**Developer Environment Setup Documentation**

**Objective**

This document outlines the steps taken to set up an efficient developer environment for software engineering projects, including configurations, customizations, and troubleshooting steps encountered during the process.

**1. Select Your Operating System (OS)**

**Operating System:** Windows 11

**Steps:**

1. **Download Windows 11:**
   * Visit the [Windows 11 download page](https://www.microsoft.com/software-download/windows11).
   * Download the Windows 11 Installation Assistant.
2. **Install Windows 11:**
   * Run the Installation Assistant and follow the on-screen instructions to upgrade your current OS or perform a clean installation of Windows 11.

**2. Install a Text Editor or Integrated Development Environment (IDE)**

**IDE:** Visual Studio Code

**Steps:**

1. **Download Visual Studio Code:**
   * Visit the [Visual Studio Code download page](https://code.visualstudio.com/Download).
2. **Install Visual Studio Code:**
   * Download the installer for your OS.
   * Run the installer and follow the on-screen instructions to complete the installation.

**3. Set Up Version Control System**

**Version Control System:** Git **Repository Hosting:** GitHub

**Steps:**

1. **Install Git:**
   * Visit the [Git download page](https://git-scm.com/downloads).
   * Download the installer for your OS.
   * Run the installer and follow the on-screen instructions to complete the installation.
2. **Configure Git:**
   * Open a terminal or command prompt.

Configure Git with your user information:

* + git config --

bash

Copy codeglobal user.name "Your Name"

git config --global user.email "your.email@example.com"

1. **Create a GitHub Account:**
   * Visit [GitHub](https://github.com) and sign up for a free account.
2. **Initialize a Git Repository:**
   * Open a terminal or command prompt.
   * Navigate to your project directory.
   * Initialize a new Git repository:

bash

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git init

* + Create a new file (e.g., README.md) and add some content to it.
  + Stage and commit the changes:

bash

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git add .

git commit -m "Initial commit"

1. **Push to GitHub:**
   * Create a new repository on GitHub.
   * Follow the instructions provided by GitHub to push your local repository to GitHub.

**4. Install Necessary Programming Languages and Runtimes**

**Programming Language:** Python

**Steps:**

1. **Download and Install Python:**
   * Visit the [Python download page](https://www.python.org/downloads/).
   * Download the installer for your OS.
   * Run the installer and follow the on-screen instructions to complete the installation.
   * Ensure the option to add Python to the system PATH is checked during installation.
2. **Verify Installation:**
   * Open a terminal or command prompt and run:

bash

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python --version

**5. Install Package Managers**

**Package Manager:** pip (Python)

**Steps:**

1. **Install pip:**
   * pip is included with Python 3.4+ installations.
   * Verify by running:

bash

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pip --version

**6. Configure a Database (MySQL)**

**Database:** MySQL

**Steps:**

1. **Download and Install MySQL:**
   * Visit the [MySQL download page](https://dev.mysql.com/downloads/windows/installer/5.7.html).
   * Download the MySQL Installer.
   * Run the installer and follow the on-screen instructions to complete the installation.
   * During installation, choose the "Developer Default" setup type to include MySQL Server, MySQL Workbench, and other necessary tools.
2. **Configure MySQL:**
   * Set a root password during the installation process.
   * Open MySQL Workbench and connect to your local MySQL server.

**7. Set Up Development Environments and Virtualization (Optional)**

**Virtualization Tool:** Docker

**Steps:**

1. **Install Docker:**
   * Visit the Docker download page.
   * Download the Docker Desktop installer for your OS.
   * Run the installer and follow the on-screen instructions to complete the installation.

**8. Explore Extensions and Plugins**

**IDE:** Visual Studio Code

**Steps:**

1. **Install Extensions:**
   * Open Visual Studio Code.
   * Go to the Extensions view by clicking the Extensions icon in the Activity Bar on the side of the window.
   * Search for and install the following extensions:
     + Python
     + GitLens
     + Prettier - Code formatter

**Reflection on Challenges:**

During the setup process, a few challenges were encountered and resolved:

* **Challenge:** Ensuring all necessary paths were correctly set for Python.
  + **Solution:** Reinstalled Python with the "Add Python to PATH" option checked and verified by running python --version.
* **Challenge:** Configuring MySQL on Windows.
  + **Solution:** Followed MySQL Workbench instructions and online tutorials for setup and troubleshooting.
* **Challenge:** Installing Docker on Windows 11.
  + **Solution:** Enabled WSL 2 (Windows Subsystem for Linux) and followed Docker's installation guide.

By following the documented steps and reflecting on the challenges, the setup process was completed successfully.