



Week1 : SOFTWARE DEVELOPMENT TOOLS AND ENVIRONMENTS



Document



Group line

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 :

ກັບການທີ່ເປັນຜູ້ເຂົ້າຂາງດ້ານອົບປະກິດ ນາມາທາຂອນເອົບປະກິດຂຶ້ນໃນງານດ້ານວິວກາຮຽນຂອ້ອົບປະກິດ ເຊື່ອງມີການພັດນາຂອ້ອົບປະກິດແນບໂໄສ ການດິດຕາມຄວາມຄືນຫ້າຍອກການພັດນາພົດກັນທີ່ ກາຈັດການໂອຣັ້ນແລກການກຳທັນດຳ ເຊື່ອງສໍາຮັບຮ້າງແລກການບຽນກາຮອງຍ່າງຕົ້ນໄວ ເຊື່ອງສໍາຫັນແຫຼດຸດນັກພ່ວງແລກການຮ່ວມມືຢູ່ມູນເຊີງປະລິກິພາພ່ອປ່ຽນແປງ ສາກພວດດ້ອນແນບຮ່ວມມືອົບປະກິດ ເຊື່ອງສໍາຮັບການគຽນຮ່ວມແລກກຳຕົດຕັ້ງ

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

การให้คะแนน	
Midterm	35
Final	35
Homework and Exercise LAB	15
Mini project	15

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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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>

- 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

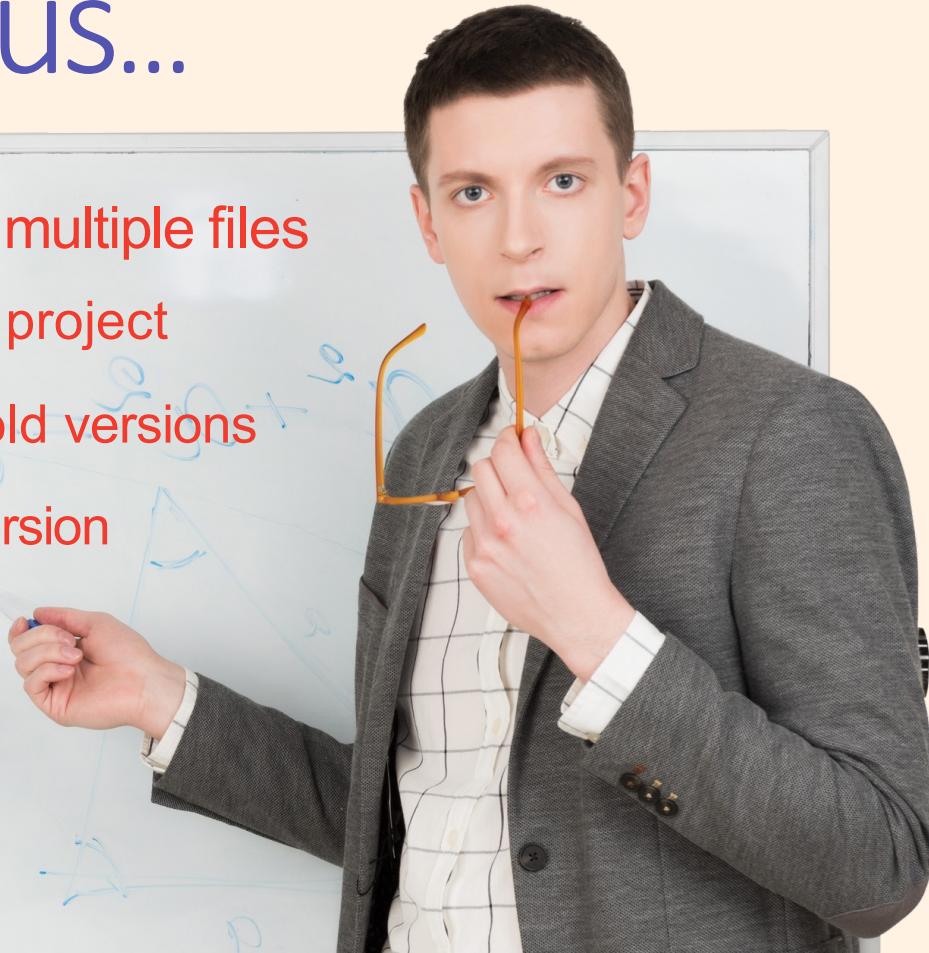
Compare versions of a project

"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!





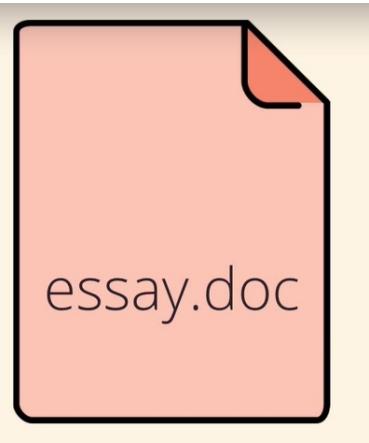
ughhhh I died!





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





essay.doc

essay_v2.doc

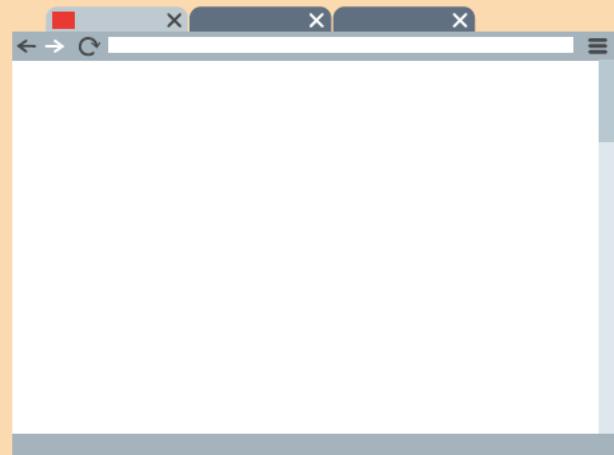
essay_final.doc

essay_v1.doc

essay_v2
new_intro.doc

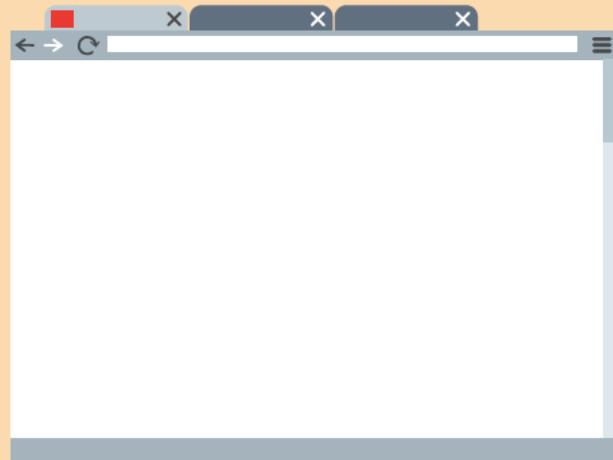
essay_FINAL_
FINAL_FOR_
REAL.doc

I Start A New Project!



Add A Checkpoint

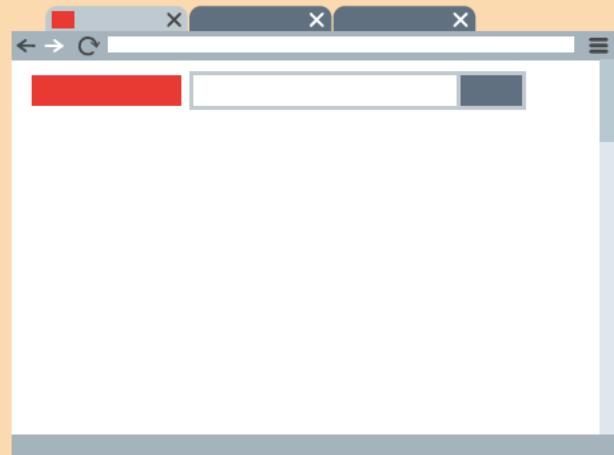
Initialize Project



Add A Checkpoint

Initialize Project

Add Top Navbar

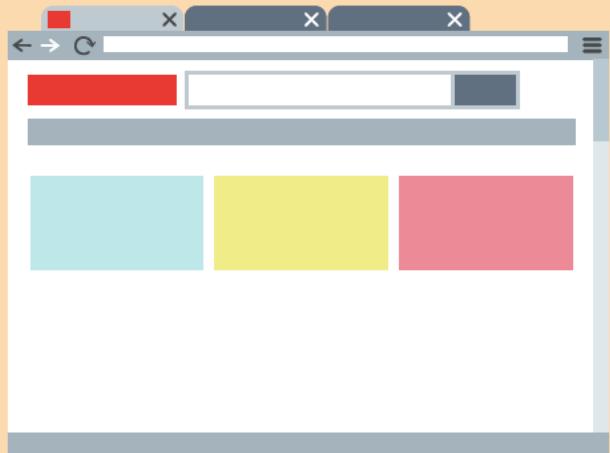


Add A Checkpoint

Initialize Project

Add Top Navbar

Add First Row



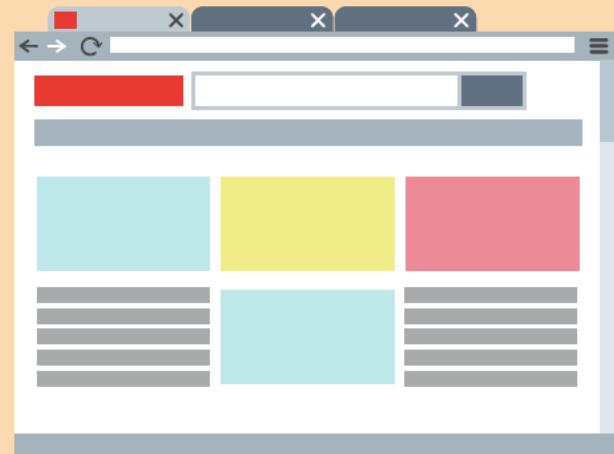
Add A Checkpoint

Initialize Project

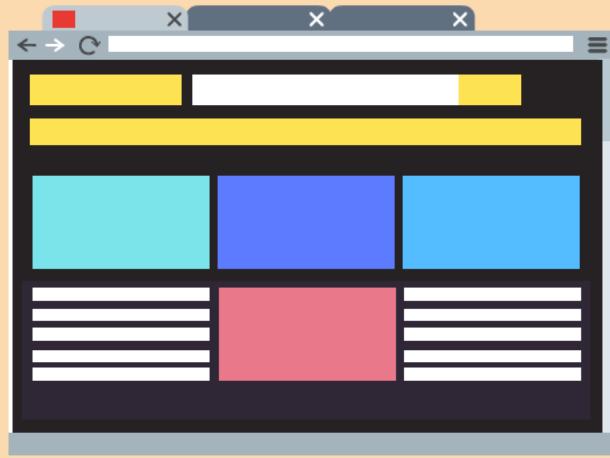
Add Top Navbar

Add First Row

Finish Bottom Row



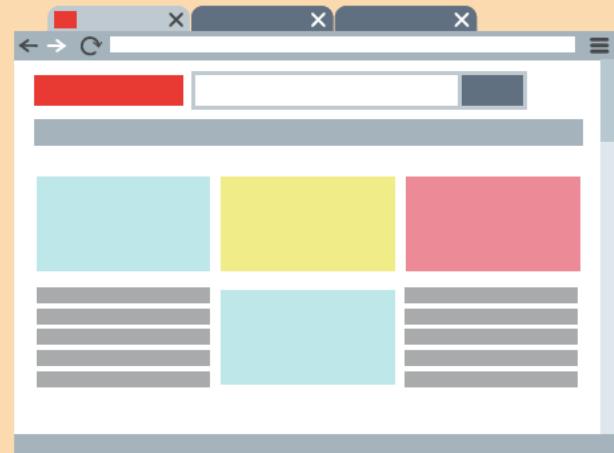
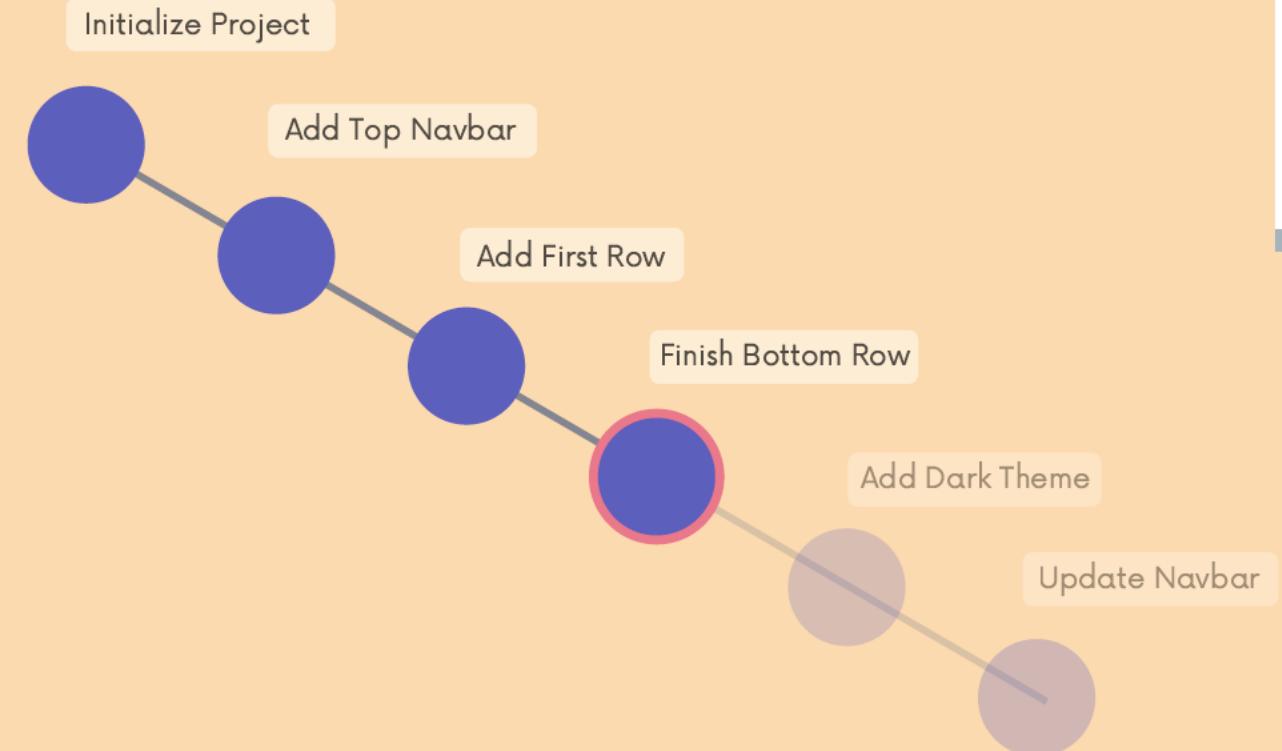
Add A Checkpoint



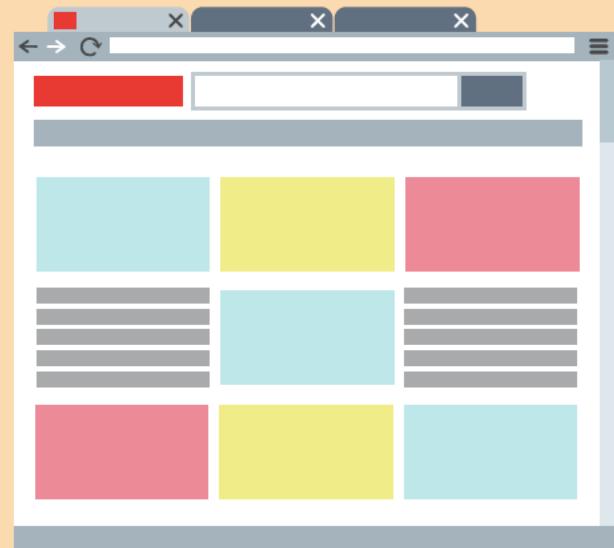
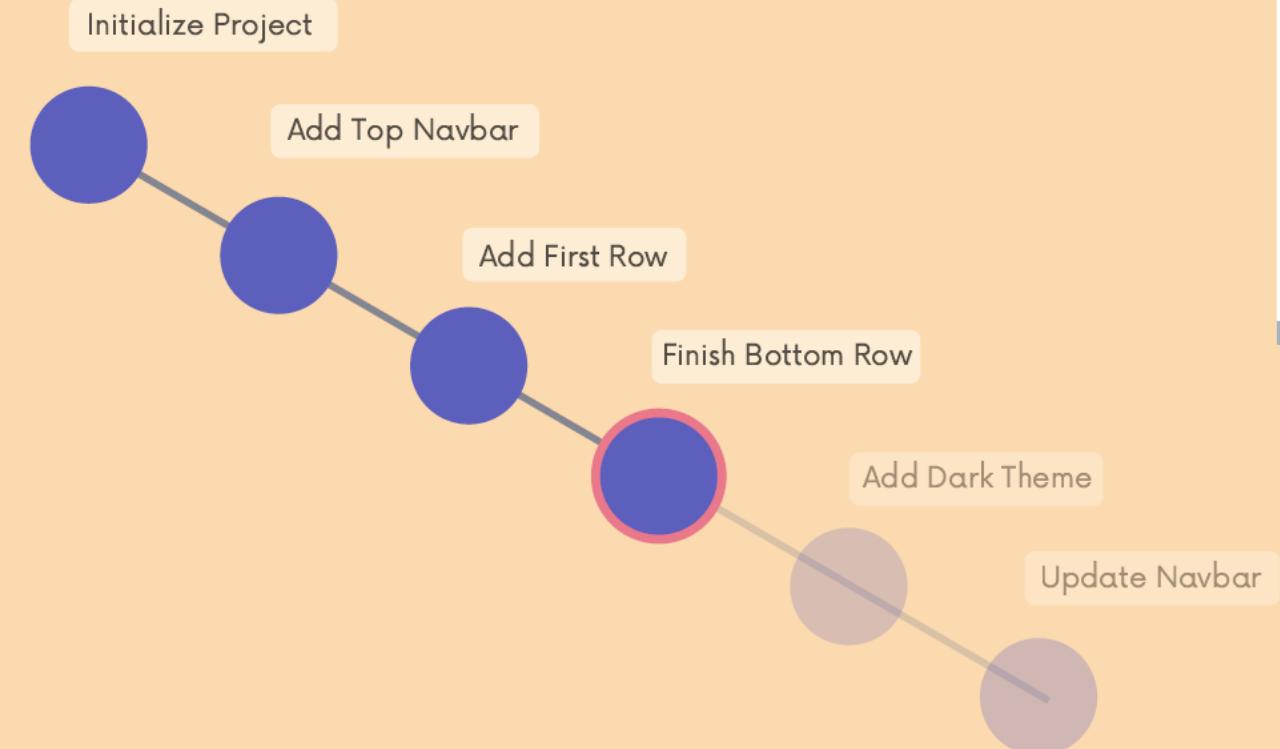
A woman with long brown hair, wearing a brown blazer over a light-colored shirt and shorts, is shouting and pointing her right index finger towards the right side of the frame. She is holding a small blue object in her left hand.

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

I can go back to prior checkpoints I made!

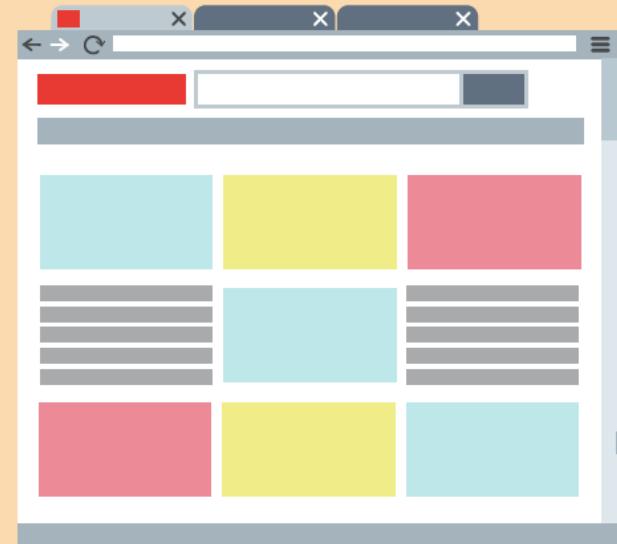
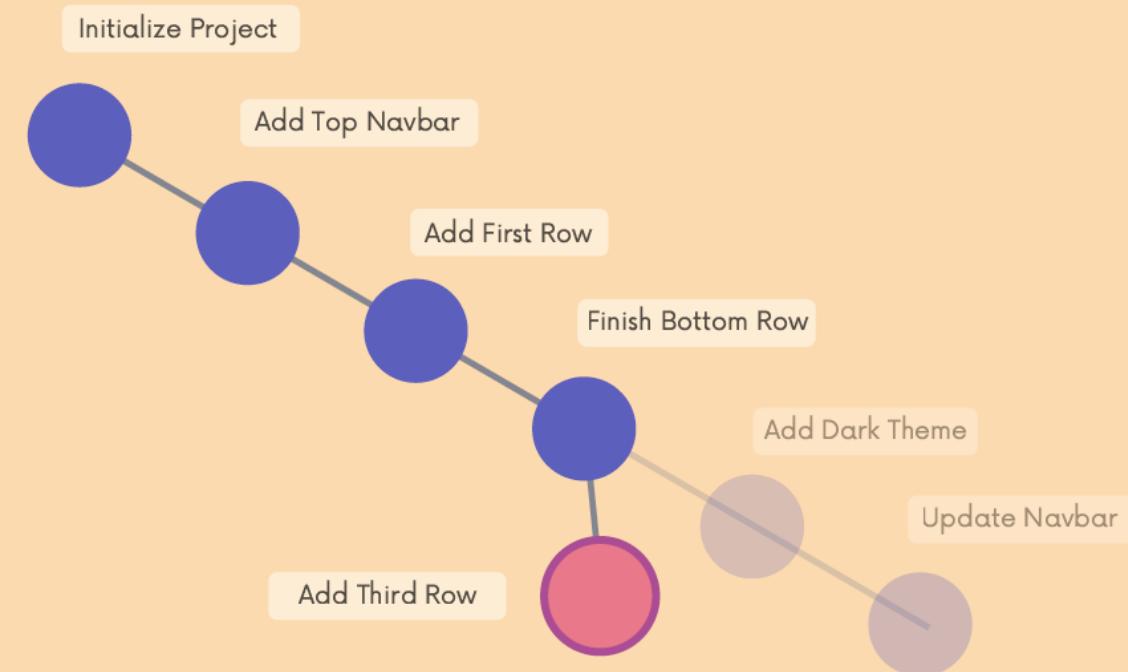


I can even start more work off of an old checkpoint

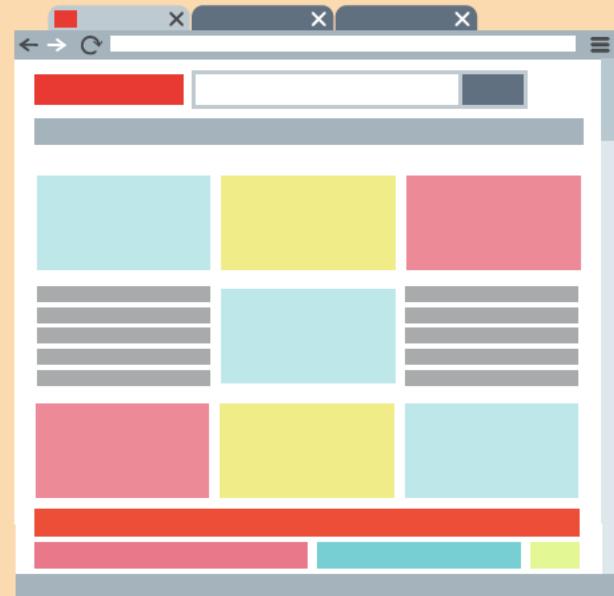
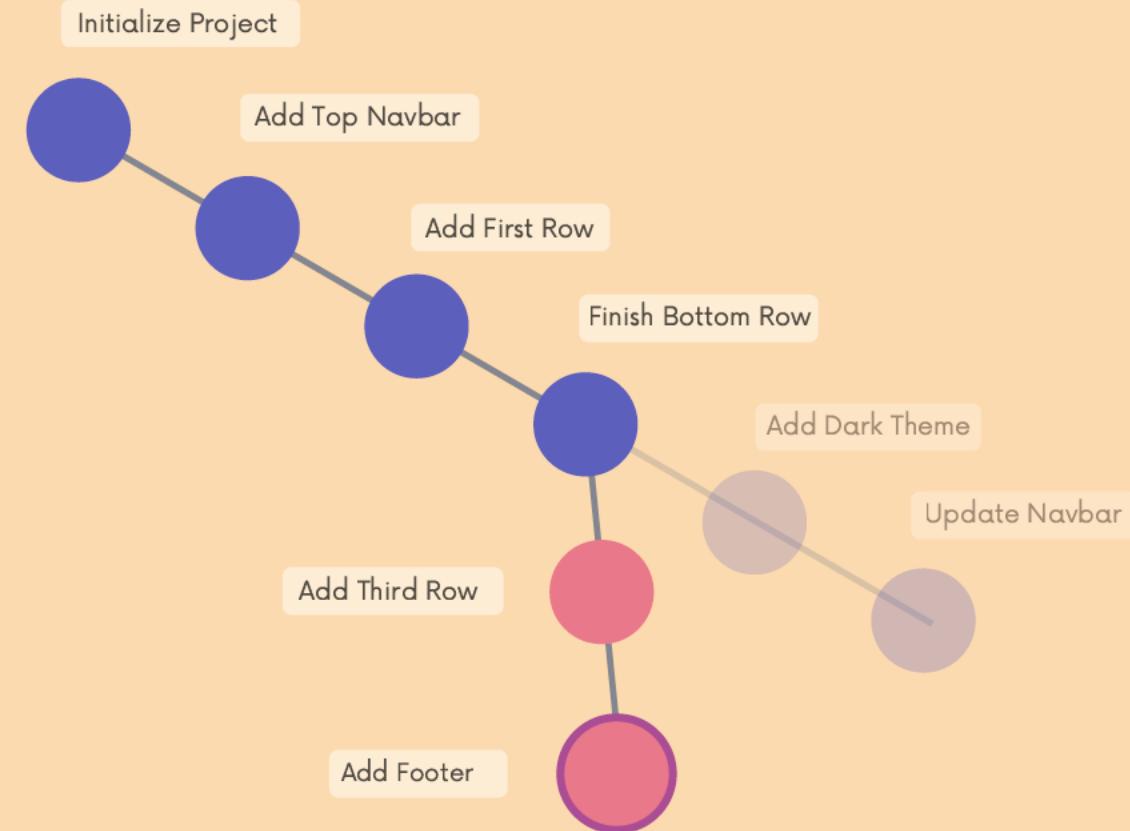


I add more content!

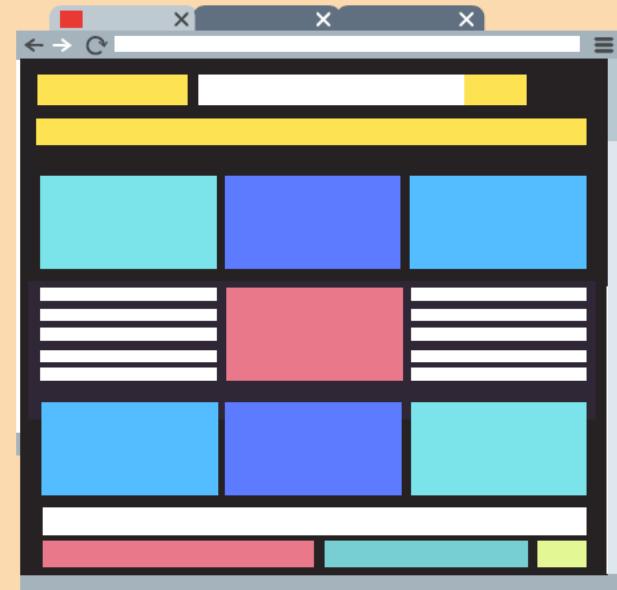
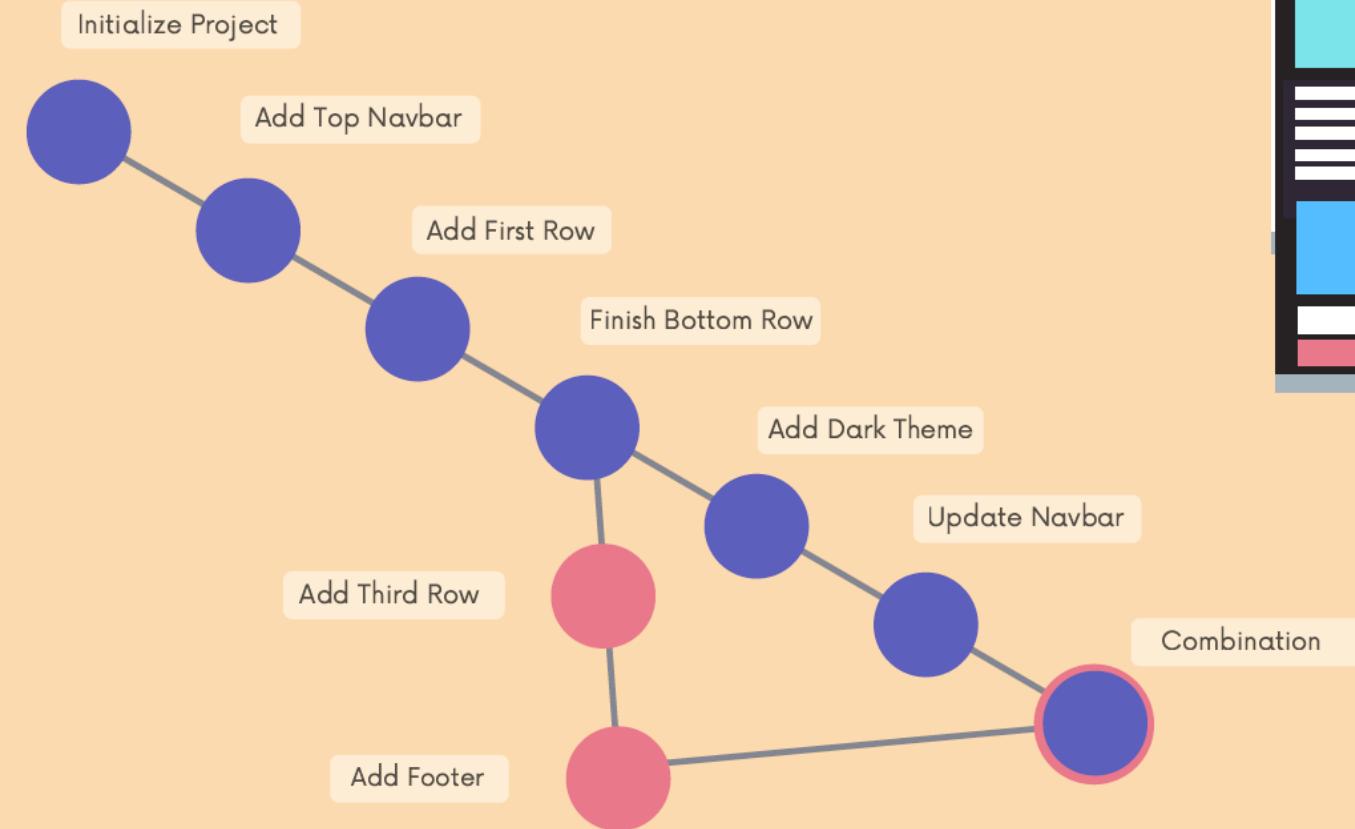
I add a new checkpoint!



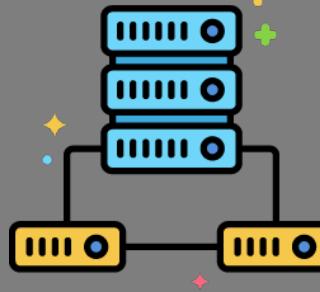
Another checkpoint!



And I can even combine checkpoints!



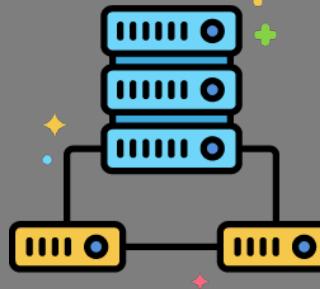
Before Version Control System



Before Version Control System



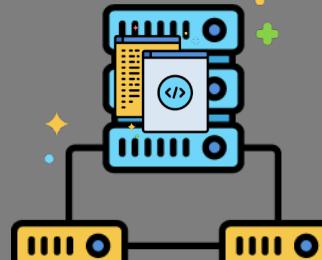
Version 1.0



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

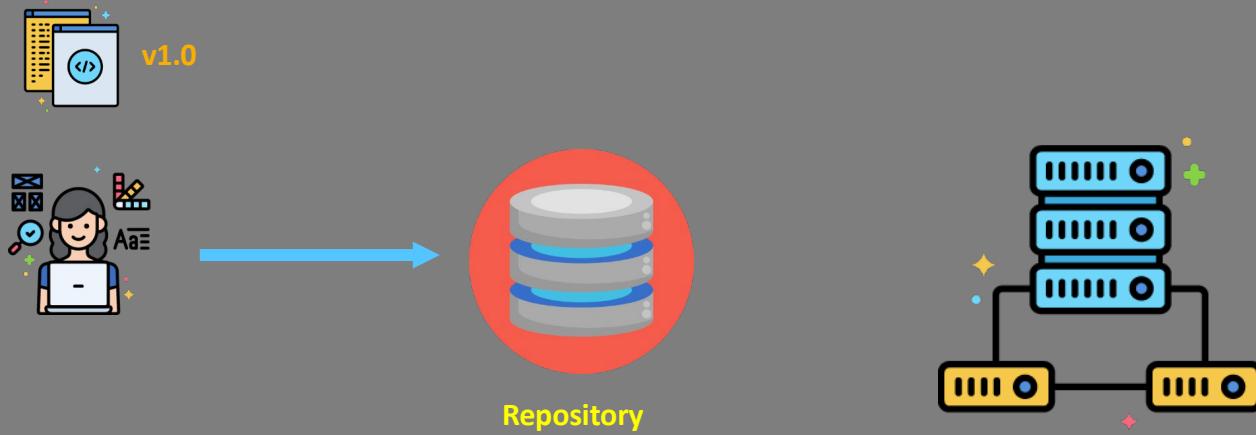


Before Version Control System

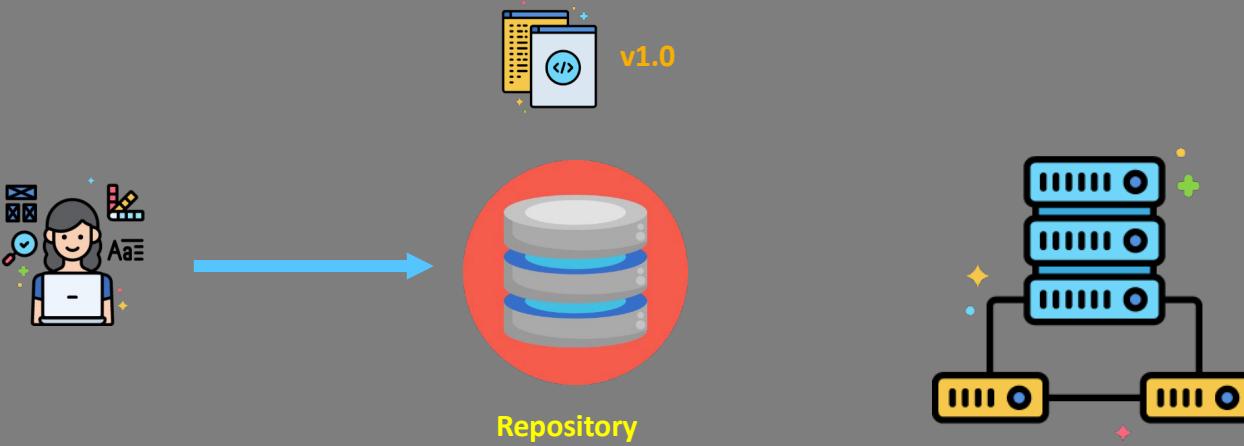


- Rollback is time consuming
- No audit tracking
- Not scalable for large teams

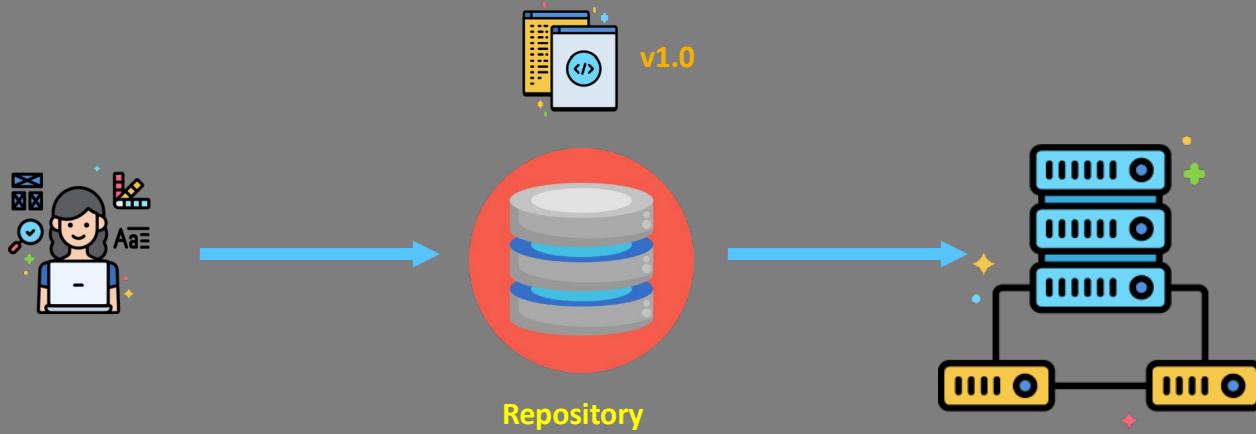
Version Control System



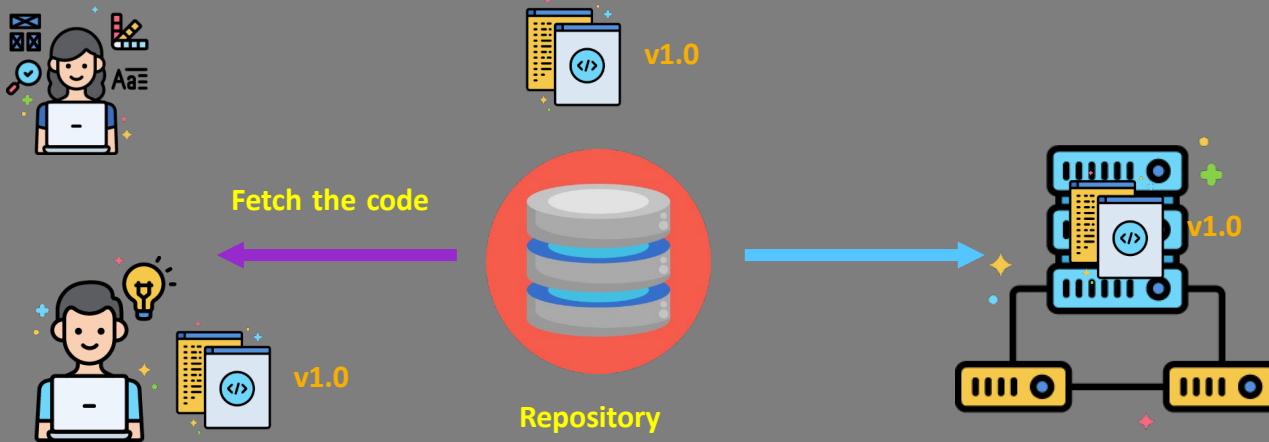
Version Control System



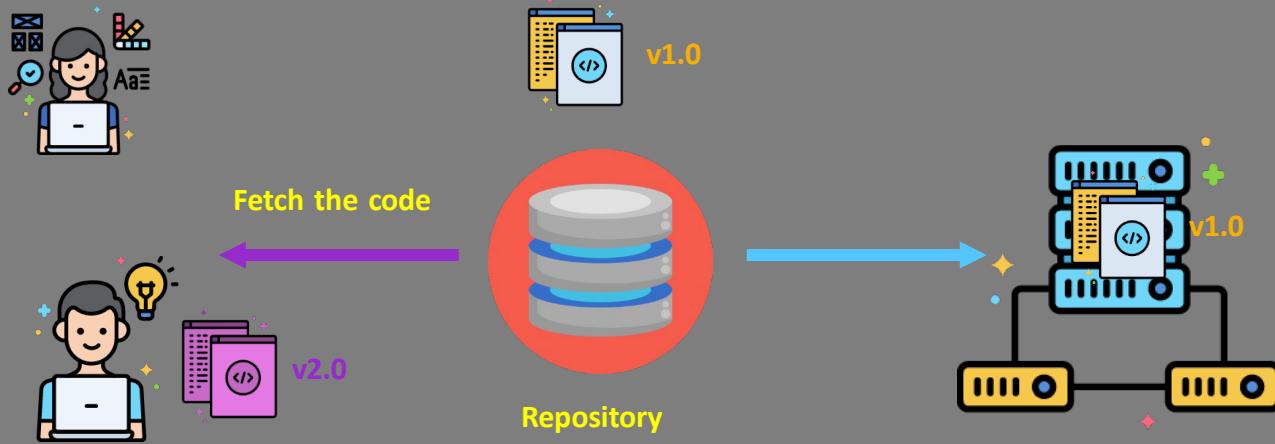
Version Control System



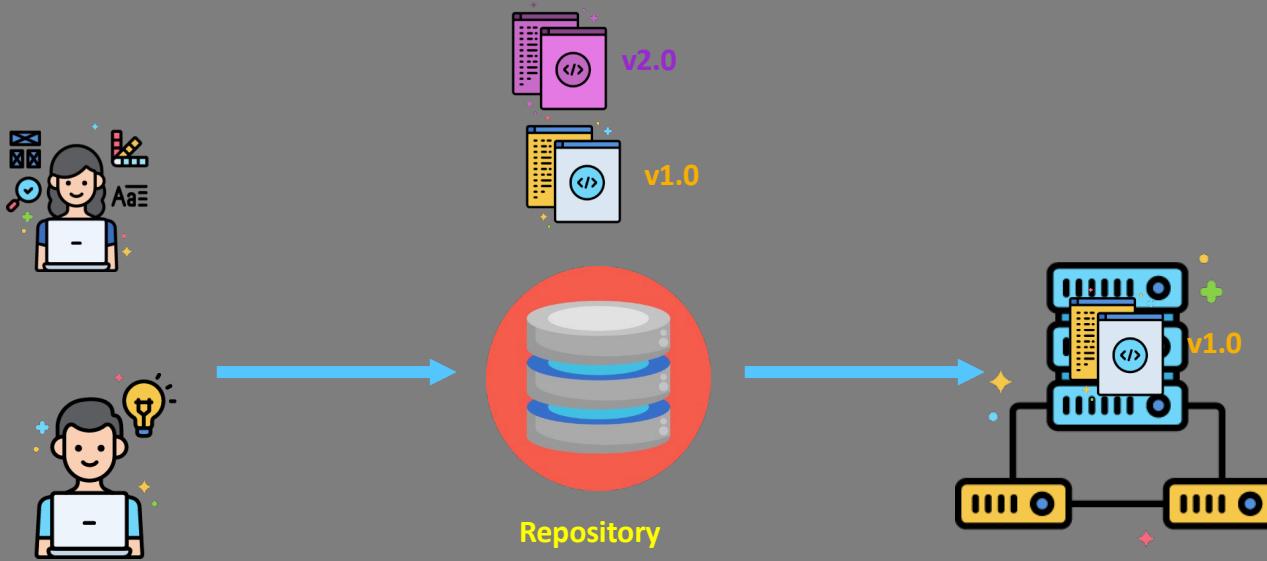
Version Control System



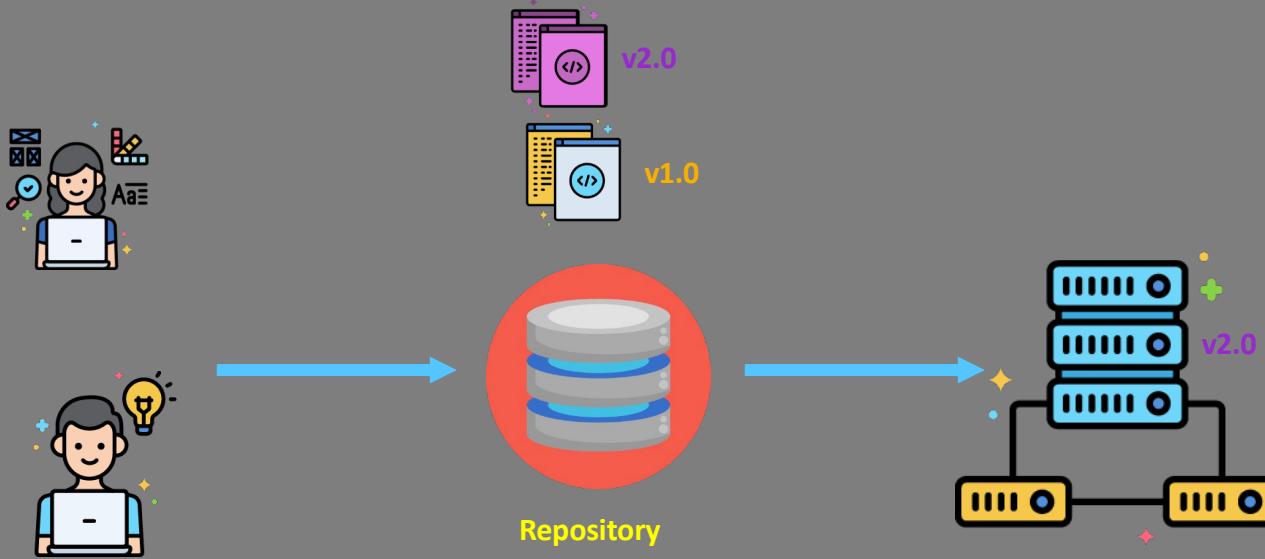
Version Control System



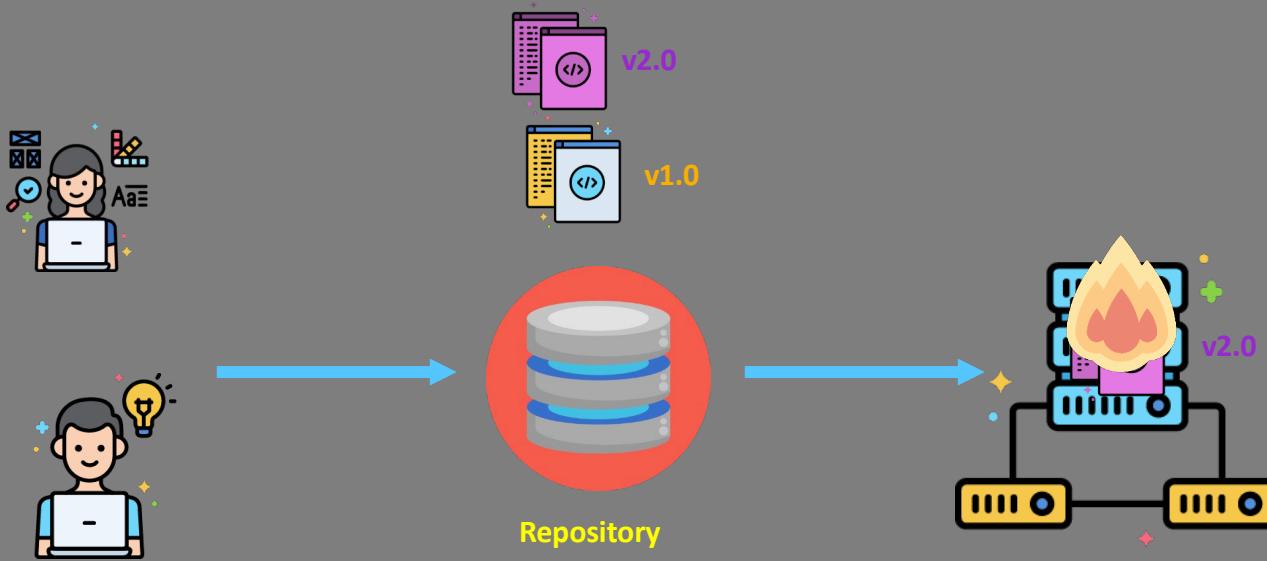
Version Control System



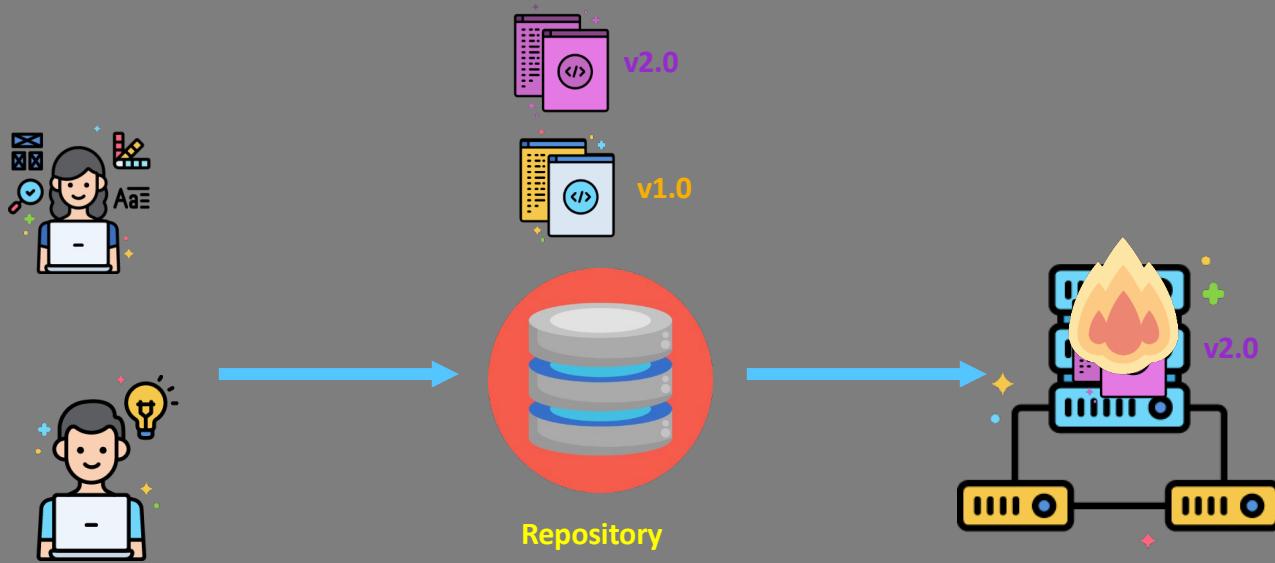
Version Control System



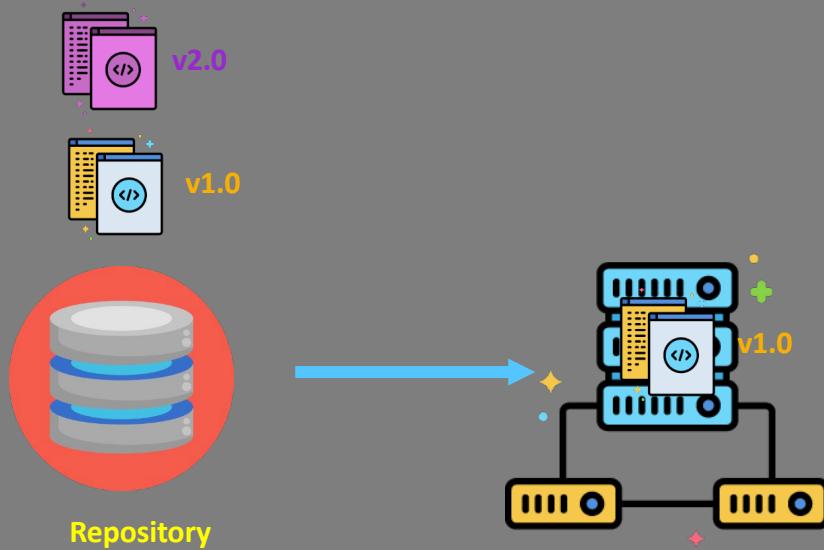
Version Control System



Version Control System



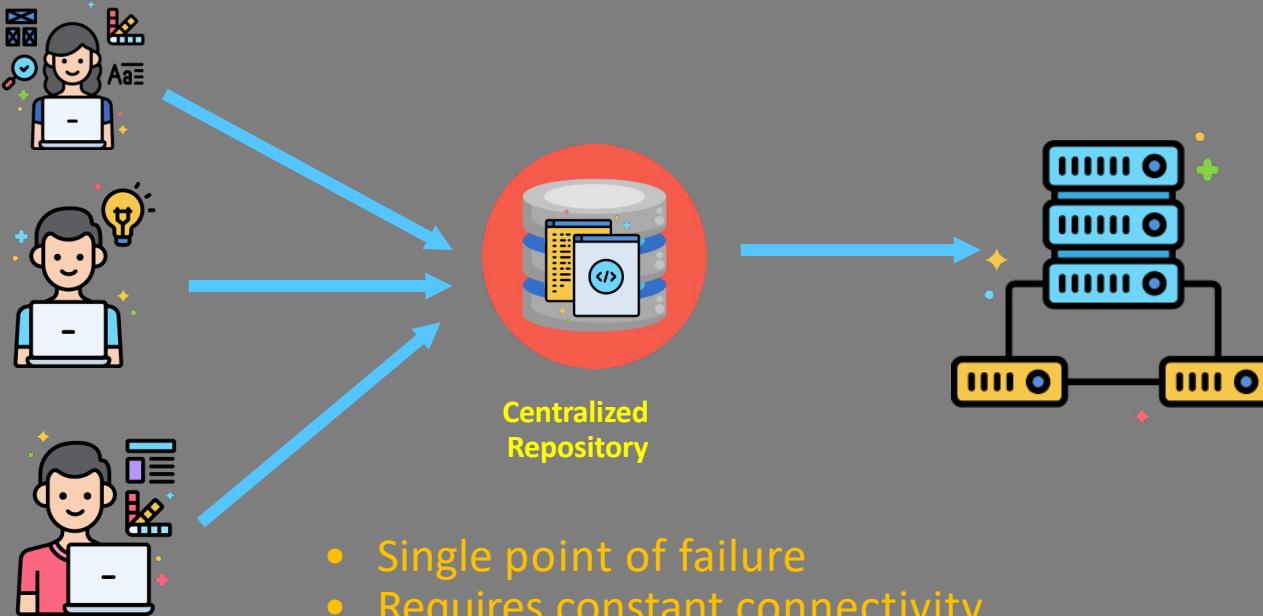
Version Control System - Git



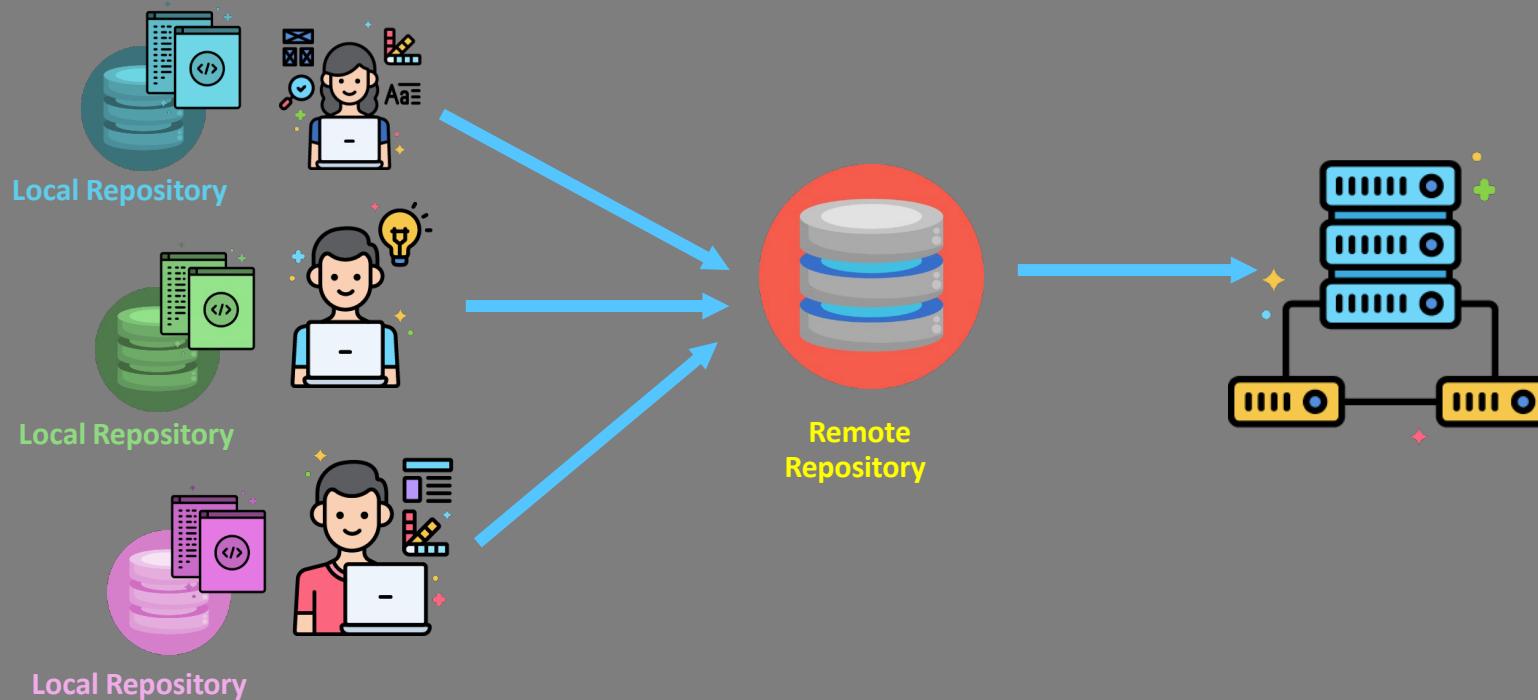
Why Git?

- Distributed

Centralized Version Control System

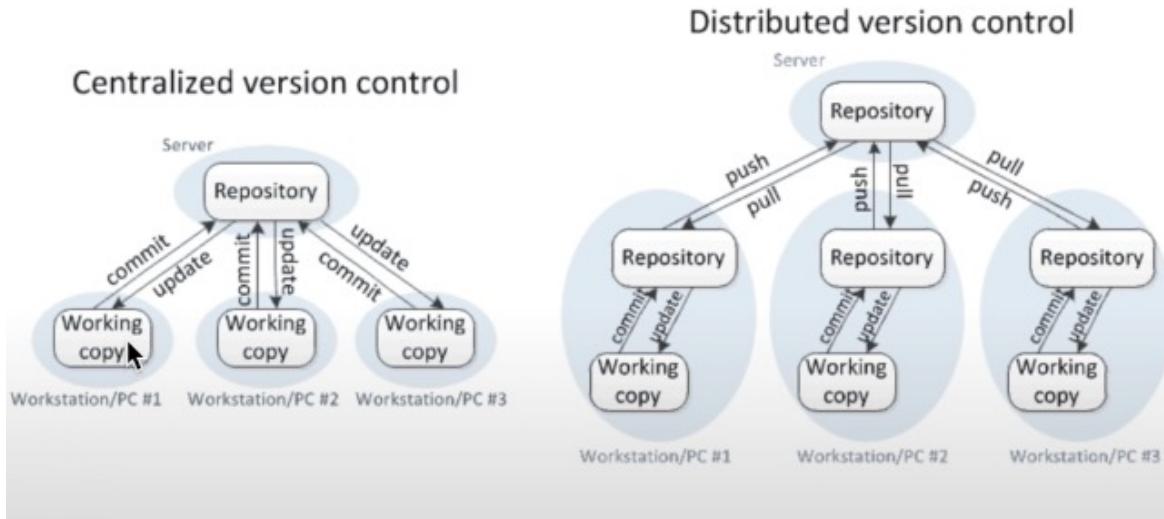


Distributed Version Control System

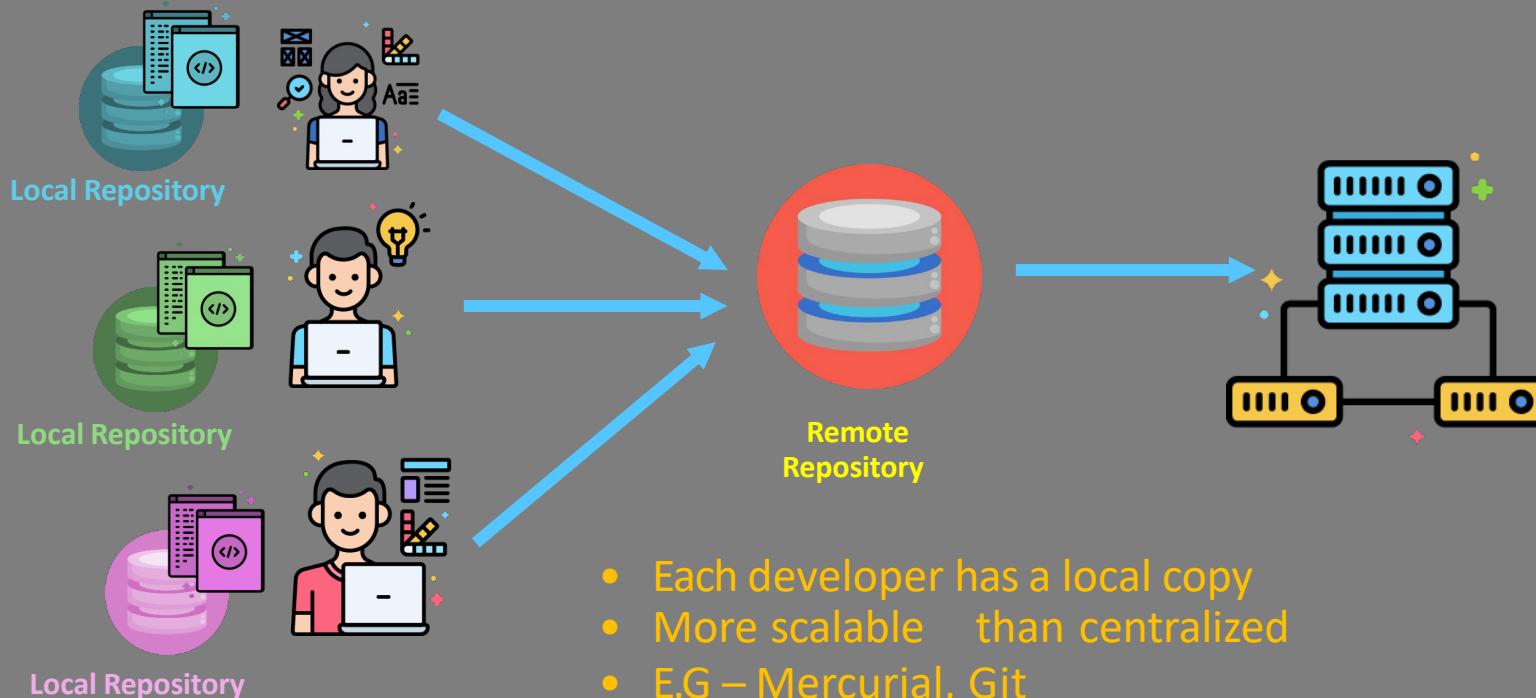


Centralized vs Distributed

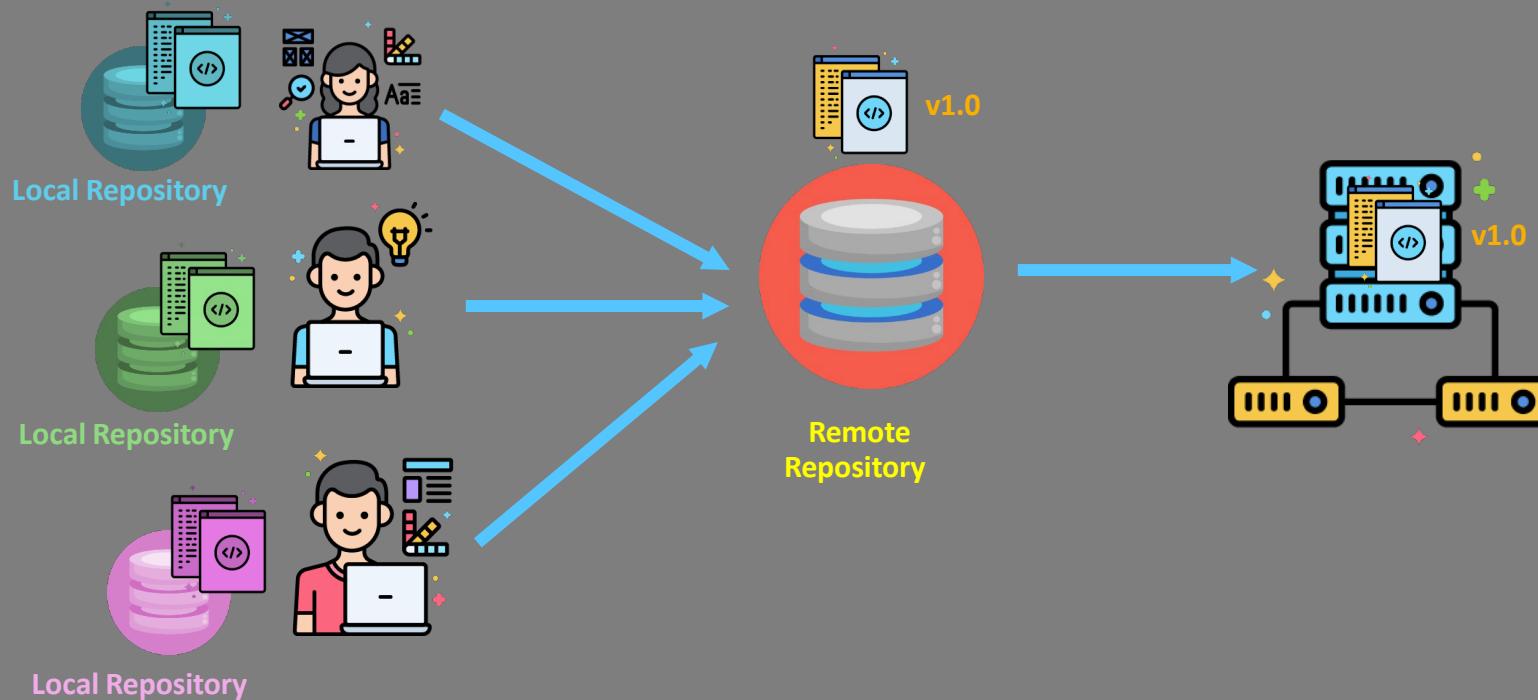
Version Control



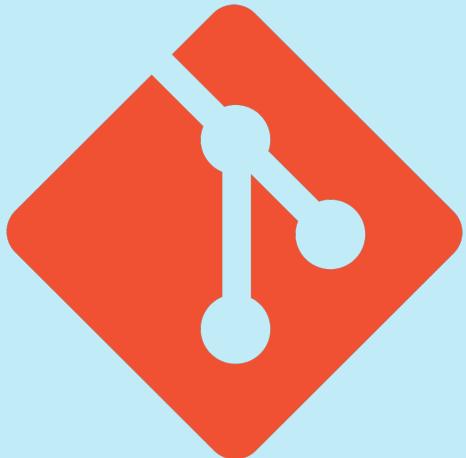
Distributed Version Control System



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

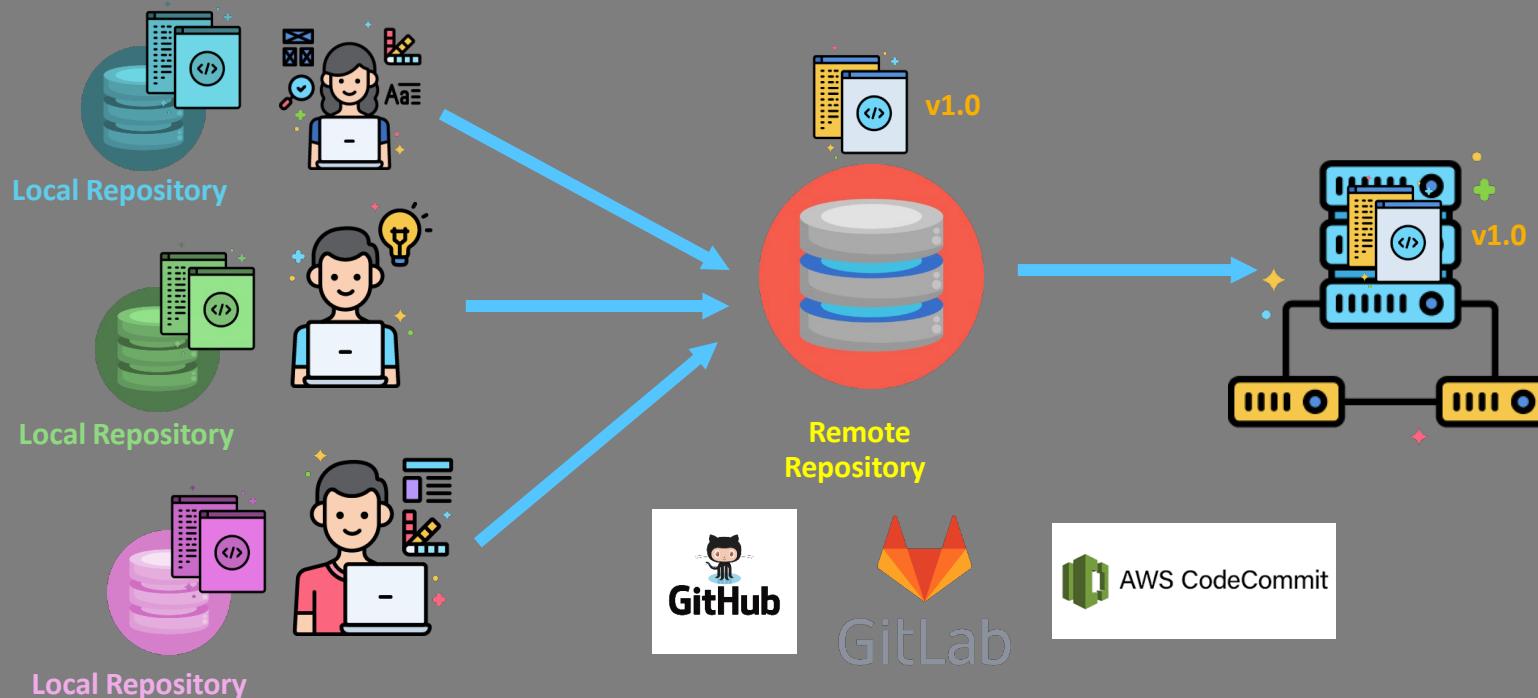


- Version Control System
- Installed locally on the system
- Created in 2005, by Linus Torvalds
- Open source, and used in multiple cloud repository services



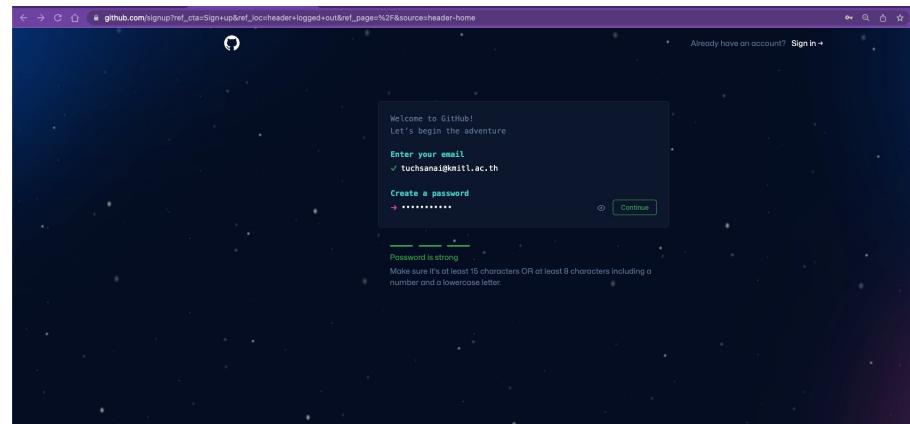
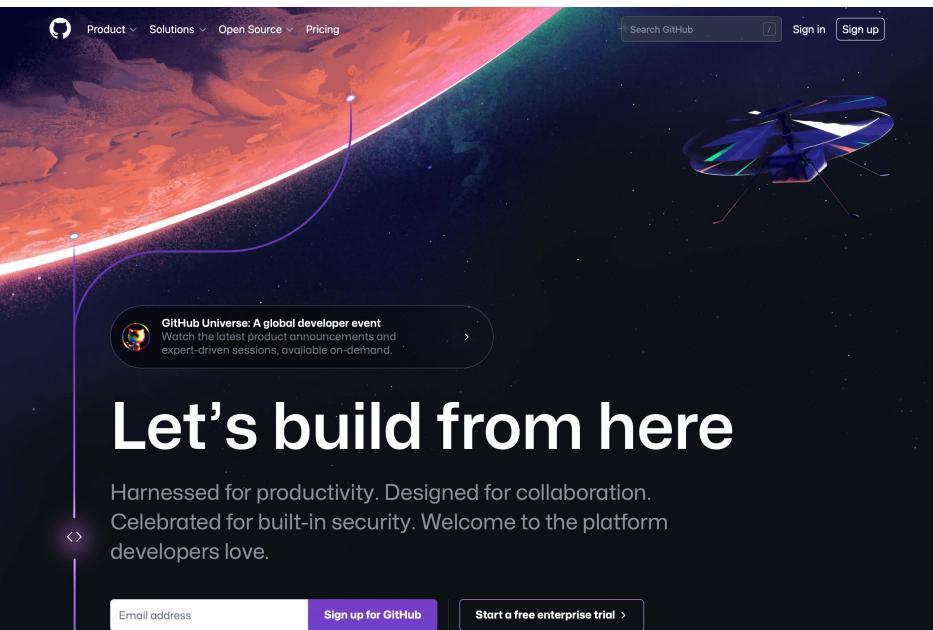
- Git repository hosting services with other features
- Runs on the cloud
- Created in 2008, currently owned by Microsoft
- Not open source, have free and paid tiers

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:**

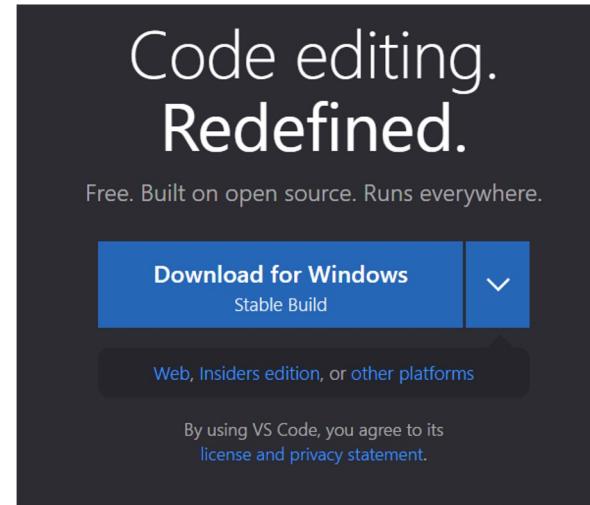
- Our *HIGHLY* recommend text editor for this course is VS Code:
 - **<https://code.visualstudio.com/>**
- Why *HIGHLY* recommended?
 - Windows + VS Code + GitHub
 - Upon installing git you will be asked to select a default editor, you'll need VS Code installed to select it as default.



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 this, there's a sidebar with links to the 'Pro Git book' and 'View GUI Clients'. The main content area features a large image of a Mac desktop with a Git interface. It displays the text 'Latest source Release 2.38.1' and a 'Download for Mac' button. To the right, there are sections for 'Downloads' (with links for macOS, Windows, and Linux/Unix), 'GUI Clients', and 'Logos'. A footer at the bottom includes links for 'View Logos', 'Git via Git', and 'About this site'.

DAY 1

Configure Git



Week 1 - Starting with Git

- You can check the current configuration with the commands:
- 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”**

- -- ลบ config เก่า --
 - git config --global --unset user.name
 - git config --global --unset user.email
 - git config --global --unset credential.username
-
- -- ลบ origin คนเก่า ถ้า commit ไม่ได้ --
 - git remote remove origin

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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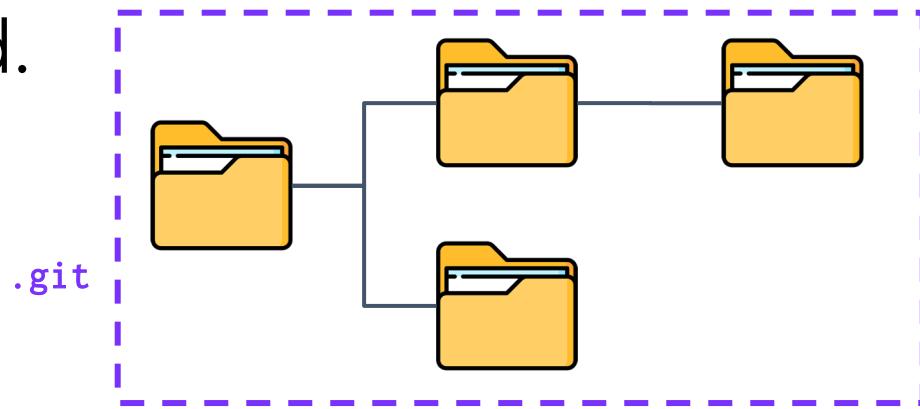
Day 1 - Starting with Git

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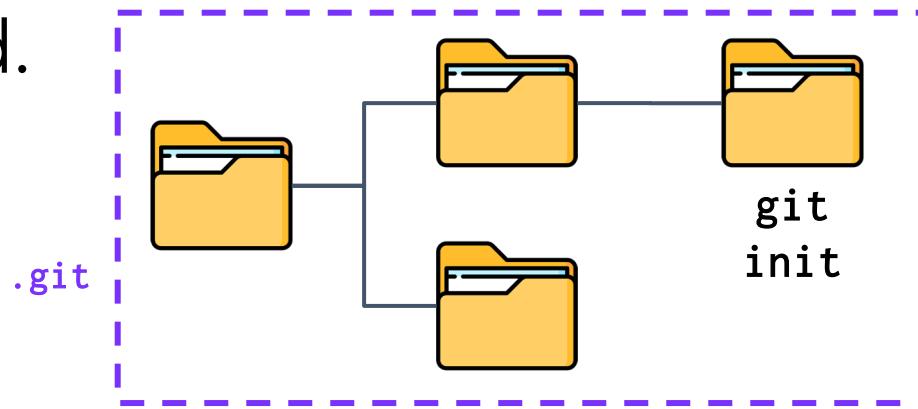
Day 1 - Starting with Git

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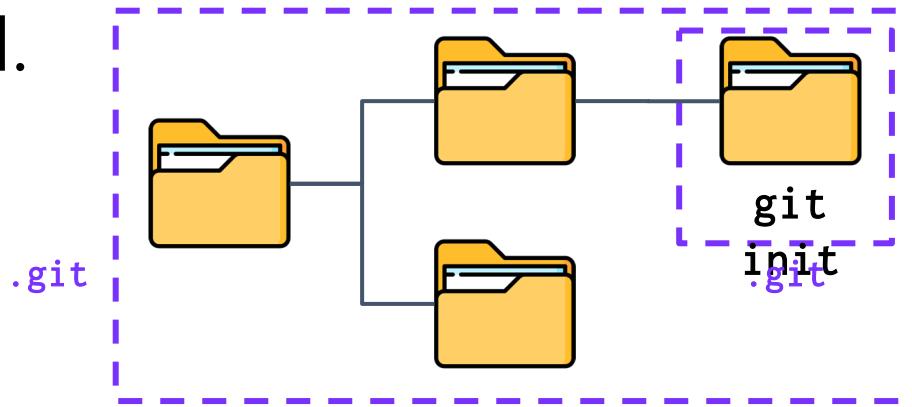
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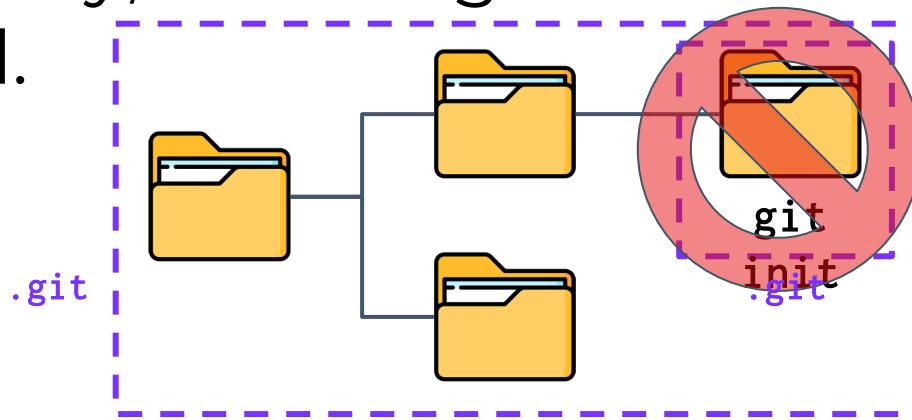
Day 1 - Starting with Git

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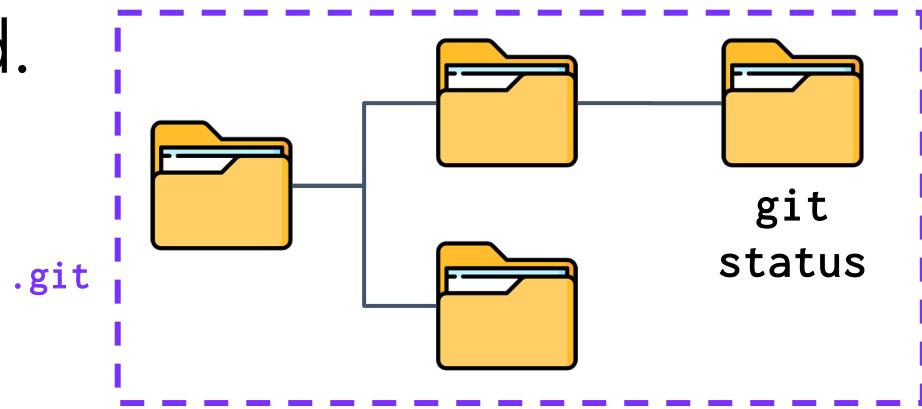
Day 1 - Starting with Git

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Day 1 - Starting with Git

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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

ซอฟต์แวร์ | ลงชื่อนักเขียน คำชี้แจง คอมมานต์ไลน์



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.

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.

 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.

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 

You can @mention other users and organizations to link to them.

Pronouns: Don't specify 

URL: 

Social accounts: Link to social profile 

Company: 

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

Location: 

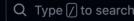
Display current local time: Other users will see the time difference from their local time.

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.

> Developer settings 

Update profile

3 In the left sidebar, select "Developer settings."

 Settings / **Developer Settings**  Type  | 

GitHub Apps 

OAuth Apps 

Personal access tokens 

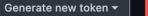
Want to build something that integrates with and extends GitHub? [Register a new GitHub App](#) to get started developing on the GitHub API. You can also read more about building GitHub Apps in our [developer documentation](#).

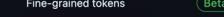
4

 Settings / **Developer Settings**  Type  | 

GitHub Apps 

Personal access tokens 

Generate new token 

Tokens (classic) 

Need an API token for scripts or testing? [Generate a personal access token](#) for quick access to the GitHub API.

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

5

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.](#)

repo

- `repo:status`
- `repo_deployment`
- `public_repo`
- `repo:invite`
- `security_events`

Full control of private repositories
Access commit status
Access deployment status
Access public repositories
Access repository invitations
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)

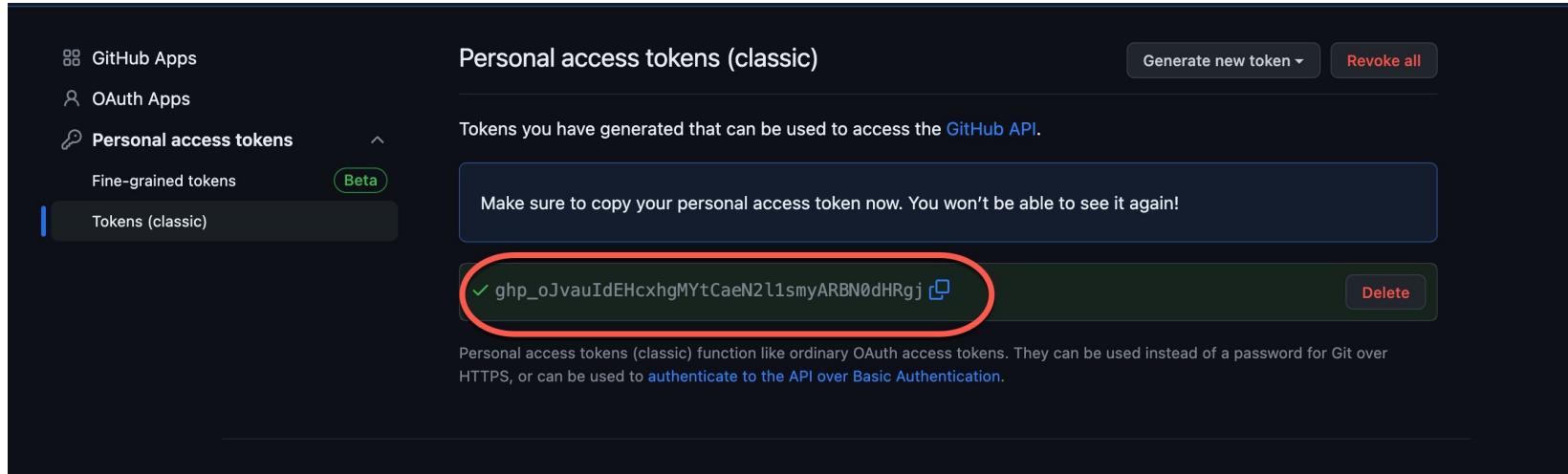
Generate new token ▾ Revoke all

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.