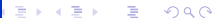


How to write cross-interpreter programs

Maciej Fijałkowski

merlinux GmbH

Pycon 2010, February 19th 2010, Atlanta



This talk

- most people only target CPython (or Jython or IronPython)
- sometimes, you want your program to run on each of those
- libraries are more often cross-interpreter

This talk

- most people only target CPython (or Jython or IronPython)
- sometimes, you want your program to run on each of those
- libraries are more often cross-interpreter
- hope to give you more reasons tomorrow

This talk

- most people only target CPython (or Jython or IronPython)
- sometimes, you want your program to run on each of those
- libraries are more often cross-interpreter
- hope to give you more reasons tomorrow
- won't talk about py3k

Have a way to verify compatibility

- extensive test suite
- good coverage

Exceptions

- TypeError vs AttributeError change often between implementations, even CPython versions
- don't rely on exception string messages (they may differ)

```
try:
    ...
except ImportError, ie:
    if str(ie) != '...':
        raise
```

Exceptions

- TypeError vs AttributeError change often between implementations, even CPython versions
- don't rely on exception string messages (they may differ)

```
try:  
    ...  
except ImportError, ie:  
    if str(ie) != '...':  
        raise
```

- also means - don't use doctests

Subclasses of builtin types

- in general overridden methods on subclassed builtin types are not invoked by preexisting other methods

```
class d(dict):  
    def __getitem__(self, e):  
        ...
```

- would `keys()` go via this `getitem`?
- tests are your friend

Access to 3rd party libraries

- there is no good story here
- ctypes based access is going to be supported by all Pythons
- are there pure Python replacements/options?
- separate out dependencies/especially optional ones

Don't rely on refcounting

- example

```
open('x', 'w').write('stuff')
```

- on refcounting, flushes file immediately
- on any other GC, it might be deferred for a while
- the single most-common problem when fixing twisted

- resurrection on CPython will call `__del__` multiple times, other Pythons exactly once
- cycles with `__del__`s are not collected by CPython, PyPy breaks them randomly instead
- in PyPy and Jython `__del__` cannot be attached to classes after creation

Use new-style classes

- 3.x ready
- faster on PyPy, too

sys.prefix

- implementations may have different installation layouts
- open issue, at least for PyPy, has compatibility consequences with setuptools

IO bytes vs unicode

- convert/decode as soon as possible, keep text and bytes apart
- for 2.x Pythons use str for bytes and unicode for text
- the distinction is deeper in 3.x (str is unicode, bytes exist with slightly different interface than old str)

Obscure corners

- non-string keys in type dictionaries
- introspection results, implementation objects (e.g. builtin methods etc), may have different types
- exact naming of things (like list-comprehension variable)

Questions?

- <http://morepypy.blogspot.com>
- <http://pypy.org>