Adding Python 3 support to Galaxy: a status report

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Galaxy and Python

- **2005**: Galaxy backend source code rewritten from Perl to Python
- **2008/12/03**: Python 3.0 released, breaking backwards compatibility with Python 2.x
- ... several Galaxy and Python releases...
- **2018/06/27**: Python 3.7.0 released. Galaxy still supports **only** Python 2.7
- **2020/1/1**: support for the last supported Python 2 minor release (2.7) will cease
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  [https://pythonclock.org/](https://pythonclock.org/)

!! PANIC !!
No need to panic (yet)

- **2015-04**: Python 3 support added to **Pulsar** 0.4.0
- **2015-06**: Python 3 support added to **BioBlend** v0.6.0
- **2015-12**: Initial work to add Py3 support to **galaxy-lib** (@jmchilton)
- **2016-06**: At the GCC 2016 **Hackathon** 215 files were updated by a 5-person group: a protocol was established to add Py3 support without breaking Py2
  - 2to3; revert unnecessary changes; use six to not break Py2
- **2017-12**: Completed protocol on whole codebase; linting with **flake8** for both Py2 and Py3 on all PRs
- **2018-05**: **Planemo** 0.49.0 now stable and tested under Py3
- **2018-06-12**: Galaxy successfully **starts** under Python3 (also tested on TravisCI)
- **Today**: It’s possible to run the **unit tests** on Py3 (68% pass)
Major challenges

- Large codebase
- Python2-only **dependencies** (several unmaintained):
  - Support added: bx-python, NoseHTML, Pulsar
  - Replaced: Cheetah→Cheetah3, Fabric→Fabric3, SVGFig→svgwrite
  - Removed: feedparser, sgmllib, wchartype, WebHelpers
  - TODO: Mercurial, paste, WebError (for interactive debug), pygithub3, twill (for tests)
- Python3 or universal **wheels** for deps
- Unicode errors (**str** vs. **bytes**)
When is Py3 going to be supported?

- After >70 merged PRs, Galaxy starts under Py3 but is still quite broken
- Luckily it’s very probable that Linux distribution will maintain Python 2.7 for a few more years (depending on their support schedule)
- The status of Python 3 support in Galaxy is tracked at: https://github.com/galaxyproject/galaxy/issues/1715

Next steps:

- Fix unit tests under Py3
- Replace or drop the remaining Py2-only dependencies

Come and help at GCCBOSC CoFest 2018!

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