

Document



Group line

Week1 : SOFTWARE DEVELOPMENT TOOLS AND ENVIRONMENTS

DevTools Public

Unpin Unwatch 1

main 2 branches 0 tags Go to file Add file Code

Your main branch isn't protected
Protect this branch

Tuchsanai Create README.md bb20146 now 121 commits

| Docker | ff | 3 weeks ago |
|------------|-------------------|--------------|
| GIT | Update Week1.pdf | 13 hours ago |
| Jenkins | j | last month |
| kubernetes | Create README.md | now |
| .gitignore | Update .gitignore | 3 months ago |
| README.md | d | 13 hours ago |

README.md

SOFTWARE-DEVELOPMENT-TOOLS-AND-ENVIRONMENTS

ເພື່ອຫາຕາມຫລັກສູດ :

ກັບການທີ່ເປັນຜູ້ທີ່ຂ່າຍງຸດຕາມອົບທີ່ແວຣ ນາມາທາຂອນອາພິລິຄະຊຸມໃນງານຕ້າມວິວກາຮຽນຂອ້ອົບທີ່ແວຣ ເຖິງມີການພັນນາຂອ້ອົບທີ່ແວຣແນບໂລໄສ ການຕິດຕາມຄວາມຕົນຫ້າຂອງການພັນນາພົດທະນົກ ກາຈັດກາງໂອຣິ້ນແລກກາງກຳຫັນດຳ ເຖິງສໍາຮັບຮ້າງແລກກາງບຽນກາຮອງຢ່າງຕ່ອງໄລ້ ເຖິງສໍາຫັນແຫຼດຸນກພ່ວງແລກກາງຮ່ວມຂໍອຍເຊີງປະລິກອີກພາບອອງໂປຣແກຣມ ສາກພວດດ້ອນແນບຮ່ວມມືອົບພັນນາ ເຖິງມີສໍາຫັນກາງຄວາມຮ່ວມມືແລກຕົດຕັ້ງ

Principles to Software Professionals, Roles of Applications in Software Engineering Tasks, Agile Software Development Tools, Product Development Tracking, Version and Configuration Management, Build and Continuous Integration Tools, Program Debugging and Profiling Tools, Collaborative Development Environments, Packaging and Deployment



Document



Group line

| แผนกราสสอน | |
|------------|--|
| หัวข้อ | รายละเอียด |
| 1 | <p>Git and GitHub Configure Git Creating and Cloning Repositories Private Repositories and Token</p> <p>Lab week 1</p> |
| 2 | <p>Understanding Git Usage and Workflow Add and Commit Git Log Git Remote and Git Push Fetch and Pull</p> <p>Lab week 2</p> |
| 3 | <p>Understanding Branches Understanding HEAD Git Branch Commands Delete and Rename Branches Merging Branches - Theory and Concepts Merging Branches in Practice Git Diff</p> <p>Lab week 3</p> |
| 4 | <p>Git with Going back and Undoing Changes -Git Checkout and Detached HEAD -Git Restore, Git Reset, Git Revert Undoing Changes - Exercise and Solution</p> |

| | |
|---|--|
| 5 | <p>Docker</p> <p>Docker Overview Basic Docker Commands Docker Run</p> <p>Docker Images Environment Variables Command vs Entrypoint</p> |
| 6 | <p>Labs - Docker Images Labs - Environment Variables Labs - Command vs Entrypoint</p> <p>Docker Compose Docker Registry</p> <p>Lab: Docker Registry Labs: Docker Compose</p> |
| 7 | <p>Docker Engine Docker Storage Docker Networking</p> <p>Labs - Docker Storage Labs - Docker Networking</p> |
| 8 | <p>Docker Swarm Docker Service Docker Stacks CI/CD - Docker Integration</p> <p>Lab</p> |

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| 5 | <p>Docker</p> <p>Docker Overview Basic Docker Commands Docker Run</p> <p>Docker Images Environment Variables Command vs Entrypoint</p> <p>Labs - Docker Images Labs - Environment Variables Labs - Command vs Entrypoint</p> | 6 | |
| 7 | <p>Docker Engine Docker Storage Docker Networking</p> <p>Labs - Docker Storage Labs - Docker Networking</p> | 8 | <p>Docker Swarm Docker Service Docker Stacks CI/CD - Docker Integration</p> <p>Lab</p> |
| | | 9 | <p>Kubernetes 1</p> <p>Container Orchestration Kubernetes Architecture PODs</p> |
| | | 10 | <p>Kubernetes 2</p> <p>Basics of Networking in Kubernetes ReplicaSets and Deployments</p> <p>11 Micro service</p> <p>12 Jenkins</p> <p>13 Mini Project Pitching</p> <p>14 Mini Project Pitching</p> <p>15 Mini Project Pitching</p> <p>16 Mini Project Pitching</p> |

| การให้คะแนน | |
|---------------------------|----|
| Midterm | 30 |
| Final | 35 |
| Homework and Exercise LAB | 15 |
| Mini project | 20 |

- Git was developed in 2005 by **Linus Torvalds**
- Git is **Version control system** is a system that records changes to a file or set file over time so that you. can restore specific version later
- Git is a **Distributed Version Control System**



Git helps us...

Track changes across multiple files

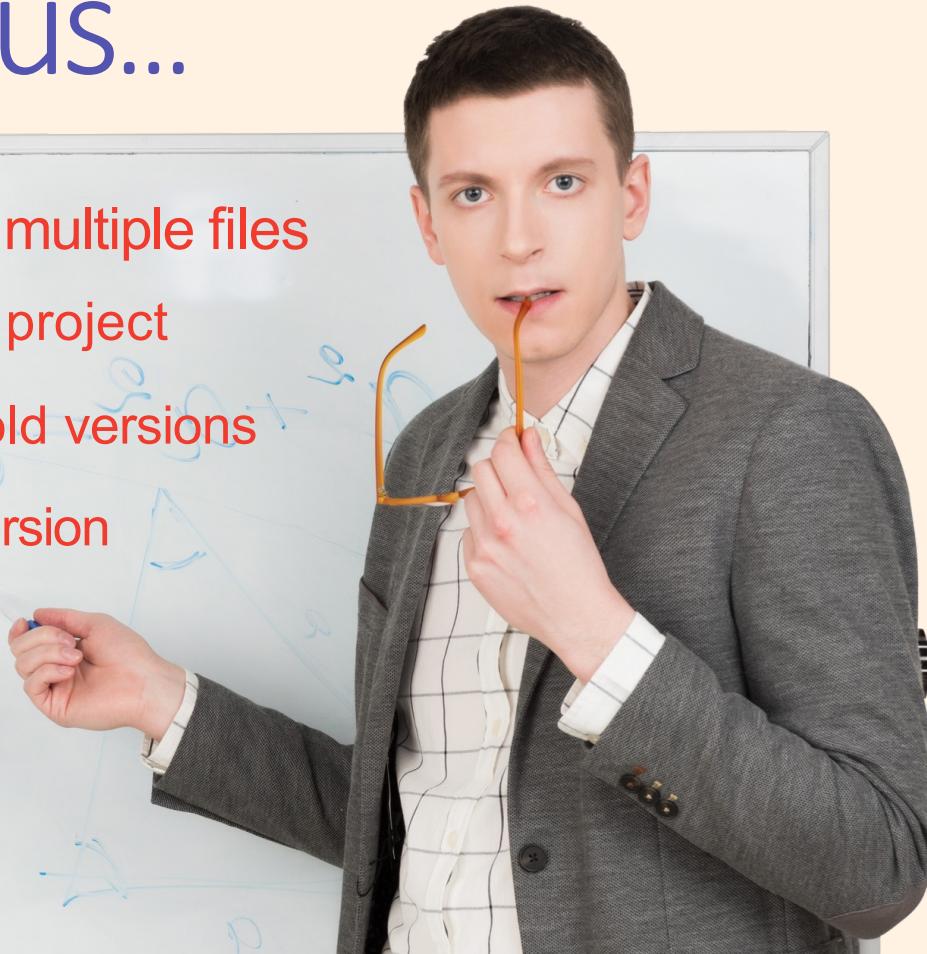
Compare versions of a project

"Time travel" back to old versions

Revert to a previous version

Collaborate and
share changes

Combine changes







Git – What and Why

Oh boy, I sure do
love playing my
video games!



I'm going to save
my game now in
case I die soon!



Oh jeez, this is
going to be a
difficult fight!





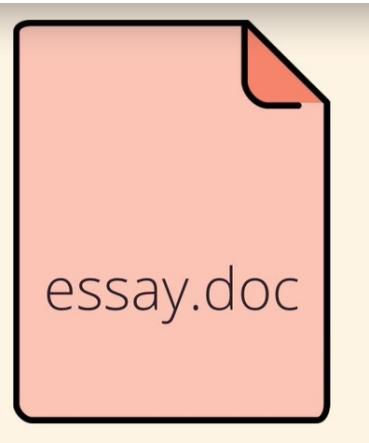
ughhhh I died!





Thank heavens I
saved my game! I
can just revert!





essay.doc

essay_v2.doc

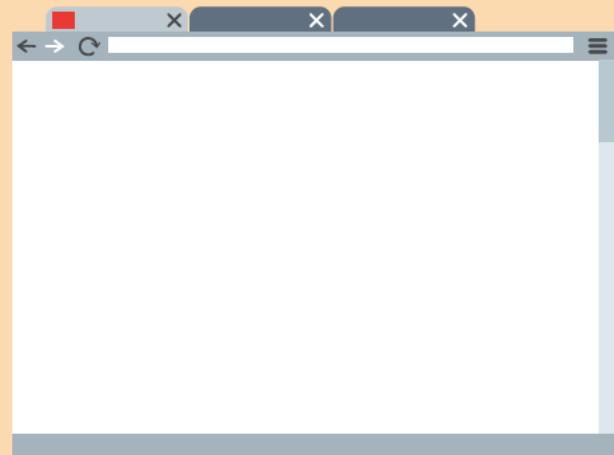
essay_final.doc

essay_v1.doc

essay_v2
new_intro.doc

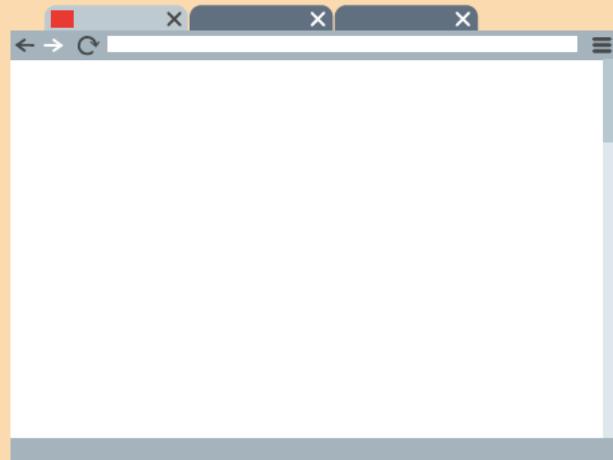
essay_FINAL_
FINAL_FOR_
REAL.doc

I Start A New Project!



Add A Checkpoint

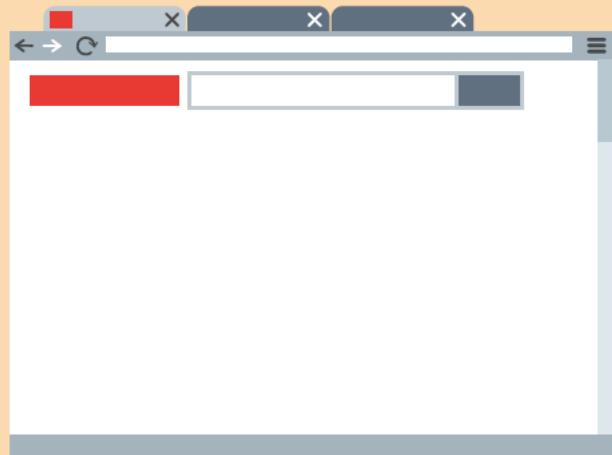
Initialize Project



Add A Checkpoint

Initialize Project

Add Top Navbar

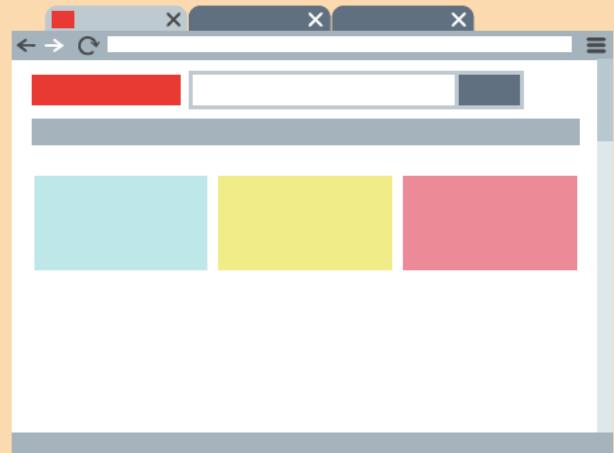


Add A Checkpoint

Initialize Project

Add Top Navbar

Add First Row



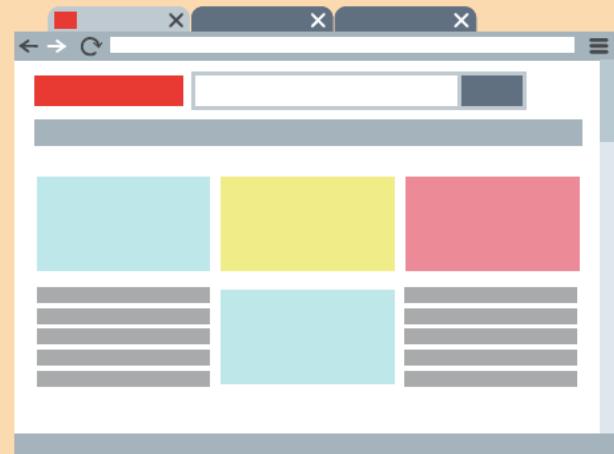
Add A Checkpoint

Initialize Project

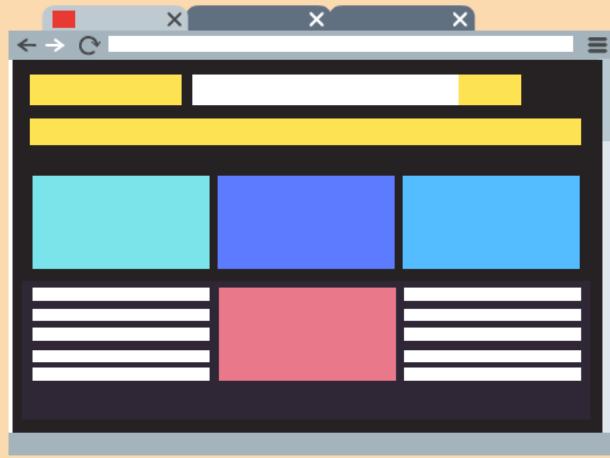
Add Top Navbar

Add First Row

Finish Bottom Row



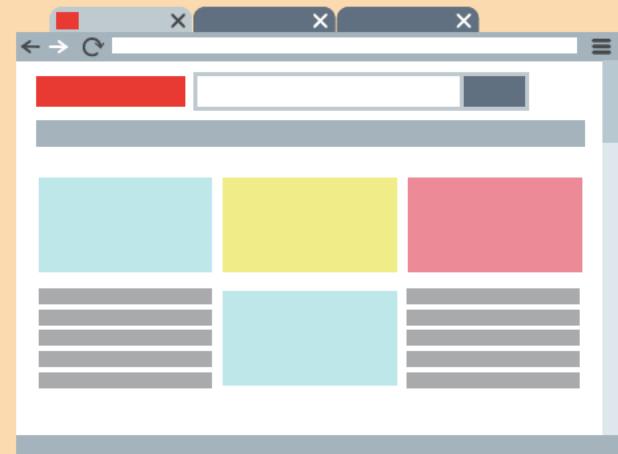
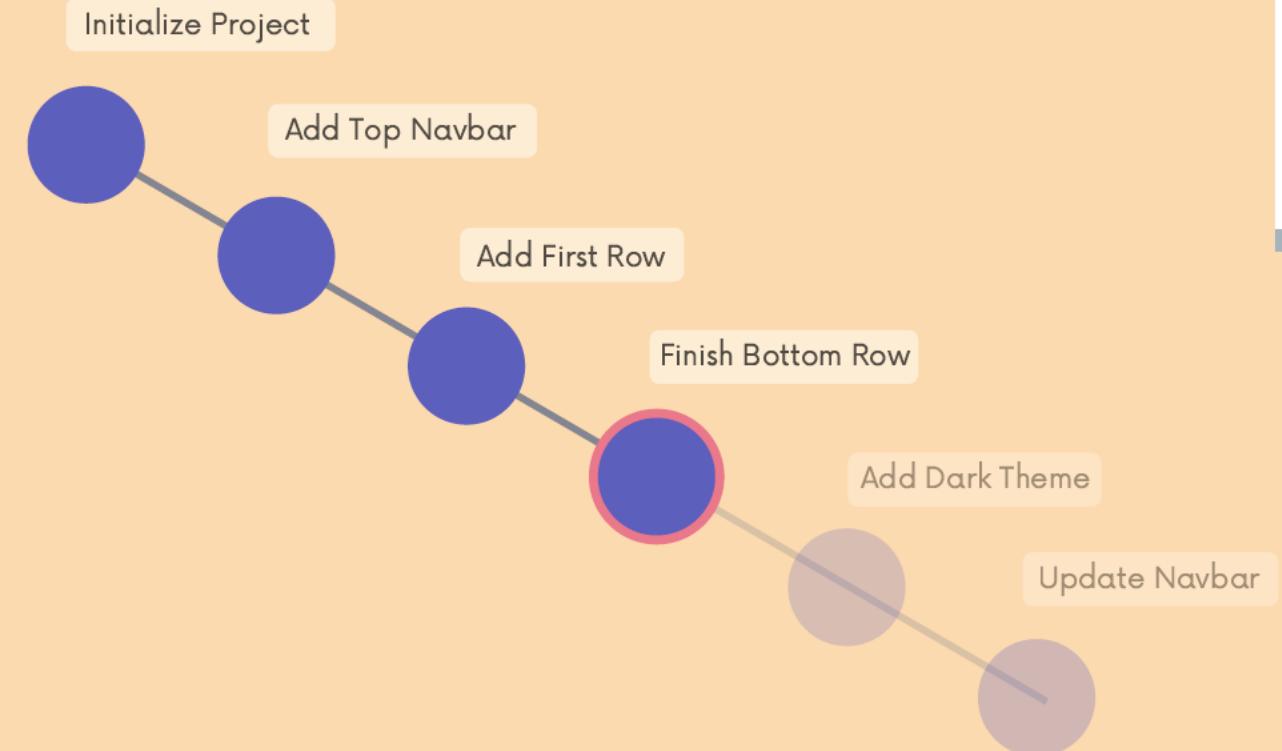
Add A Checkpoint



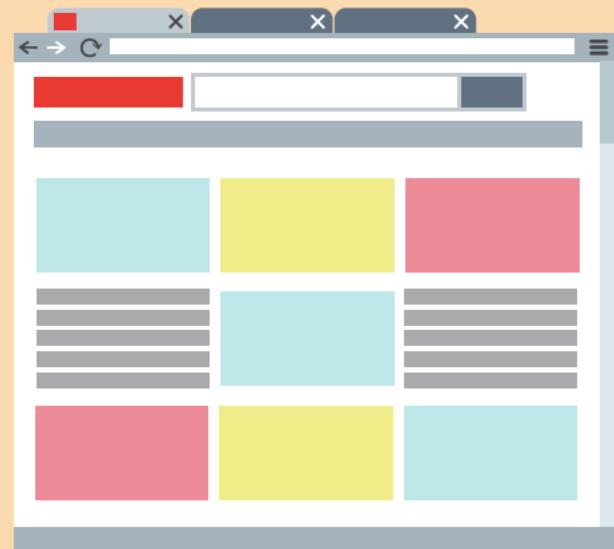
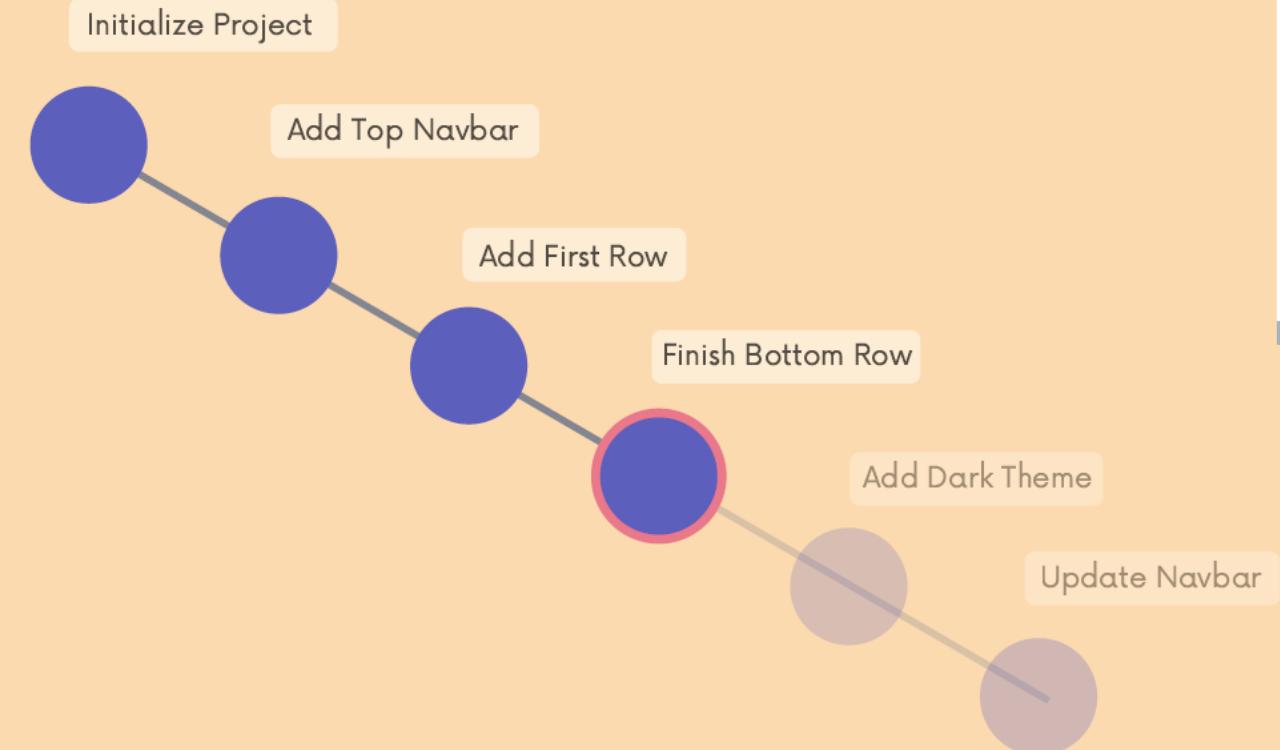
A woman with long brown hair, wearing a brown blazer over a light-colored shirt and shorts, is shouting and pointing her right index finger towards the right side of the frame. She is holding a small blue object in her left hand.

**ANGRY BOSS SAYS...
THE COLORS ARE BAD!**

I can go back to prior checkpoints I made!

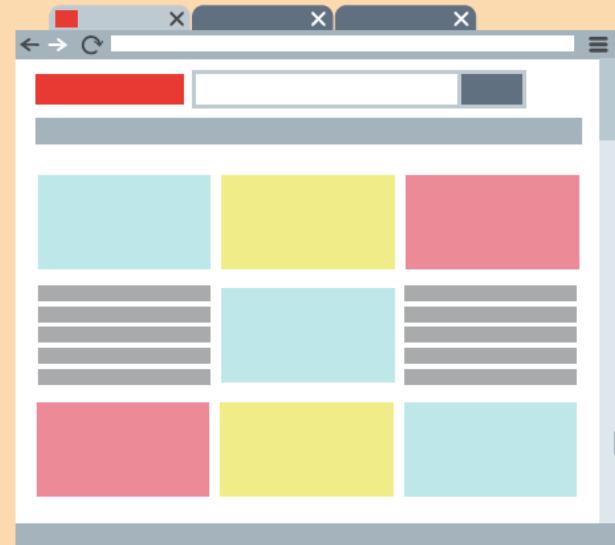
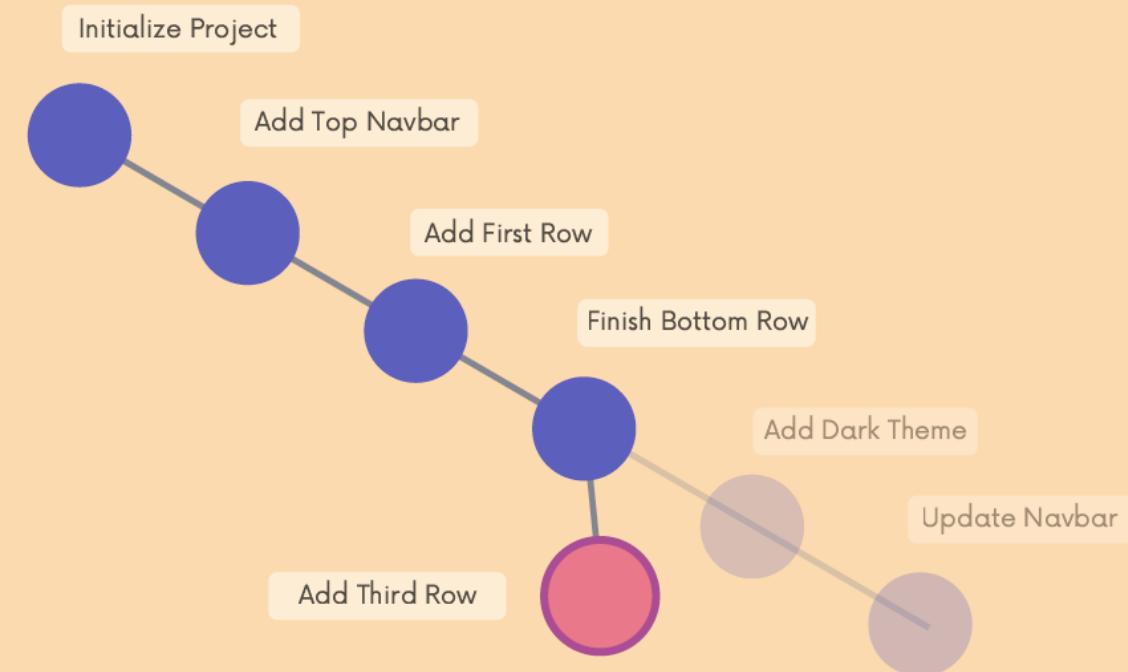


I can even start more work off of an old checkpoint

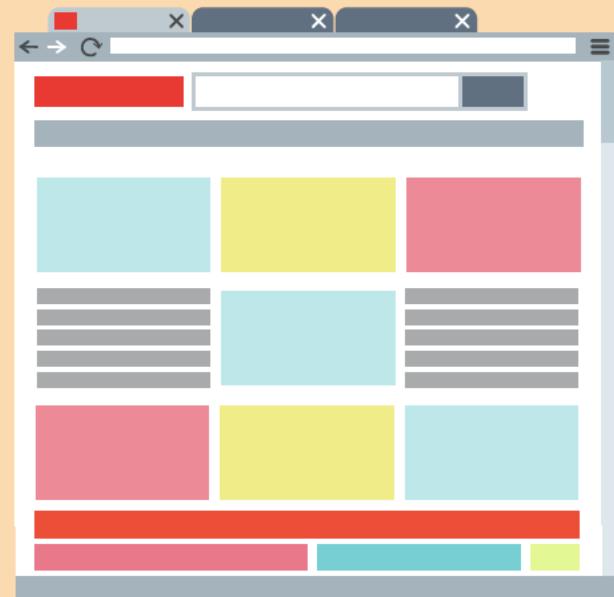
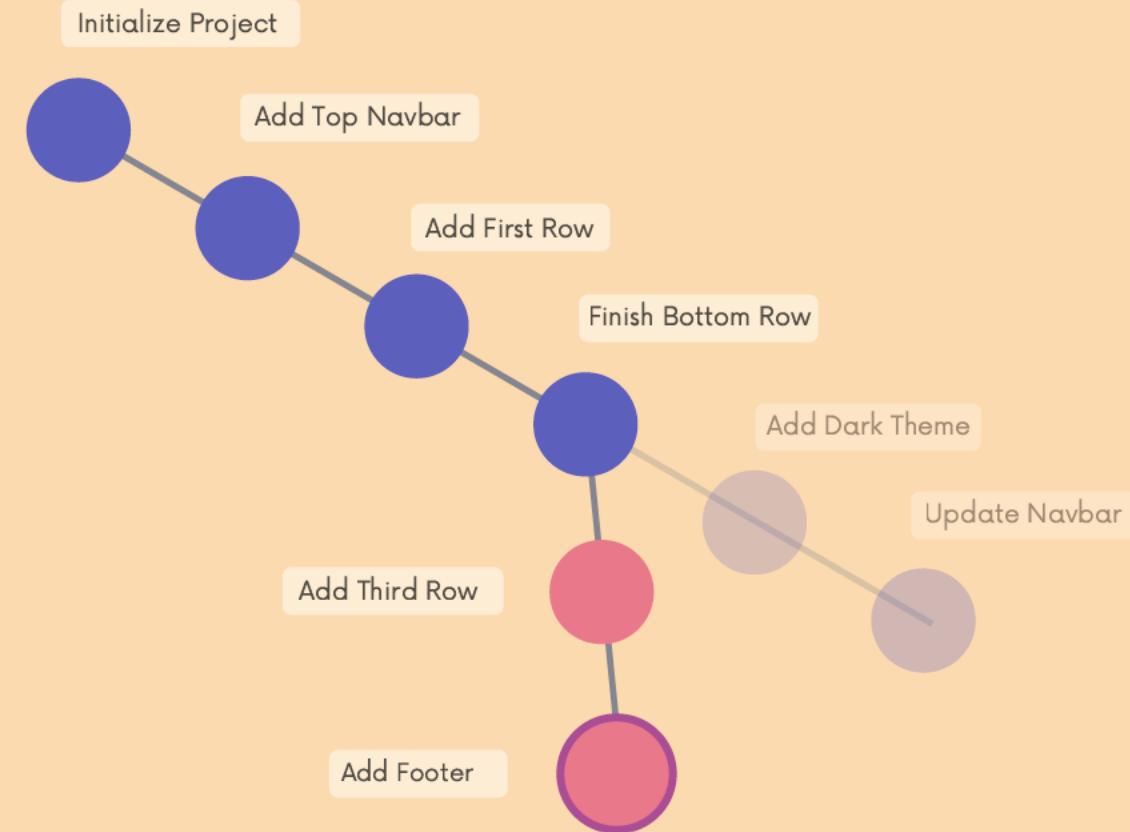


I add more content!

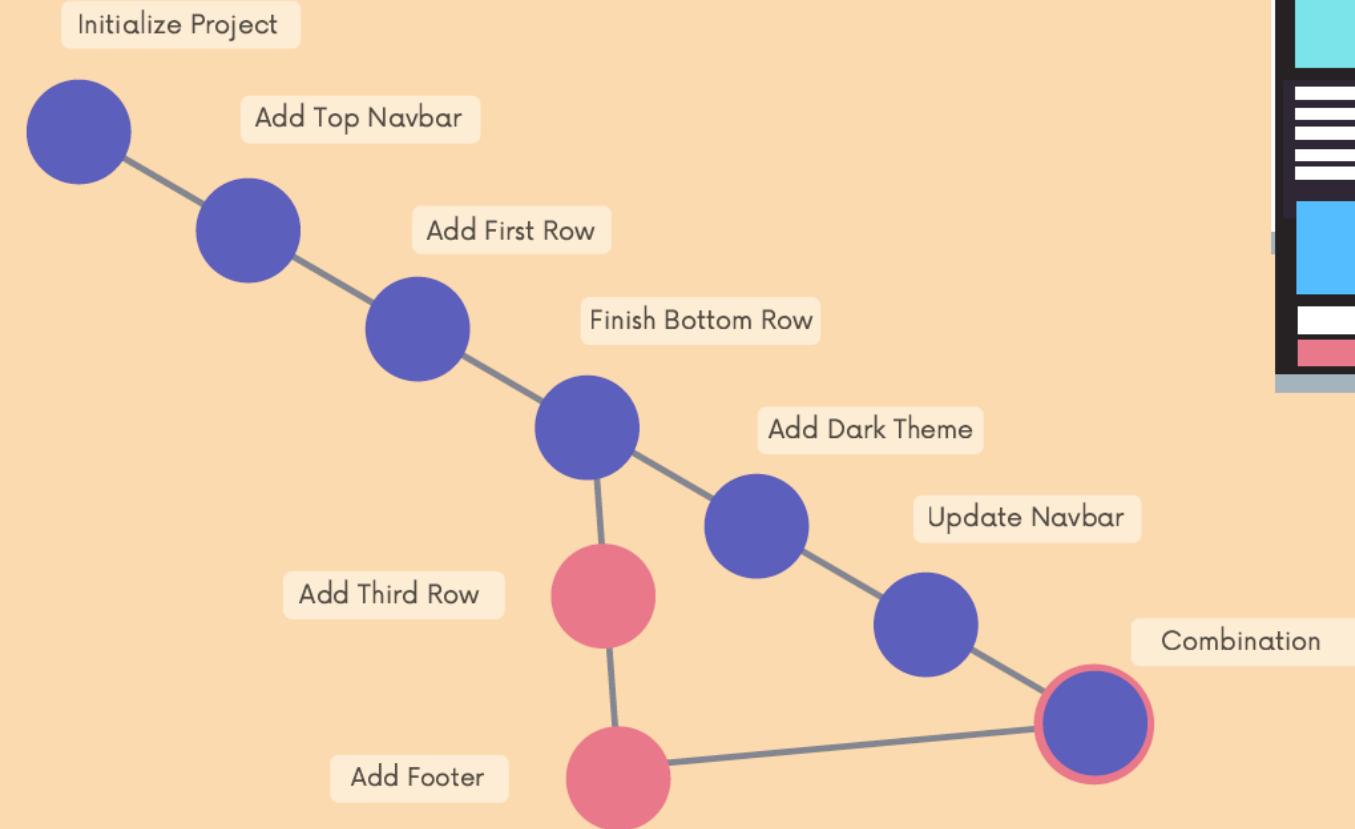
I add a new checkpoint!



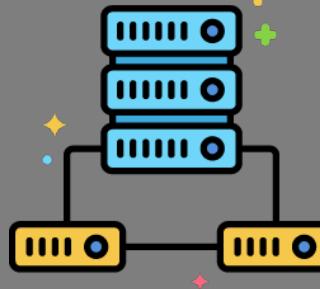
Another checkpoint!



And I can even combine checkpoints!



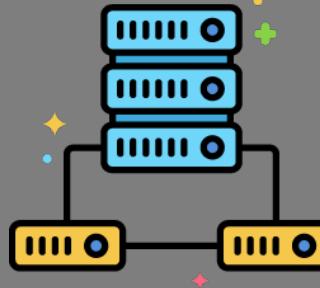
Before Version Control System



Before Version Control System



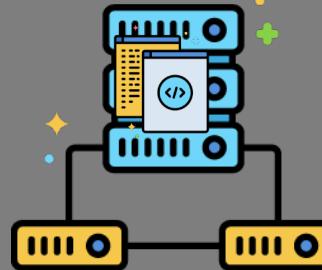
Version 1.0



Before Version Control System



Version 1.0



running code version 1.0

Before Version Control System

I have a great idea, send me your code



Before Version Control System



Before Version Control System

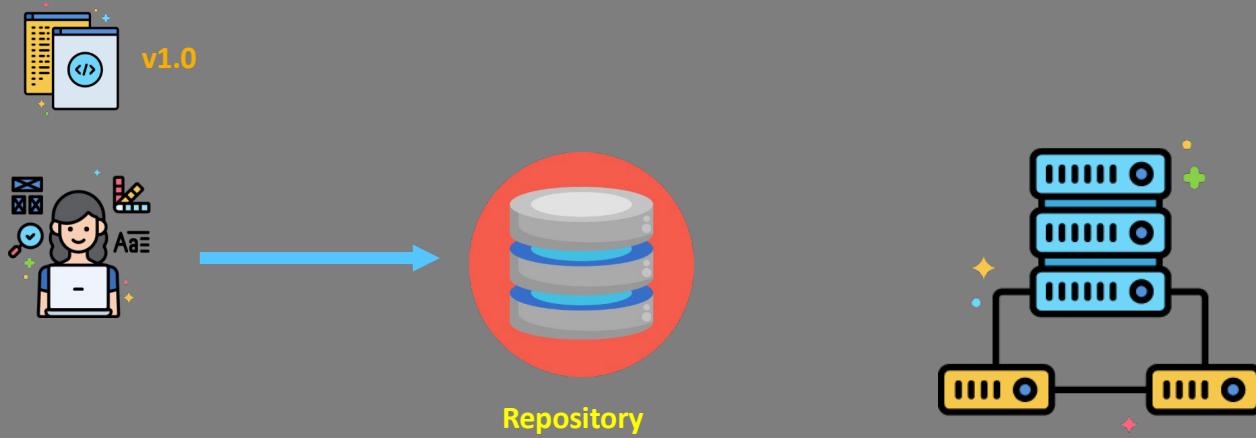


Before Version Control System

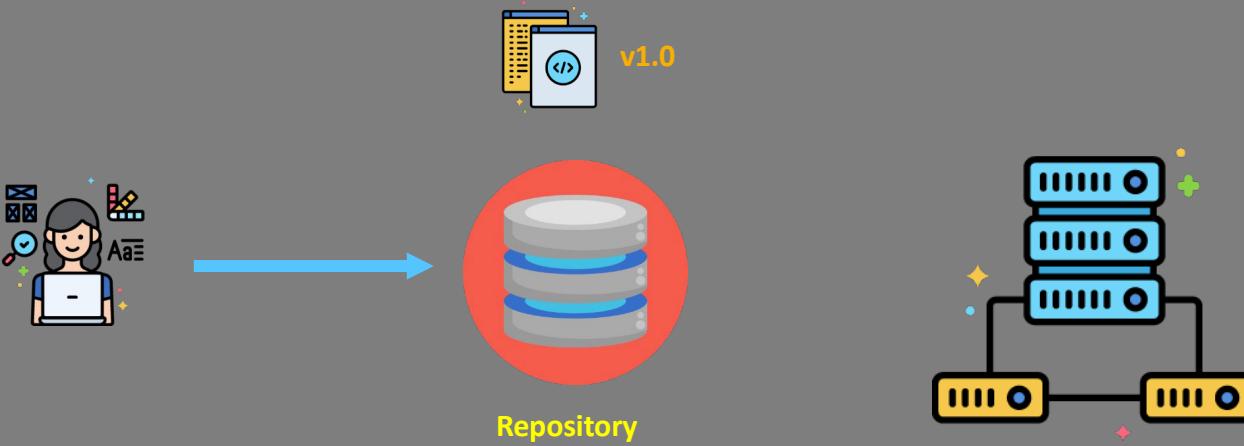


- Rollback is time consuming
- No audit tracking
- Not scalable for large teams

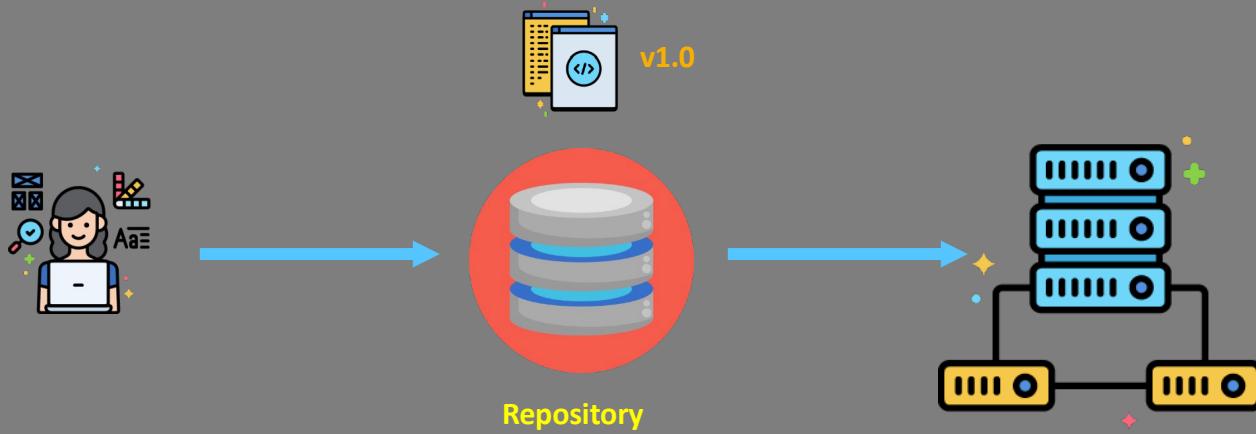
Version Control System



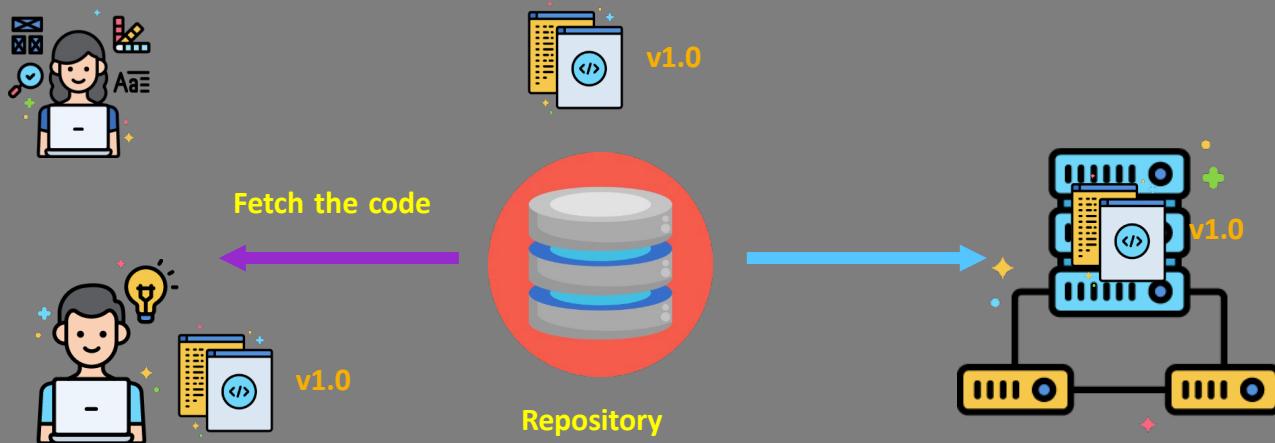
Version Control System



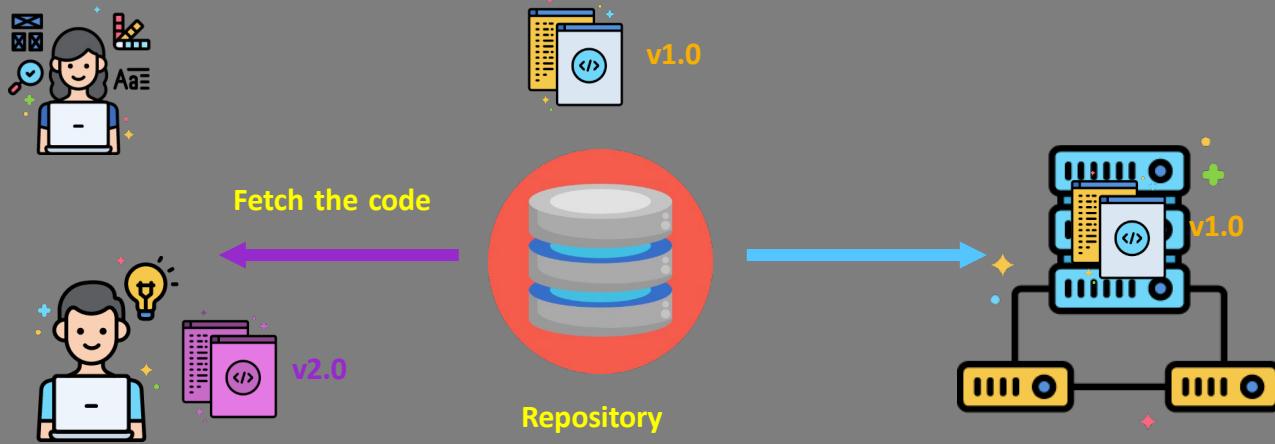
Version Control System



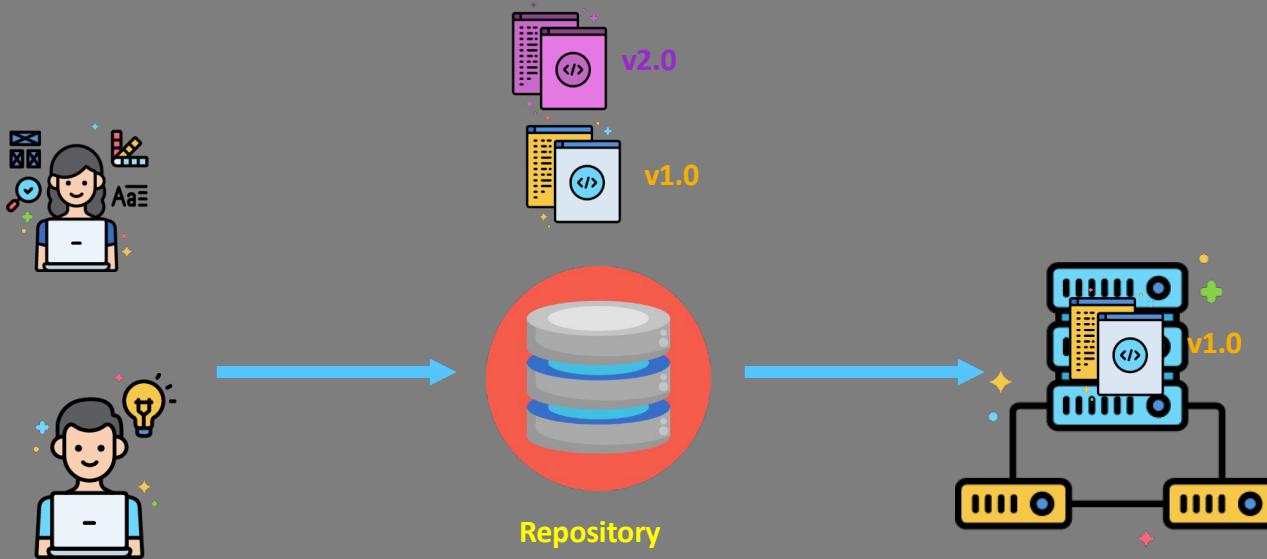
Version Control System



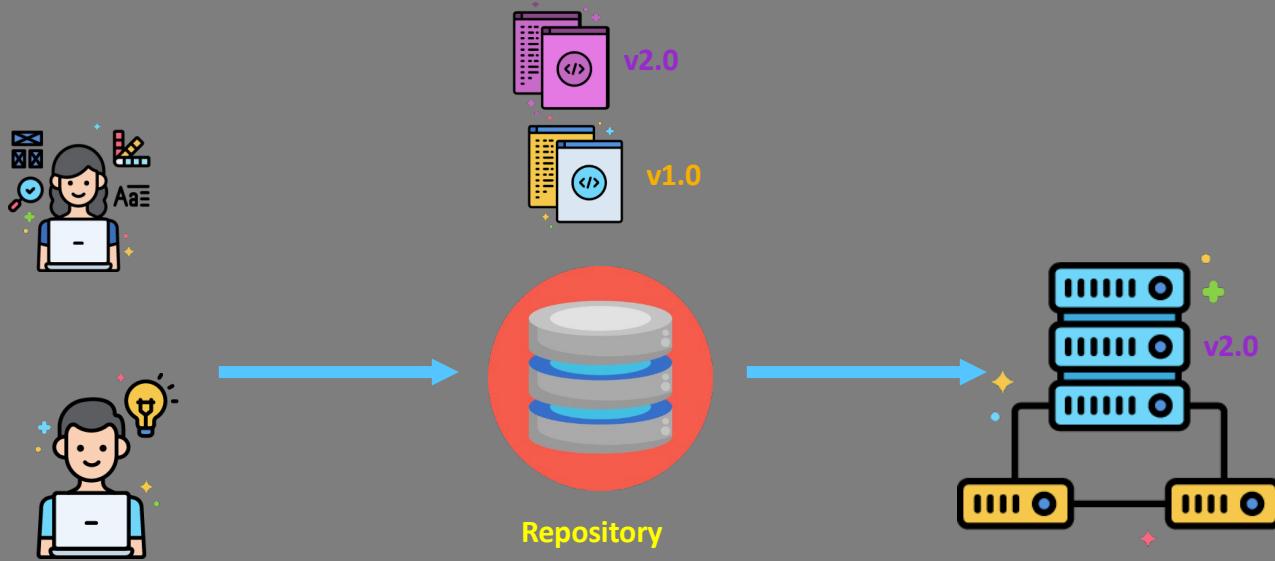
Version Control System



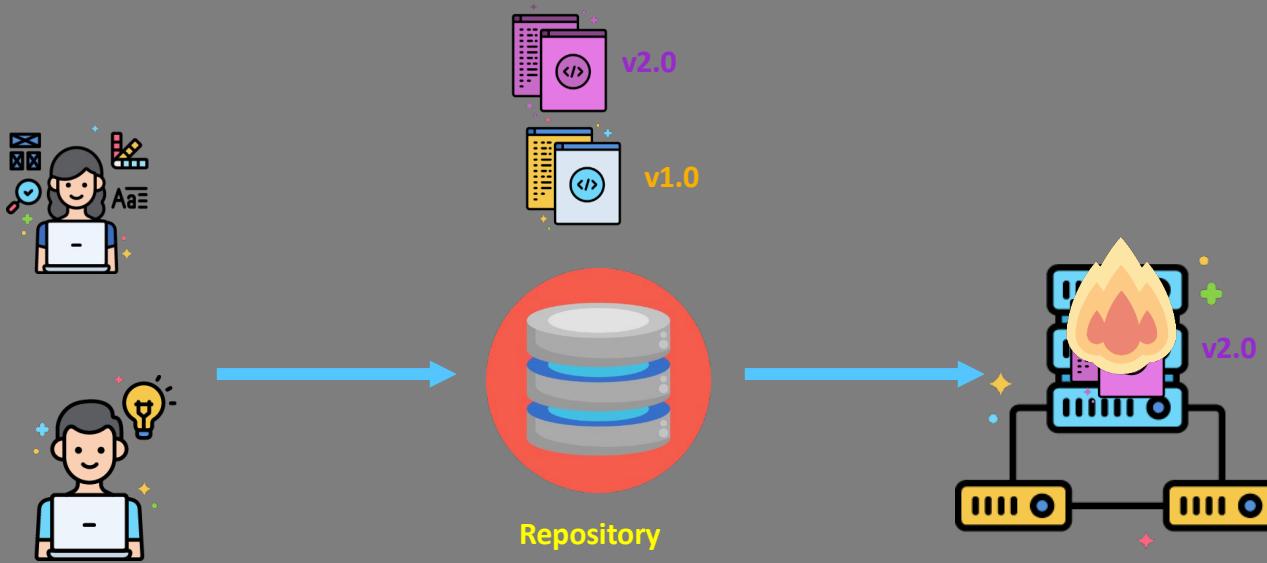
Version Control System



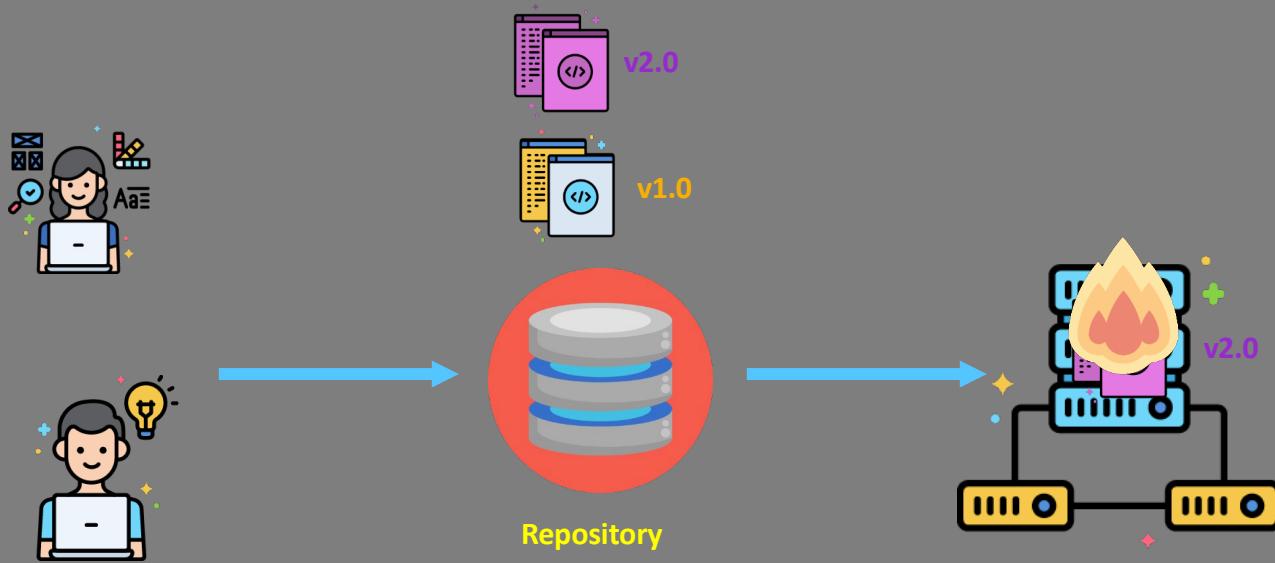
Version Control System



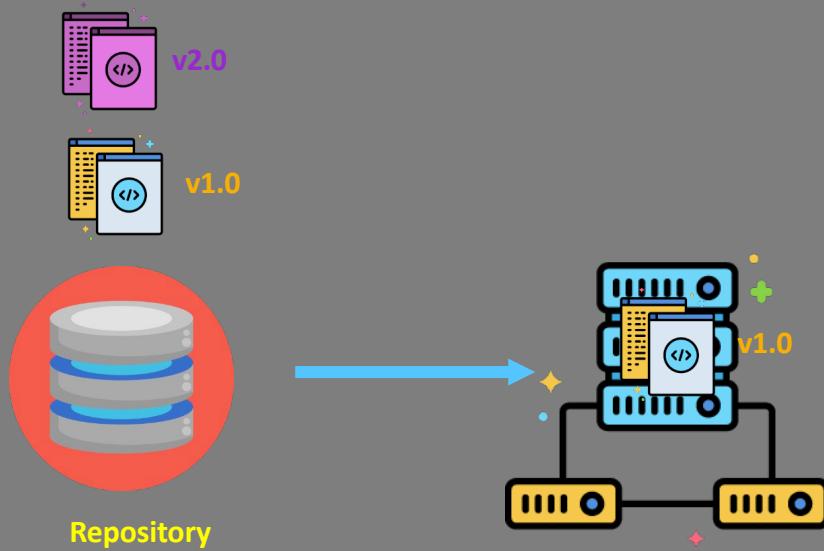
Version Control System



Version Control System



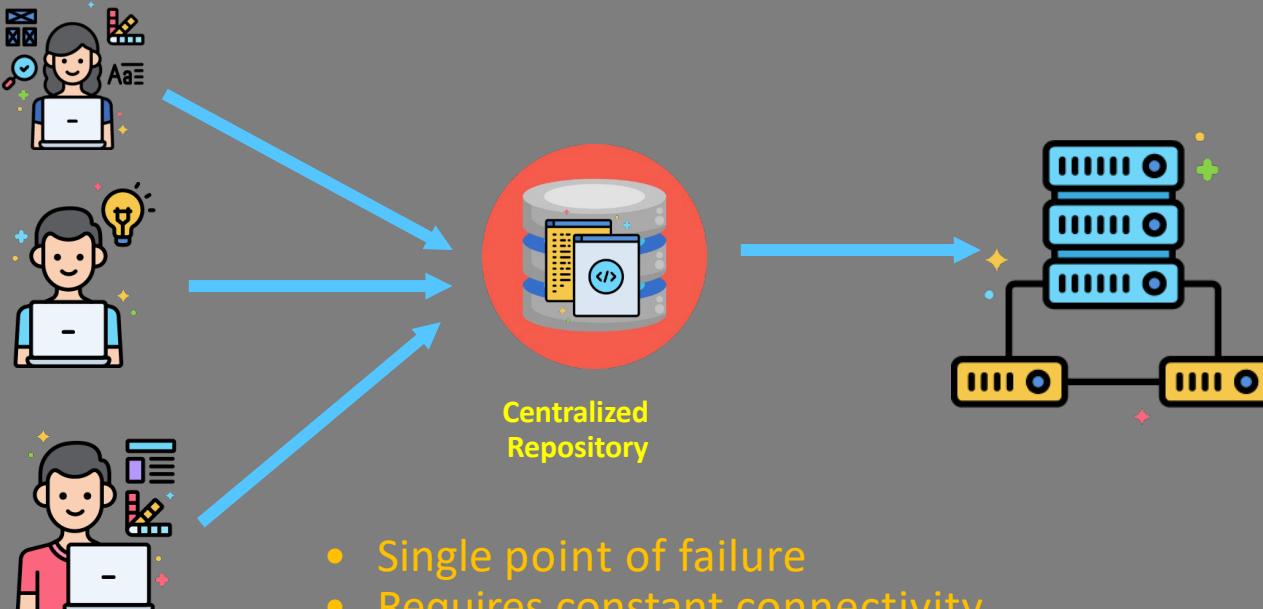
Version Control System - Git



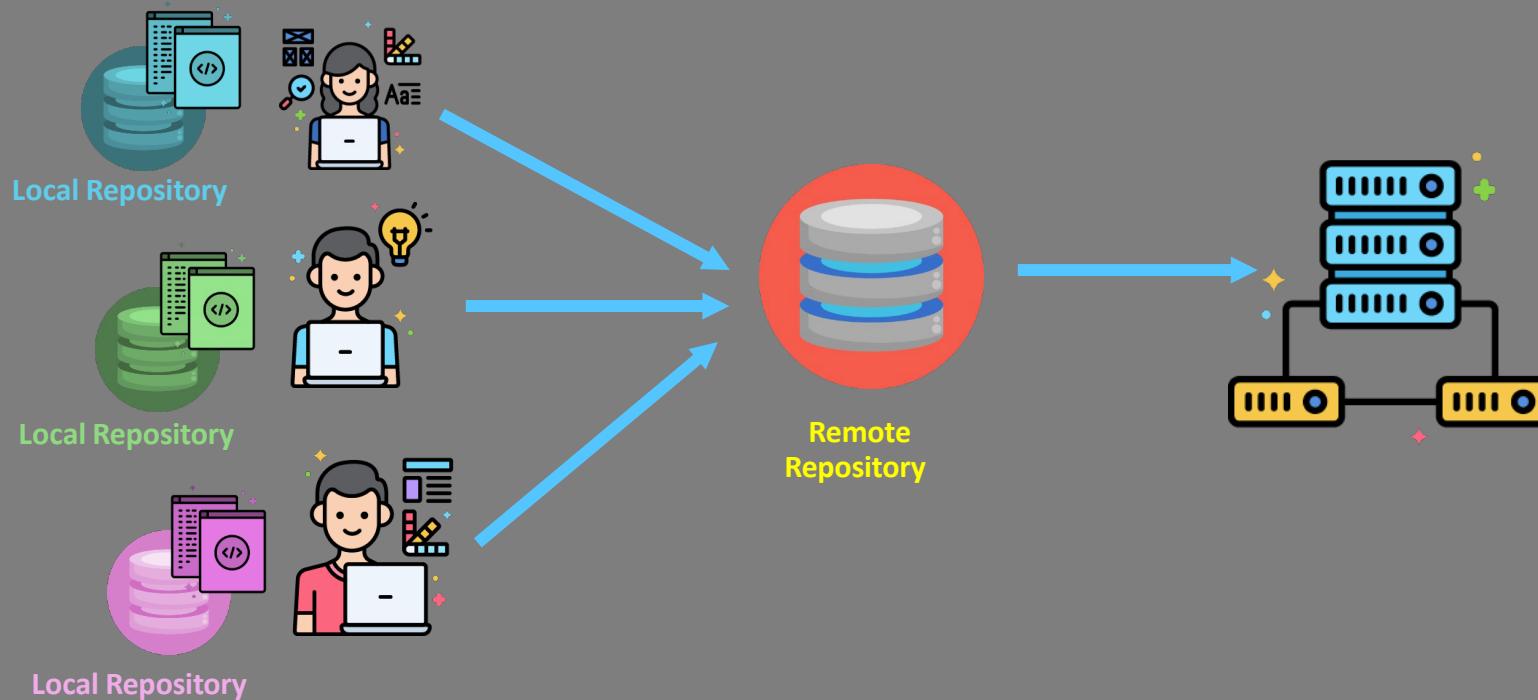
Why Git?

- Distributed

Centralized Version Control System

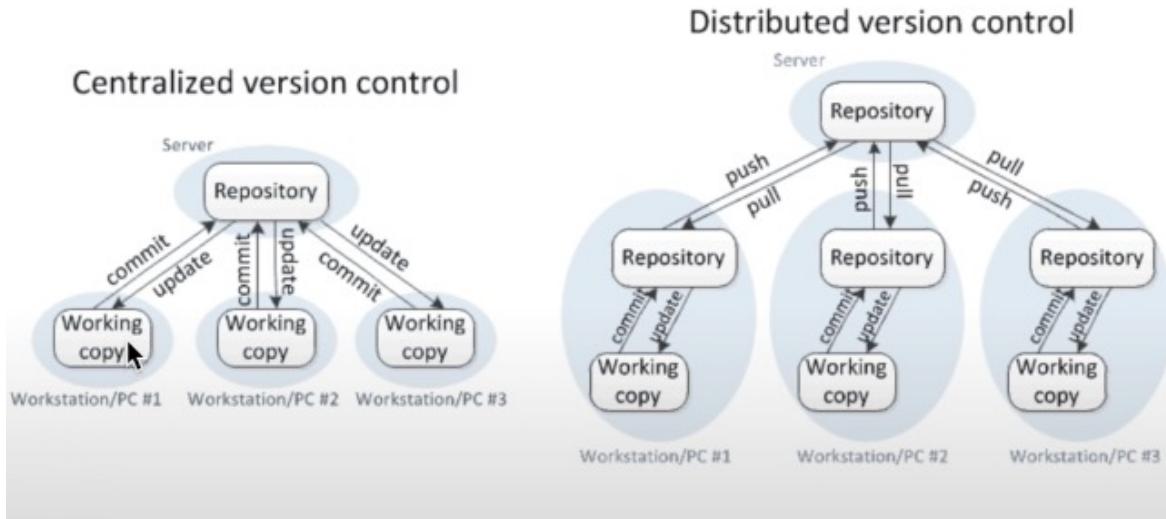


Distributed Version Control System

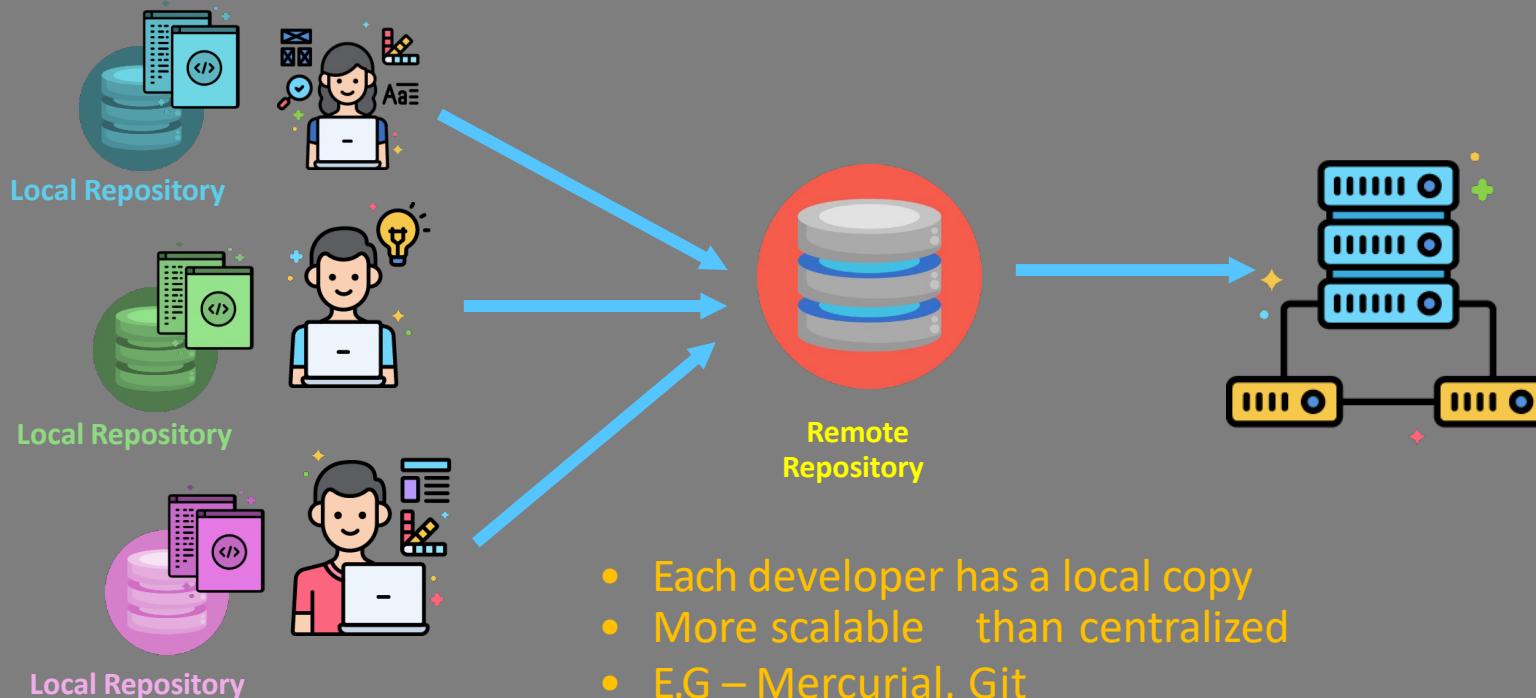


Centralized vs Distributed

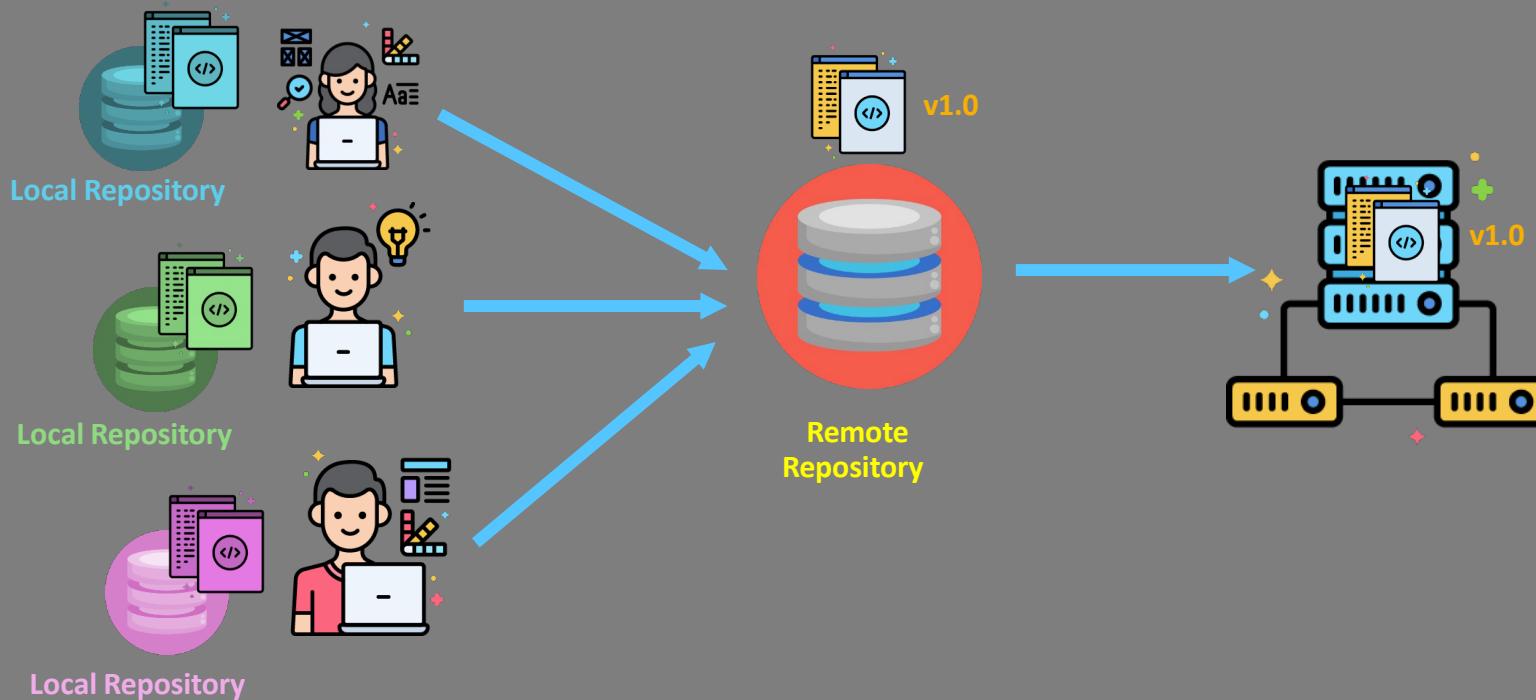
Version Control



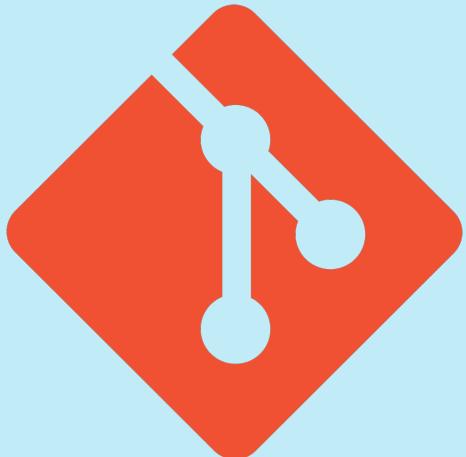
Distributed Version Control System



Distributed Version Control System



Version Control System



Why Git?

- Distributed
- Performant
- Detailed audit tracking
- Open source
 - Free!
 - Implemented with Kubernetes GitOps, integration with Jenkins and other DevOps tools
 - GitHub, GitLab, Code Commit are all based on Git

Git vs GitHub

Git Vs. GitHub

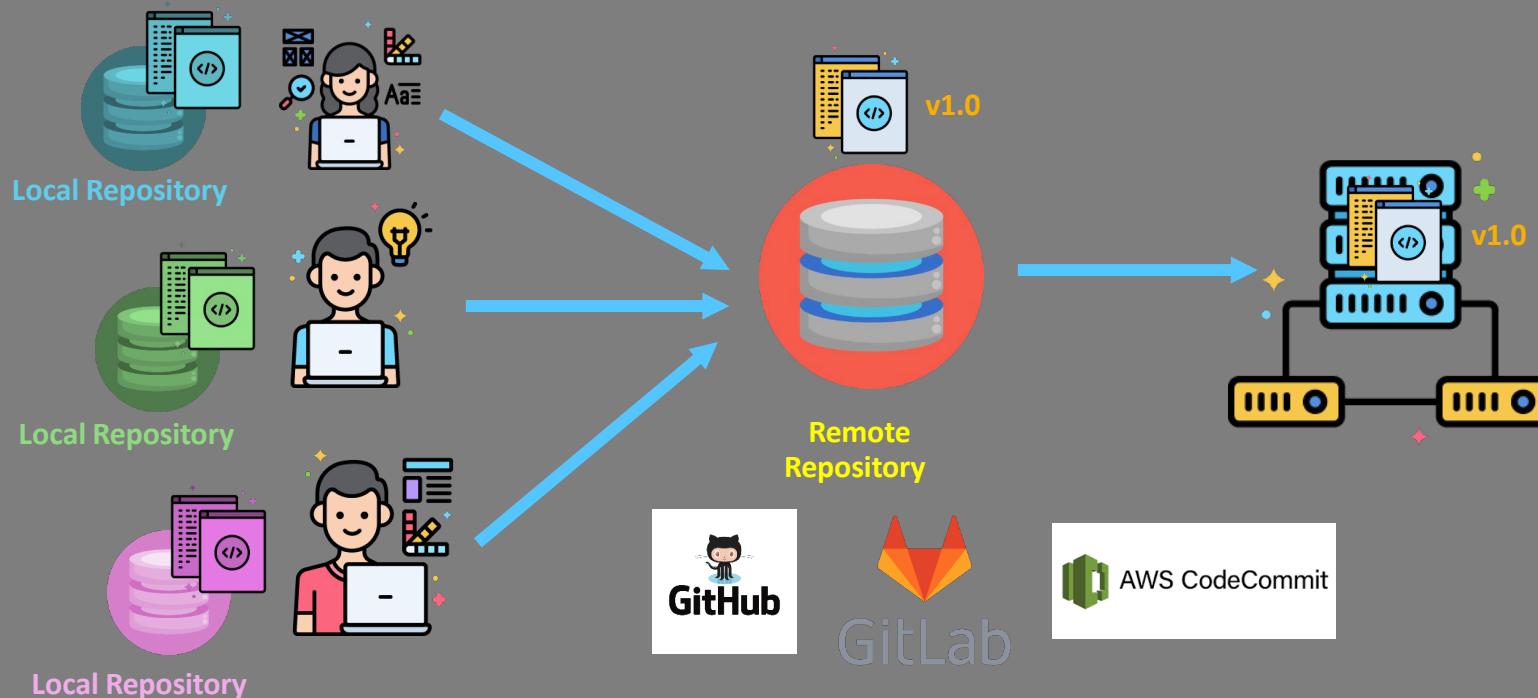


- Version Control System
- Installed locally on the system
- Created in 2005, by Linus Torvalds
- Open source, and used in multiple cloud repository services



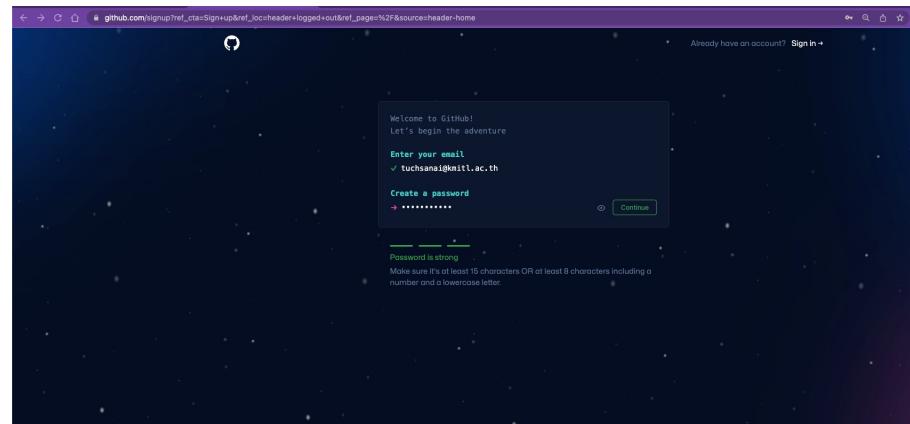
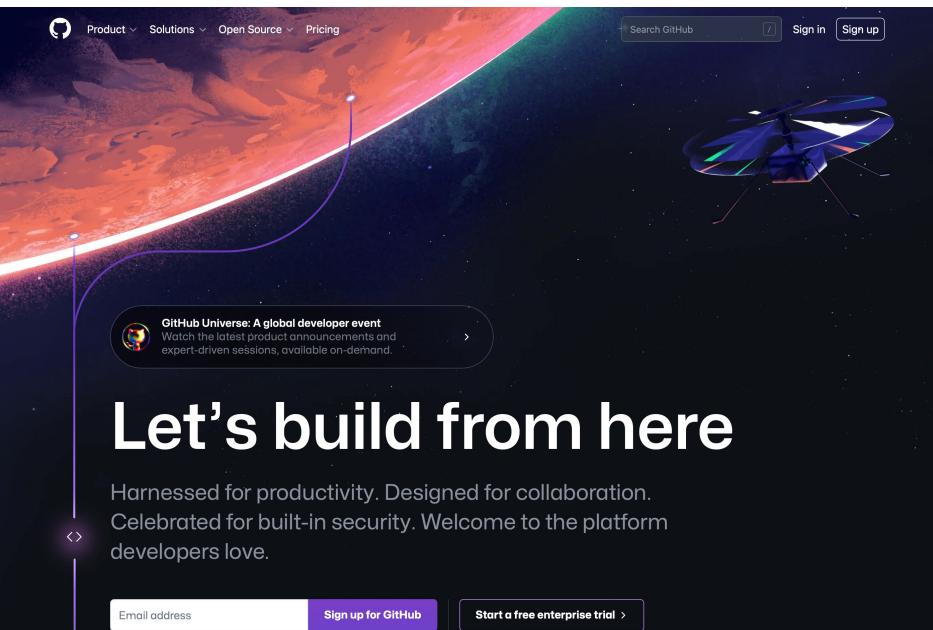
- Git repository hosting services with other features
- Runs on the cloud
- Created in 2008, currently owned by Microsoft
- Not open source, have free and paid tiers

Distributed Version Control System



Week 1 - Starting with Git

Sign Up : <https://github.com>



<https://github.com>

Installing Git

Week 1 - Starting with Git

- MacOS or Linux Users:**

- Congrats! You already have Git installed on your machine since it comes pre-installed as part of your OS.
 - To confirm this, open up a terminal and type:
 - `git --version`
 - `>> git version 2.25.1 (Apple Git-128)`

Week 1 - Starting with Git

- **MacOS or Linux Users:**
 - If you wish to update or re-install git, you can do this by simply selecting the MacOS or Linux links on the official git website:
 - **<https://git-scm.com/downloads>**

Week 1 - Starting with Git

- **MacOS or Linux Users:**

- Our suggested text editor for this course is VS Code:
 - <https://code.visualstudio.com/>
- It's created by Microsoft and has direct integrations with GitHub and is one of the most popular text editors today.
- You can follow along with any text editor you prefer however.



Week 1 - Starting with Git

- **Windows Users:**

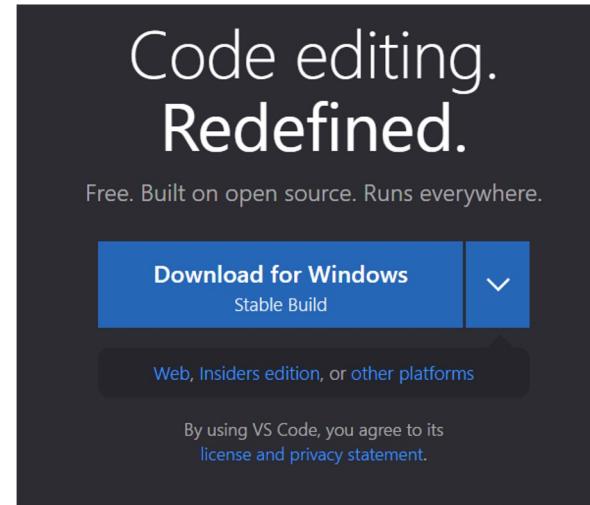
- Our *HIGHLY* recommend text editor for this course is VS Code:
 - **<https://code.visualstudio.com/>**
- Why *HIGHLY* recommended?
 - Windows + VS Code + GitHub
 - Upon installing git you will be asked to select a default editor, you'll need VS Code installed to select it as default.



Week 1 - Starting with Git

- **Windows Users:**

- Go to:
 - <https://code.visualstudio.com/>
- Download with Default Settings:





Week 1 - Starting with Git

- **Windows Users:**

- Next we'll download git, go to:
 - **<https://git-scm.com/>**

The screenshot shows the 'Downloads' section of the git-scm.com website. At the top, there's a navigation bar with links for 'About', 'Documentation', 'Downloads', 'GUI Clients', 'Logos', and 'Community'. Below the navigation, there's a sidebar with links for 'macOS', 'Windows', and 'Linux/Unix'. A note says 'Older releases are available and the Git source repository is on GitHub.' To the right, there's a large image of a Mac desktop with a monitor displaying 'Latest source Release 2.38.1 Release Notes (0022-10-07) Download for Mac'. Below this, there are sections for 'GUI Clients' (with a link to 'View GUI Clients') and 'Logos' (with a link to 'View Logos'). At the bottom, there's a section for 'Git via Git' with a note about getting the latest development version via Git itself.

DAY 1

Configure Git



Week 1 - Starting with Git

- You can check the current configuration with the commands:
 - **git config user.name**
 - **git config user.email**
- The configuration commands will be:
 - **git config --global user.name “user”**
 - **git config --global user.email “email”**
- If switch with another github account
 - **git config --global user.name “user”**
 - **git config --global user.email “email”**
 - **git config --global credential.username “user”**

Show global Git configuration?

```
git config --list or git config -l
```

or look at your `~/.gitconfig` file. The local configuration will be in your repository's `.git/config` file.

```
git config --list --show-origin
```

Week 1 - Starting with Git

- Let's head over to our command line interface to set-up our Git configuration:
 - Git Bash
 - Terminal
 - Command Prompt

DAY 1

Creating a Git Repository

Day 1 - Starting with Git

- How can we create a Git Repository?
 - **git init**
 - This command initializes a Git Repository on your local machine.
 - You only need to run this command once per project.
 - **git status**
 - This command will report back the status of your Git repository.

Day 1 - Starting with Git

- How can we create a Git Repository?
 - Upon creating a repository with **git init** you will create a hidden .git file.
 - The .git file is a hidden file that manages the versioning of the files inside the Git repository.

Day 1 - Starting with Git

- Git inside a Folder/Directory:
 - Upon creating a Git Repository, all the folders/directories inside the top level Git Repository will also be part of that Repository, meaning all the changes are tracked.

Day 1 - Starting with Git

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 - Upon creating a Git Repository, all the folders/directories inside the top level Git Repository will also be part of that Repository, meaning all the changes are tracked.



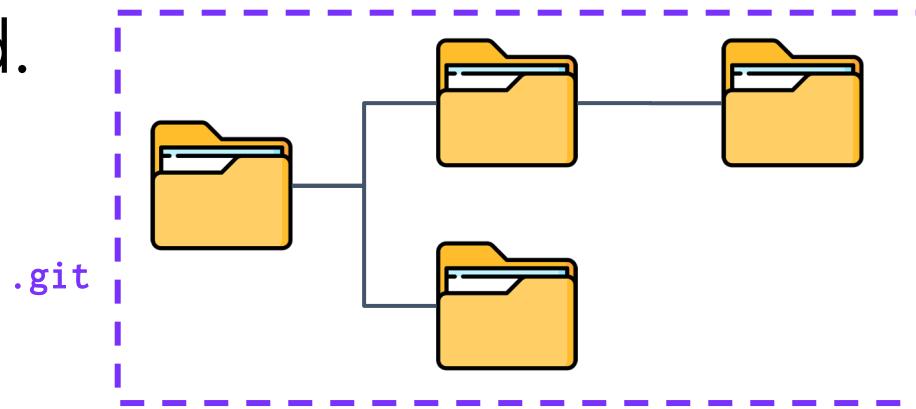
Day 1 - Starting with Git

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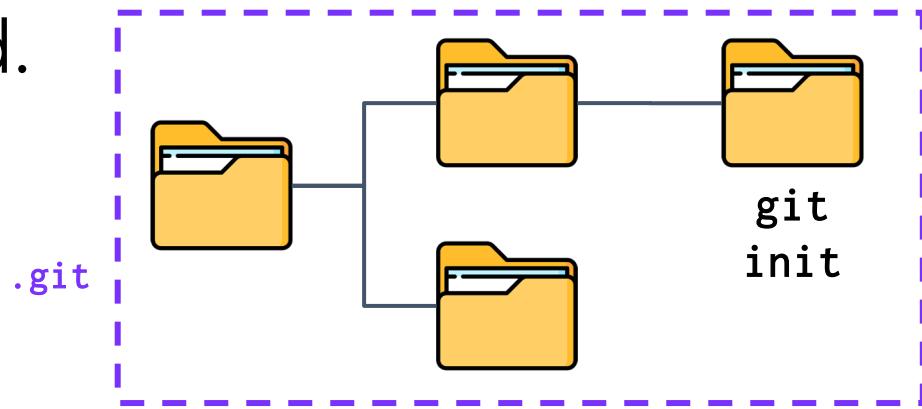
Day 1 - Starting with Git

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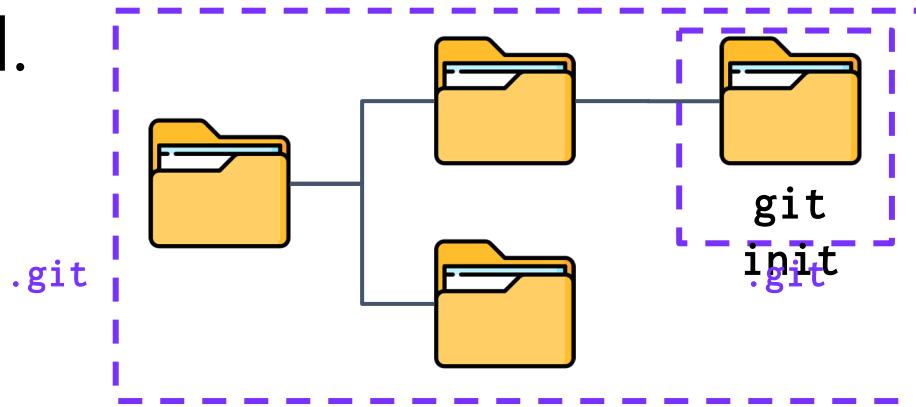
Day 1 - Starting with Git

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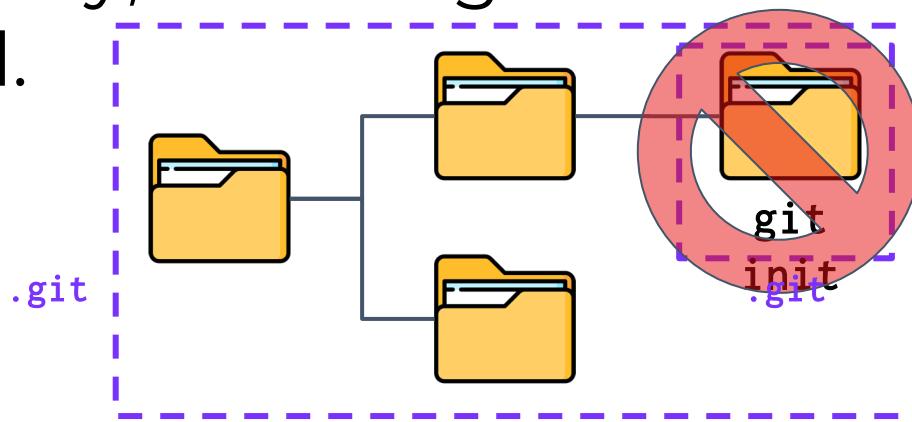
Day 1 - Starting with Git

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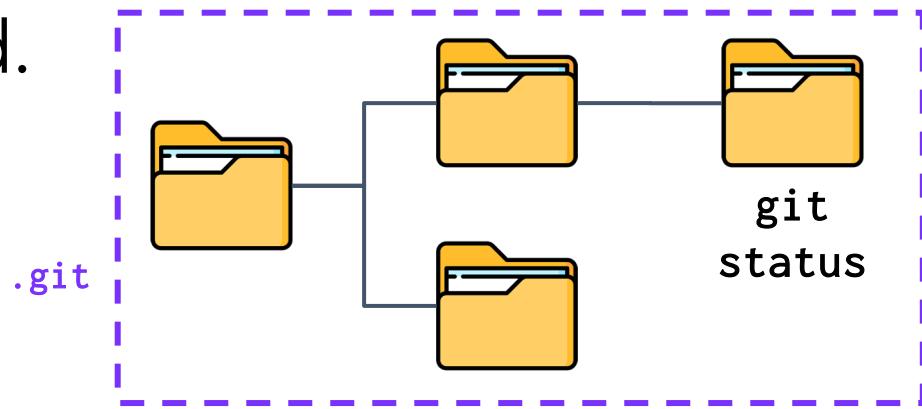
Day 1 - Starting with Git

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Day 1 - Starting with Git

- Git inside a Folder/Directory:
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Ignoring Files

We can tell Git which files and directories to ignore in a given repository, using a `.gitignore` file. This is useful for files you know you NEVER want to commit, including:

- Secrets, API keys, credentials, etc. Operating
- System files (`.DS_Store` on Mac) Log files
- Dependencies & packages



.gitignore

Create a file called .gitignore in the root of a repository. Inside the file, we can write patterns to tell Git which files & folders to ignore:

- `.DS_Store` will ignore files named `.DS_Store`
- `folderName/` will ignore an entire directory
- `*.log` will ignore any files with the `.log` extension

<https://www.toptal.com/developers/gitignore>



› **gitignore.io**

สร้างไฟล์ .gitignore ที่มีประโยชน์สำหรับไปริจิคต์ของคุณ

ค้นหา

ซอฟต์แวร์ | ลงชื่อนักเขียน คำชี้แจง คอมมานต์ไลน์ คุณ!



Day 1 - Starting with Git

- How can we create a Git Repository?
 - We can also use the Graphical Interface with GitHub Desktop or we can even create a new repository online at www.github.com.
 - Then we can **git clone** this repository to our local machine.

Day 1 - Starting with Git

- Let's create our first local Git repository at the command line.
- Then we'll create a repository on GitHub and use **git clone** to clone it to our local computer.
 - We'll need to set-up some tokens in order to clone private repositories.

DAY 1

Private Repositories and Tokens

Day 1 - Starting with Git

- Clone Syntax with PAT:

```
git clone https://username:YOUR_TOKEN@github.com/username/repo.git
```

- Previously we used:

```
git clone https://github.com/account/repo.git
```

Create a Personal Access Token

- Log in to your GitHub account that you want to create the PAT for.
- Click on your profile picture in the upper-right corner of the screen and select "Settings."
- In the left sidebar, select "Developer settings."
- Under the "Developer settings" menu, choose "Personal access tokens."
- Click on the "Generate token" button.
- You'll be taken to the "Create a new personal access token" page. Please provide the following information:
 - "Note": Enter a name for your token to specify its purpose (e.g., "GitHub API access").
 - "Expiration": You can optionally set an expiration date for the PAT (not required).
 - "Select scopes": You need to choose the scopes you want this PAT to have access to (e.g., read repository data, write repository data, read user data, etc.).

You unlocked new Achievements with private contributions! Show them off by including private contributions in your Profile in settings.

Pinned

Customize your pins

746 contributions in the last year

Contribution settings ▾

Mon Wed Fri

Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep

A large yellow number 1 is displayed in the upper right corner, with a red arrow pointing upwards towards the user profile picture icon in the top right of the dashboard header.

1

Click on your profile picture in the upper-right corner of the screen and select "Settings."

- Set status
- Your profile
- Your repositories
- Your projects
- Your codespaces
- Your organizations
- Your enterprises
- Your stars
- Your sponsors
- Your gists
- Upgrade
- Try Enterprise
- Try Copilot
- Feature preview
- Settings**
- GitHub Docs
- GitHub Support
- Sign out

A large yellow number 2 is displayed in the bottom right corner, with a red rectangular box highlighting the "Settings" option in the sidebar menu.

2

3

In the left sidebar, select "Developer settings".

This screenshot shows the GitHub Public profile settings page. On the left, there's a sidebar with various account management options like Public profile, Account, Appearance, Accessibility, Notifications, Access, Billing and plans, Emails, Password and authentication, Sessions, SSH and GPG keys, Organizations, Enterprises, and Moderation. Below these are sections for Code, planning, and automation (Repositories, Codespaces, Packages, Copilot, Pages, Saved replies), Security (Code security and analysis), Integrations (Applications, Scheduled reminders), Archives, Security log, and Sponsorship log. At the bottom of the sidebar is a "Developer settings" link, which is highlighted with a yellow box and a large blue arrow pointing to it from below. The main content area is titled "Public profile" and contains fields for Name (tuchsanai), Profile picture (a white cat), Public email (with a dropdown menu), Bio (Tell us a little bit about yourself), Pronouns (Don't specify), URL, Social accounts (Link to social profile), Company, Location, and a note about displaying current local time. A large yellow box highlights the "Personal access tokens" section in the sidebar.

Your personal account

Public profile

Name

tuchsanai

Your name may appear around GitHub where you contribute or are mentioned. You can remove it at any time.

Profile picture

Public email

Select a verified email to display

You have set your email address to private. To toggle email privacy, go to [email settings](#) and uncheck "Keep my email address private."

Bio

Tell us a little bit about yourself

Pronouns

Don't specify

URL

Social accounts

Link to social profile

Link to social profile

Link to social profile

Link to social profile

Company

You can @mention your company's GitHub organization to link them.

Location

Display current local time

All of the fields on this page are optional and can be deleted at any time, and by filling them out, you're giving us consent to share this data wherever your user profile appears. Please see our [privacy statement](#) to learn more about how we use this information.

Update profile

4

This screenshot shows the GitHub Developer Settings page. The sidebar on the left has sections for GitHub Apps, OAuth Apps, and Personal access tokens (which is highlighted with a red box). The main content area is titled "GitHub Apps" and contains a large yellow number 4. Below it is a section for "Personal access tokens" with a sub-section for "Tokens (classic)". A large yellow box highlights the "Generate new token" button in the top right corner of the main content area.

Settings / Developer Settings

GitHub Apps

OAuth Apps

Personal access tokens

GitHub Apps

Want to build something that integrates with and extends GitHub? [Register a new GitHub App](#) to get started developing on the GitHub API. You can also read more about building GitHub Apps in our [developer documentation](#).

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5

This screenshot shows the GitHub Developer Settings page, specifically the "Personal access tokens (classic)" section. The sidebar on the left has sections for GitHub Apps, OAuth Apps, and Personal access tokens (with "Tokens (classic)" highlighted with a red box). The main content area is titled "Personal access tokens (classic)" and contains a large yellow number 5. It includes a "Generate new token" button in the top right and a note about using tokens for API access. A large yellow box highlights the "Tokens (classic)" section in the sidebar.

Settings / Developer Settings

GitHub Apps

OAuth Apps

Personal access tokens

Personal access tokens (classic)

Generate new token

Fine-grained tokens

Tokens (classic)

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6

New personal access token (classic)

Personal access tokens (classic) function like ordinary OAuth access tokens. They can be used instead of a password for Git over HTTPS, or can be used to [authenticate to the API over Basic Authentication](#).

Note

test

What's this token for?

Expiration *

7 days The token will expire on Tue, Sep 26 2023

Select scopes

Scopes define the access for personal tokens. [Read more about OAuth scopes.](#)

| | |
|--|--------------------------------------|
| <input checked="" type="checkbox"/> repo | Full control of private repositories |
| <input checked="" type="checkbox"/> repo:status | Access commit status |
| <input checked="" type="checkbox"/> repo_deployment | Access deployment status |
| <input checked="" type="checkbox"/> public_repo | Access public repositories |
| <input checked="" type="checkbox"/> repo:invite | Access repository invitations |
| <input checked="" type="checkbox"/> security_events | Read and write security events |

| | |
|--|---|
| <input checked="" type="checkbox"/> repo | Full control of private repositories Access commit status Access deployment status Access public repositories Access repository invitations Read and write security events |
| <input type="checkbox"/> workflow | Update GitHub Action workflows |
| <input type="checkbox"/> write:packages | Upload packages to GitHub Package Registry Download packages from GitHub Package Registry |
| <input type="checkbox"/> delete:packages | Delete packages from GitHub Package Registry |
| <input type="checkbox"/> admin:org | Full control of orgs and teams, read and write org projects Read and write org and team membership, read and write org projects Read org and team membership, read org projects Manage org runners and runner groups |
| <input type="checkbox"/> admin:public_key | Full control of user public keys Write user public keys Read user public keys |
| <input checked="" type="checkbox"/> admin:repo_hook | Full control of repository hooks Write repository hooks Read repository hooks |
| <input type="checkbox"/> admin:org_hook | Full control of organization hooks |
| <input type="checkbox"/> gist | Create gists |
| <input type="checkbox"/> notifications | Access notifications |
| <input type="checkbox"/> user | Update ALL user data Read ALL user profile data Access user email addresses (read-only) Follow and unfollow users |

GitHub Apps

OAuth Apps

Personal access tokens

Fine-grained tokens Beta

Tokens (classic)

Personal access tokens (classic)

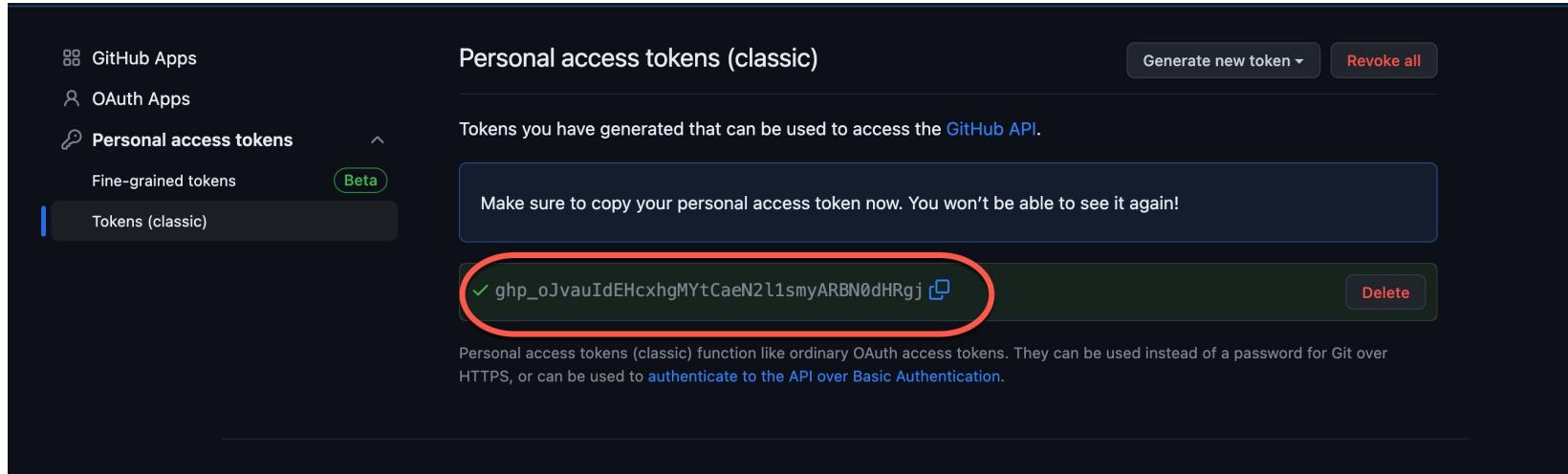
Generate new token ▾ Revoke all

Tokens you have generated that can be used to access the [GitHub API](#).

Make sure to copy your personal access token now. You won't be able to see it again!

✓ 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 [Copy](#) Delete

Personal access tokens (classic) function like ordinary OAuth access tokens. They can be used instead of a password for Git over HTTPS, or can be used to [authenticate to the API over Basic Authentication](#).



DAY 1

Summary and Exercise



Day 1 - Starting with Git

- **Exercise Tasks:**

- Create a new Private Repository on GitHub.
- Initialize your repository with README, license and gitignore.
- Clone your Repository using the Command Line and a PAT.