Installation Guide for Python, PyCharm, and SQL Server Express in Windows Environment

# 1. Install Python

1. Download Python:  
 - Go to the official Python website: https://www.python.org/downloads/.  
 - Click Download Python 3.x.x (the latest stable version).  
  
2. Install Python:  
 - Open the downloaded installer.  
 - Important: Check the box labeled Add Python to PATH at the bottom of the installation window.  
 - Click Install Now to start the installation.  
 - After installation, open Command Prompt and type python --version to confirm Python was installed and added to PATH.

# 2. Install SQL Server Express

1. Download SQL Server Express:  
 - Go to the official SQL Server Express download page: https://www.microsoft.com/en-us/sql-server/sql-server-downloads.  
 - Select SQL Server Express and click Download now.  
  
2. Install SQL Server Express:  
 - Open the downloaded installer.  
 - Choose Basic Installation for a standard setup.  
 - Follow the on-screen instructions to complete the installation.  
 - Take note of the SQL Server instance name provided during installation (e.g., SQLEXPRESS).  
  
3. Configure SQL Server Express:  
 - Launch SQL Server Management Studio (SSMS) to connect to the SQL Server instance.  
 - In the Connect to Server window, select Server type as 'Database Engine' and Server name as 'Your-PC-Name\SQLEXPRESS'.  
 - Authentication: Choose Windows Authentication.  
 - Click Connect to ensure that your SQL Server instance is running.

# 3. Install PyCharm

1. Download PyCharm:  
 - Go to the PyCharm website: https://www.jetbrains.com/pycharm/download/.  
 - Download PyCharm Community Edition (free) or Professional Edition if you have a license.  
  
2. Install PyCharm:  
 - Open the downloaded installer.  
 - Select the installation folder and follow the on-screen instructions.  
 - In the installation options, you may want to:  
 - Check Create Desktop Shortcut.  
 - Check Add to PATH if prompted.  
 - Associate .py files with PyCharm for easier file management.  
 - Click Install to complete the installation.

# 4. Configure a Virtual Environment (.venv) in PyCharm

1. Open PyCharm and Create/Open a Project:  
 - Open PyCharm.  
 - Select New Project or Open an existing project.  
  
2. Configure a Virtual Environment:  
 - In the New Project window, select Location for your project.  
 - Under Python Interpreter, select New environment using and choose Virtualenv.  
 - PyCharm will automatically detect the installed Python version, but you can specify a different version if needed.  
 - Location for .venv: PyCharm will create a .venv folder within your project directory by default.  
 - Click Create to set up the virtual environment.  
  
3. Activate .venv:  
 - The .venv environment should now be automatically activated for your project.  
 - To verify, open Terminal in PyCharm (bottom left) and type:  
 ```bash  
 python --version  
 ```  
 You should see the Python version in the .venv environment.  
  
4. Install Packages in .venv (Optional):  
 - You can install packages directly within the .venv environment by opening the PyCharm Terminal and using pip, like so:  
 ```bash  
 pip install <package-name>  
 ```  
  
5. Managing Virtual Environment Settings:  
 - In PyCharm, you can go to File > Settings > Project: [Project Name] > Python Interpreter to view and manage packages installed in .venv.

# Summary

With this setup, you now have:  
1. Python installed and ready for development.  
2. SQL Server Express installed and configured.  
3. PyCharm set up with a virtual environment (.venv) for managing dependencies and ensuring consistent project setups.