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Courses : Advanced Web Programming
Studina Program : D4 – Informatics Engineering / D4 – Business Information Systems
Semester : 4 (four) / 6 (six)
Meeting : 1 (one)

JOBSHEET 01
INTRODUCTION WEB FRAMEWORK LARAVEL

1. Laravel

Laravel is one of the most popular and powerful PHP frameworks for web development. Designed with the aim of speeding up the development process by providing powerful and easy-to-use tools and features.

Here are some key points about Laravel:

- ✓ **Strong Ecosystem**: Laravel has a vast and active ecosystem, which includes excellent documentation and a vibrant community. Laravel's official documentation is complete and easy to understand, providing a step-by-step guide to learning the framework from basic to advanced. The Laravel community is also very active, with many forums, discussion groups, and other online resources available for help and knowledge sharing.
- ✓ **Expressive Syntax**: One of the main advantages of Laravel is its expressive and easy-to-understand syntax. By using consistent conventions and clean code, Laravel allows developers to write code quickly and efficiently. For example, using features like "fluent query builder" makes writing database queries more intuitive and easy to learn.
- ✓ **Eloquent ORM**: Eloquent is an ORM included with Laravel, which allows developers to interact with databases using PHP objects. This allows developers to write cleaner, easier-to-understand code, as well as reduces the need to write SQL queries directly. Eloquent also provides features such as object relations, search, filtering, and data validation, which make application development easier and more efficient.
- ✓ **Powerful Routing**: Laravel provides a powerful and easy-to-use routing system, which allows developers to route their app's URLs easily. It allows developers to route HTTP requests to appropriate functions, and organize their application code in a structured and easy-to-maintain manner.
- ✓ **Integrated Testing**: Laravel provides robust support for unit testing, providing integrated tools and frameworks for writing and running automated tests. This allows developers to ensure that their code works correctly and avoid regression when they

make changes. Laravel also provides features for testing various aspects of the application, including controller, model, and display testing.

- ✓ **Blade Templating**: Laravel uses a templating system called Blade, which allows developers to create app views easily and efficiently. Blade provides a clean and intuitive syntax for writing HTML views, as well as features such as layout inheritance, loops, and conditionals. It allows developers to create dynamic and attractive views easily.
- ✓ **Integrated Security**: Laravel provides a variety of integrated security features, which help protect your applications from common web attacks. For example, Laravel provides protection against CSRF attacks by providing automated features to generate and inspect CSRF tokens on HTML forms. Laravel also provides features to protect applications from XSS attacks, SQL Injection, and other web security attacks.
- ✓ **Built-in Packages**: Laravel comes with a variety of packages that are useful for common tasks in web development, such as user authentication, session management, and job scheduling. This allows developers to build applications quickly and efficiently, without the need to rewrite the same code over and over again.

This is only a small part of what Laravel offers as a web development framework. With the combination of these features, Laravel allows developers to build robust, efficient, and easy-to-maintain web applications.

2. Supporting Devices

Before we start using Laravel for lab work, make sure your system meets the following requirements:

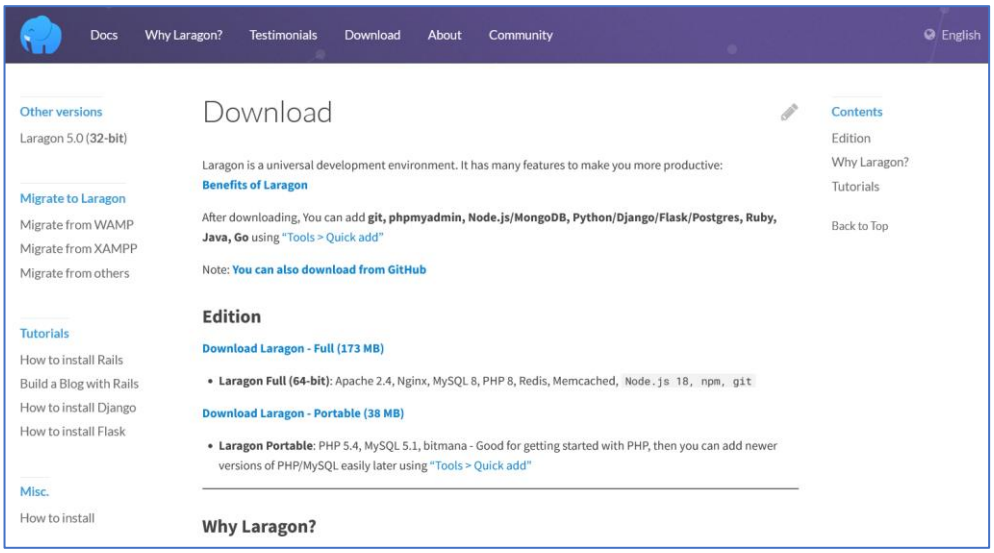
No	System	Information
1	Laragon - Web Server	Application for webservers, same as XAMPP. Install Components: - Apache Webserver - MySQL - PHP 8.2
		Link Download : Download Laragon
2	PhpMyAdmin	Website-based MySQL/MariaDB database management application. This application is *open-source* and has been widely used by web developers.
		Link Download: auto download and *install* via Laragon

3	Text Editor (can choose) 1. VS Code 2. PHPStrom	Text editors are used to write PHP program code. VSCode is open-source so it can be used freely, while PHPStrom is paid. However, PHPStrom can get a free license by registering using a student account/email.
		Link Download : 1. Download VSCode 2. Download PHPStrom
4	Composer	Composer is a dependency manager for the PHP programming language that is widely used in modern web application development. This application can manage PHP libraries that we want to use when web development.
		Link Download : Download Composer
5	Notepad++	Additional applications for second text editor
		Link Download : Download Notepad++
6	GIT	Is version control used to manage versions, and is in charge of recording every change to the program code file that we write.
		Link Download : Download Git
7	Browser (minimum of 2) 1. Firefox Developer Edition 2. Mozilla Firefox 3. Google Chrome	Web browser for web previews that are being developed.
		Link Download : 1. Firefox Developer Edition 2. Mozilla Firefox 3. Google Chrome
8	Git Fork (optional)	Additional applications for actions on GIT (clone, pull, commit, push, etc.). Actually, there are similar features in VSCode and PHPStorm text editors, but this can be for other options besides using text editors
		Link Download : Download Git-Fork

3. Laragon Installation

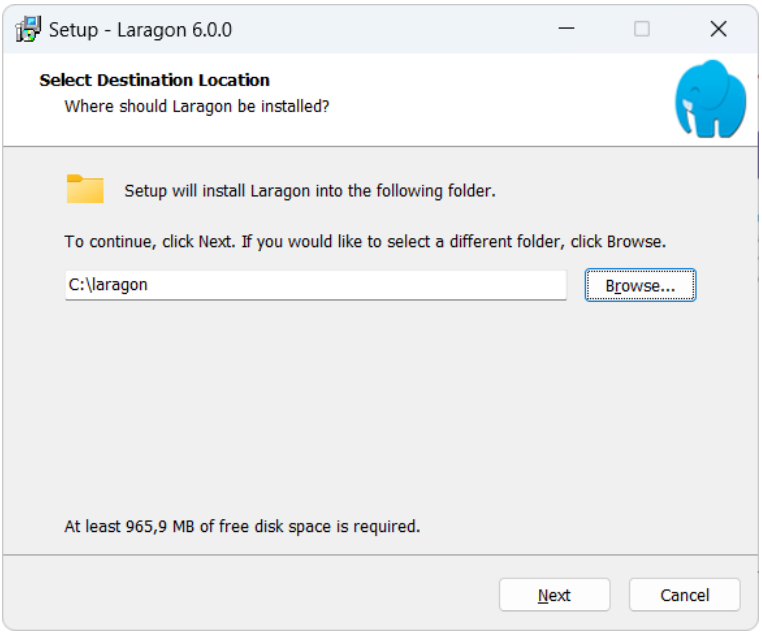
In this practicum, we use Laragon as our main web server in running our Laravel program later. Here are the Laragon installation steps:

a. Click the laragon application download link. Download Laragon
b. When you have entered the Laragon website, select the Download Laragon – **Full option** and download the application

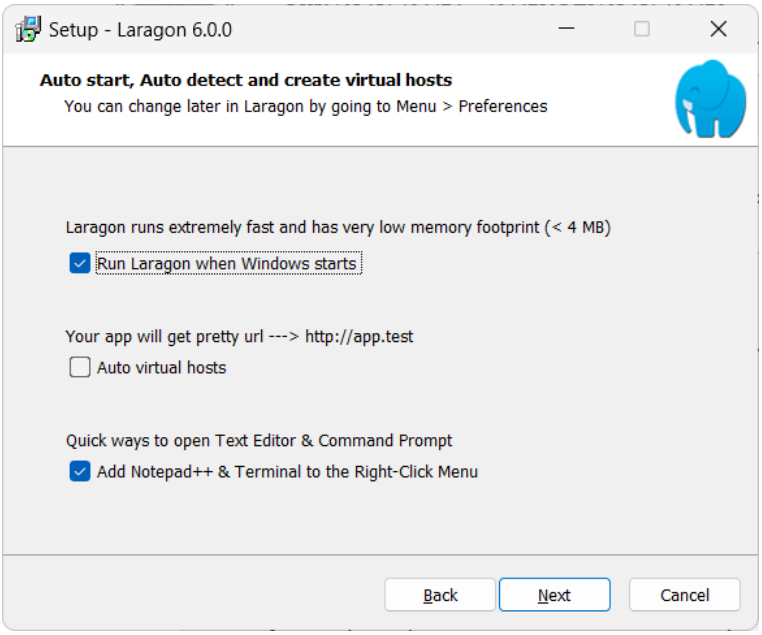


c. After the download is complete, run the laragon file

d. Select the laragon installation folder (usually on the C/D drive), then click *next*

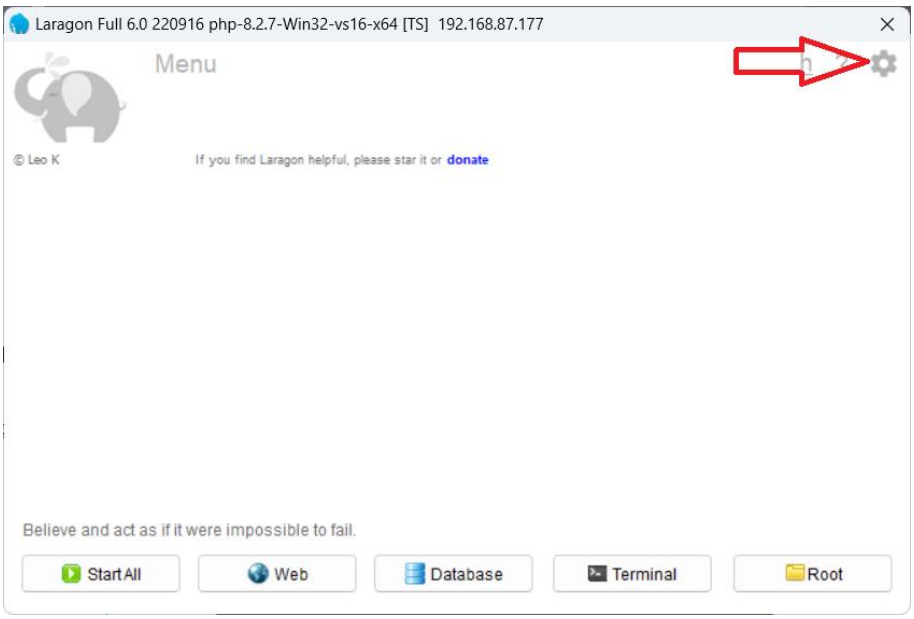


e. For the option "Run laragon when windows starts" we can check, so that laragon can be run when our laptop turns on.

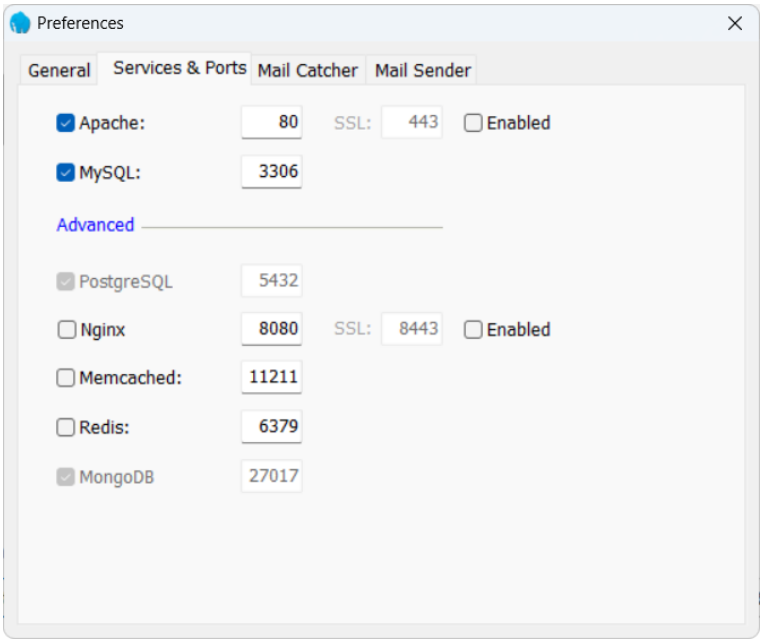


f. Then click *next*, and click *install*

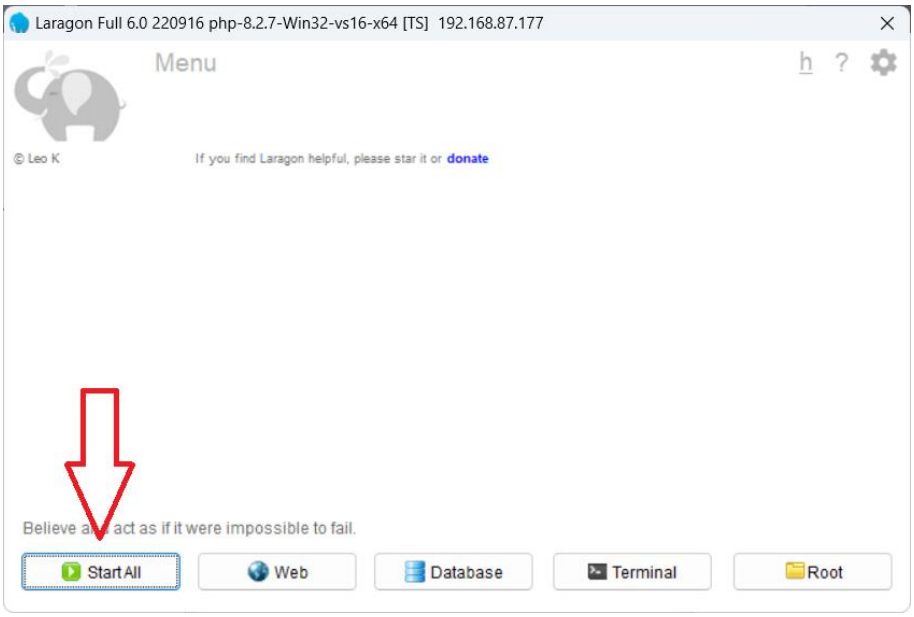
g. Once *installed, we* open the laragon application, and we click *settings*



h. We select *the Services & Ports tab*, and make sure the **Apache service** *check on port* 80, *and* MySQL *on* port 3306.



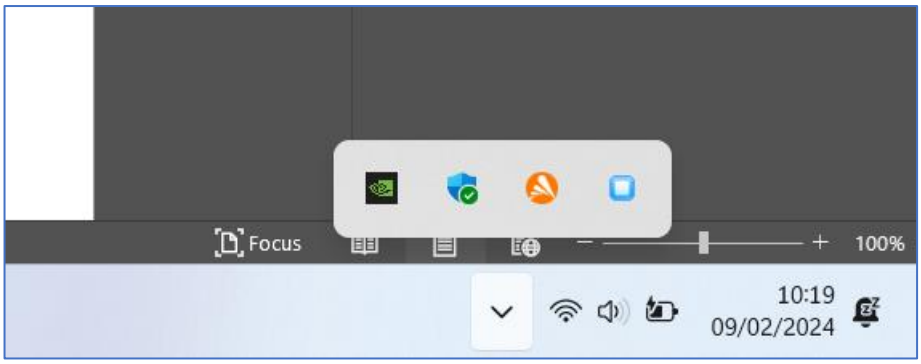
i. *Close* the dialog above, and click ***start all*** to run the webserver and database



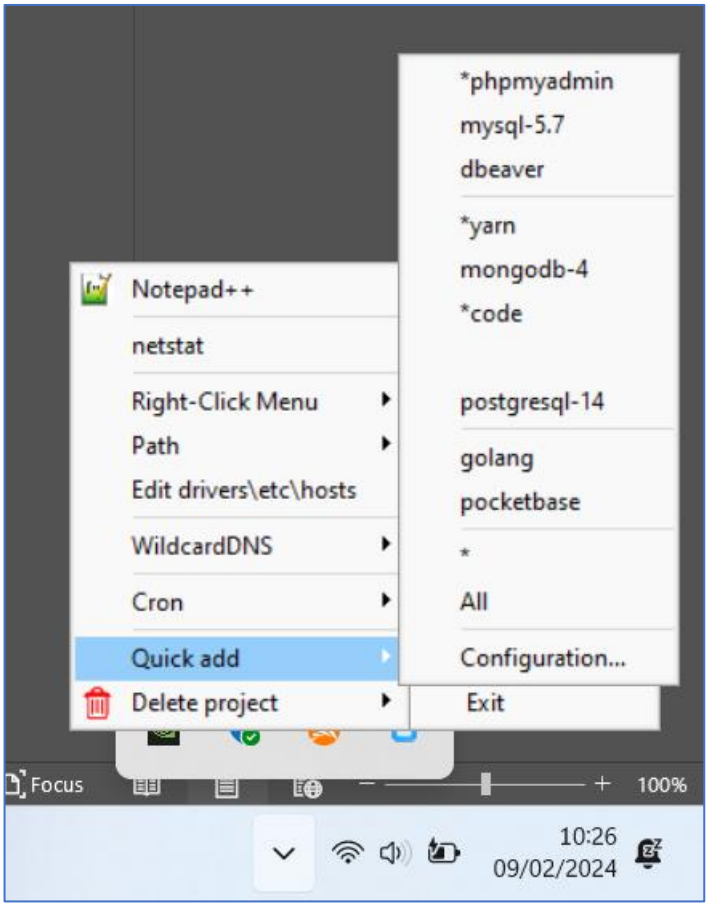
4. PhpMyAdmin Installation

We use phpmyadmin to manage the MySQL/MariaDB database that we will use later. Here are the steps to install Phpmyadmin via Laragon

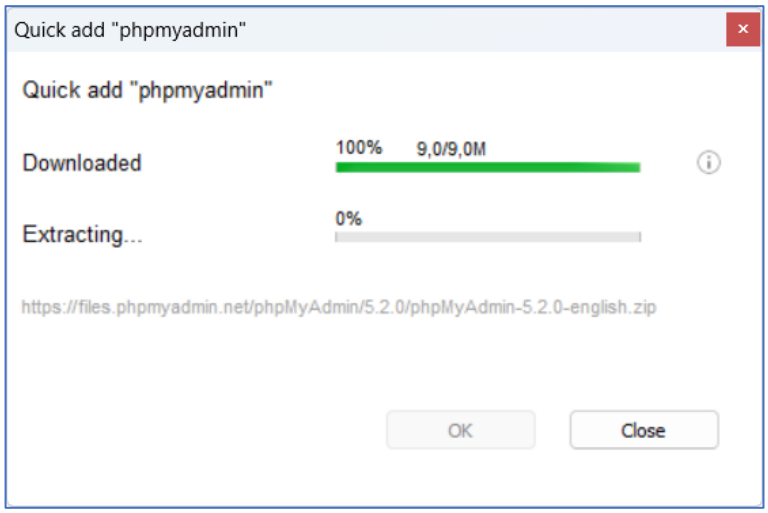
a. Open the taskbar in the lower right corner and pay attention to the icon (laragon when not run / laragon when it has been run) . The icon is the icon for the laragon application.



b. Right-click on the laragon icon, then click `Quick add` → `phpmyadmin` → `tools`



c. Then a dialog will appear laragon download phpMyAdmin

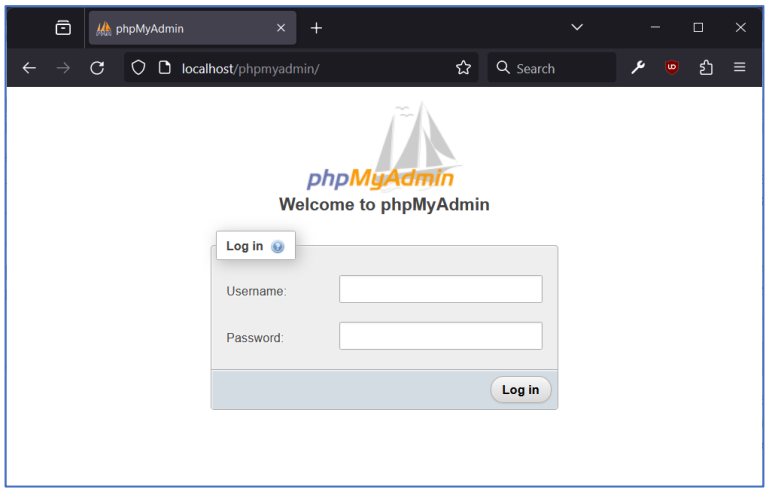


d. Once downloaded, the phpMyAdmin application will be saved in the `C:\laragon\etc\apps\phpMyAdmin folder`

e. Open the `phpMyAdmin folder and copy the` config.sample.inc.php `file into` config.inc.php `and edit the config.inc.php file as shown below`

```
29  /* Server parameters */
30  $cfg['Servers'][$i]['host'] = 'localhost';
31  $cfg['Servers'][$i]['compress'] = false;
32  $cfg['Servers'][$i]['AllowNoPassword'] = true;
```

f. Once it's done editing, save the changes, and we try to open the phpMyAdmin application `in the browser by accessing the` localhost/phpMyAdmin page

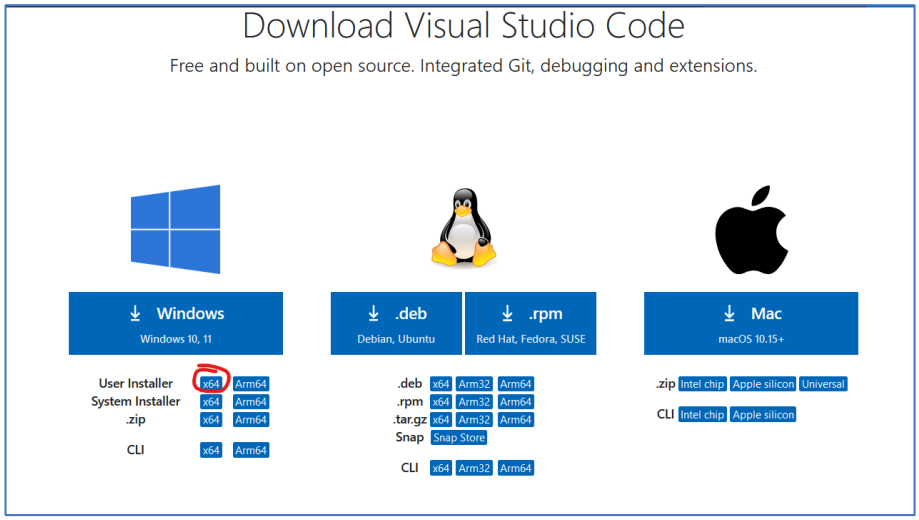


g. By *default*, the account to log in to the MySQL/MariaDB database is the `root username` and the password is left blank

5. Visual Studio Code installation

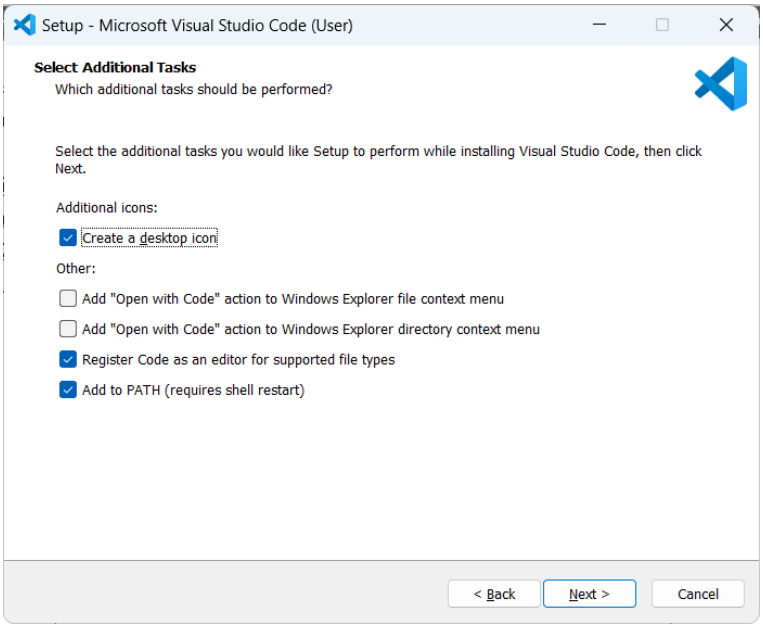
Visual Studio Code or what we often call VSCode is a very popular program code editor developed by Microsoft. VScode is a powerful and lightweight text editor designed for cross-platform application development. Here are the VSCode installation steps

a. Click the VSCode Download link, and for windows operating system users, select the one circled in red



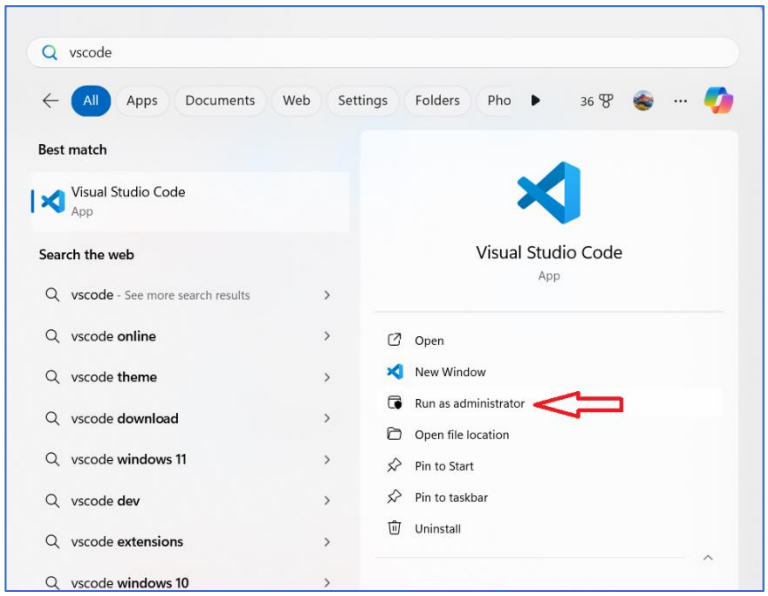
b. When the download is complete, run the file

c. Select the appropriate option



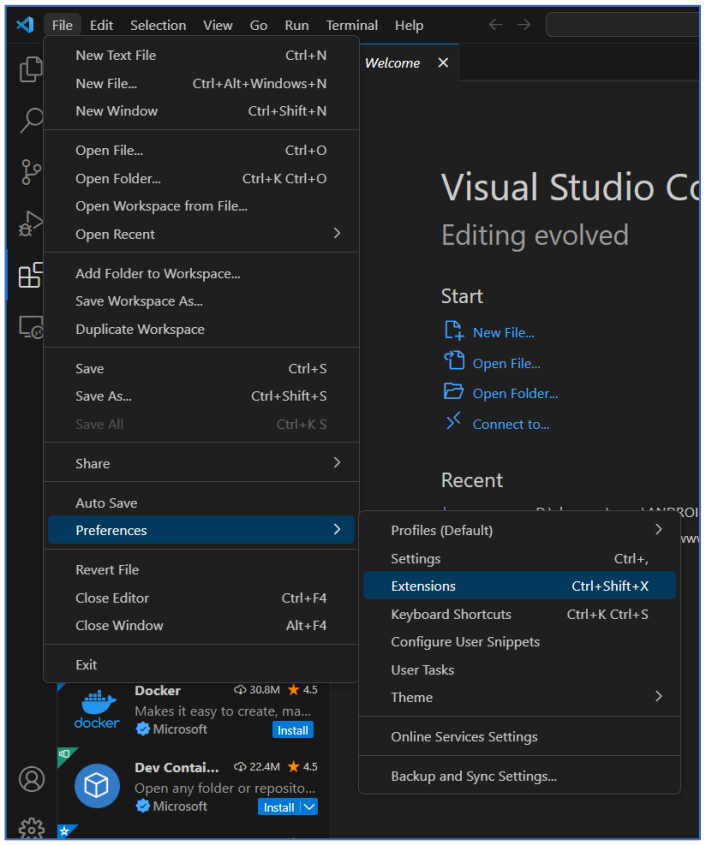
d. Then continue the *VSCode* installation process

e. After completing the VSCode intall process, run the VSCode program administrator (run *as administrator*)

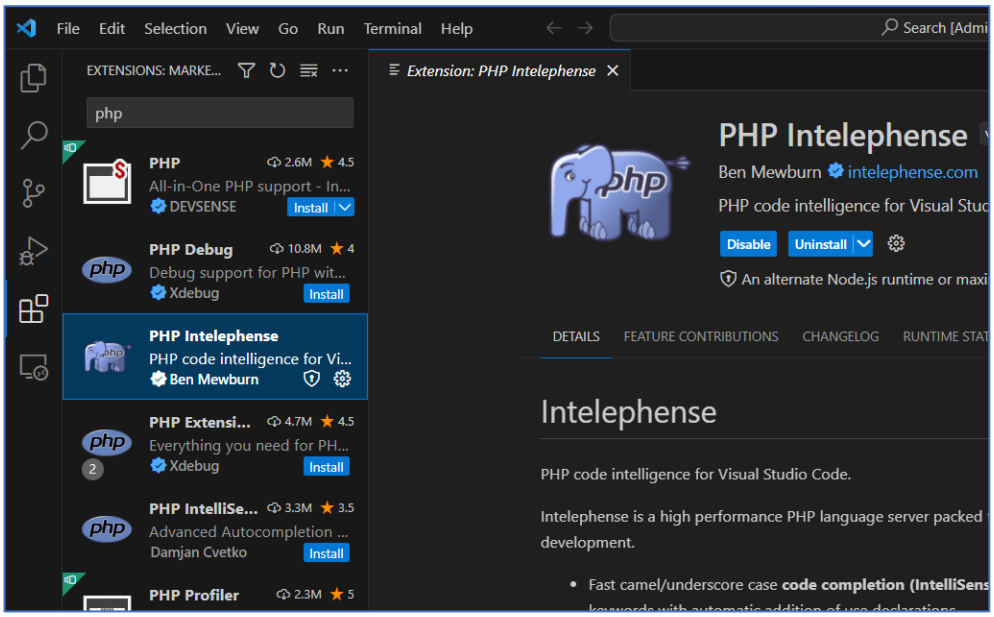


f. Here we will prepare plugins / extensions to make it easier to write program code for Laravel

g. Klik `File → Preferences →Extensions`

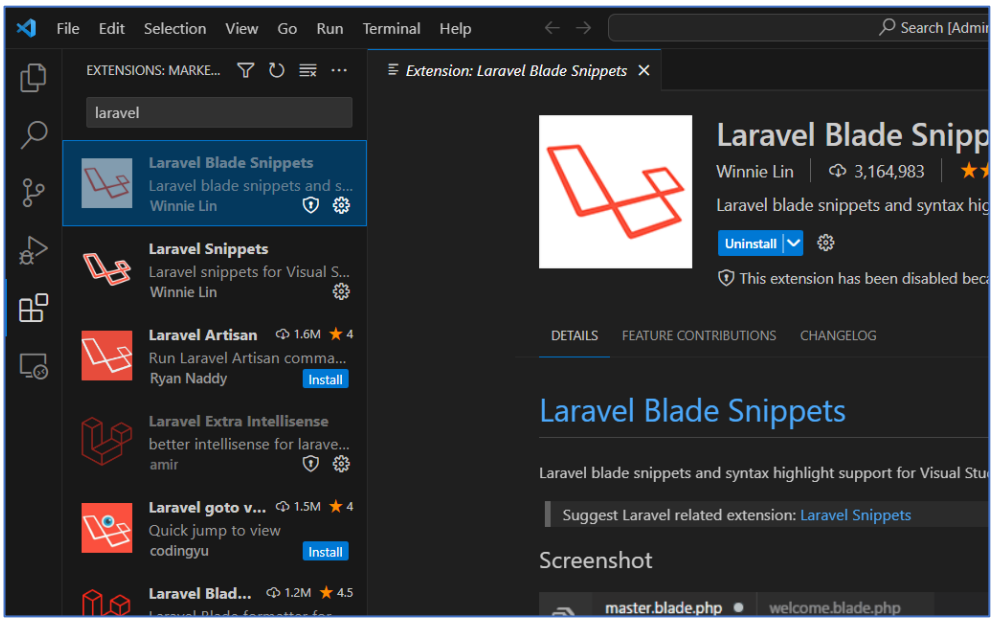


h. Then we type an extension search that makes it easier for us to write PHP program code. We write the keyword `"php"`



i. We select and *install* the PHP Intelligence `extension` which is useful to make it easier for us to code PHP.

j. We can also look for extensions to make it easier to write PHP program code, especially for Laravel. We write the keyword `"Laravel"`



k. We can select and *install* the `Laravel Blade Snippets` and `Laravel Extra Intellisense` extensions to make our coding easier. You can also explore other extensions according to your taste.

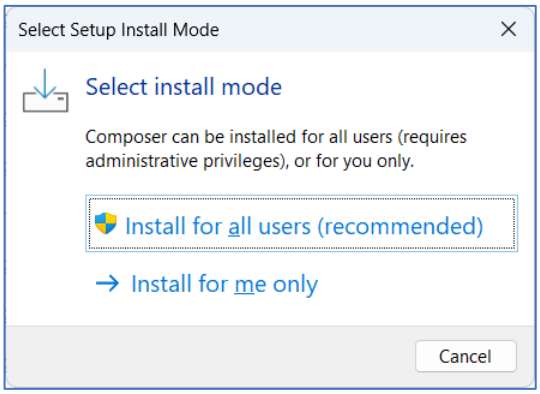
l. For the installation of PHPStrom Text Editor is not much different from VSCode, so you can try it yourself

6. Installing Composer

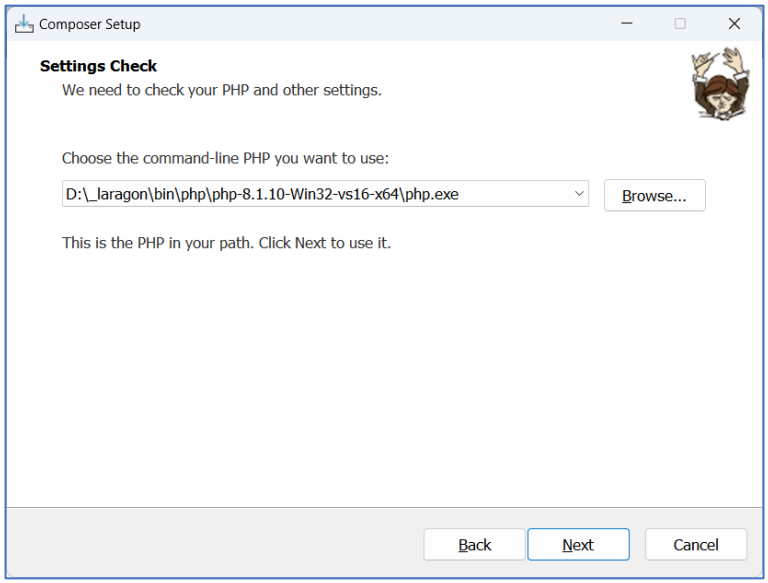
Composer is a dependency manager for the PHP programming language that allows developers to efficiently manage and manage project dependencies. It is a very useful tool in modern PHP software development, allowing users to define and install necessary PHP libraries, frameworks, and other packages. Here are the Composer installation steps

a. Click the Download Composer link

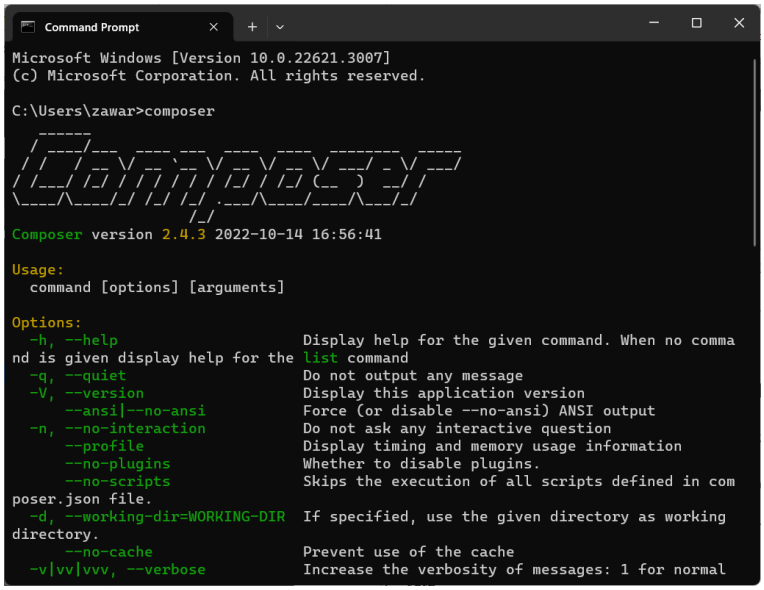
b. Run the downloaded composer file, if there is a `Select Setup Install Mode dialog, select` Install `for all users`



c. Click *next*, and a dialog will appear to select php.exe file location . Make sure the selected `php.exe` file is inside the laragon installation folder.



d. Now we try to check the `command prompt` by typing the command `"composer"`. If a response appears as below, it means that composer has been successfully *installed*



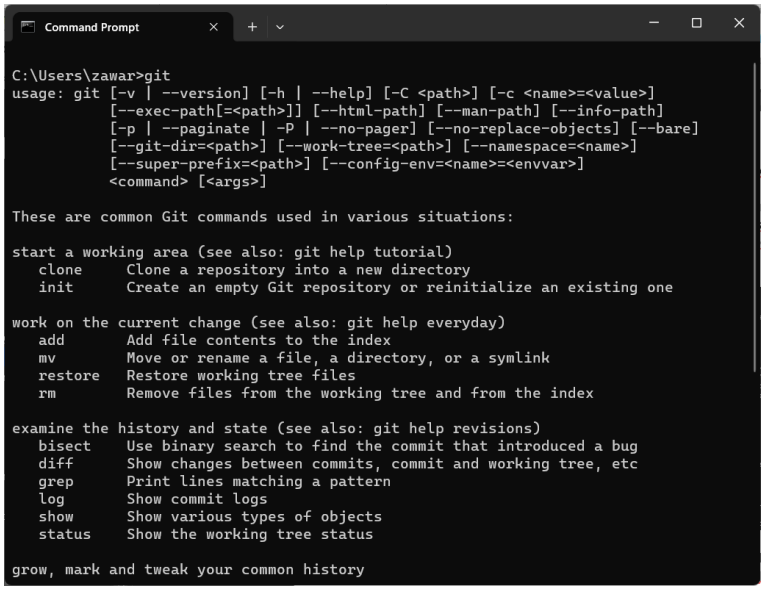
7. Installing Notepad++

Notepad++ is a lightweight text editor that can be used to write/read program code. This application is so lightweight, and can be an option to use as a second text editor. There are no special settings in this application so it is easy to install. Here's the download link for the notepad++ application.

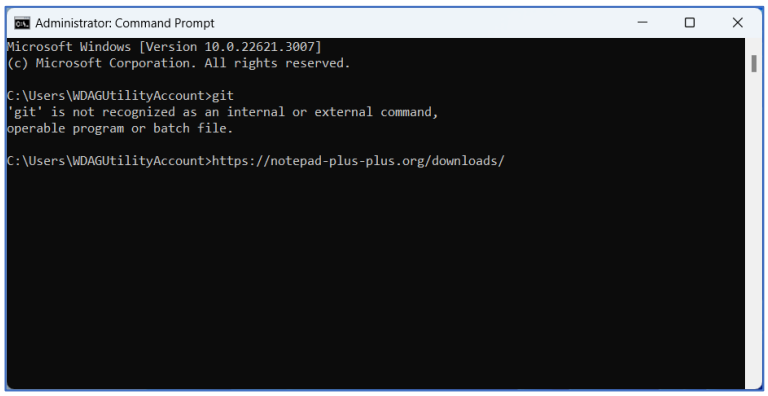
8. GIT installation

Git is software to do version control of the program code that we create. Git is needed to manage program code and make it easier for us to collaborate and work together when working on program code in groups. Here are the steps to install git on the windows operating system.

a. First, we check whether our operating system supports GIT or not by typing the command "`git`" at the command prompt

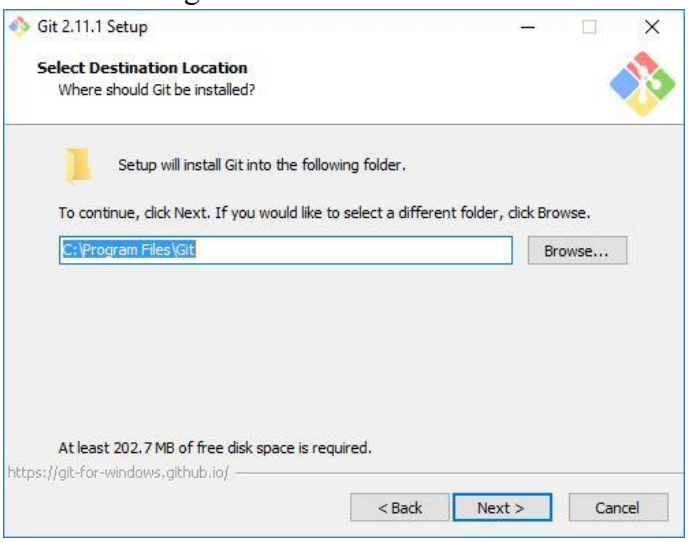


b. If the output comes out as shown above then `git` is already *installed* on our operating system and we can proceed to Stage 8 (*skip* this Git installation stage). If the `git is not recognized` notification comes out as shown below, then we proceed to the next step

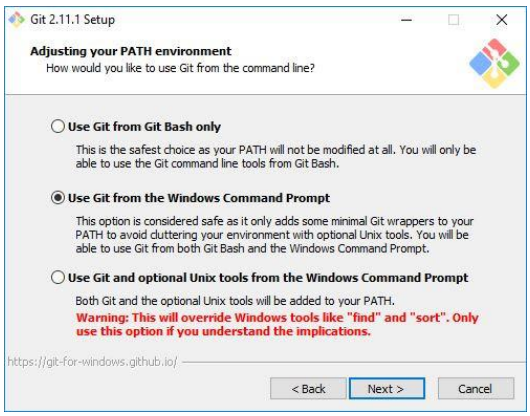


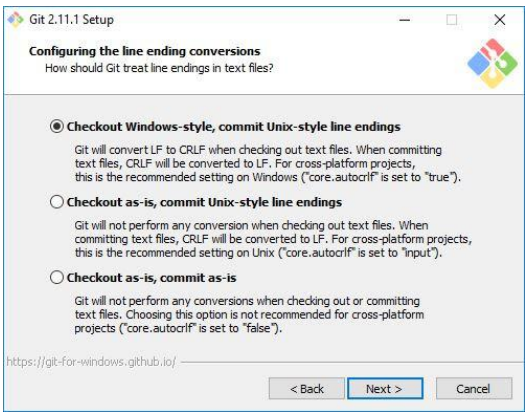
c. Click the Download Git link
d. Run the downloaded git file, and a dialog will appear as follows.

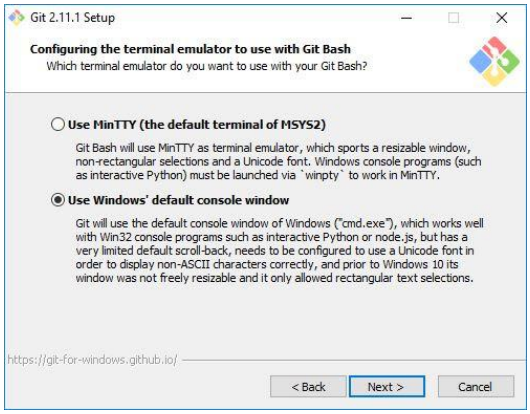
e. Then click *next* and select the git *install* location

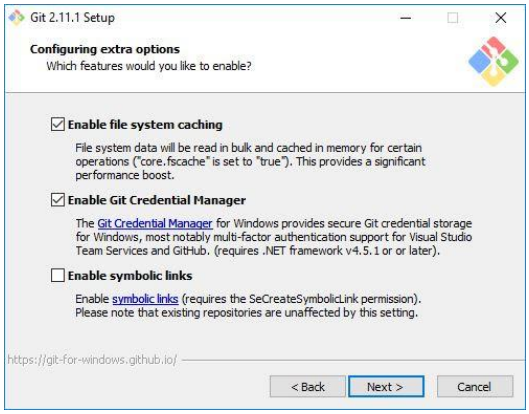


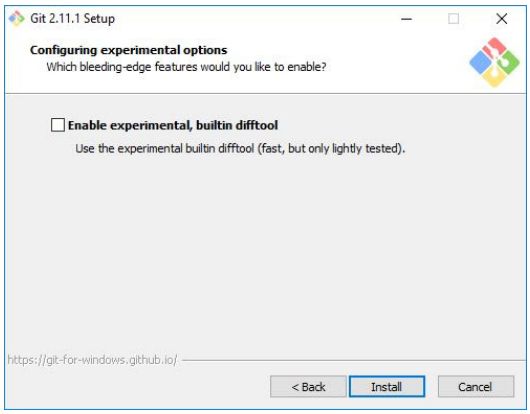
f. Next, select the required components and the next choice if you don't understand, use the *default option* and click *next*. It is allowed to try other install options but if something unwanted happens please *uninstall* and *install* again with *the default* options. Here is an image of the *default install*er `git` option that we can follow.

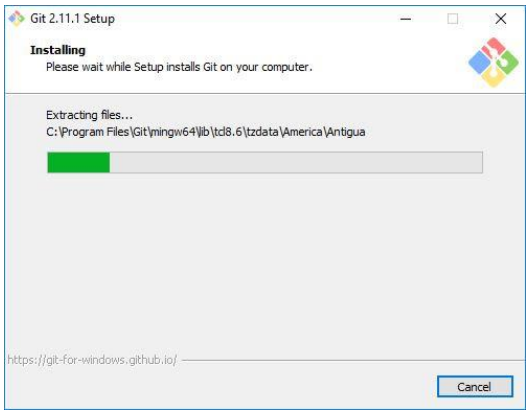




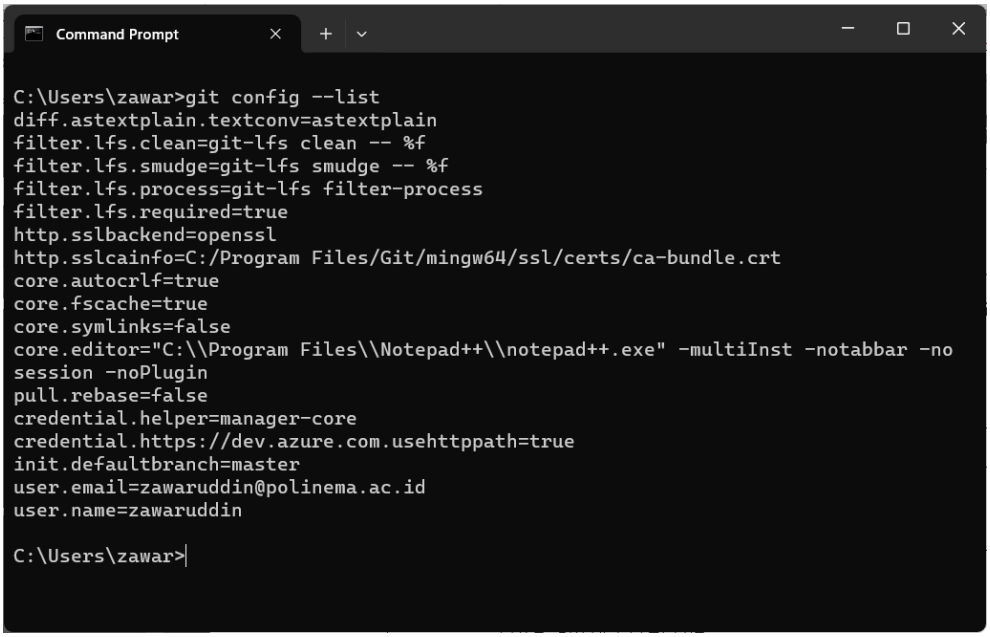








g. Congratulations we have successfully *installed* git on the windows operating system. The next step is to configure git to match the github account we have.
h. Open the terminal then type the command `git config -list`, then the terminal output will be as follows



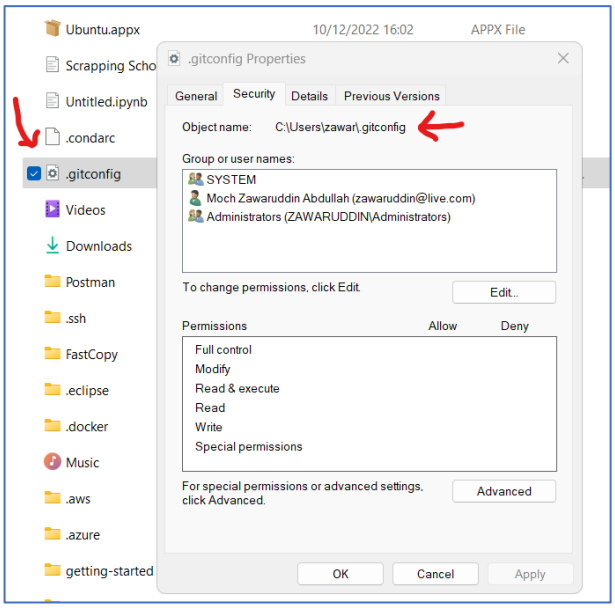
i. Note the last two lines in the configuration. Note the `user.name` and `user.email` *options* This field is *the field* that specifies the username and *git email* to be used when saving changes or *publishing* to github. Make sure the options match our name and email that we registered on github.

j. If not already *set* the value of `user.name` and `user.email` can be set by using the following command:

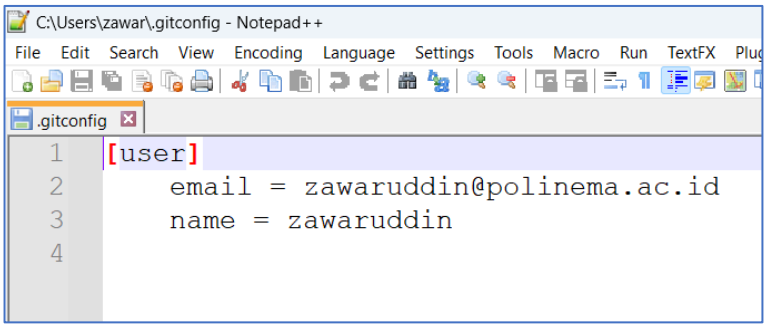
```
git config --global user.name = your_username
git config --global user.email = your_email
```

Or alternatively edit files directly on Windows

```
C:/<computer_account_name>/.gitconfig
```



k. Right-click on the .gitconfig file using the notepad++ text editor, and fill in your github account data



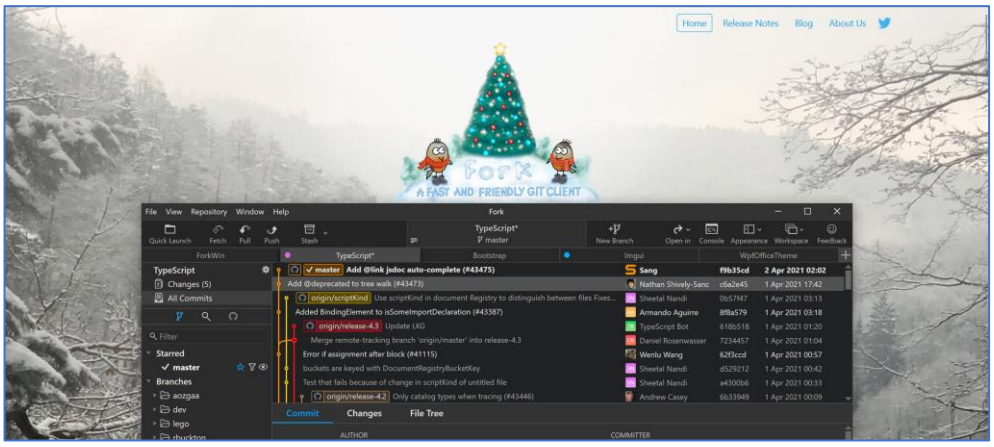
9. Web Browser Installation

Web browsers are used to open and view website applications that we create. At least we need at least 2 (two) browsers to test the appearance of our website application, and ensure that it looks in accordance with the standards of each of these browsers. There are no special settings for web browser installation, so you can try *installing* the web browser application yourself.

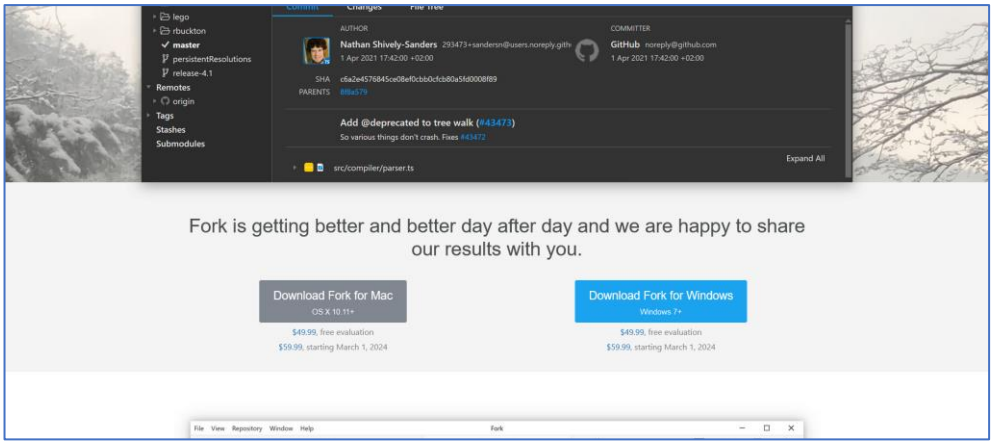
10. *Git-Fork Installation*

Git-Fork is a desktop application used to manage Git repositories with a graphical user interface (GUI). The Git-Fork application allows users to perform various Git operations, such as closing repositories, creating *branches*, committing them, *resolving conflicts in program code, merging program code, and more, all in a more intuitive and understandable way than using Git commands through the terminal*. Here are the steps to install git-fork

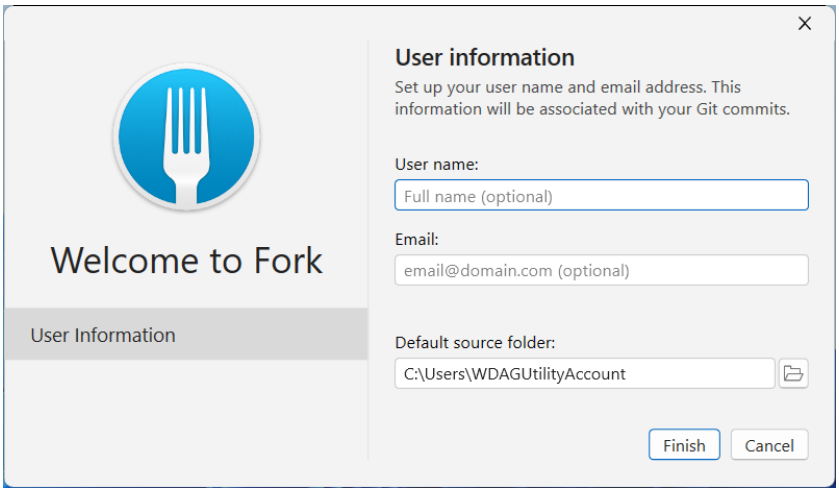
a. Open the Git-Fork download link



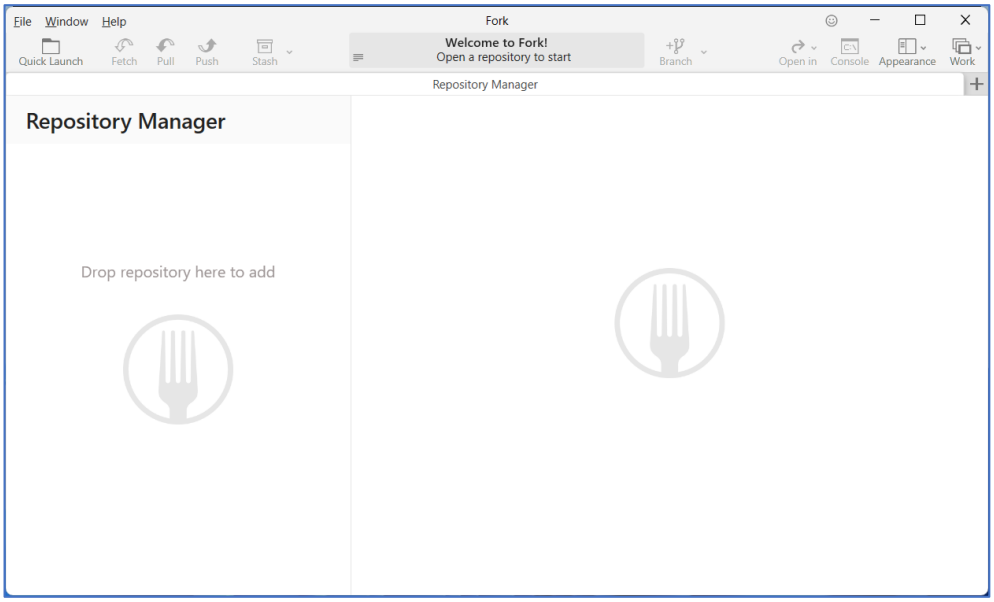
b. Download the git-fork file according to your operating system



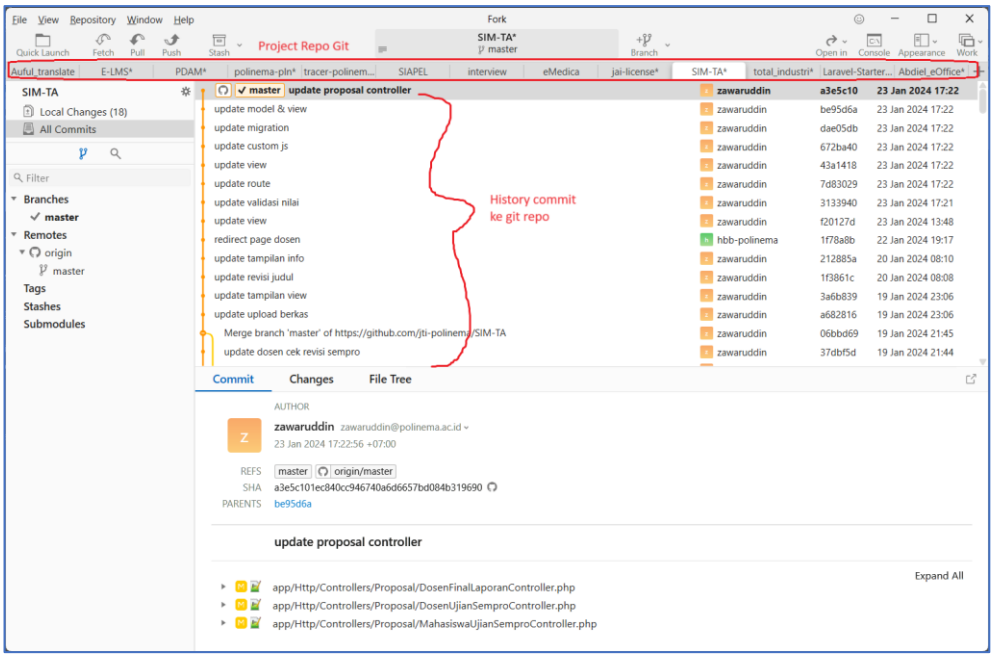
c. Then run the file that has been successfully downloaded, and a dialog appears as follows



d. Please fill in your user name (your full name) and your email registered on github.
e. Then click the finish button.
f. Here is what the git-fork application looks like after it is successfully *installed*



g. And here is an example of a git-fork application to open many git projects



11. Laravel Installation

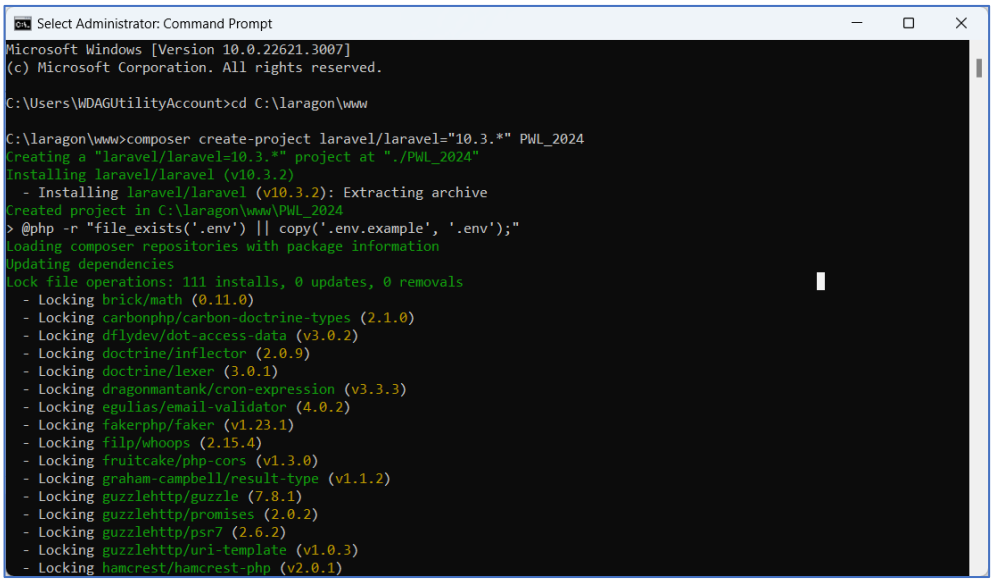
Laravel can be *installed* in several ways. In this practicum, it will be explained how to install laravel using *the command prompt / terminal*. Here are the steps to install laravel that will be done

a. For *development* purposes, the Web server we use is **laragon, so run and activate the services we need in laragon (apache and mysql)**

b. Open *terminal/CMD*, and navigate to the directory *C:laragon/www*

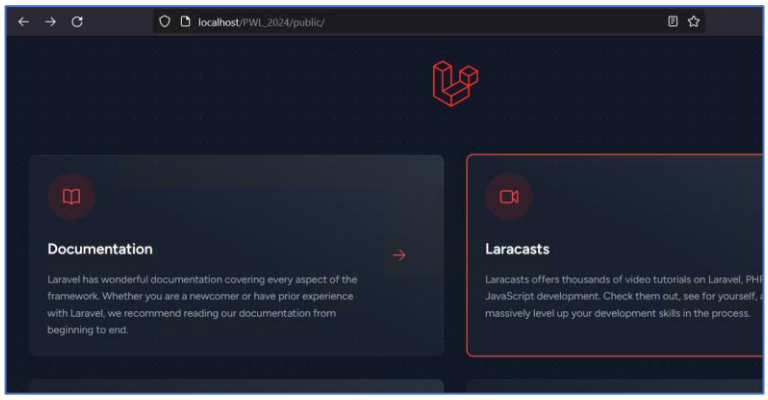
c. Type the following command to install version 10 specific Laravel

```
composer create-project laravel/laravel="10.3.*" PWL_2024
```



d. If you have finished the installation process of Laravel via composer, we try to open it in the browser by typing `localhost/PWL_2024/public`

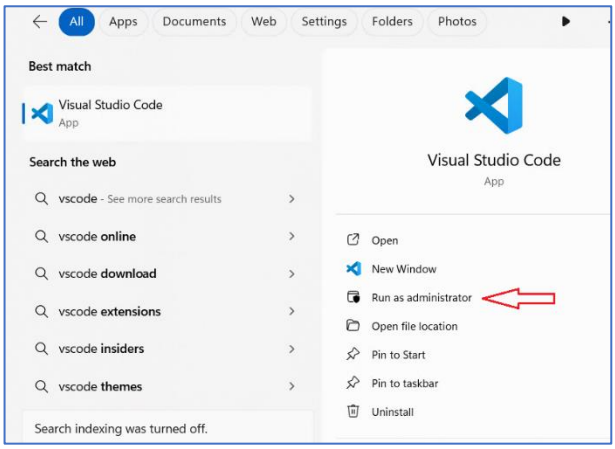
e. Here is the initial view of the laravel application that we have installed



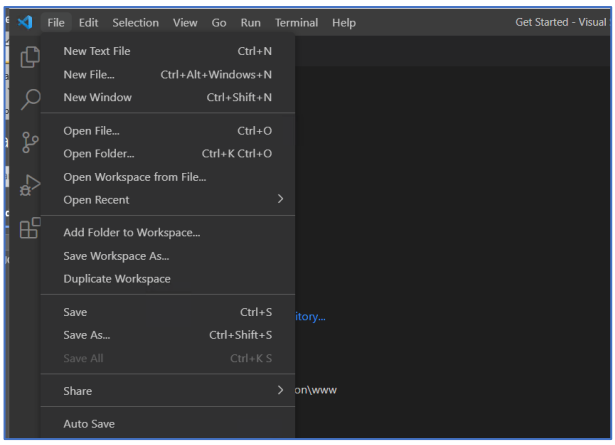
12. *Publish* Project Laravel ke Github

The Laravel application/project that we have created can *be published/committed* to github using Visual Studio Code (VSCode). Here are the steps to publish the Laravel project to github.

a. Open the VSCode application and *run as administrator*

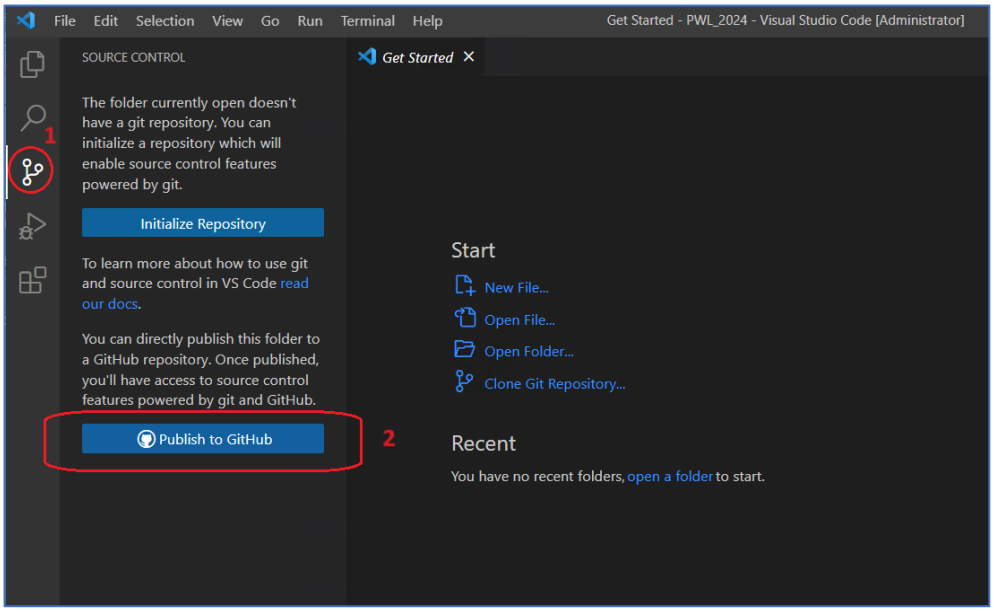


b. Then in the VSCode application, click the `File` → `Open Folder` → menu select the PWL_2024 folder

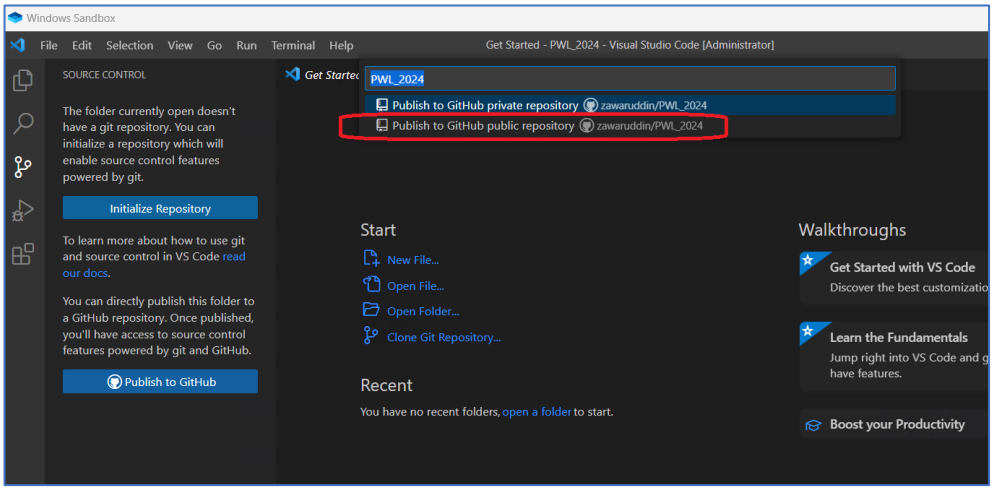


c. After PWL_2024 project is opened in VSCode, then pay attention to the menu on the left of VSCode

d. Click the "*Source Control" menu* icon and click the *"Publish to Github"* button to publish *our Laravel project to our respective github account.*

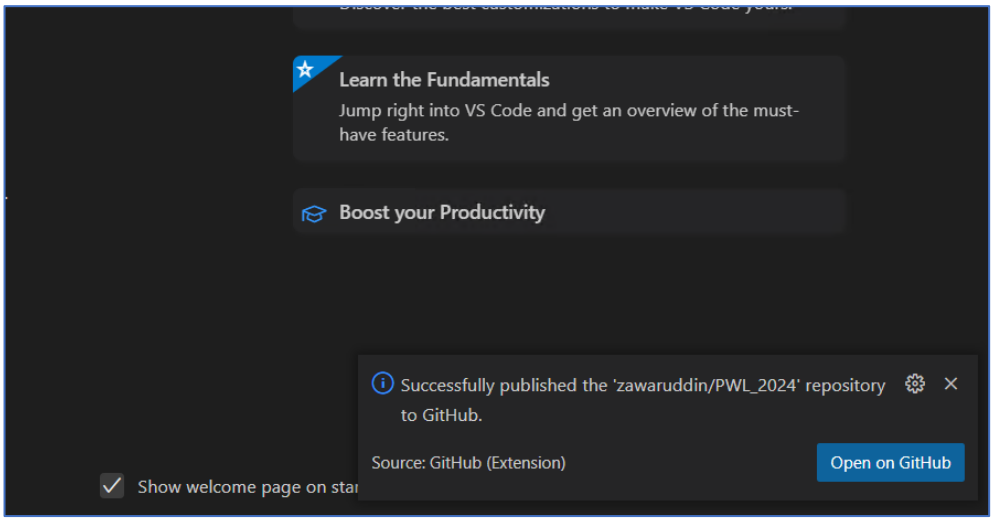


e. Then select the option below, namely "*Publish to Github public repository"*

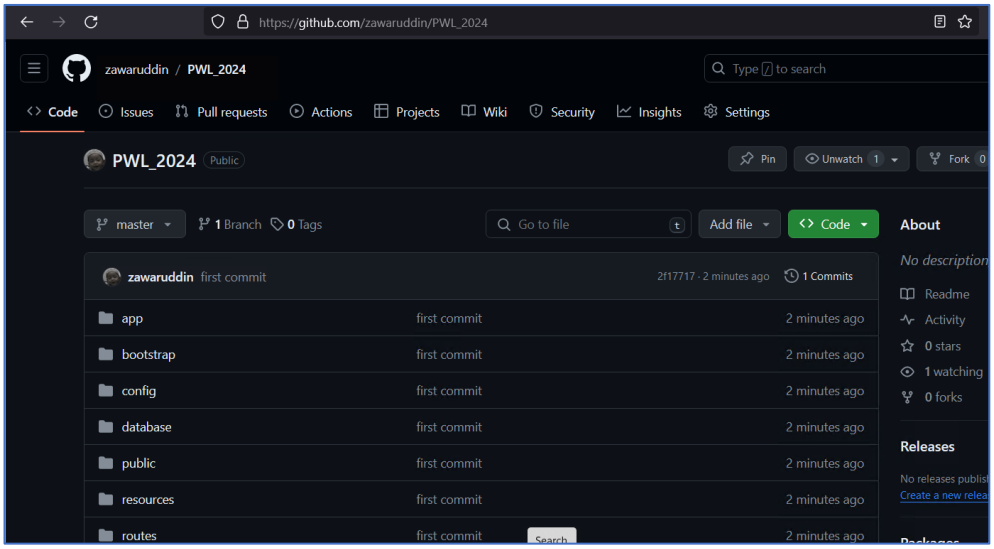


f. After a while, a notification will appear to log in to your github account. Please fill in the username and password of your respective github account.

g. After the login notification is successful, a notification will appear that our Laravel project has been published to the github repository



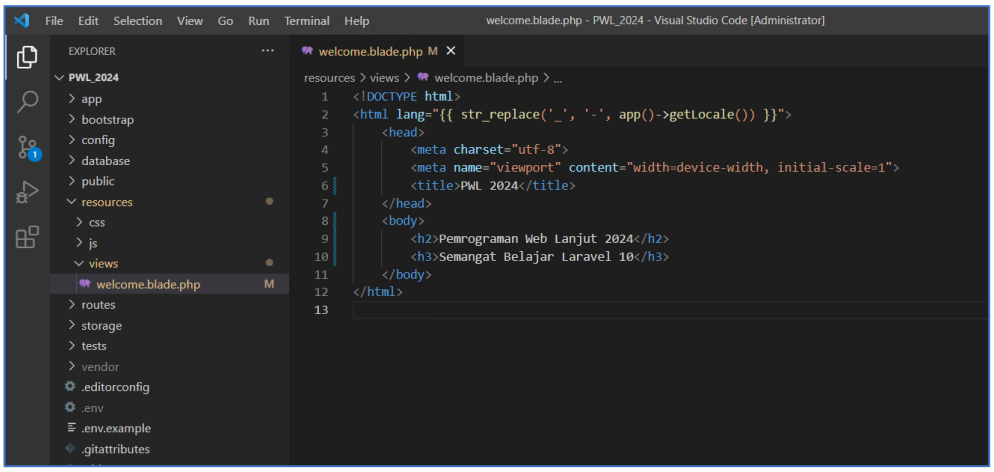
h. Here's what our Laravel project looks like that we can see in our github account repository



13. Update Program Code and Sync to Github Repo

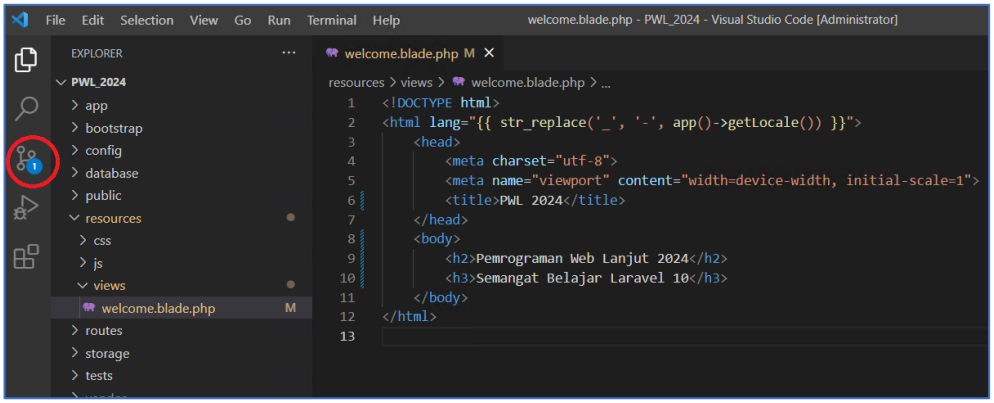
There are times when we work on or modify the program code that we have made. And we need to record what changes we have made. Now here we can use git to record changes to the program code, and synchronize with the repository on github. Our steps in recording program code changes can be as follows

a. Open `the resources/views/welcome.blade.php` file in VSCode
b. Modify the file as shown below

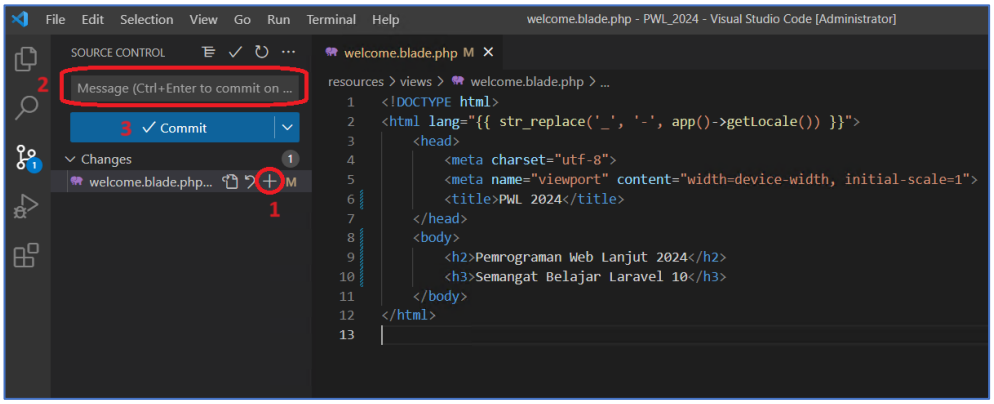


c. Then save, and try to check your web display on the browser

d. Now try to notice on the "Source Control" icon menu, there is 1 notification (meaning there is 1 file that has been modified)

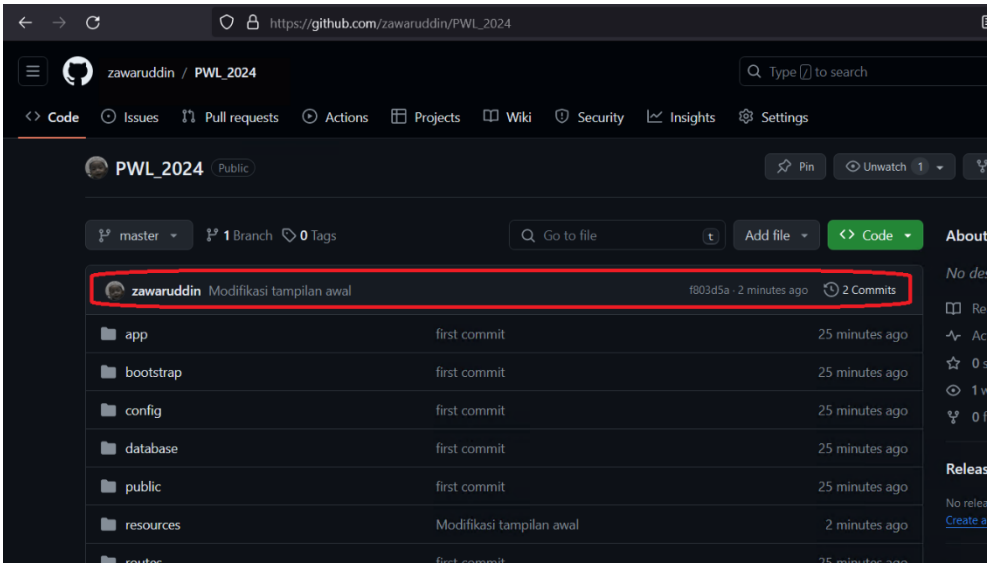


e. Click the "source control" *menu icon*, add the files you want to sync, fill in the comments you want to submit (for example "modify the initial display"), then click the *Commit button*



f. Next click the *"Sync Changes" button* and click *"OK"*

g. We have successfully made changes to the program code, and we can see the history of these changes in the PWL_2024 repository in our respective github accounts



h. Learn about Stage 13 by doing Steps *a-g* repeatedly so that you can understand the flow.

*Thank you, and good luck ****