



Introduction

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- **Markdown**

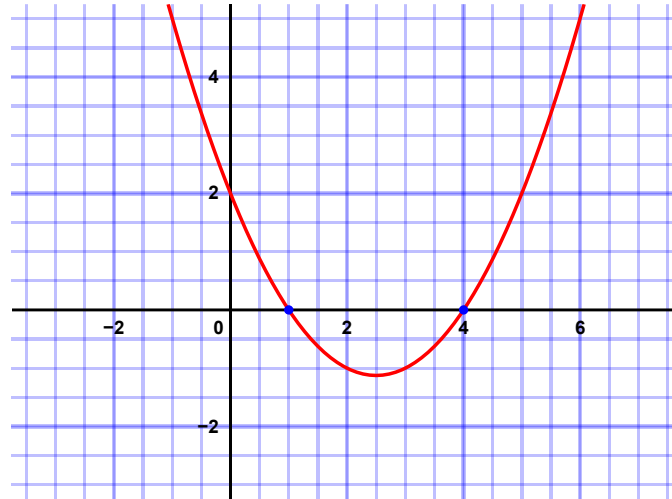
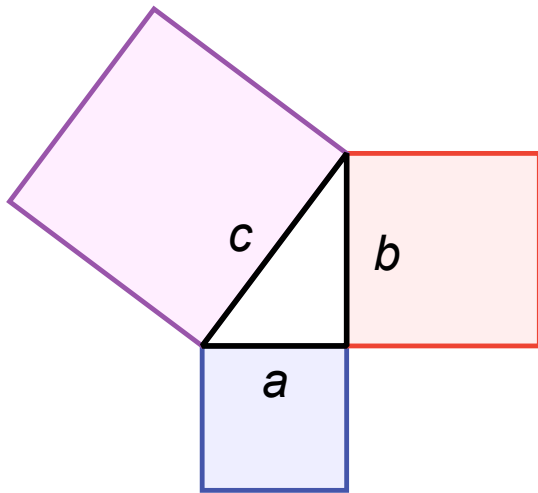
- What is Markdown?
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Open-source Software

- Motivation

- We don't pay **scientific or academic achievements**. We also share its details (proof, derivation, ...).

- e.g. [Pythagoras's theorem](#) ($a^2 + b^2 = c^2$), [quadratic formula](#) ($x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$)



Open-source Software

- Motivation

- We don't pay **scientific or academic achievements**. We also share its details (proof, derivation, ...).
 - e.g. [Pythagoras's theorem](#), [quadratic formula](#)
- How about **products**? (e.g. chairs, sandwiches, and gasoline)
- How about **artworks**? (e.g. [Mona Lisa](#) by Leonardo da Vinci, [Moonlight Sonata](#) by Beethoven)

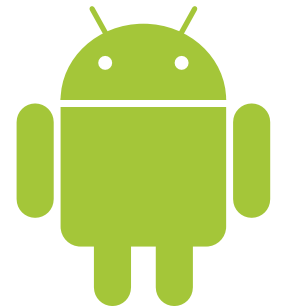
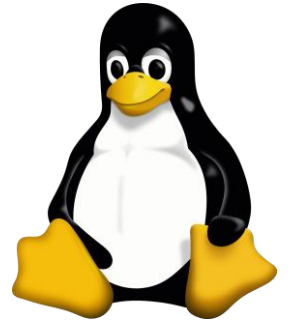


- How about **software**?

Open-source Software

▪ History

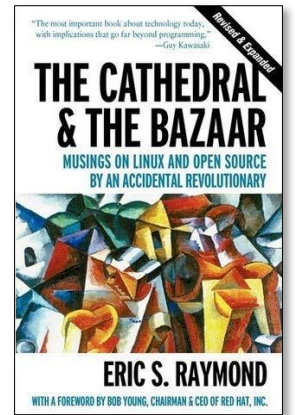
- [GNU Project](#) (**GNU** is **N**ot **U**nix; 1984, [Richard Stallman](#))
 - An extensive collection of *free software* (무료 자유 소프트웨어 in Korean)
 - e.g. [GCC](#) (GNU Compiler Collection), [GIMP](#), [GTK](#) (GIMP Toolkit), [GNOME](#), [R](#), ...
 - [GPL license](#) guarantees end users the freedom to run, study, share, and modify the software
- [Linux](#) (1991, [Linus Torvalds](#))
 - A family of open-source Unix-like operating systems based on the Linux kernel
 - e.g. [Debian](#) (1993), ..., [Ubuntu](#) (2004), [Android](#) (2008), [Chrome OS](#) (2011)
 - cf. [BSD Unix](#) – [FreeBSD](#) – [macOS](#), [iOS](#), [PlayStation](#) (~ Unix – [Linux](#) – Ubuntu, Android, ...)
 - Popularity ([StatCounter](#) retrieved on September 7th, 2021)
 - Desktop: 2.4% (Windows 76.13%)
 - Mobile: 72.73%
 - Tablet: 44.75% (iOS 55.17%)
 - cf. Servers: 75.3% (source: [W3Techs](#))
 - cf. Supercomputers: 100% (source: [TOP500](#))



Open-source Software

▪ Open-source software (OSS)

- Computer software that is released under a *license* in which the copyright holder grants users the rights to use, study, change, and distribute the software and its source code to anyone and for any purpose (from [Wikipedia](#))
 - e.g. [Mozilla Firefox](#), [Apache](#), [MySQL](#), [Python](#), [TensorFlow](#), [PyTorch](#) / [LibreOffice](#), [Shotcut](#), [Blender](#)
- A famous example of *open collaboration* (개방, 공유, 협력 in Korean)
 - Open-source hardware (e.g. [Arduino](#))
 - [Wiki](#) (e.g. [Wikipedia](#), [NamuWiki](#)), open content (e.g. [creative commons](#))
 - [Crowdsourcing](#) ([blockchain](#))
- Further readings
 - Eric Raymond, "The Cathedral and the Bazaar" [\[Homepage\]](#) [\[Korean Translation\]](#) / [\[한빛미디어; 무료\]](#)
 - [Linus's law](#): "Given enough eyeballs, all bugs are shallow."
 - Joone, "만화로 나누는 자유/오픈소스 소프트웨어 이야기" [\[Homepage\]](#)



Open-source Software

- Open-source software licenses [\[Wikipedia\]](#) [\[OLIS in Korean\]](#)

- e.g. [Google vs. Oracle on Java API \(2010-2021\)](#) [\[News in Korean\]](#)

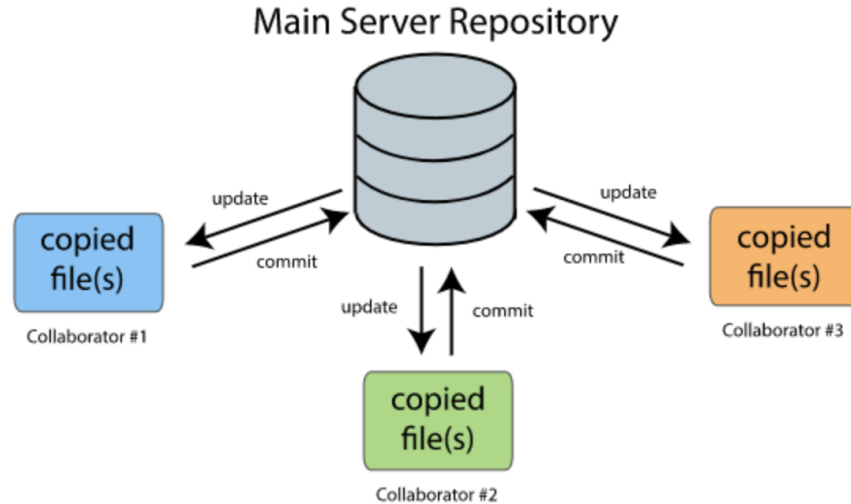
[Samsung vs. Software Freedom Law Center on BusyBox \(2005-2009\)](#) [\[News in Korean\]](#)

라이선스	복제, 배포, 수정 의 권한 허용	배포시 라이선스 문서 첨부	배포시 소스코드 제공 의무와 범위	조합저작물 작성 및 타 라이선스 로 배포 허용	수정내용 고지	특허 라이선스의 허용	이름/상표/상호 의 사용 제한	보증의 부인	책임의 제한
License	Copy, Modification, Distribution	Attachment of License Statement	Scope of Code Opening	Distribution with Other Licenses	Notice of Amendments	Grant of Patent License	Restriction of Trademarks	No Approval	No Liability
GPL v3	○	○	All codes		○	○		○	○
LGPL v3	○	○	Derivative work	○	○	○		○	○
MPL v1.1	○	○	Files	○	○	○		○	○
MIT	○	○		○				○	○
BSD-3	○	○		○			○	○	○
Apache v2	○	○		○		○	○	○	○

Git

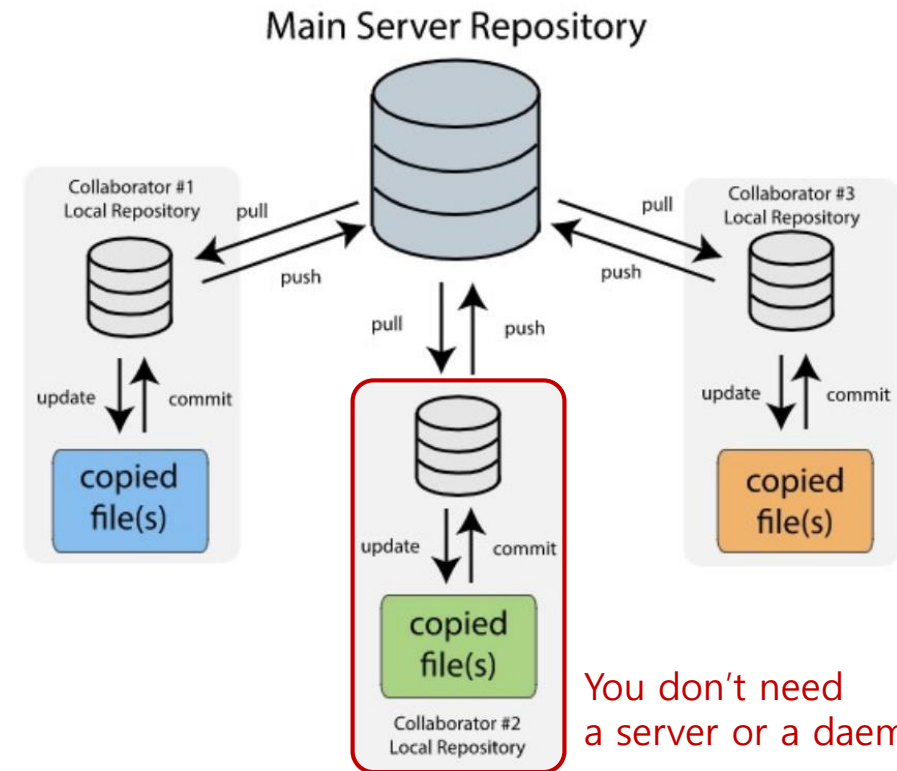
- How to collaborate in software development
 - Version control systems (VCS) manage revision of source codes (and also various types of files).
e.g. CVS, Subversion, Git / applications in Google Drive
- Git (2005, Linus Torvalds)
 - A **distributed** version control system

Centralized version control system



A Centralized Version Control System. Users could check out files they wanted to work on, then commit them once they made their changes.

Distributed version control system



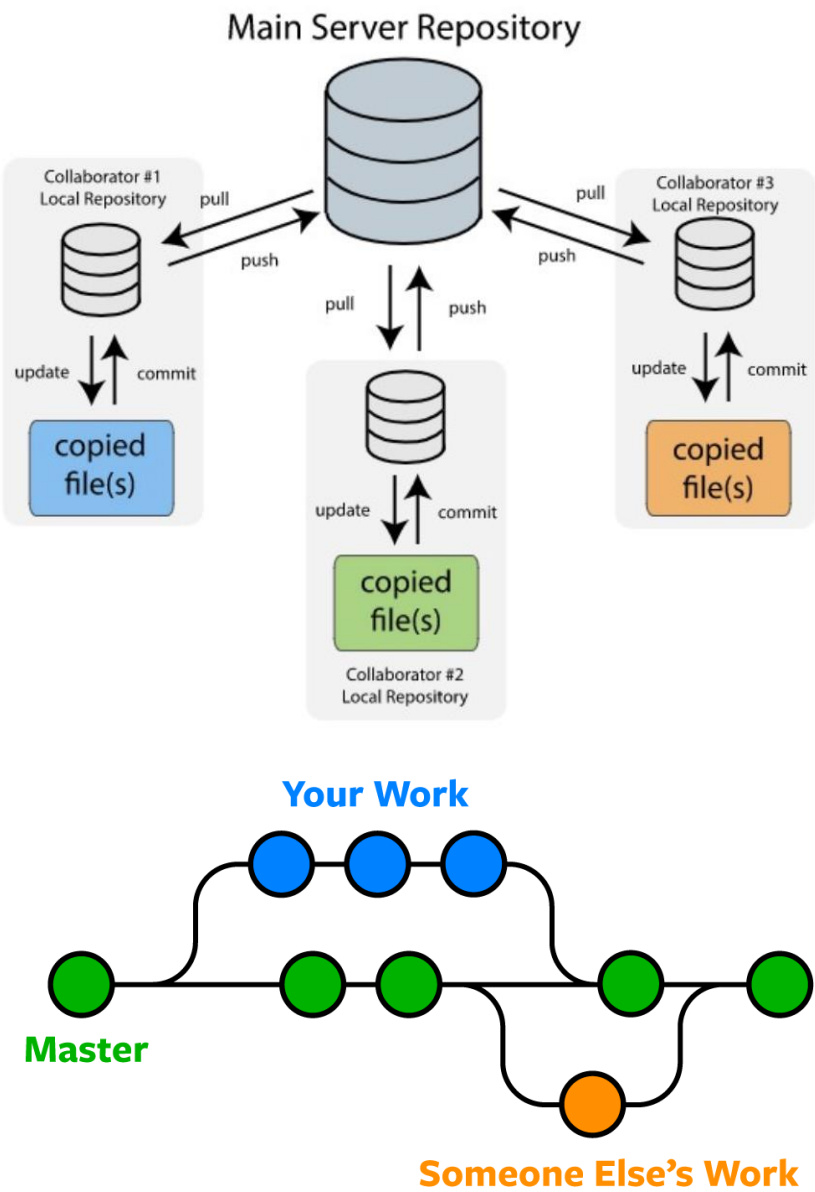
You don't need a server or a daemon.

A Distributed Version Control System. Each collaborator has a local copy of the repository, so no Internet connection is required.

Git

- Terminology [\[More\]](#)

Terms	Meanings
Repository	A storage for tracking files and their history <ul style="list-style-type: none">- <i>Remote</i> repository: The main repository shared by all team members (default name: <code>origin</code>, default branch name: <code>master</code>)- <i>Local</i> repository: Your working copy in your system
Clone	Make a local copy of the remote repository
Commit	Apply the current changes to the local repository A unit of revision (revision numbers given by SHA , last commit: <code>HEAD</code>)
Push	Upload the local repository to the remote repository
Pull	Update the local repository from the remote repository
Branch	A version of the repository that diverges from the (main) repository
Fork	Make my remote repository of the remote repository
Merge	Integrate two branch together
Pull request	Notify master developers to merge my branch to the master repository (The developers may review your codes.)

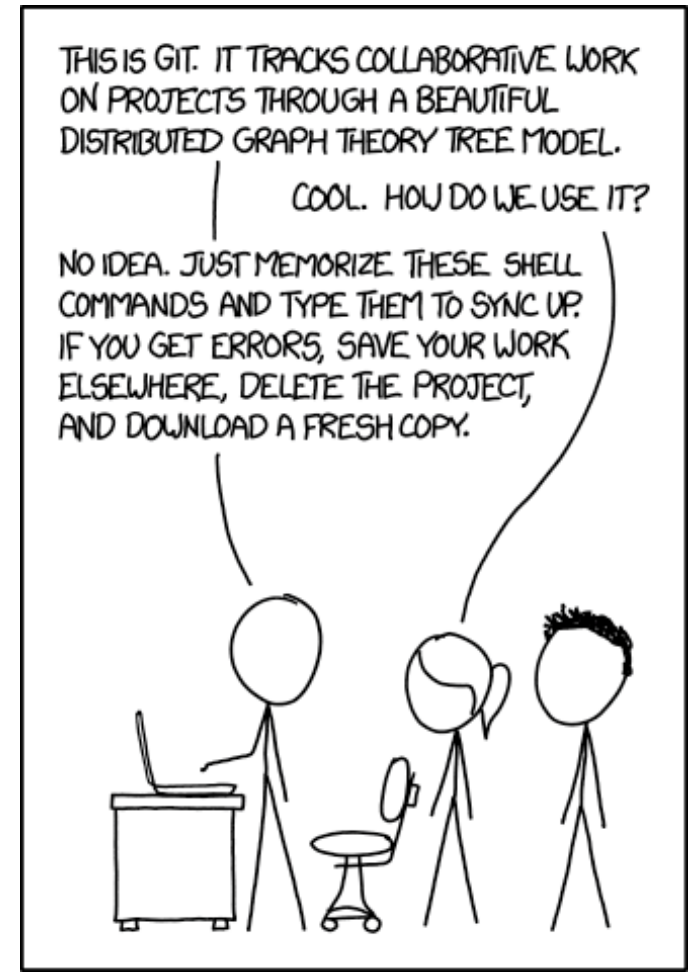


Git

- Commands [\[Git Cheat Sheets\]](#)

Note) (optional) [write_your_text]
Press q if you exit log or diff.

TODO	Commands
Create a new repository	git init
Clone a remote repository	git clone [url]
Commit	git commit (-m "[log message]")
Push	git push [remote] [branch]
Pull	git pull
Add a file	git add [file]
Rename a file	git mv [file-original] [file-renamed]
Delete a file	git rm (--cached) [file]
Revert a file (or to a commit)	git reset [file or commit]
Show logs of the repository	git log
Show logs of a file	git log --follow [file]
Show status of current changes	git status
Show details of current changes	git diff ([file])

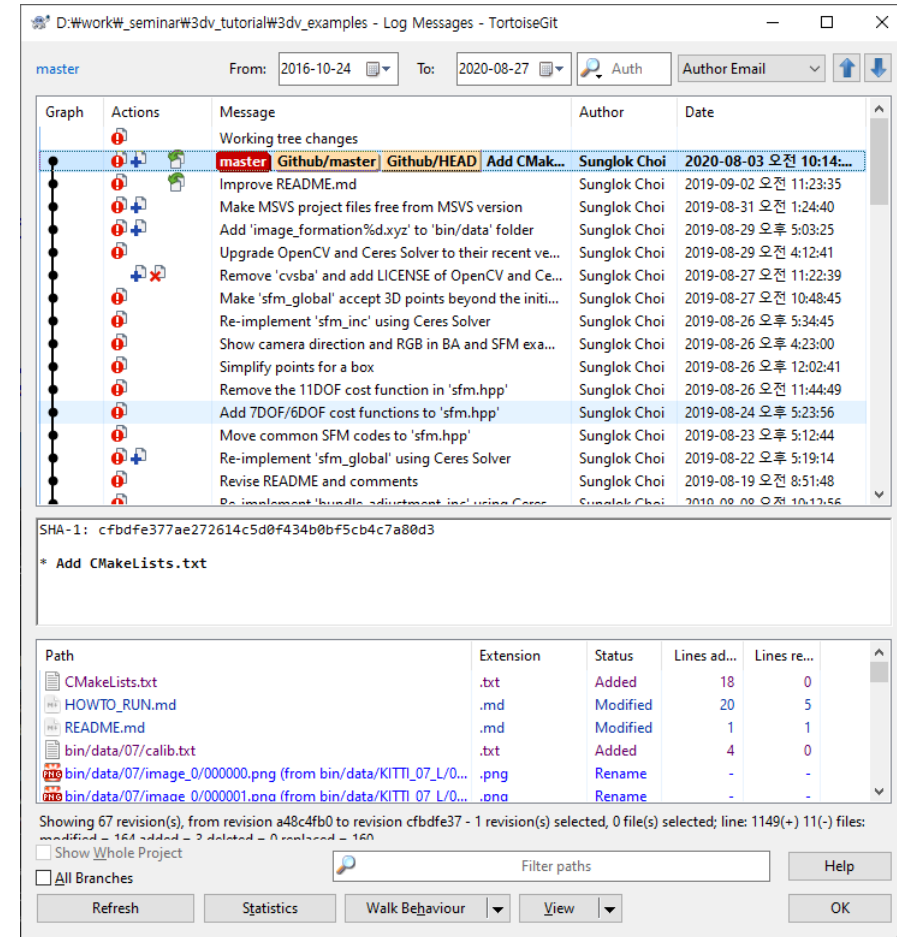
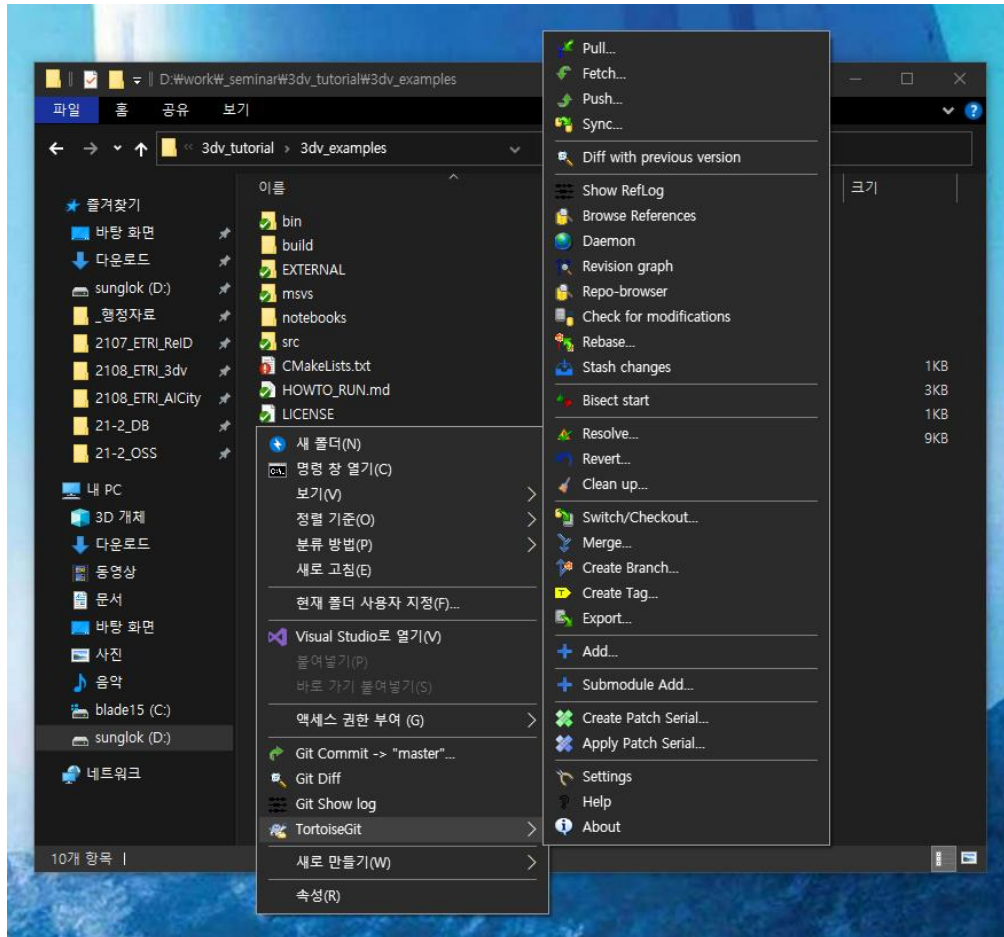


Git

■ ~~Commands~~ [\[Git Cheat Sheets\]](#)

■ GUI clients [\[List\]](#)

– I recommend [TortoiseGit](#) for Windows, which extends *File Explorer* as a Git GUI client.

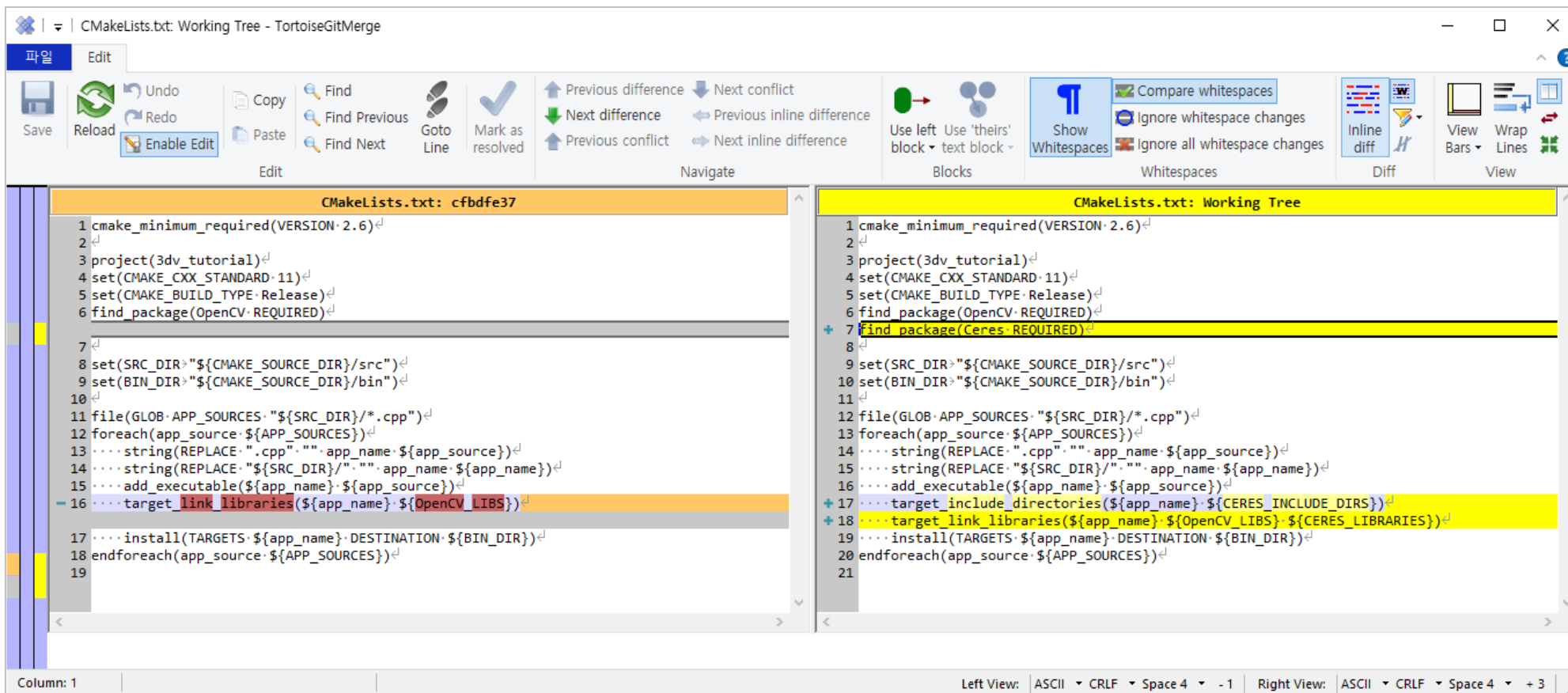


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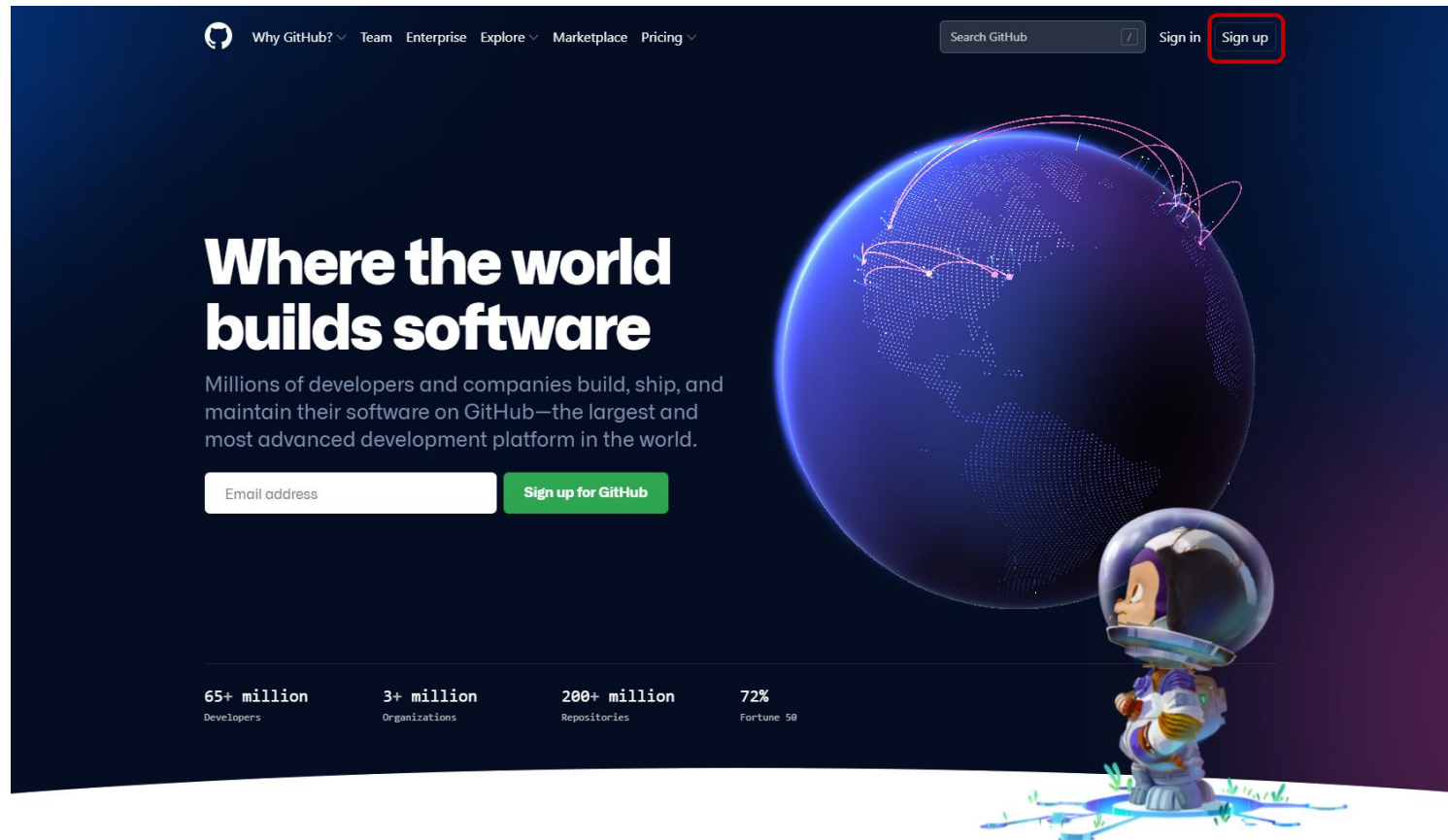


Tip! You can use this diff tool out of Git including PPTX and XLSX.

Github

- [Github](#)

- Internet hosting for Git-based remote repositories
- Commonly used to host open-source projects [\[Check the most starred repositories\]](#)
- cf. Please **sign up** if you have no account and check [Github Education Program](#).



Markdown

▪ Markdown

- A **lightweight** markup language for formatted documents → **Markdown**
 - cf. [Markup languages](#): [HTML](#) (HyperText Markup Language), [XML](#) (Extensible Markup Language)
 - File extension: .md or .markdown
- Why?
 - **Concise**
 - **Human-friendly** (easy to use and understand)
- Popularity
 - Blogging, wiki, instant messaging
 - **Software documentation** ([README](#) files)
- Further readings
 - [Mastering Markdown](#), Github
 - Online practice) [Markdown Live Preview](#)
 - Editors) [Atom](#), [Visual Studio Code](#), [Notepad++](#), [Vim](#), ..., [Typora](#) (only for markdown)

Markdown Syntax

- Headers

This is an <h1> tag

This is an <h2> tag

This is an <h6> tag

- Emphasis

This text will be italic

This will also be italic

****This text will be bold****

__This will also be bold__

You *can* combine them

- ~~Strikethrough~~

~~This~~ will appear crossed out.

- cf. Emoji [\[Emoji Cheat Sheet for Github Flavored Markdown\]](#)

:smile:



Markdown Syntax

- Lists
 - Unordered
 - * Item 1
 - * Item 2
 - * Item 2a
 - * Item 2b
 - Ordered
 - 1. Item 1
 - 1. Item 2
 - 1. Item 2a
 - 1. Item 2b
 - Task Lists
 - [x] @mentions, #refs, [links](), **formatting**, and tags supported
 - [x] list syntax required (any unordered or ordered list supported)
 - [x] this is a complete item
 - [] this is an incomplete item

Markdown Syntax

- Links
 - `http://github.com` - automatic!
 - `[GitHub](http://github.com)`
- Images
 - `![GitHub Logo](images/logo.png)`
 - Format: `![Alt Text](url)`
- Blockquotes
 - As Kanye West said:
 - `> We're living the future so`
 - `> the present is our past.`
- Inline code
 - I think you should use an `<addr>` element here instead.

Images with custom resizing and alignment

```
<p align="center">  
  
</p>
```

Markdown Syntax

- Syntax highlighting

```
```javascript
function fancyAlert(arg) {
 if(arg) {
 $.facebox({div:'#foo'})
 }
}
```
```

- Tables [\[Tables Generator\]](#)

```
First Header	Second Header
Content from cell 1 | Content from cell 2
Content in the first column | Content in the second column
```

| First Header | Second Header |
|-----------------------------|------------------------------|
| Content from cell 1 | Content from cell 2 |
| Content in the first column | Content in the second column |

Markdown Example

- [My Github profile](#)

```
![header](https://capsule-render.vercel.app/api?type=waving&color=auto&height=200&section=header&text=Sunglok%20Choi&fontSize=32)
```

I am Sunglok Choi, Assistant Professor in the [\[Dept. of Computer Science and Engineering\]](https://computer.seoultech.ac.kr/), [\[SeoulTech\]](https://en.seoultech.ac.kr/).

My research interests include

- * **:car:** ****Robot Navigation****: Localization, SLAM, Path Planning, Path Following
- * **:camera:** ****Computer Vision****: Robust Regression, 3D Vision (Visual Odometry, Visual SLAM, SFM)

I open some of my research works: [\[Triangulation Toolbox\]](https://github.com/sunglok/TriangulationToolbox) (MATLAB) and [\[RANSAC Template Library\]](https://github.com/sunglok/rtl) (C++).

I am always happy **:smile:** share my knowledge **:blue_book:** with others. Please visit the follows if you are interested.

- * [\[An Invitation to 3D Vision: A Tutorial for Everyone\]](https://github.com/sunglok/3dv_tutorial)
- * Python in 3 Hours
- * Programming meets Mathematics
- * Machine Learning Brief with scikit-learn
- * [\[Deep Learning Brief with PyTorch\]](https://github.com/mint-lab/dl_tutorial)
- * [\[MINT Lab's Know-Where\]](https://github.com/mint-lab/know-where)
- * [\[Awesome Robotics Datasets\]](https://mint-lab.github.io/awesome-robotics-datasets/)

Markdown Example

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Sunglok Choi

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- [MINT Lab's Know-Where](#)
- [Awesome Robotics Datasets](#)

Summary

▪ Open-source Software

- Motivation: **Freedom** to run, study, share, and modify the software (~ scientific/academic achievements)
- History: **GNU Project**, **Linux**, Apache, ..., [SourceForge](#), ..., Github, ...
- What is open-source software?
- Open-source software licenses: **GPL** – **LGPL** – **MIT/BSD** – **Apache**

▪ Git and Github

- Motivation: **Collaboration** for software development
- What is Git? A **distributed** version control system
- Terminology, commands, and **GUI clients**
- What is Github? **Start to plant your flower!**

▪ Markdown

- What is Markdown? A **lightweight** markup language for writing a formatted text
- Markdown syntax: You still remember, right?
- Markdown example