PROJECT - 03

“VS -CODE”

SUBMITTED BY: MANASWI M. PATIL

Objectives:

This project is designed to equip interns with a deep understanding and practical expertise in using Visual Studio Code (VS Code), a versatile and powerful code editor. The objective is to enable them to maximize their productivity in software development tasks, ranging from code writing and editing to debugging and version control, across a variety of programming languages. vs code Support a wide range of programming languages and frameworks. It offer a lightweight and fast code editor that doesn't consume excessive system resources. Provide an Allow users to personalize their coding environment through themes, extensions, and configuration options. Maintain an open-source model to encourage transparency, community contributions, and accessibility for all developers. Regularly update and enhance features, addressing user feedback and staying up-to-date with industry trends and technologies.

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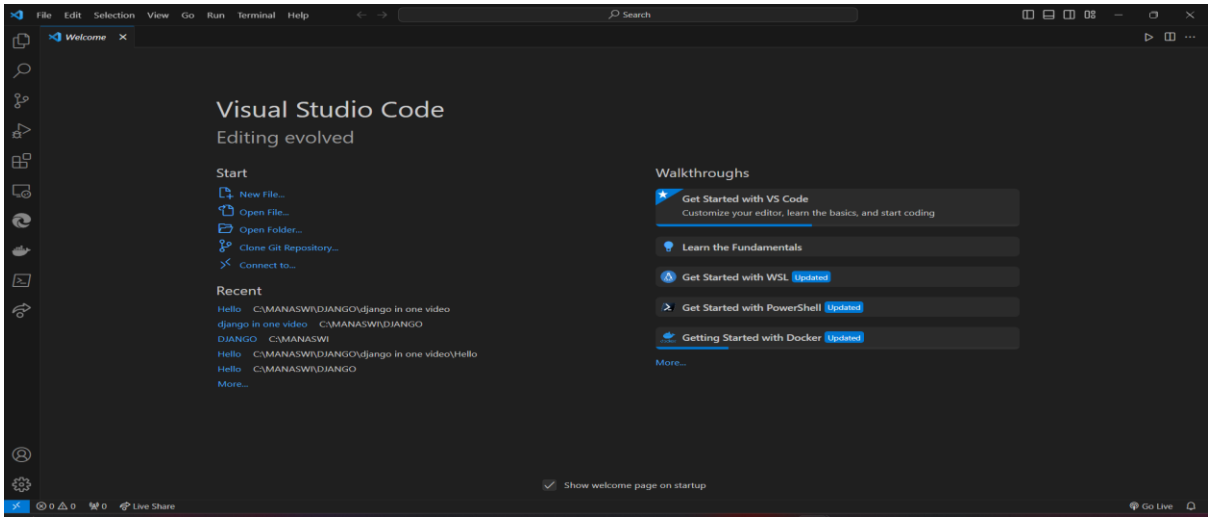
1. Introduction

VS Code is a text editor used for writing and editing code. it supports a wide range of programming languages, making it versatile for different types of development projects. It is a lightweight and powerful source code editor developed by Microsoft. VS Code is freely available and open-source, making it accessible to all. It has a large community of users and developers, providing support and continuous improvement.

Installing steps and set up :

- Open browser →type vs code download → click on first link below→

https://code.visualstudio.com/download →download for the windows. This is the first window after open the vs code.



For creating new file in window→click ‘file’.

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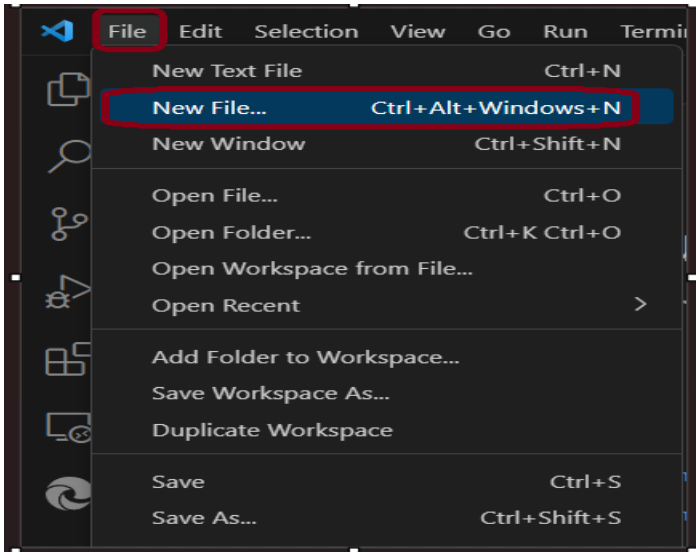
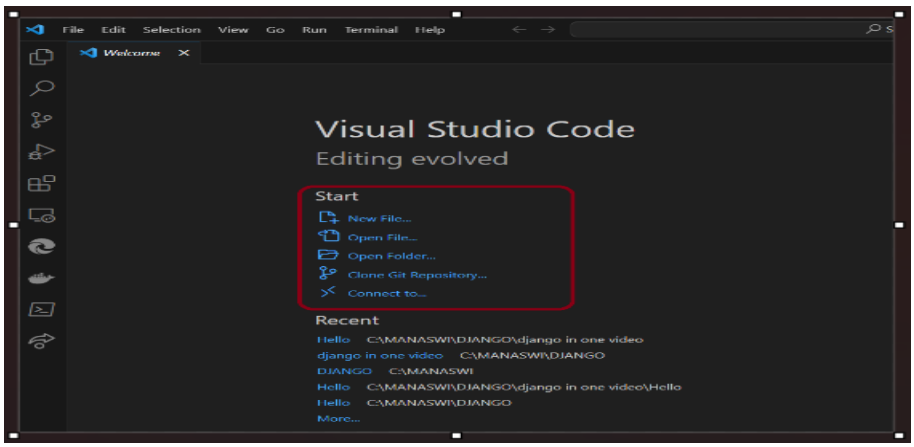


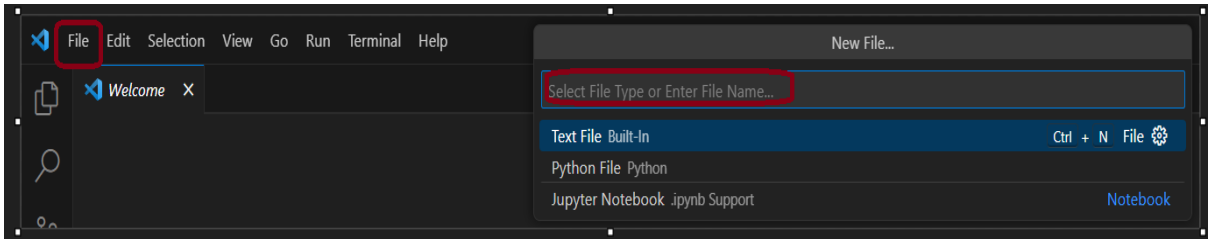
- You can directly starts with this options too. → to open previous file or new file follow below.



2. Basic Coding and Editor Customization

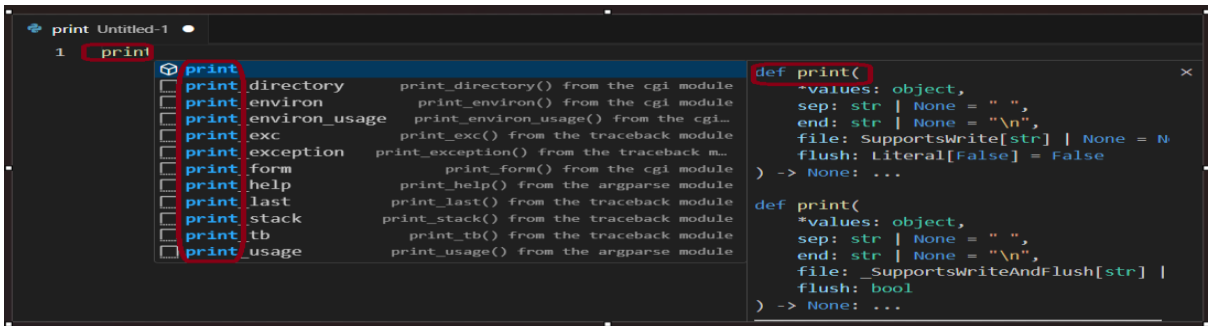
Creating and managing projects and files:

- Click file→new file→ select file type from below list.

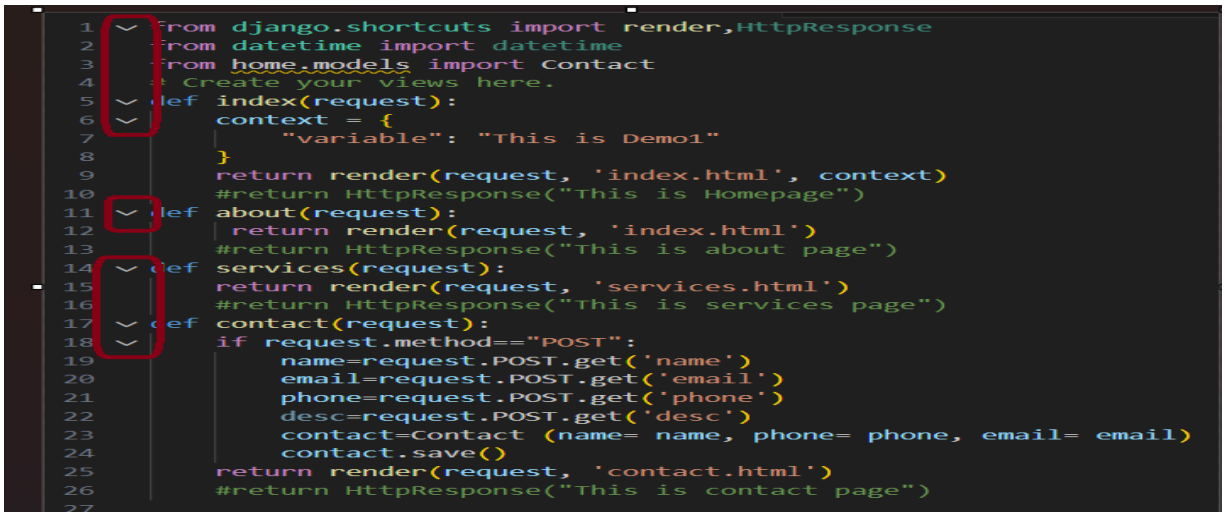


Used advanced editor features to edit the code:

- To edit code/file use format code option
- Just typing one word in editor it will show you the magic of lots of words→it suggests a option to choose → just click on it to put.



- Click on editor code window→click on small arrow from left side in code →it will minimize the specific code in current page.



- Red curly line show the following line is incomplete or sense less.

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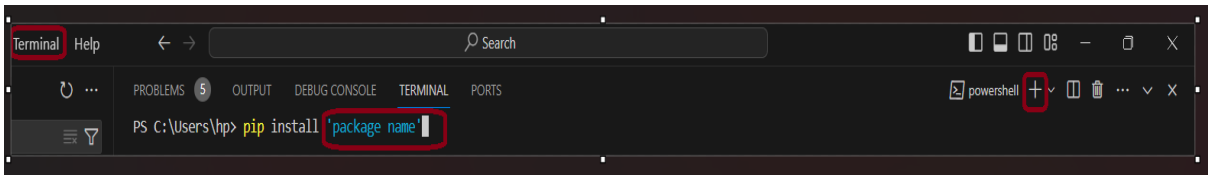
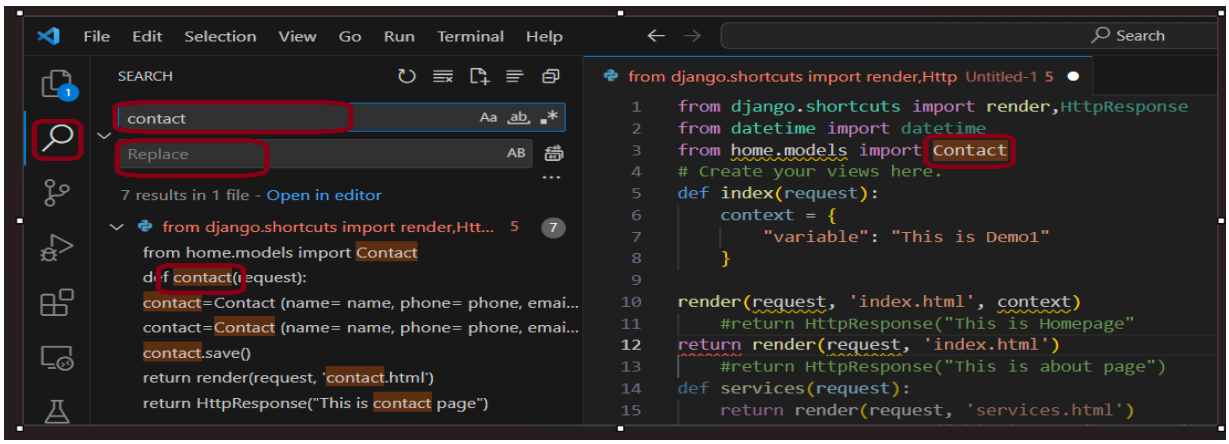
To run code need packages to install.

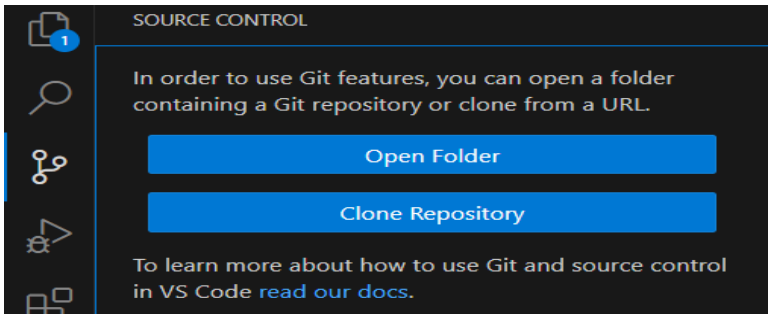
- Click terminal→new terminal /click ‘+’ option to add terminal.



- To search specific word in working page and replace with another name →click search →type word which you want to seach→click replace→write new word to replace if want.



- Source control used to collaboration purpose multiple users can work simultaneously.



- ‘Remote Explorer’ is a feature that allows you to work with files and projects on remote machines.
- Click rectangle option to access this feature→click to add ‘+’new connection→install.

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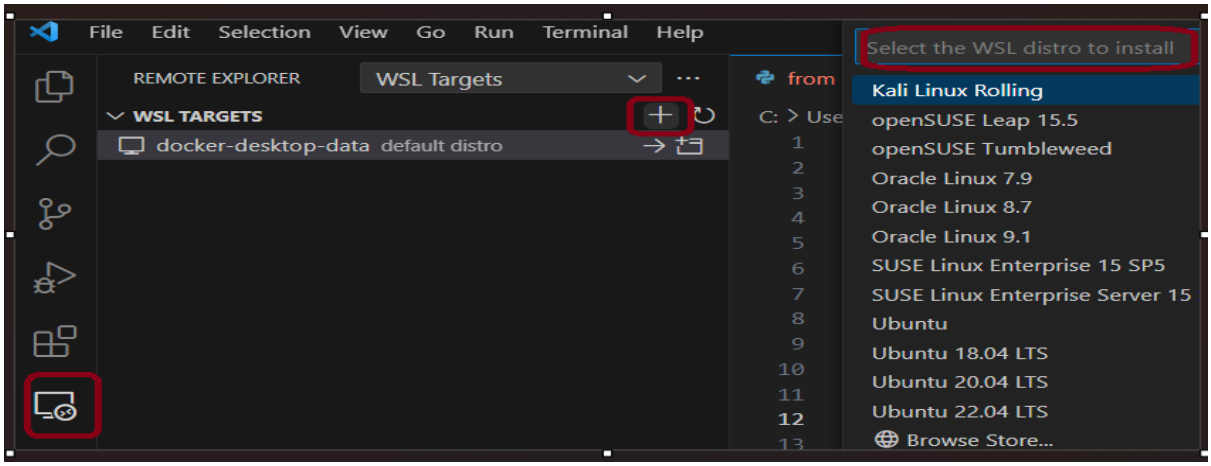
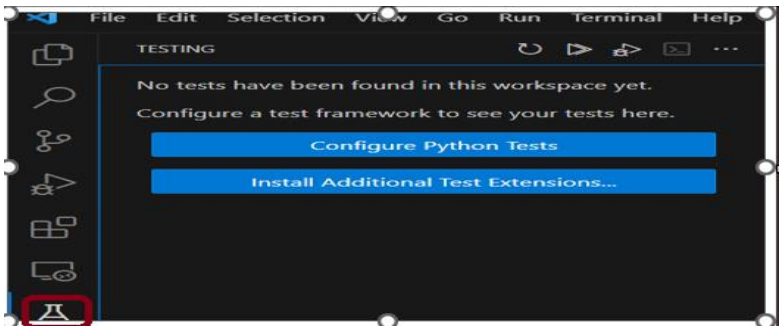


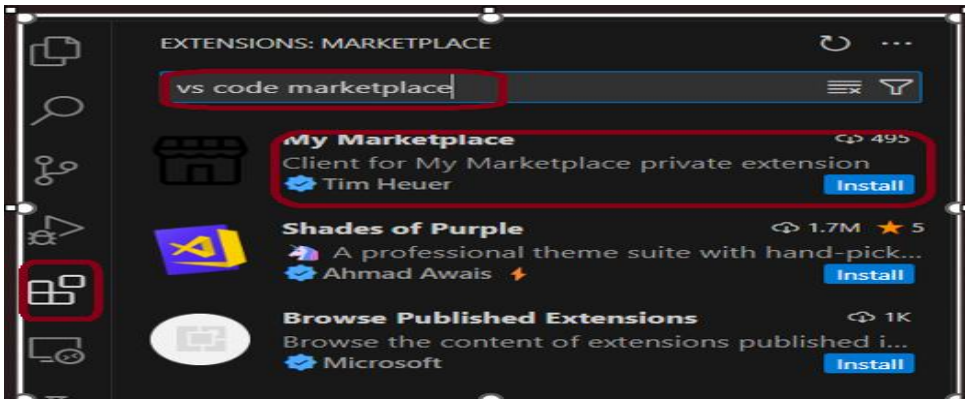
Testing organizes tests based on your project's structure and allows you to run or debug tests directly from the explorer.



Customizing the editor with themes, fonts, and layout configurations

- To add themes in editor : click ‘file’ menu from vs code editor→preferences→theme→select option from following.

- Go extension symbol→type ‘vs code marketplace’→install



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Editor layout is used to working with multiple files at a time.

- Click editor layout→click split right→ bottom→split rows etc.
- Open the command palette →’Ctrl + Shift + P ‘→to access various commands and settings→Search for specific actions or settings and execute them directly from the palette**.**

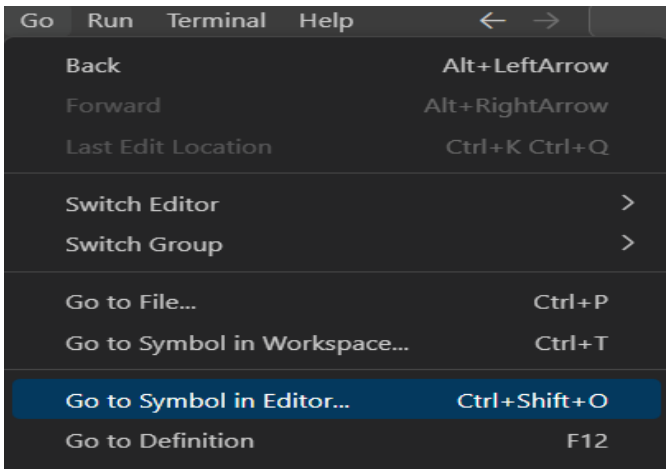
3. Extensions and Productivity Tools

Discovering and installing essential extensions for different programming languages and tools.

Code navigation:

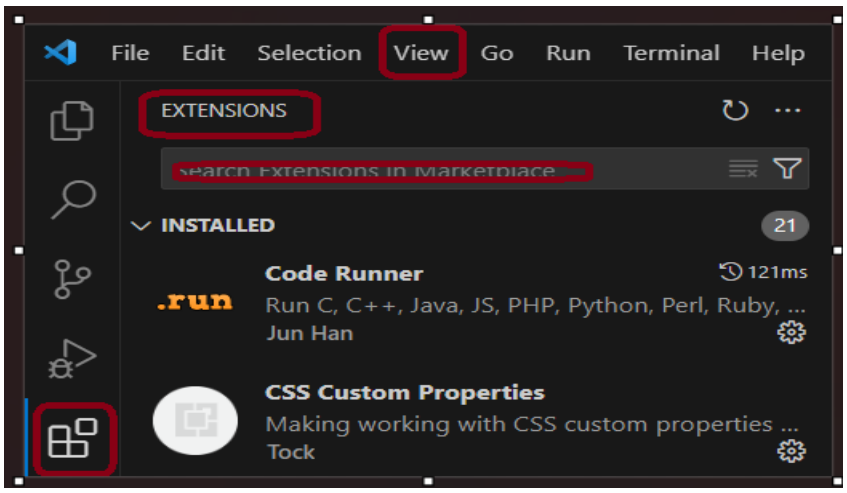
- Open vs code editor→open source code→ Use the file explorer on the left side to navigate between files and folders→ Click on a file to open it in the editor→line number you want to navigate→click 'Ctrl+G'→ Press Ctrl + Shift + O → to open "Go to Symbol.

Go symbol allows you to quickly navigate to a specific function, variable, or symbol by typing its name.

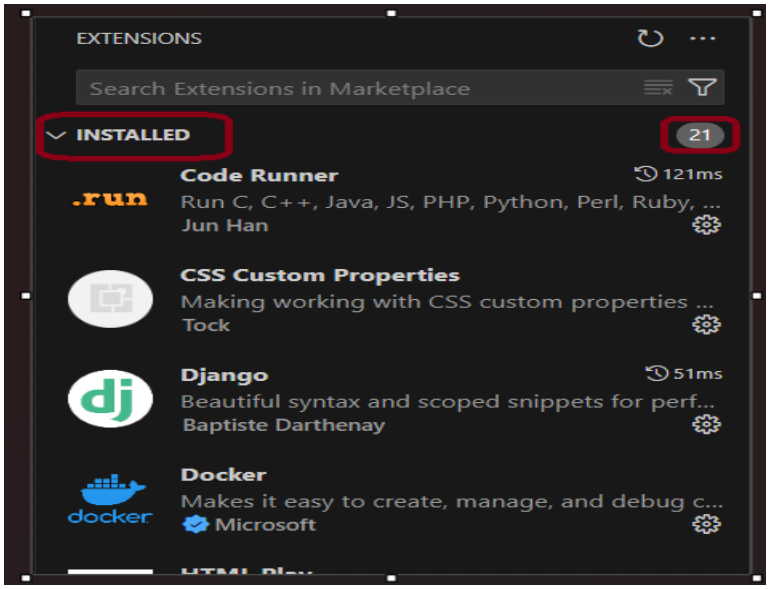


You can add extensions as per your requirement from following below steps.

- Click on 'square symbol'/ click on 'view'→extension→search extension whatever you want→click install.

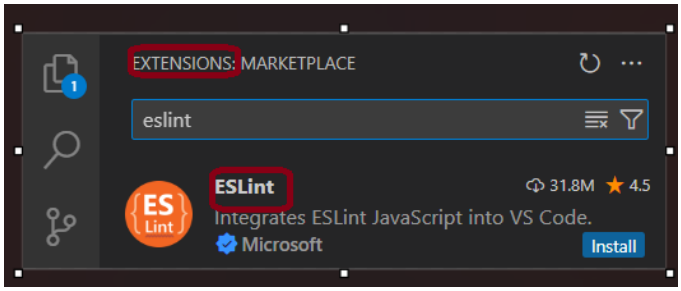


Also seen the list of 'Installed extension' and 'count' in your platform.



Configuring linters, formatters , and other productivity tools

- Go on extension→search ESlint→install.



- install ESLint and its required dependencies using npm →install the following command→ in terminal →type this→ npm install eslint --save-dev →enter.

```
PS C:\Users\hp> npm install eslint --save-dev
```

- To create basic configuration file enter following command→ npx eslint --init

Click setting→'ctrl+,'→setting.json→add following lines to make configuration→ Add the following lines→"eslint.enable": true,→enter→"editor.codeActionsOnSave": →{ "source.fixAll.eslint": true→},

Utilizing built-in snippets and creating custom ones

Utilizing built-in snippets and creating custom ones in Visual Studio Code (VS Code) can significantly improve your coding efficiency.

- Trigger Snippets: Visual Studio Code comes with built-in snippets that can be triggered by typing a specific prefix and pressing Tab or Enter. *example*, typing if and pressing Tab creates a basic if statement.

- Tab Completion: Many programming languages have built-in snippets that can be triggered by pressing Tab after typing a part of the snippet. *example*, typing console.lo and pressing Tab creates a console.log() statement.

- Explore Available Snippets:

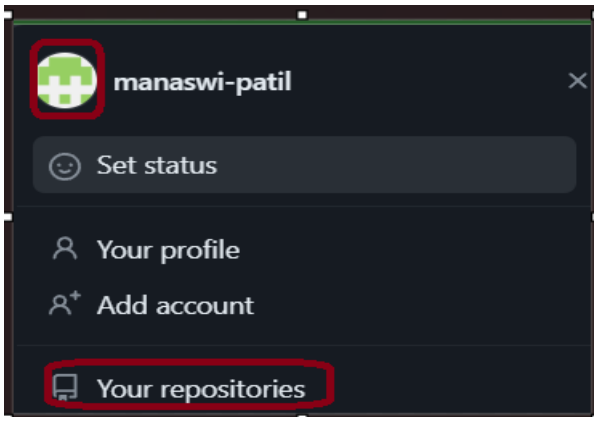
VS Code provides a snippet picker that you can access →type 'Ctrl+Space' after triggering a snippet prefix→ show available Snippests.

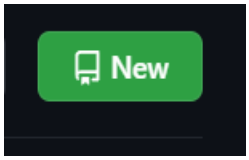
4. Version Control Integration

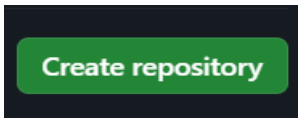
Integrating with Git and other version control systems directly within VS Code

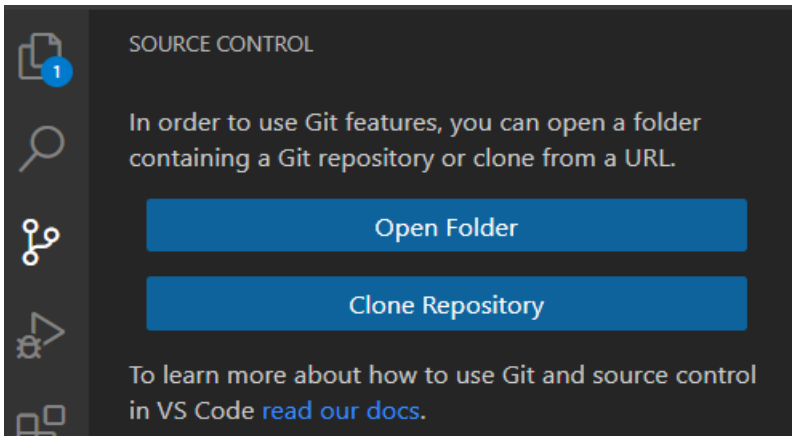
How to push vs code to github?

Open vs code →open project→open file→open github account in any browser→'github.com'→click right top corner→click your repository→click new→give repository name→description→create repository→copy url from top bar →open vs code→version/source control icon click→click clone repository and paste url in search bar.









- Type commit 1→click 'ctrl+
- enter' →it will created→click three dots from corner →select push pull→remote→add remote→paste url→enter→add remote name +enter→file added in git hub account.

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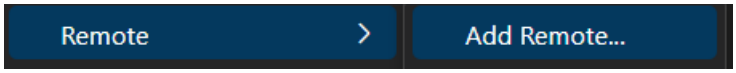
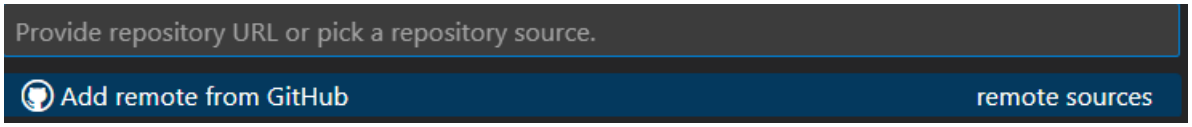
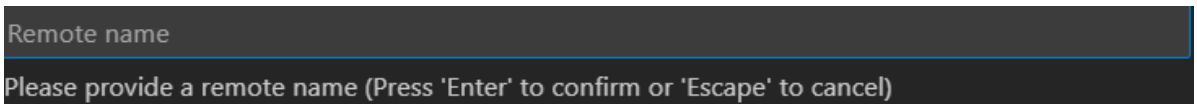
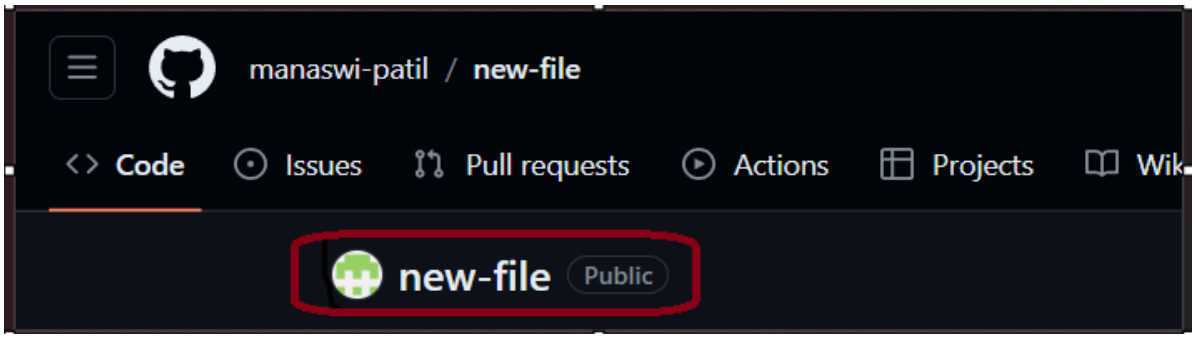






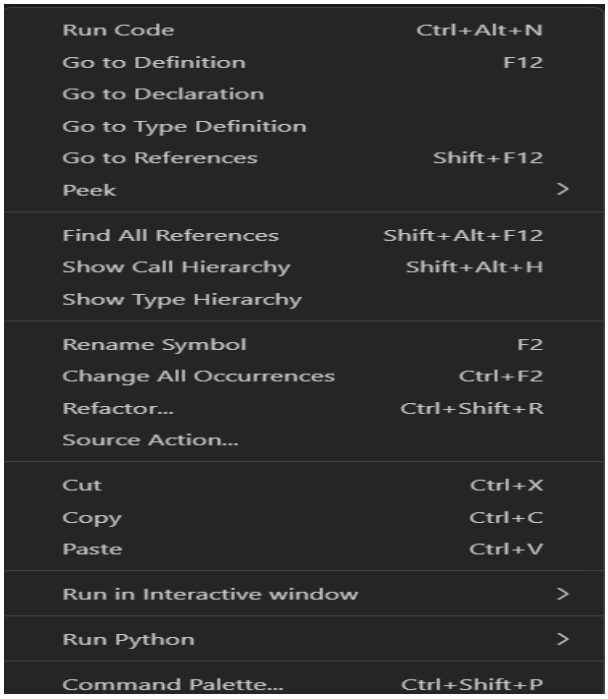
Display all files in your github account.



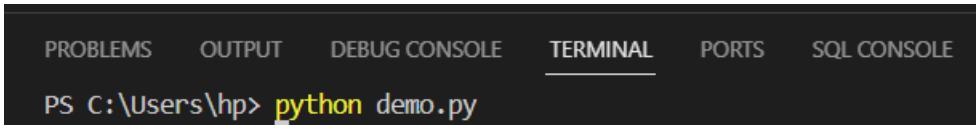
5. Debugging and Code Analysis

Setting up and using the debugging tools in VS Code

- Open vs code editor→open code file→right click in editor window→run option→chhoose run in interactive window option or any you want.



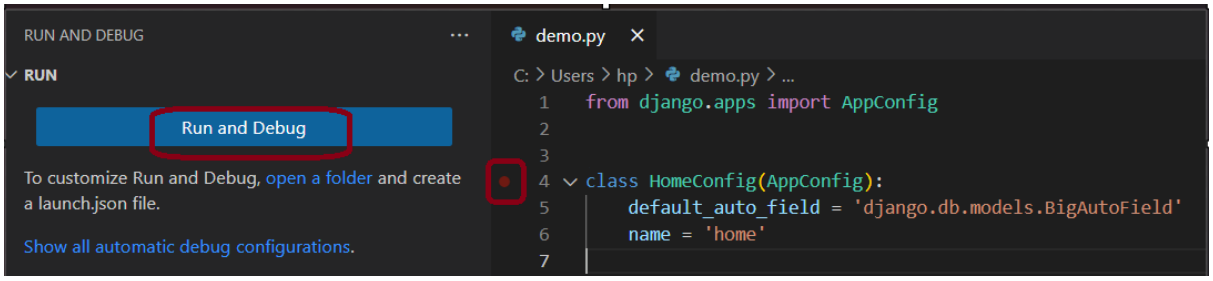
- Open terminal →write command like 'python file name'→>enter.



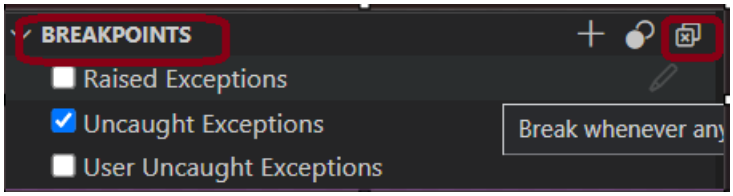
How to debug python scripts?

- Click 'run button ' from menu bar→add breakpoints→run and debug .

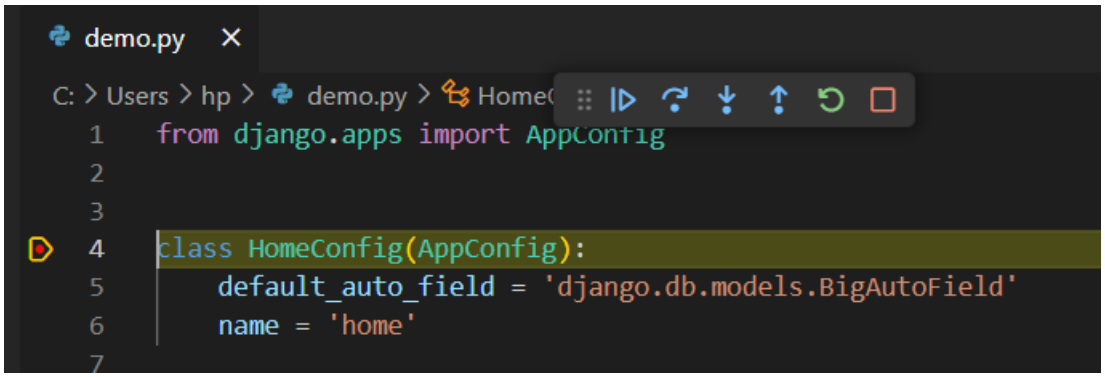
Red dot indicates breakpoints.



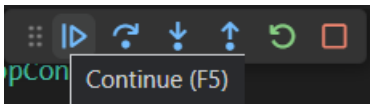
- Bottom of editor page→all breakpoints list→click on cross mark to remove all breakpoints.



- Click Debug and run --> Debugger is stop at breakpoint line.

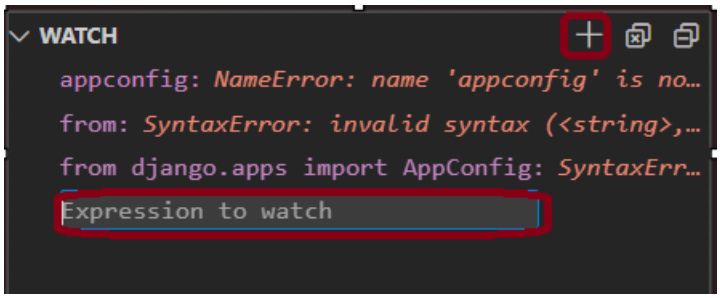


Click to continue the debug→step over→step into →step out from using this option.



Used of watch?

- Left side of panel→click watch→'+'click→type words from your file which u want to watch.



- Just double click on call stack and see where your method is called in editor

Analysing code performance and identifying bottlenecks

Resource Intensive for Large Projects: VS Code ,may get slow for big projects with lots of files and dependencies, causing performance problems.

Limited Features for Complex Tasks: VS Code is feature-rich, it may not have all the advanced features needed for certain languages, making some developers prefer more specialized IDEs.

Learning Curve for Extensions: Adding extra features through extensions is great, but some extensions, especially the complex ones, might take time to learn and set up.

Not for All Types of Development: VS Code may not be the ideal choice for all kinds of development. Some developers might find better support in specialized IDEs for specific languages or frameworks.

Limited Visual Design Support: VS Code focuses on coding and might not provide as much help for visual design tasks compared to tools designed specifically for graphical user interface (GUI) development.

Basic Refactoring Tools: While supporting basic code changes, VS Code might lack some advanced code restructuring tools found in dedicated IDEs.

Extension Dependency: While extensions boost VS Code's capabilities, users often need third-party extensions for certain tasks, and their quality can vary.

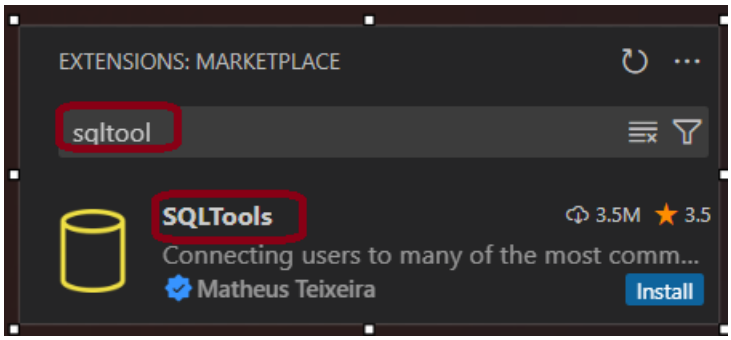
Integrated Terminal Convenience, with Limits: VS Code's built-in terminal is handy, but users heavily reliant on command-line tools might find it less powerful than standalone terminal emulators.

Visual Studio Code Server Challenges: using VS Code remotely with Visual Studio Code Server, some features might not work as smoothly as they do in a local setup**.**

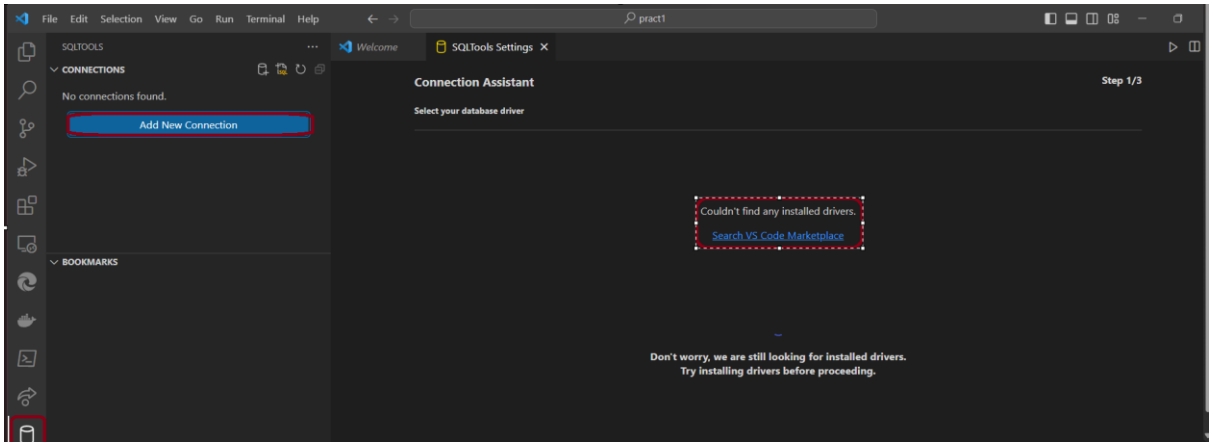
6. Working with Databases and Remote Servers

How to set MySQL and how to run queries in vs ?

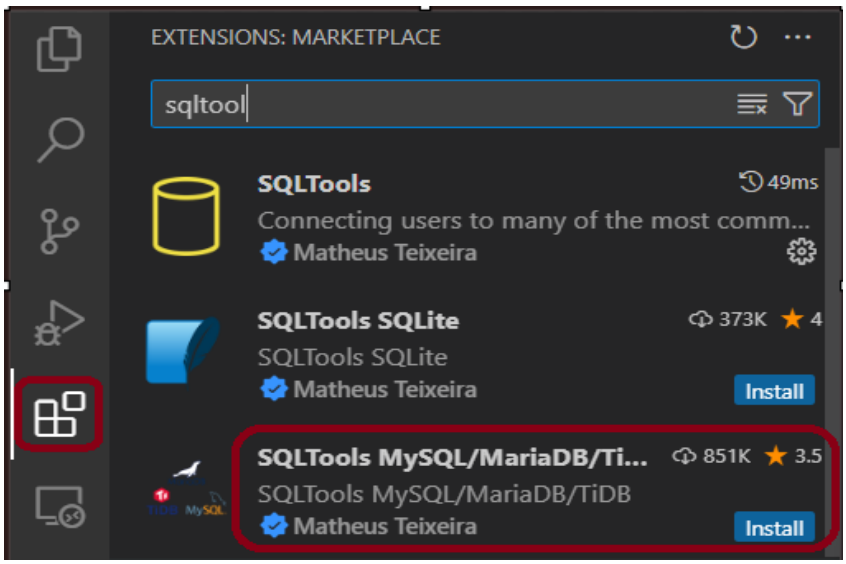
- Click extension→ search for 'sqltool'→install.



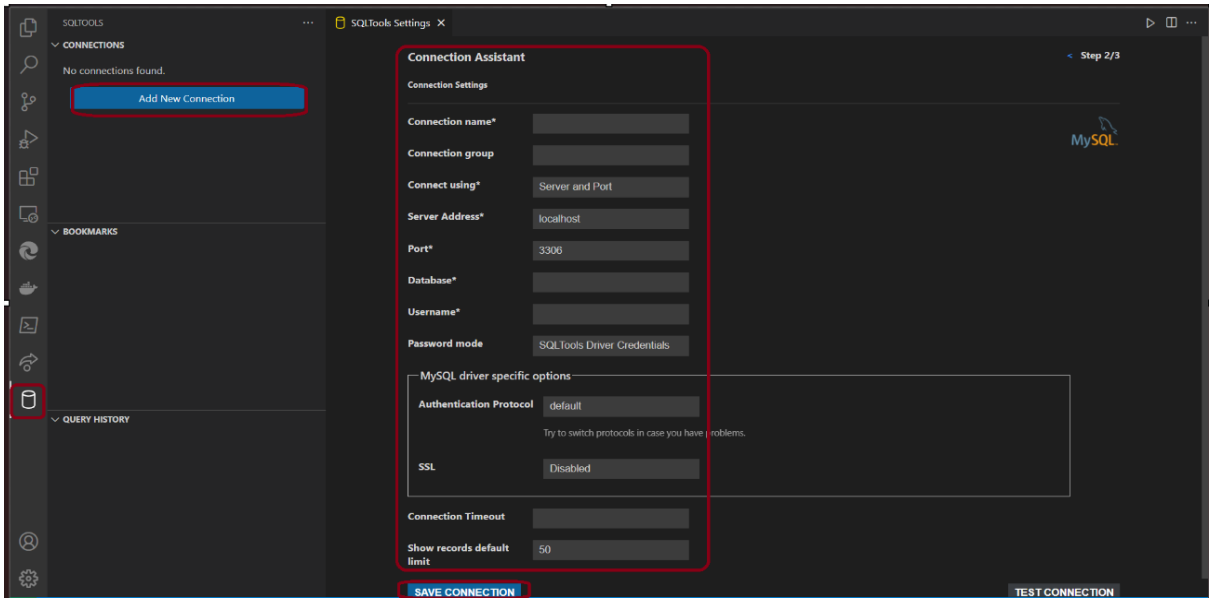
- To add new connection→click 'sqlttol' box→click add connections.



- 'Couldn't find any installed drivers'→for this you need to install another extension i.e ;sqltool MYSQL/MariaDB/TiDB'



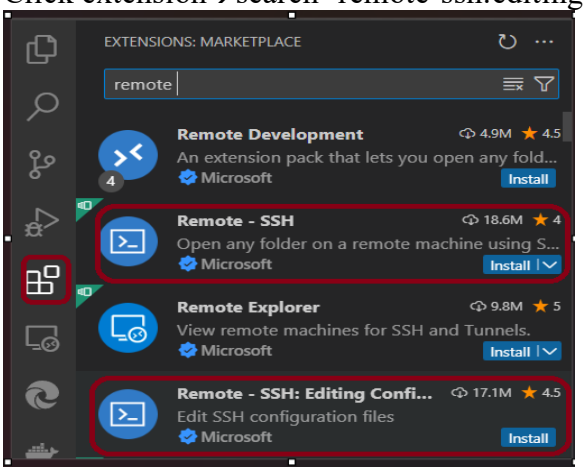
- Sqltool symbol→add new connection→click mysql →fill all the details →click on save.



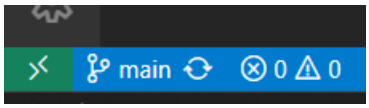
- To connect mysql server→open cmd→type ‘mysql –version’→’mysql -u root -p’→press enter→provide password→ enter.

Configuring and using remote development features for working on servers or containers.

- Click extension→search ‘remote-ssh:editing’→install→’ssh’→install.



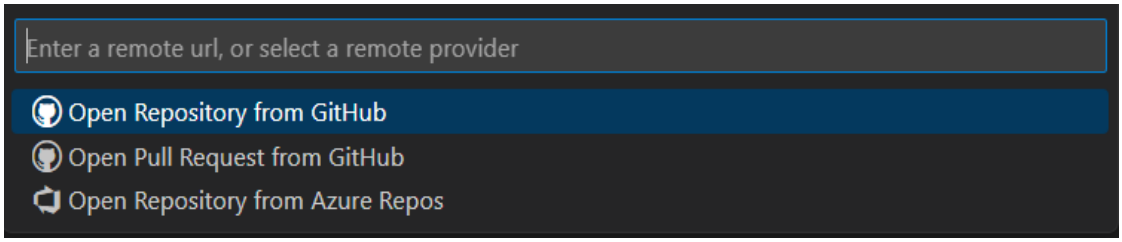
- Click to Restart vs code→click open remote window option’green color’→select connect to host→enter ip address→enter.



How to working with containers?

- Click extensions→search ‘remote containers’→click install.

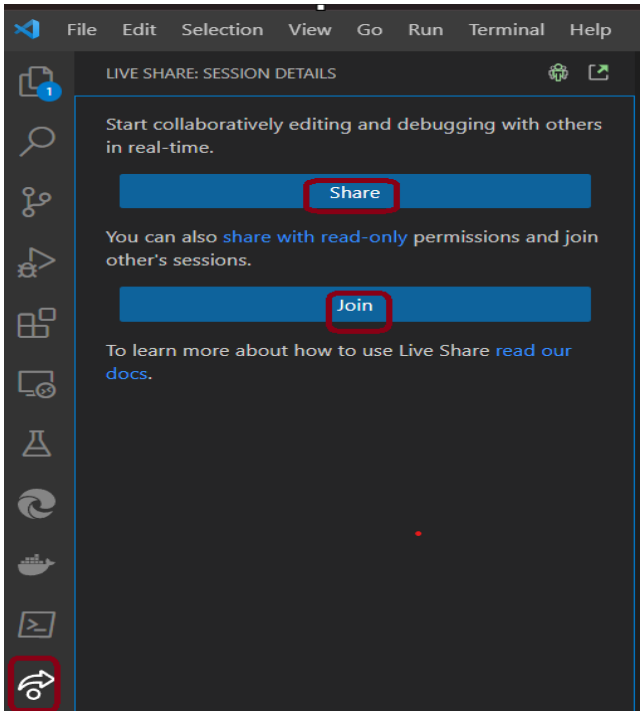
- Remote window→click open remote repository →enter value.



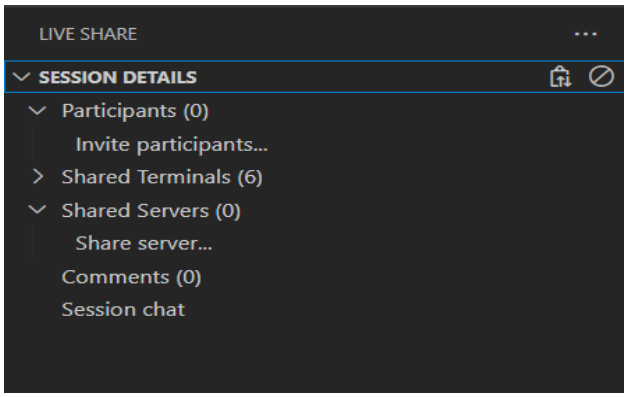
7. Collaboration and Real-world Applications

Collaborating with team members using Live Share

- Click on extension→'live share'→install.
- Click on arrow from left side panel→want to share your window with other team then→click on share. →create link →copied→share.



- Click session details→ see participant→shared terminals→see chat session to do chat.



Engaging in real-world scenarios to apply the skills learned

Real-Time Editing: Collaborators can edit code, see each other's changes, and instantly sync modifications.

Debugging Together: Live Share enables collaborative debugging, allowing participants to debug code together.

Shared Terminal: Collaborators can use a shared terminal for executing commands.

Read-Only Mode: Hosts can set participants to read-only mode if they only need to view the code without editing.

Audio Call (Optional):Live Share includes an optional audio call feature for real-time communication. Need to install external communication tools to collaborating. like Microsoft tool or else.

Undertaking group projects that utlize various features of VS Code

Once connected with another team then participants can see each other's cursors, edit code simultaneously, and interact with the shared terminal**.** Its helpful to developers.

Conclusion:

Efficiency and Simplicity: VS Code provides a streamlined and efficient development experience without compromising simplicity.

Cross-Platform Support: A major advantage of VS Code is its cross-platform compatibility, supporting Windows, macOS, and Linux.

Extensibility: VS Code's extensibility is a standout feature, allowing developers to customize and enhance their development environment through a vast array of extensions available in the Visual Studio Code Marketplace.

Intuitive User Interface: The user-friendly interface, coupled with features like IntelliSense, facilitates code completion, navigation, and debugging, contributing to an improved developer experience.

Language Support: VS Code supports a myriad of programming languages, making it an inclusive tool for developers working on diverse projects.

Integrated Source Control: The seamless integration of version control systems, particularly Git, simplifies collaborative work and ensures efficient code management.

Adaptability to Technologies: VS Code's adaptability to various technologies, frameworks, and languages makes it suitable for a broad spectrum of development projects, from web development to cloud-based solutions.

Productivity Features: VS Code enhances developer productivity through features such as IntelliSense, multi-cursor editing, and a rich set of keyboard shortcuts, optimizing the coding workflow.

Community Support: The active and growing community around VS Code contributes to continuous improvements, bug fixes, and the development of new extensions, ensuring that the editor stays current with industry trends.

Accessibility: VS Code prioritizes accessibility, making it usable for developers with diverse needs and preferences.

Real-Time Collaboration: Extensions like Live Share enable real-time collaboration, allowing developers to work together, share debugging sessions, and enhance teamwork.

Open Source Philosophy: The open-source nature of VS Code promotes transparency, community contributions, and continuous improvement.

Learning Outcomes:

- Mastery of Visual Studio Code as a development tool.
- Enhanced efficiency in coding, debugging, and project management.
- Skills in utilizing a wide array of extensions and integrated tools.
- Advanced understanding of collaborative development and remote coding practices.
- Gain proficiency in using Visual Studio as a powerful IDE for coding, debugging, and testing.
- Develop skills to write, edit, and organize code efficiently using Visual Studio's features.
- Learn how to integrate and use version control systems, such as Git, within Visual Studio.