**SE-Assignment-5 assign 2**

Installation and Navigation of Visual Studio Code (VS Code) Instructions: Answer the following questions based on your understanding of the installation and navigation of Visual Studio Code (VS Code). Provide detailed explanations and examples where appropriate.

Questions:

1. Installation of VS Code:
   * Describe the steps to download and install Visual Studio Code on Windows 11 operating system. Include any prerequisites that might be needed.

Go to any browser of your choice, I used Mozilla Firefox as my search engine then search for visual studio code to download the setup which is compatible with your operating system. I used the link below to download it.

**https://code.visualstudio.com/download**

1. First-time Setup:
   * After installing VS Code, what initial configurations and settings should be adjusted for an optimal coding environment? Mention any important settings or extensions.

You need to ensure that GIT is installed in your computer, it will be used as your terminal, then add some extensions that you will require to use like python, prettier, live server, peacock etc

1. User Interface Overview:
   * Explain the main components of the VS Code user interface. Identify and describe the purpose of the Activity Bar, Side Bar, Editor Group, and Status Bar.

**Activity Bar** - Located on the far left-hand side. Lets you switch between views and gives you additional context-specific indicators, like the number of outgoing changes when Git is enabled. You can change the position of the Activity Bar.

**Side Bar** - Contains different views like the Explorer to assist you while working on your project

**Editor Group** - The main area to edit your files. You can open as many editors as you like side by side vertically and horizontally

**Status Bar** – Information about the opened project and the files you edit.

**Panel** - An additional space for views below the editor region. By default, it contains output, debug information, errors and warnings, and an integrated terminal. The Panel can also be moved to the left or right for more vertical space.

**Ref: - https://code.visualstudio.com/docs/getstarted**

1. Command Palette:
   * What is the Command Palette in VS Code, and how can it be accessed? Provide examples of common tasks that can be performed using the Command Palette.

The **Command Palette** provides access to many commands. You can run editor commands, open files, search for symbols, and see a quick outline of a file, all using the same interactive window. It can be accessed through the keyboard by **Ctrl+Shift+P**

* **Ctrl+P** enables you to navigate to any file or symbol by typing its name
* **Ctrl+Tab** cycles you through the last set of files opened
* **Ctrl+Shift+P** brings you directly to the editor commands
* **Ctrl+Shift+O** enables you to navigate to a specific symbol in a file
* **Ctrl+G** enables you to navigate to a specific line in a file

Type **?** in the input field to get - a list of available commands that you can run from the Command Palette.

**Ref: - https://code.visualstudio.com/docs/getstarted**

1. Extensions in VS Code:
   * Discuss the role of extensions in VS Code. How can users find, install, and manage extensions? Provide examples of essential extensions for web development.

It used to Install and manage your extensions within VS Code.

Users can find extensions through the keyboard by **Ctrl+Shift +K** or through the activity bar.

**Examples of essential extensions**

Prettier, JavaScript ES6, Live server, Better Comments, Gitlens, Code Time

1. Integrated Terminal:
   * Describe how to open and use the integrated terminal in VS Code. What are the advantages of using the integrated terminal compared to an external terminal?

**You can open a terminal as follows:**

* From the menu, use the **Terminal** > **New Terminal** or **View** > **Terminal** menu commands.
* From the **Command Palette** (Ctrl+Shift+P), use the **View: Toggle Terminal** command.
* In the Explorer, you can use the **Open in Integrated Terminal** context menu command to open a new terminal from a folder.
* To toggle the terminal panel, use the Ctrl+` keyboard shortcut.
* To create a new terminal, use the Ctrl+Shift+` keyboard shortcut.

**Advantages**

* It provides integration with the editor to support features like [links](https://code.visualstudio.com/docs/terminal/basics#_links) and [error detection](https://code.visualstudio.com/docs/editor/tasks).
* It can run commands such as mkdir and git just like a standalone terminal.
* It has additional functionality called shell integration that tracks where commands are run with decorations on the left of a command and in the scrollbar:

**Ref:** **https://code.visualstudio.com/docs/terminal/basics**

1. File and Folder Management:
   * Explain how to create, open, and manage files and folders in VS Code. How can users navigate between different files and directories efficiently?

You can use the following ways:-

* Choose **File > Open Folder** and select a folder you want to open.
* Drag a folder onto VS Code to view it in the sidebar

**Quickly open/switch to a file in the current folder:**

* Choose **Go > Go to File** or hit **Cmd–P** (Mac) or **Ctrl–P** (Windows).
* Start typing the name of a file (use the **Down/Up Arrow** keys to move the selection up or down).
* Hit **Return** (Mac) or **Enter** (Windows) to open the selected file.

**Creating/adding**

The **File** > **Add Folder to Workspace** command brings up an Open Folder dialog to select the new folder

**Ref:** https://www.nobledesktop.com/learn/visual-studio-code/topic-2a-vs-code-working-with-folders-files-the-sidebar

1. Settings and Preferences:
   * Where can users find and customize settings in VS Code? Provide examples of how to change the theme, font size, and key bindings.

* To open the Settings editor, navigate to File > Preferences.
* Alternately, open the Settings editor from the **Command Palette** (Ctrl+Shift+P) with **Preferences: Open Settings** or use the keyboard shortcut (Ctrl+,)

**Ref: https://code.visualstudio.com/docs/editor**

1. Debugging in VS Code:
   * Outline the steps to set up and start debugging a simple program in VS Code. What are some key debugging features available in VS Code?

To bring up the **Run and Debug** view, select the **Run and Debug** icon in the **Activity Bar** on the side of VS Code. You can also use the keyboard shortcut Ctrl+Shift+D.

**Create Launch Configuration**: Click on the debug icon in the Activity Bar on the side of the window, then click on the gear icon to create a launch.json file. This file contains the configuration settings for debugging.

**Set Breakpoints**: Navigate to the file containing your program, and click in the area just to the left of the line numbers to set breakpoints. These are points in your code where the debugger will pause execution.

**Start Debugging**: Press F5 or click the green play button in the Debug view to start debugging. This will launch your program in debug mode.

**Key Debugging Features in VS Code**

* **Breakpoints**: Set breakpoints to pause the program at specific lines of code.
* **Watch and Variables**: View the values of variables and expressions in real-time as you step through the code.
* **Call Stack**: See the path that led to the current point in the code execution.
* **Step Through Code**: Step through the code line by line, or jump to the next breakpoint.
* **Debug Console**: Interact with the program by entering commands and evaluating expressions in the debug console.
* **Conditional Breakpoints**: Set breakpoints that only trigger when certain conditions are met.
* **Exception Handling**: Catch and handle exceptions that occur during program execution.
* **Multi-Thread Debugging**: Debug multiple threads simultaneously in multi-threaded applications.

1. Using Source Control:
   * How can users integrate Git with VS Code for version control? Describe the process of initializing a repository, making commits, and pushing changes to GitHub.

**Install git in your computer**

* Open a repository in VS code

You can either clone an existing repository or initialize a new one directly within VS Code:

**Cloning a Repository:**

* Use the Git: Clone command from the Command Palette (⇧⌘P or Ctrl+Shift+P) to clone a repository from GitHub or any other Git provider.
* Authenticate with GitHub if prompted.
* Select a repository to clone to your local machine.

**Initializing a New Repository:**

* Open an existing or new folder in VS Code.
* In the Source Control view, click the “Initialize Repository” button. This creates a new Git repository in the current folder.

**Basic Git Actions in VS Code:**

Once you’re in a Git repository, you can:

* View changes using the Source Control icon in the Activity Bar.
* Stage changes (add them to the commit) by clicking the “+” icon next to each file.
* Commit changes with a descriptive message by typing it above the changes and pressing Ctrl+Enter (macOS: ⌘+Enter).
* Create and switch branches.
* Compare files and switch between branches.
* Merge branches and publish changes to GitHub.

**Publishing to GitHub:**

* If you want to publish your local repository to GitHub:
* Use the “Publish to GitHub” command in the Source Control view.
* Choose a name and description for the repository.
* Decide whether to make it public or private.
* VS Code will push your local code to the remote repository on GitHub

[Copilot (microsoft.com)](https://copilot.microsoft.com/?FORM=undexpand)

Submission Guidelines:

* Your answers should be well-structured, concise, and to the point.
* Provide screenshots or step-by-step instructions where applicable.
* Cite any references or sources you use in your answers.
* Submit your completed assignment by 1st Jul