

Python Virtual Environments

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Why?

- Python applications will often use packages and modules that don't come as part of the standard library. Applications will sometimes need a specific version of a library, because the application may require that a particular bug has been fixed or the application may be written using an obsolete version of the library's interface.
- This means it may not be possible for one Python installation to meet the requirements of every application. If application A needs version 1.0 of a particular module but application B needs version 2.0, then the requirements are in conflict and installing either version 1.0 or 2.0 will leave one application unable to run.
- The solution for this problem is to create a [virtual environment](#), a self-contained directory tree that contains a Python installation for a particular version of Python, plus a number of additional packages.

How?

Show in command prompt (Have included a cheat sheet of conda to showcase commands).

Things contained in an environment folder

```
├── bin
│   ├── activate
│   ├── activate.csh
│   ├── activate.fish
│   ├── easy_install
│   ├── easy_install-3.5
│   ├── pip
│   ├── pip3
│   ├── pip3.5
│   ├── python -> python3.5
│   ├── python3 -> python3.5
│   └── python3.5 -> /Library/Frameworks/Python.framework/Versions/3.5/bin/pyt
├── include
├── lib
│   └── python3.5
│       └── site-packages
└── pyvenv.cfg
```

Some options for virtual environments

- Virtualenv (low-level)
- Pipenv (high-level)
- Conda (high-level)

What does a QuantEcon developer use?

- We use conda, as it is more user-friendly and we found it to have better error handling. One can use pip in a conda environment as well.
- Conda can be obtained by either Anaconda or Miniconda. Miniconda includes only conda and its dependencies. If you prefer to have conda plus over 7,500 open-source packages, install Anaconda.