

# Must use correc snek!

Python on Debian and derivatives

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# About me

- Organizer, Chicago Python User Group
- Contributor to twisted and a few other python projects; lately, working on packaging w/ Debian Python Team
- **This is my cat.**



# Motivations for this talk

- We all know our Linux systems run on Python, but what does that actually mean?
- Debian derivatives include Ubuntu, Raspberry Pi OS, Kali Linux, Tails, etc., which cover a pretty good percentage of Linux installs.

Help! My system didn't come with pip, so now I'm building python from source, but my build is failing with a missing dependency!

I tried to follow instructions from StackOverflow, but apt says "python-dev" isn't an available package...

**Who's been here?**

# **1. The Debian Python Policy**

<https://www.debian.org/doc/packaging-manuals/python-policy/>

# **2. Python Build Instructions**

<https://devguide.python.org/getting-started/setup-building/index.html>

# As of Debian 11...

- Python2.7 is no longer required or supported
  - “Python 2 is already beyond its End Of Life, and will receive no security updates. It is not supported for running applications, and packages relying on it have either been switched to Python 3 or removed.”
  - Still available for install on bullseye, but not bookworm
- On a fresh install of Debian 12:
  - `python`: command not found (unless you're in a venv)
  - `python3`: `python3.11.0... >>>`
  - the `python-is-python3` package can be installed to create & set the value of the unversioned (`/usr/bin/python`) alias

**"pythonX.Y is a complete binary for deploying an application on Debian." The keyword is DEPLOYING.**

- pythonX.Y does not contain pythonX.Y-venv, pythonX.Y-dev, python3-pip, or Python's build dependencies (wheel, setuptools, etc.), Debian splits these into separate packages
- pythonX.Y-full includes the entire stdlib, IDLE, and pydocs
  - ...but NOT pip—you still need to install pipx or setup a virtual environment to have a working pip
  - this package is not allowed to be a build dependency, dependency, recommendation, or suggestion for Debian packages, so you have to install it to have it

# ...isn't this why we started building from source in the first place?

- Pip and apt are both package managers, but they aren't compatible with each other. Debian's goal is to be able to centrally manage system updates, and apt can't update packages installed by pip.
- As of PEP-668, pip will raise an exception when you try and use it in an externally-managed environment.
- Debian's recommendation for python developers:
  - Use virtual environments to manage project dependencies using pip
    - Pipx is available, if you want system-wide behavior
  - If you need another python, you can install it from source, but use "altinstall"
  - Use containers
  - Package your project as a .deb package and install with apt or dpkg



## What happens if... let's have some demos (in a Docker container—this stuff is dangerous).

- `/usr/bin/python3` is an alias pointing at the system python
  - What happens if I install python from source? What's the difference between “`sudo make install`” and “`sudo make altinstall`”?
- PEP-668: installing packages with pip will raise an “externally managed environment” exception
  - What happens if we turn this off using “`--break-system-packages`” (or by deleting `/usr/lib/pythonX.Y/EXTERNALLY-MANAGED`)

# Further reading

Debian Python Policy: <https://www.debian.org/doc/packaging-manuals/python-policy/>

Debian Python Wiki: <https://wiki.debian.org/Python>

PEP-688: externally managed environments: <https://peps.python.org/pep-0668/>

PYPA documentation on externally managed environments:

<https://packaging.python.org/en/latest/specifications/externally-managed-environments/#externally-managed-environments>

Python.org build instructions and dependencies:

<https://devguide.python.org/getting-started/setup-building/index.html>

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