



# Environments

Python



# Introduction

- A Python **environment** is a self-contained directory with its own installation of Python and libraries.
- Helps avoid conflicts between projects.
- Types of environments:
  - Virtual Environments (venv, virtualenv) and
  - Conda Environments.

# Difference Between venv, virtualenv, and Conda

- venv:
  - Comes built-in with Python
  - Lightweight and simple, best for standard projects.
  - Requires pip for package management.
- virtualenv:
  - Third-party package that extends venv.
  - Uses pip for package management.
- Conda:
  - Part of the Anaconda distribution. Supports package management for Python and non-Python dependencies.
  - Uses conda for package management but can also install packages via pip if needed.



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# Virtual Environments with venv

- **Creating a Virtual Environment:**
  - `python -m venv myenv`
- **Activating the Environment:**
  - Windows: `myenv\Scripts\activate`
  - Mac/Linux: `source myenv/bin/activate`
  - Installing Packages: **`pip install package_name`**
  - Deactivating the Environment: `deactivate`

# Virtual Environments with virtualenv

## Installation:

- `pip install virtualenv`

## Creating a Virtual Environment:

- `virtualenv myenv`

## Activation and Deactivation:

- (Same as venv)

# Managing Dependencies with Requirements File

Create a requirements file:


- `pip freeze > requirements.txt`

Install dependencies from a requirements file:

- `pip install -r requirements.txt`

# Conda Environments

- Creating a Conda Environment:
  - `conda create --name myenv python=3.9`
- Activating the Environment:
  - `conda activate myenv`
- Installing Packages:
  - `conda install package_name`
- Exporting and Importing Environments:
  - Export:`conda env export > environment.yml`
  - Import:`conda env create -f environment.yml`

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You are now a  
Master in  
Environments!

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