
Elevating your Python Stack: A practical approach to dependency upgrades

Mohammad Ahtasham - Software Engineer

Who am I?

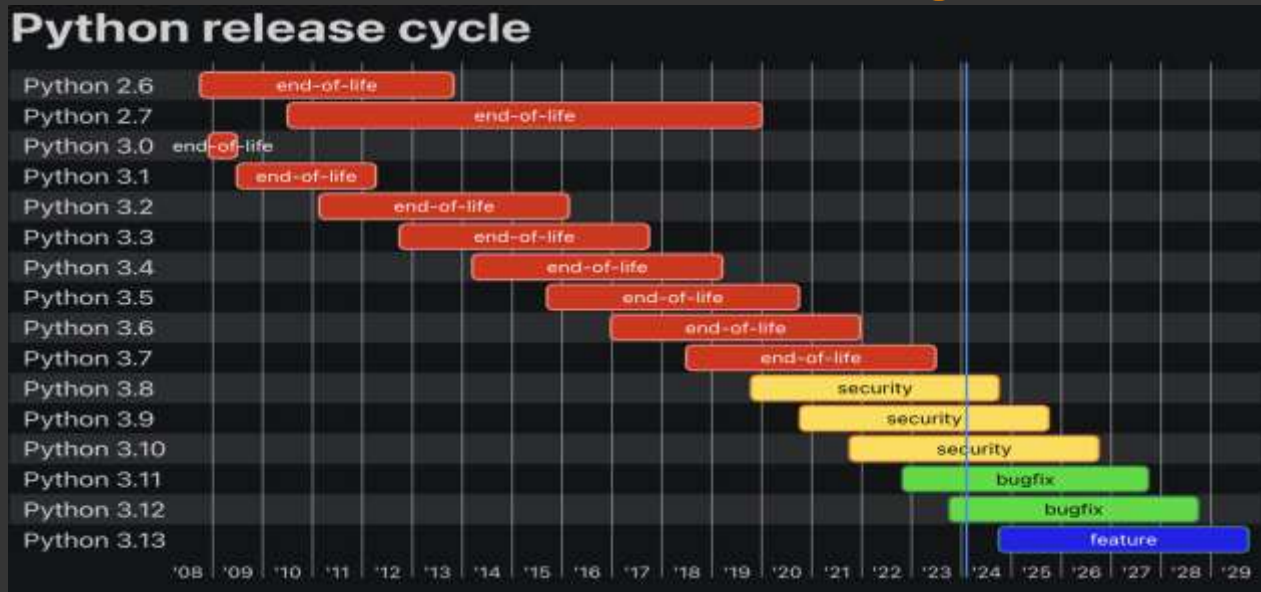
- Software Engineer @ Arbisoft/2U
- Been using Python for almost 4 years now
- Veteran of:
 - 1 large Python upgrade project
 - 2 large Django upgrade projects
 - 1 large Node upgrade project.
- And an occasional Gamer as well 🎮



Agenda

- First look/recap into upgrade process
- Manual upgrade process
- Automating code refactoring
- Automating CI/Config updates
- Upgrading at Scale
- Demos

First look/Recap into Upgrade Process



- EOL of a version is scheduled 5 years after first release
- Planned releases with bug fixes in first 1.5 years and security releases afterwards.



Manual Upgrade Process

Manual Upgrade Checklist:

- Have Automated tests
- Read the Release notes
- Update your code according to new release
- Upgrade your Python Dependencies
- Fix any deprecation warnings(Optional)
- Start testing with new Python version
- Fix any breaking tests




Automating Code Refactoring

- What is a Codemod?
- Black, isort etc. are also examples of codemods.
- Frameworks for writing codemods: bowler, LibCST, pasta etc.
- Various Codemods used @OpenedX can be found at:

https://github.com/openedx/repo-tools/tree/master/edx_repo_tools/codemods

When to Automate

1. Need to make change at dozens of places.
2. Changes don't require any additional code context or judgment call.
3. The effort to Automate isn't high.



Automating CI/Config updates

- This part is not hard, but easy to forget.
- Repetitive
- This includes Yaml files, .ini files, setup.py etc
- Various Codemods used for this purpose can be found @:

https://github.com/openedx/repo-tools/tree/master/edx_repo_tools/codemods/django



Upgrading at Scale

- Pip-tools(pip-sync, pip-compile)
- A Combination of:
 - ◆ Pip-tools,
 - ◆ Requirement files,
 - ◆ Make file
 - ◆ PyGithub and Github Actions
- Upgrade Requirements workflow
- Bulk Repo Update Workflow

Demos from edX/2U

Requirements file
structure

Python
Requirements
Upgrade
workflow

Bulk Repo
Upgrade Job



That's it!!!

Need Help?

You can always contact me:

@: ahthassan74@gmail.com

IN: [linkedin.com/in/mohammad-ahtasham](https://www.linkedin.com/in/mohammad-ahtasham)