

Virtual Environments vs. Conda Environments

Within workspace environments, VS Code supports two main types:

Virtual Environments (venv)

- Built-in Python tool for creating isolated environments
- Creates a folder with a copy/symlink to a specific interpreter
- Typically stored in your project folder (often in a `.venv` directory)
- Managed with commands like `python -m venv .venv`
- More lightweight and focused just on Python package isolation

Conda Environments

- Managed by the conda package manager
- Can handle non-Python dependencies and multiple Python versions
- Typically stored in a central location on your system (e.g., `~/miniconda3/envs/`)
- Managed with commands like `conda create -n my-env python=3.8`
- More comprehensive package management system that can handle complex dependencies including non-Python libraries

Key Practical Differences

1. **Storage Location:**
 - Global environments: System-wide directories
 - Workspace virtual environments: Usually in the project folder
 - Conda environments: Usually in a central conda directory
2. **Configuration in VS Code:**
 - Workspace environments are selected specifically for a workspace via the Python interpreter selection
 - VS Code stores this selection in the workspace settings
3. **Package Installation Scope:**
 - Installing packages in a global environment affects all projects using that environment
 - Installing packages in a workspace environment only affects that specific project
4. **Portability:**
 - Workspace environments make projects more portable and reproducible
 - Global environments can lead to dependency conflicts between projects

Best Practice

As noted in the VS Code documentation:

"In Python, it is best practice to create a workspace-specific environment, for example, by using a local environment."

This practice ensures that:

1. Your projects are isolated from each other
2. You can easily share project requirements with collaborators
3. You avoid the "it works on my machine" problem
4. You have better control over dependencies

