Virtual Environments & Standalone Runtimes in Python

The Why, What and How?

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What?

What?

- Virtual Environments
  - Create isolated Python envs with a shared runtime, System Python.
- Standalone Runtimes
  - Create isolated Python envs with separate runtimes.

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Why?

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Why?

Because you might have to work on two projects, one needing numpy v1 and another needing numpy v2.

How?

How? - User packages

- Why?
- What?
  - Virtualenv
  - Standalone runtimes
- How?
  - Virtualenv
  - Edm, conda

Install packages in user Python instead of system Python.

```
pip install --user <package-name>
```

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How? - Virtual environments

Virtual environments

- On Python 2, you need to install virtualenv.
- On Python 3, it comes pre-installed.

Note : virtualenv caches the packages/eggs you install.

How? - Virtual environments

- Why?
- What?
  - Virtualenv
  - Standalone
    runtimes
- How?
  - Virtualenv
  - Edm, conda

```
virtualenv custom_py_venv

source custom_py_venv/bin/activate

pip install numpy

deactivate
```

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- Why?
- What?
  - Virtualenv
  - Standalone runtimes
- How?
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How? - Virtual environments

As long as we put in the time and effort to work with virtual environments, let's also use a requirements file.

With explicit version numbers, if possible. For reproducibility.

```
pip -e requirements.txt
```

- Why?
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  - Virtualenv
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How? - Standalone runtimes

- ActiveState Python.
- Conda, by ContinuumIO. Command line. Also comes with a GUI equivalent.
- edm, by Enthought. Command line. Canopy is the GUI equivalent.

Both conda and edm cache packages/eggs you install.

- Why?
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How? - Standalone runtimes

```
conda create --name custom_py_env

source activate custom_py_env

conda install numpy

source deactivate
```

How? - Standalone runtimes

- Why?
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```
edm envs create custom_py_env

edm shell -e custom_py_env

edm install numpy

exit
```

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Virtual environments &
Standalone runtimes

- Why?
- What?
  - Virtualenv
  - Standalone runtimes
- How?
  - Virtualenv
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References

https://virtualenv.pypa.io/en/stable/

https://pip.readthedocs.io/en/1.1/requirements.html

http://docs.enthought.com/edm/

https://conda.io/docs/index.html