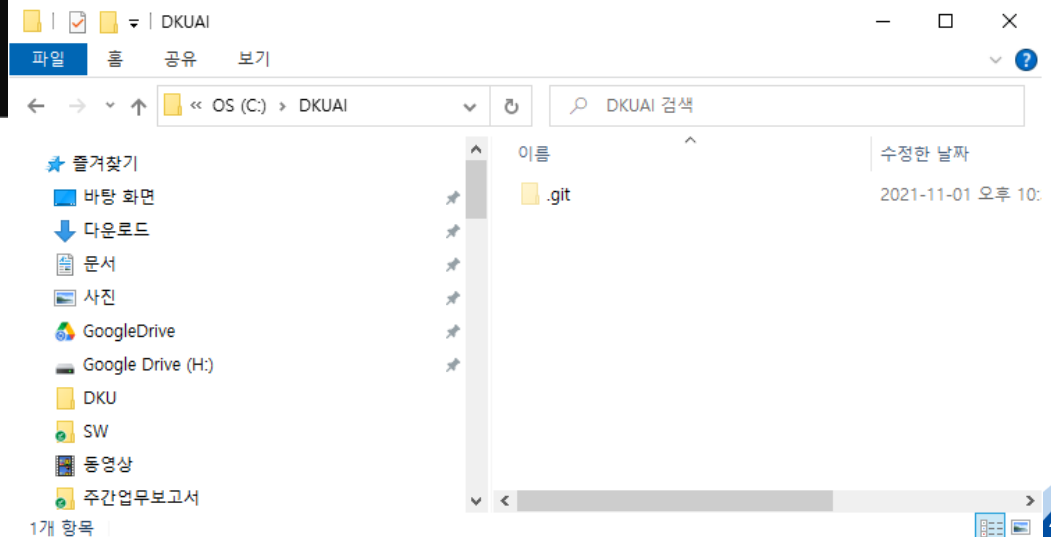
C:\DKUAI>git init
Initialized empty Git repository in C:/DKUAI/.git/

C:\DKUAI>dir
C 드라이브의 볼륨: OS
볼륨 일련 번호: 92BE-9589

C:\DKUAI 디렉터리

2021-11-01 오후 10:39 <DIR> .
2021-11-01 오후 10:39 <DIR> ..
                0개 파일                0 바이트
                2개 디렉터리 100,173,819,904 바이트 남음

C:\DKUAI>
```



## 4. Github 사용 – git add .



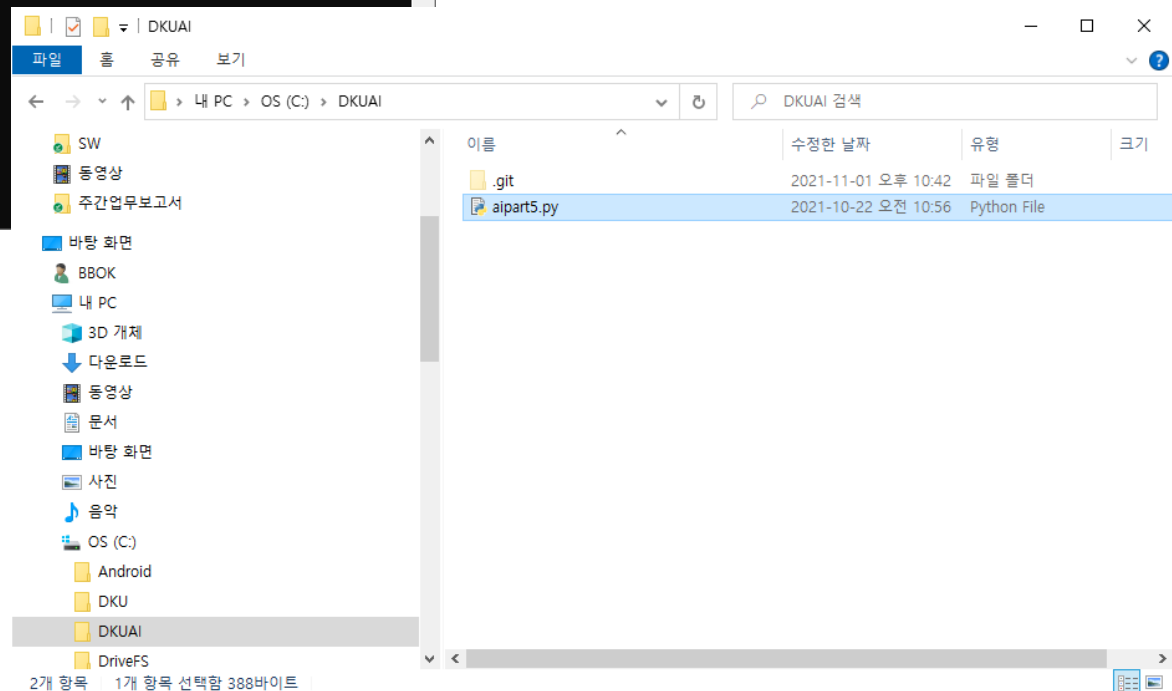
```
명령 프롬프트

C:\DKUAI>dir
C 드라이브의 볼륨: OS
볼륨 일련 번호: 92BE-9589

C:\DKUAI 디렉터리

2021-11-01 오후 10:42 <DIR> .
2021-11-01 오후 10:42 <DIR> ..
2021-10-22 오전 10:56      388 aipart5.py
                   1개 파일      388 바이트
                   2개 디렉터리 100,174,303,232 바이트 남음

C:\DKUAI>git add .
C:\DKUAI>
```



## 4. Github 사용 – git branch –M main



```
명령 프롬프트
C:\WDKJAI>dir
C 드라이브의 볼륨: OS
볼륨 일련 번호: 92BE-9589

C:\WDKJAI 디렉터리

2021-11-01 오후 10:42 <DIR> .
2021-11-01 오후 10:42 <DIR> ..
2021-10-22 오전 10:56      388 aipart5.py
                        1개 파일      388 바이트
                        2개 디렉터리 100,174,303,232 바이트 남음

C:\WDKJAI>git add .
C:\WDKJAI>git branch -M main
C:\WDKJAI>git branch
C:\WDKJAI>
```

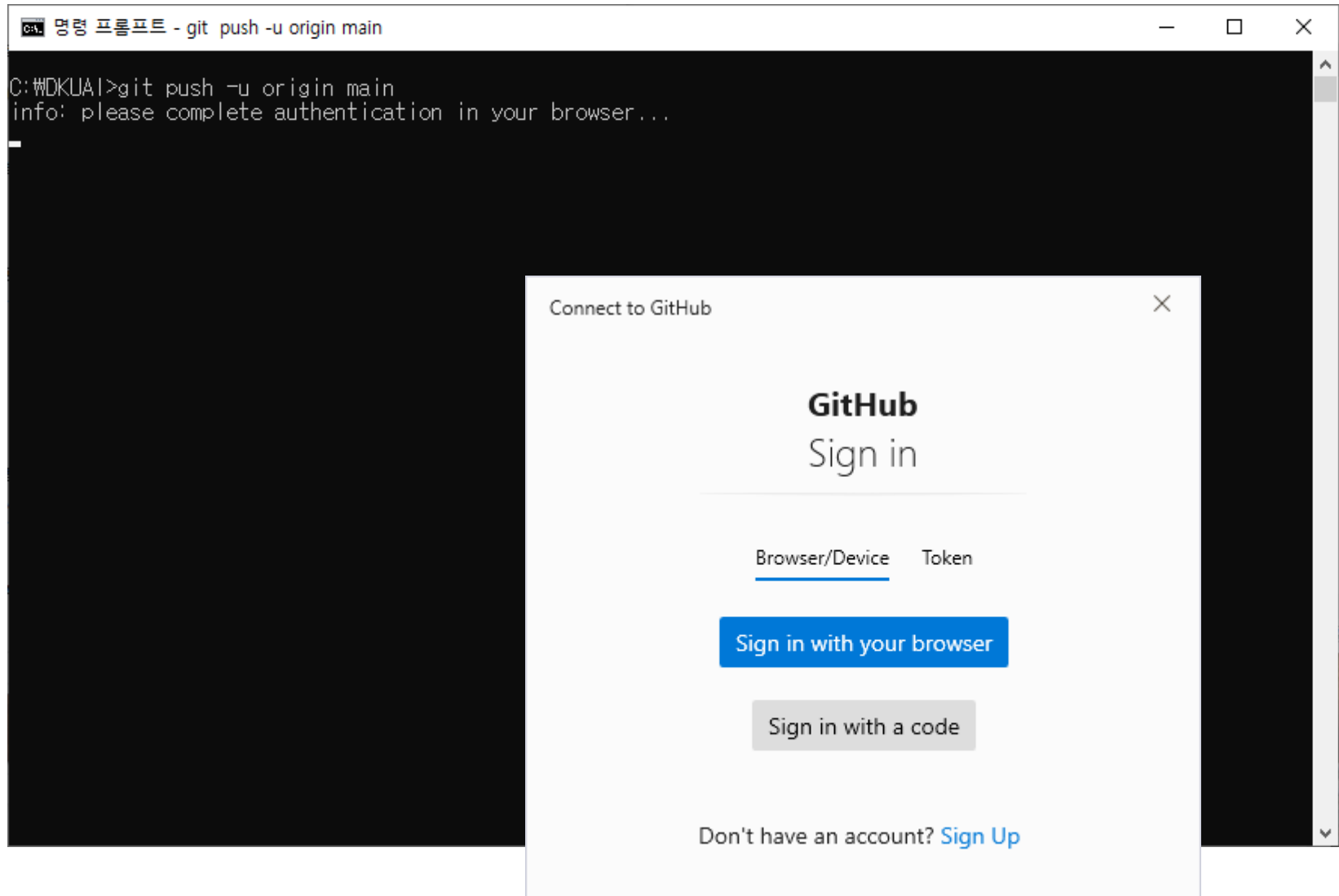
## 4. Github 사용 – git commit



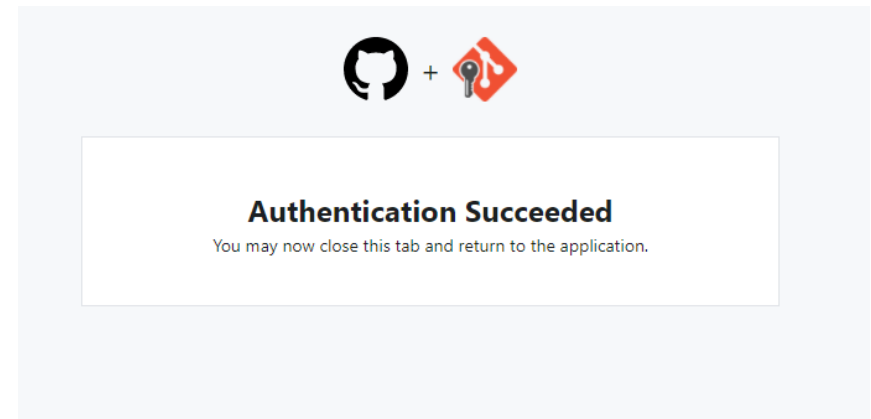
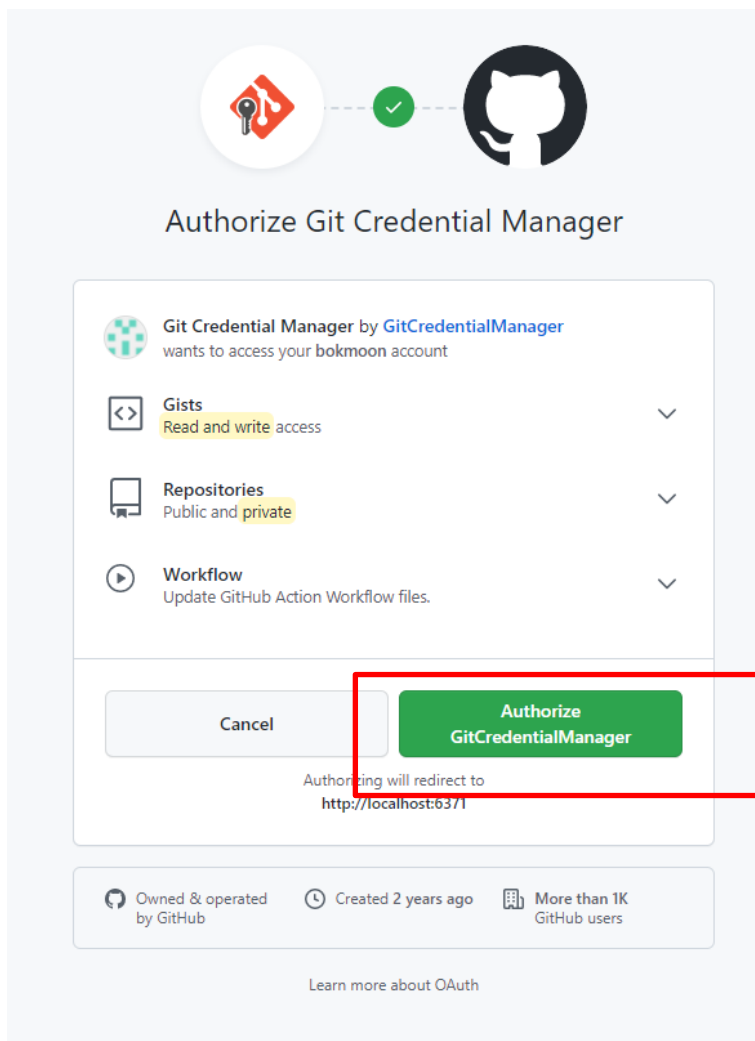
```
C:\WDKJIA>git commit -m "first commit"
[main (root-commit) 04a0169] first commit
1 file changed, 23 insertions(+)
create mode 100644 aipart5.py
C:\WDKJIA>
```



## 4. Github 사용 – git push



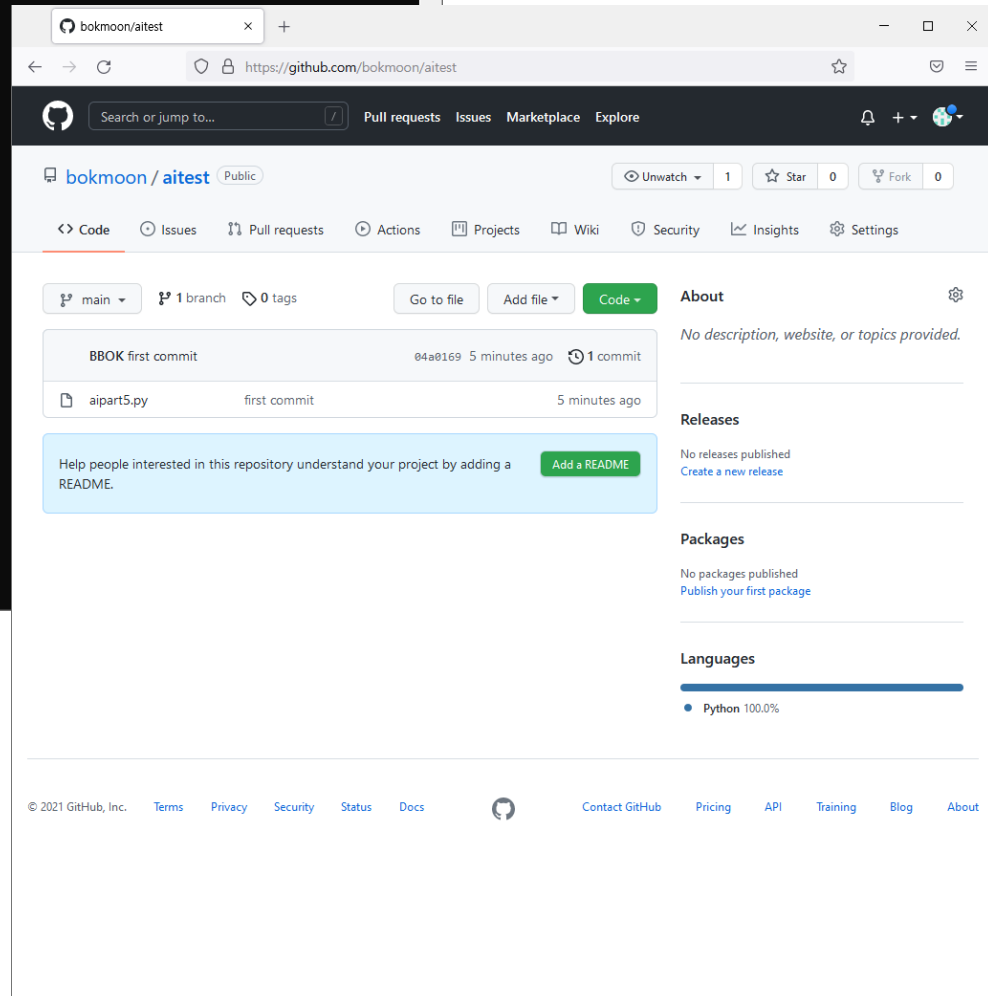
## 4. Github 사용 - 로그인



# 4. Github 사용 – git push 완료



```
C:\WDKJAI>git push -u origin main
info: please complete authentication in your browser...
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 415 bytes | 415.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/bokmoon/aitest.git
 * [new branch]      main -> main
Branch 'main' set up to track remote branch 'main' from 'origin'.
C:\WDKJAI>
```



## 4. Github 사용 - linux 사용



```
root@DKU:/WEB
[root@DKU WEB]# git init
Initialized empty Git repository in /WEB/.git/
[root@DKU WEB]# ls -al
total 12
drwxr-xr-x. 3 root root 4096 Nov  1 13:59 .
dr-xr-xr-x. 19 root root 4096 Nov  1 13:08 ..
drwxr-xr-x. 2 root root 4096 Nov  1 13:59 .git
[root@DKU WEB]# git checkout -b main
Switched to a new branch 'main'
[root@DKU WEB]# git remote add origin https://github.com/bokmoon/aitest.git
[root@DKU WEB]# git pull origin main
warning: Pulling without specifying how to reconcile divergent branches is
discouraged. You can squelch this message by running one of the following
commands sometime before your next pull:

    git config pull.rebase false  # merge (the default strategy)
    git config pull.rebase true   # rebase
    git config pull.ff only       # fast-forward only

You can replace "git config" with "git config --global" to set a default
preference for all repositories. You can also pass --rebase, --no-rebase,
or --ff-only on the command line to override the configured default per
invocation.

remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 3 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 395 bytes | 395.00 KiB/s, done.
From https://github.com/bokmoon/aitest
 * branch            main       -> FETCH_HEAD
 * [new branch]      main       -> origin/main
[root@DKU WEB]# ls -al
total 16
drwxr-xr-x. 3 root root 4096 Nov  1 13:59 .
dr-xr-xr-x. 19 root root 4096 Nov  1 13:08 ..
-rw-r--r--. 1 root root 366 Nov  1 13:59 aipart5.py
drwxr-xr-x. 8 root root 4096 Nov  1 13:59 .git
[root@DKU WEB]#
```

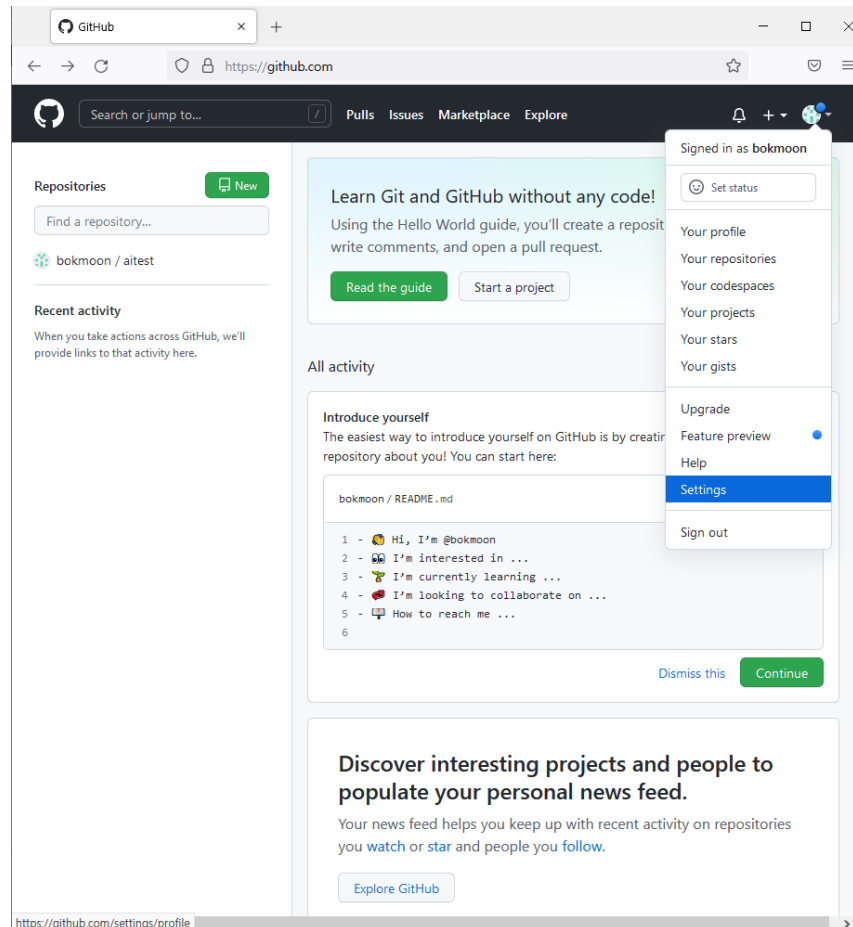
## 4. Github 사용 – token 생성



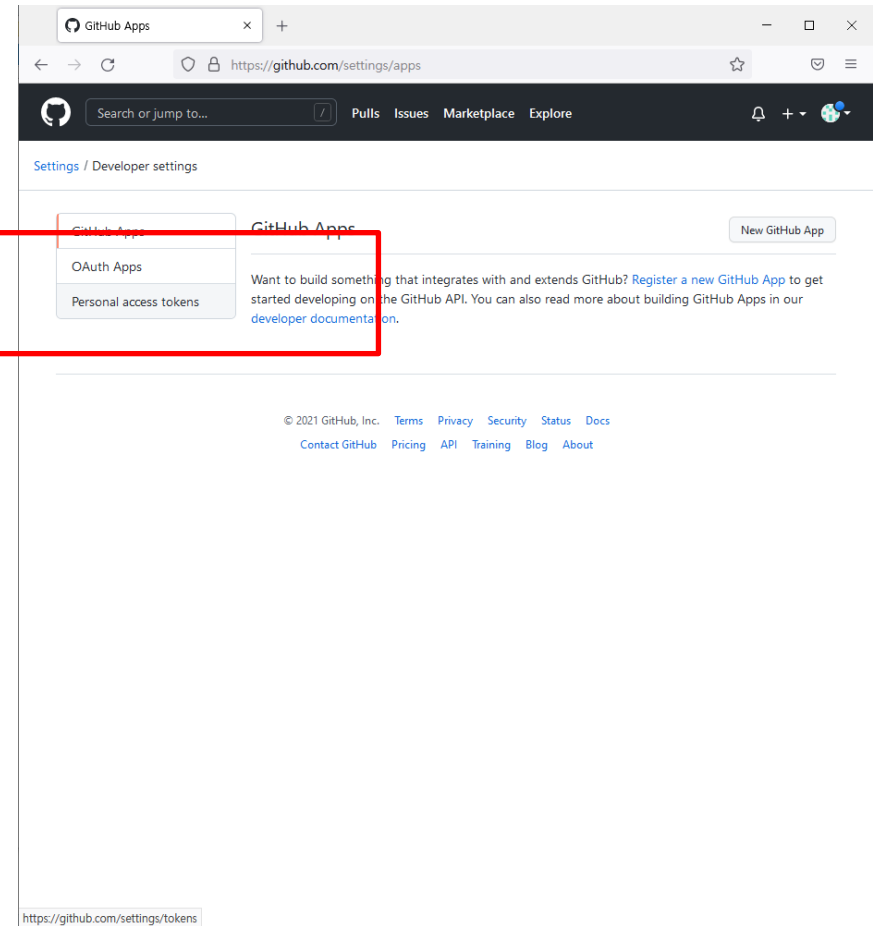
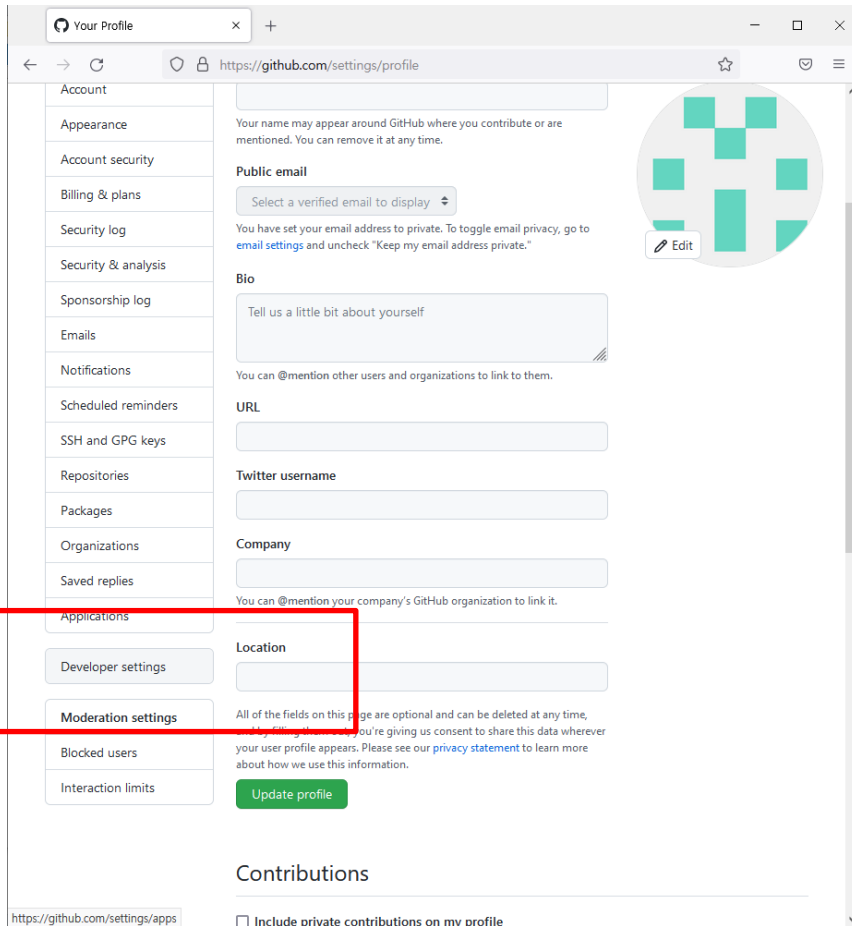
- linux에서 push 할때는 계정 / 비밀번호를 넣어야 한다.
- 현재 비밀번호는 지원하지 않고 토큰을 생성해서 넣어야 함

토큰 만들기

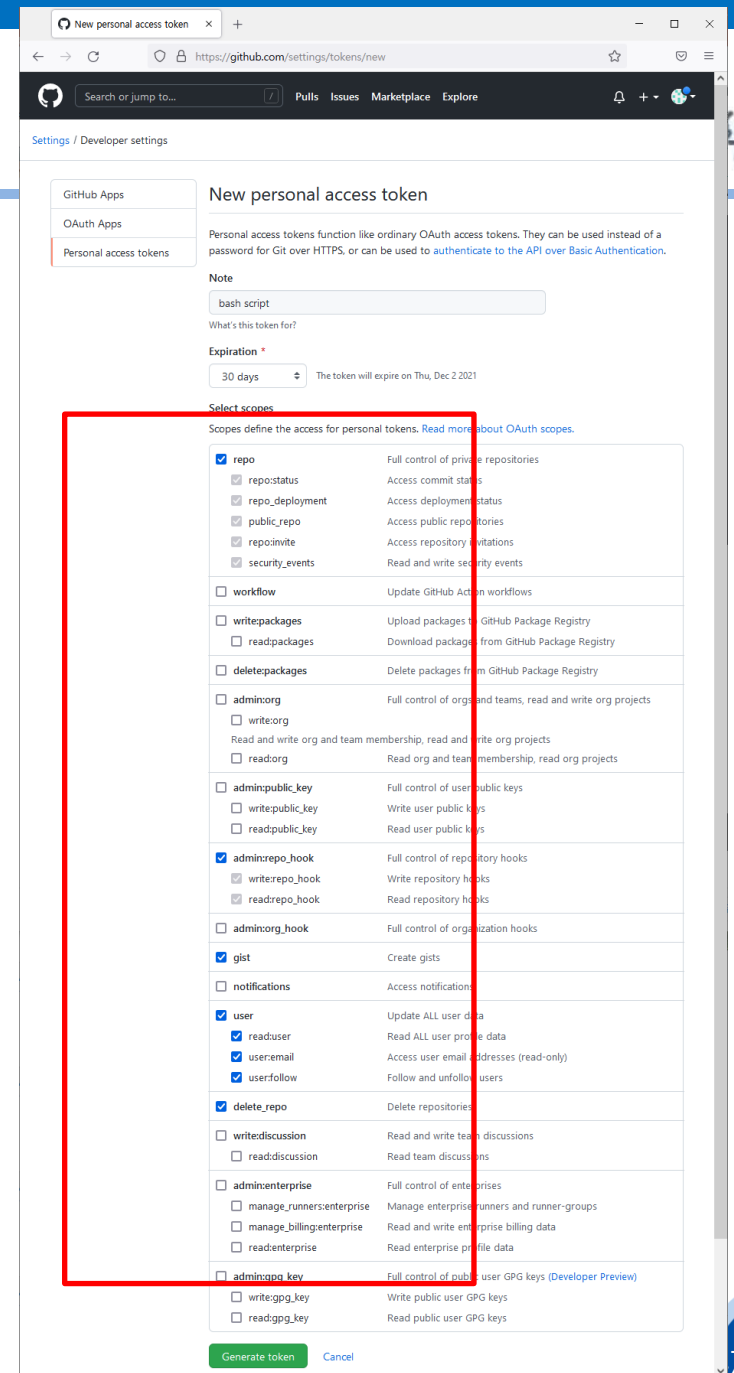
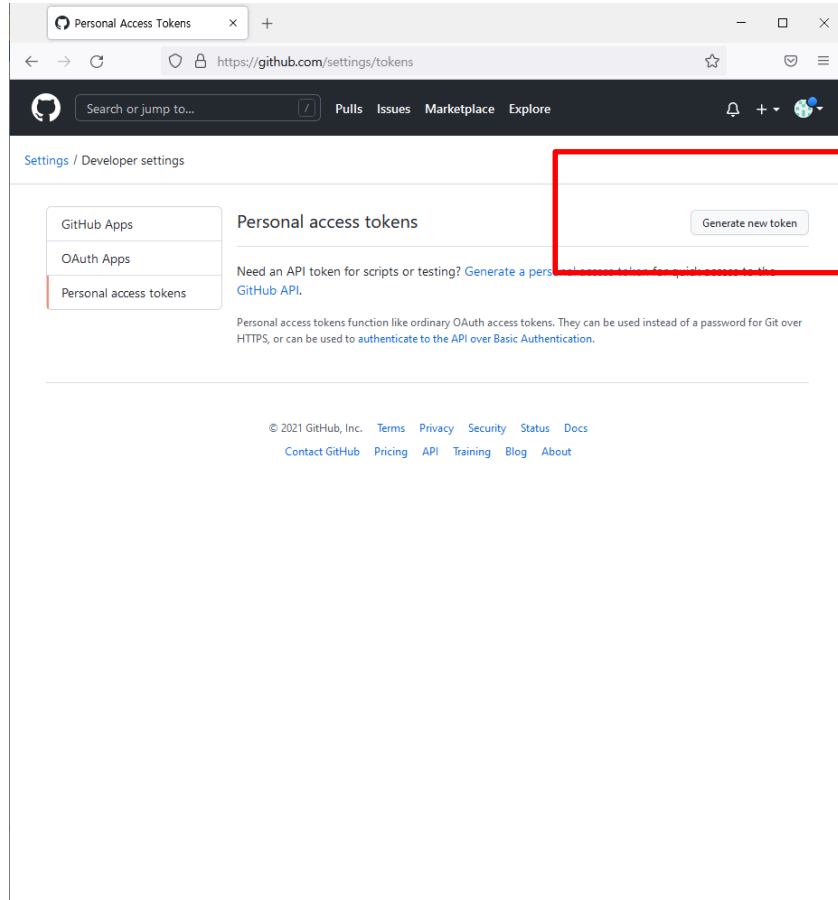
- 계정 - settings



# 4. Github 사용 – token 생성



# 4. Github 사용 - token 생성



## 4. Github 사용 – config 작성



```
root@DKU:/WEB
[root@DKU WEB]# ls -al
total 20
drwxr-xr-x. 3 root root 4096 Nov  1 16:42 .
dr-xr-xr-x. 19 root root 4096 Nov  1 15:57 ..
-rw-r--r--. 1 root root  11 Nov  1 16:42 aaaa.txt
-rw-r--r--. 1 root root  28 Nov  1 16:41 aitest.txt
drwxr-xr-x. 8 root root 4096 Nov  1 16:56 .git
[root@DKU WEB]# git add .
[root@DKU WEB]# git commit -m "3rd commit"

*** Please tell me who you are.

Run

  git config --global user.email "you@example.com"
  git config --global user.name "Your Name"

to set your account's default identity.
Omit --global to set the identity only in this repository.

fatal: unable to auto-detect email address (got 'root@DKU.(none)')
[root@DKU WEB]#
```

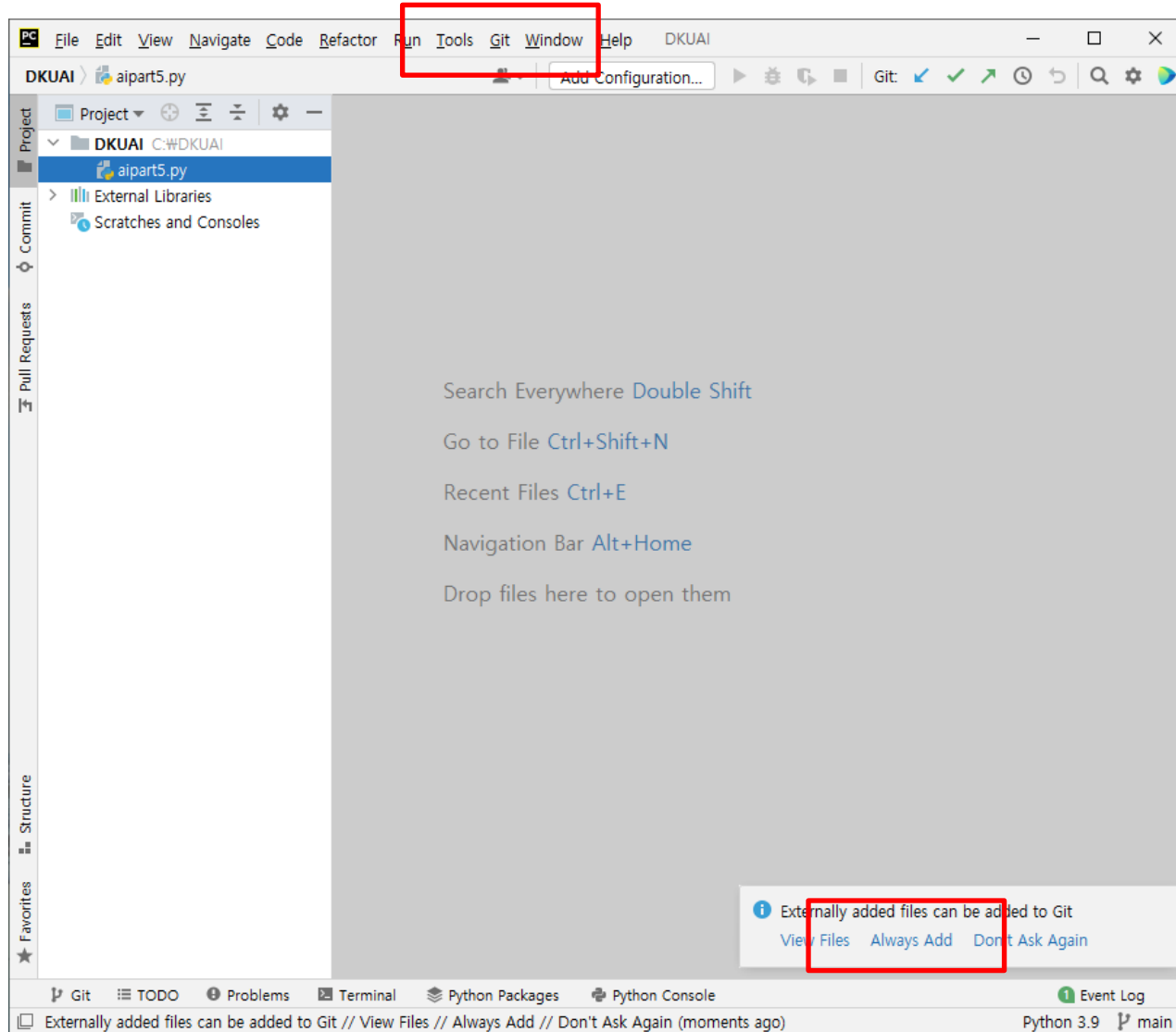


## 4. Github 사용 – push 성공

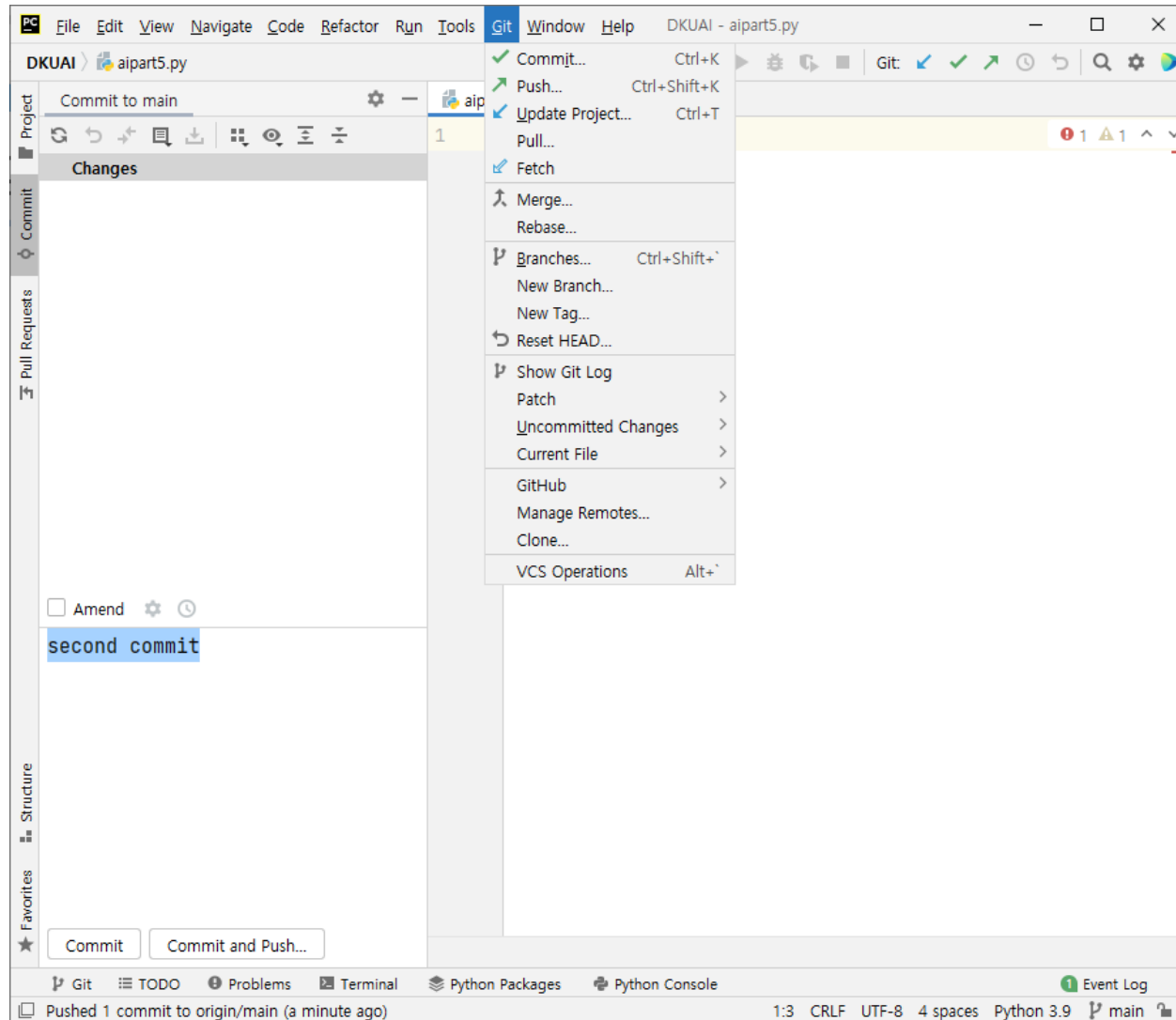


```
root@DKU:/WEB
remote: Counting objects: 100% (12/12), done.
remote: Compressing objects: 100% (8/8), done.
remote: Total 11 (delta 0), reused 11 (delta 0), pack-reused 0
Unpacking objects: 100% (11/11), 1.41 KiB | 1.41 MiB/s, done.
From https://github.com/bokmoon/aitest
 * branch          main      -> FETCH_HEAD
    5ab7156..64703f4  main      -> origin/main
Updating 5ab7156..64703f4
Fast-forward
 .idea/.gitignore      | 3 +++
 .idea/DKUAI.iml       | 8 ++++++++
 .idea/inspectionProfiles/profiles_settings.xml | 6 ++++++
 .idea/misc.xml        | 4 ++++
 .idea/modules.xml     | 8 ++++++++
 .idea/vcs.xml         | 6 ++++++
 test.py               | 0
7 files changed, 35 insertions(+)
create mode 100644 .idea/.gitignore
create mode 100644 .idea/DKUAI.iml
create mode 100644 .idea/inspectionProfiles/profiles_settings.xml
create mode 100644 .idea/misc.xml
create mode 100644 .idea/modules.xml
create mode 100644 .idea/vcs.xml
create mode 100644 test.py
[root@DKU WEB]#
```

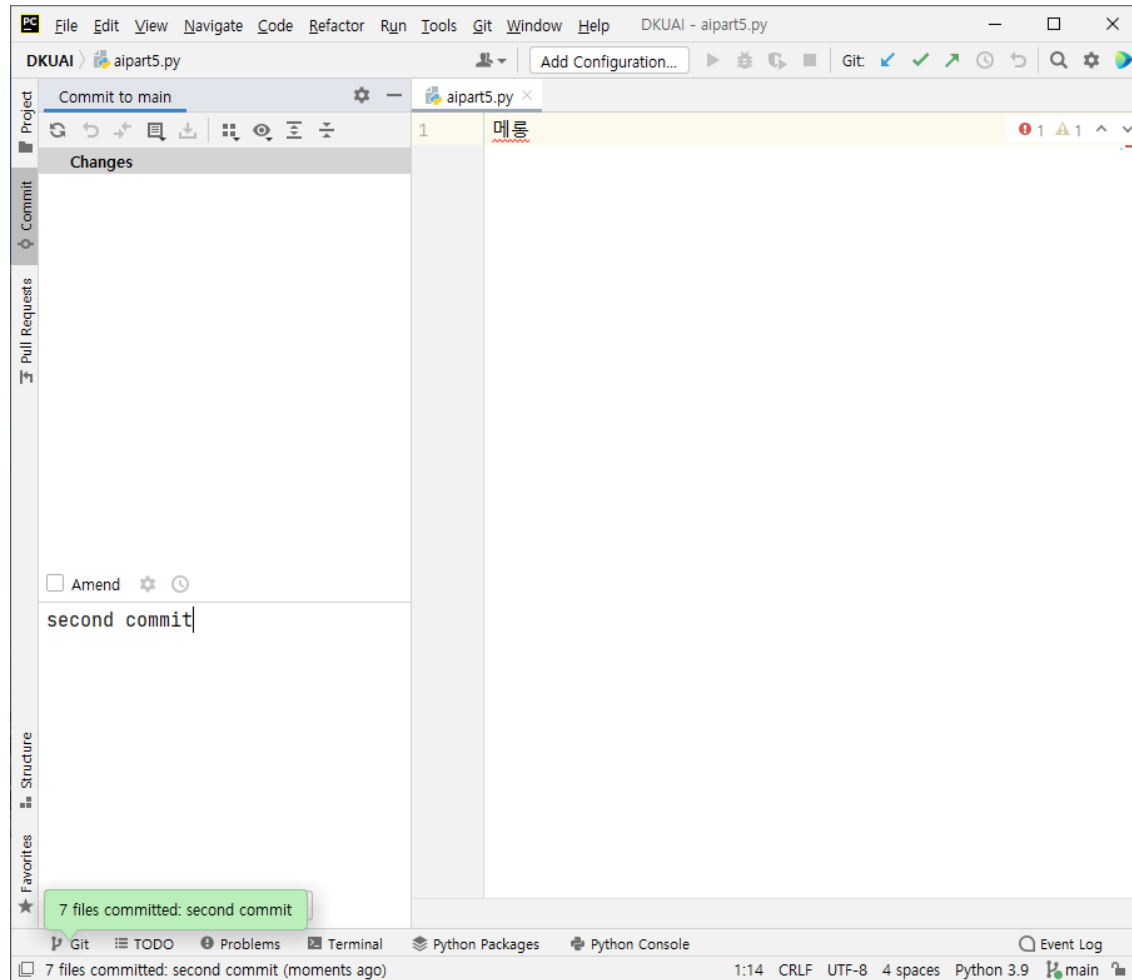
## 5. IDE를 이용한 git 사용



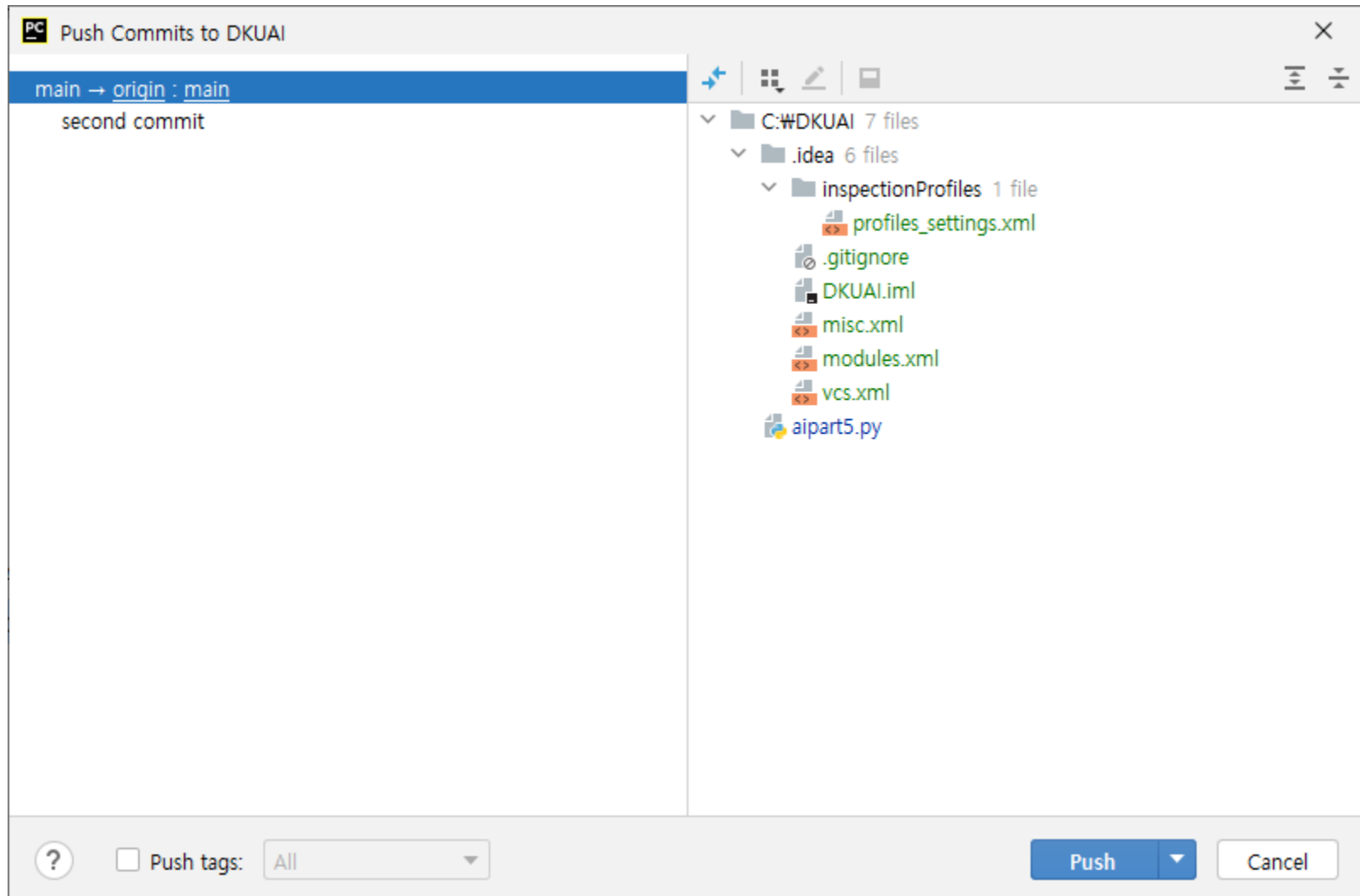
## 5. IDE를 이용한 git 사용



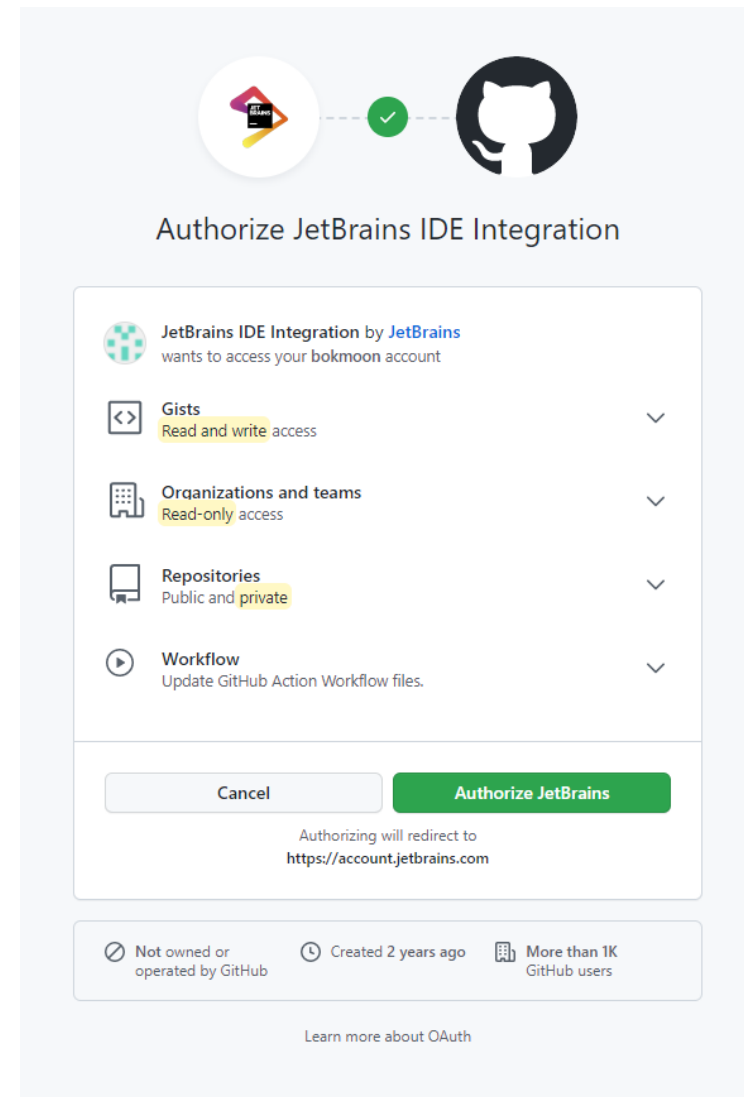
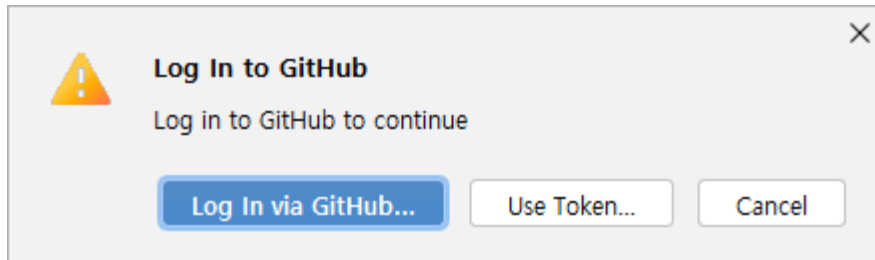
# 5. IDE를 이용한 git 사용



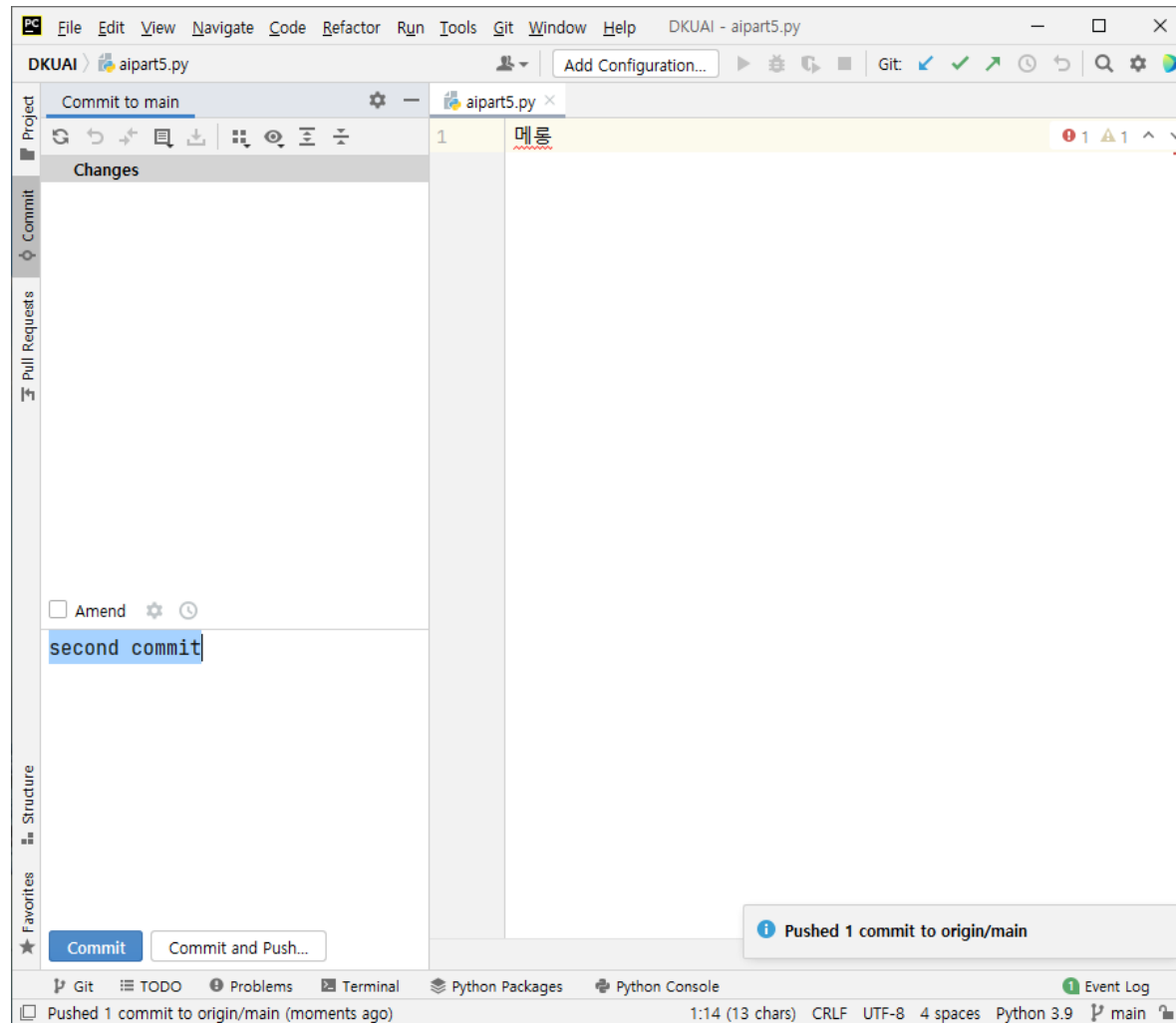
## 5. IDE를 이용한 git 사용



## 5. IDE를 이용한 git 사용



## 5. IDE를 이용한 git 사용



# 5. IDE를 이용한 git 사용



The screenshot shows a web browser displaying the GitHub repository page for 'bokmoon/aitest'. The address bar shows the URL 'https://github.com/bokmoon/aitest'. The repository is public and has 1 branch and 0 tags. The commit history shows a 'BBOK second commit' with a hash of '5a760bb' made 1 minute ago, containing 2 commits. The files listed are '.idea' and 'aipart5.py', both committed 1 minute ago. A prompt encourages adding a README. The right sidebar shows 'About' (no description), 'Releases' (no releases published), 'Packages' (no packages published), and 'Languages' (Python 100.0%). The footer includes GitHub's terms, privacy, security, status, docs, and contact information.

bokmoon/aitest

Search or jump to... Pull requests Issues Marketplace Explore

bokmoon / aitest Public Unwatch 1 Star 0 Fork 0

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

main 1 branch 0 tags Go to file Add file Code

BBOK second commit 5a760bb 1 minute ago 2 commits

.idea	second commit	1 minute ago
aipart5.py	second commit	1 minute ago

Help people interested in this repository understand your project by adding a README. Add a README

About No description, website, or topics provided.

Releases No releases published Create a new release

Packages No packages published Publish your first package

Languages Python 100.0%

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