

Pex: Theory and Practice

Moshe Zadka – <https://cobordism.com>

Pyninsula April 2018

Packaging

- ▶ First step
- ▶ Many options
- ▶ In-depth: Pex

Python start-up

```
$ python /some/script.py
```

Causes

```
"/some" in sys.path
```

Python start-up

```
$ python /some/script/
```

Same as

```
$ python /some/script/__main__.py
```

Python start-up

```
$ python /some/script/__main__.py
```

Causes

```
"/some/script" in sys.path
```

Python start-up

```
/some/script/ __main__.py  
    foo.py  
    bar/ __init__.py  
        something.py
```

Python start-up

```
$ python /some/script.zip
```

Treats zip archive like directory.

Python start-up

"One big pile of garbage is better than two small piles of garbage."
– Alice's Restaurant

Python start-up

Zip is an ending-oriented format:

```
$ (echo "hello";cat foo.zip) > bar.zip
```

```
$ unzip -t bar.zip
```

```
Archive:  bar.zip
```

```
warning [bar.zip]:  6 extra bytes at beginning or w  
    (attempting to process anyway)
```

Python start-up

```
$ HERE=$(pwd)
$ (cd /some/script/ && zip $HERE/stuff.zip -r .)
$ (echo '#!/usr/bin/python3 '; cat stuff.zip) \
  > runnable
$ chmod +x runnable
```

Productionizing – hard

- ▶ Lots of edge cases!
- ▶ Reimplement? No!

Pex – roll up your libraries

Supports a lot!

Pex – recipe

```
$ pip wheel --wheel-dir \  
--no-binary :all: \  
/some/dir requirements.txt # ...  
$ pex --no-index --find-links \  
/some/dir requirements.txt \  
-m ... \  
-o ...
```

Pex – Python recipe

```
$ pip wheel --wheel-dir \  
  /some/dir requirements.txt # ...
```

Pex – Python recipe

```
builder = pex_builder.PEXBuilder()  
builder.set_entry_point(...)  
builder.set_shebang('/usr/bin/python3')  
for dist in os.listdir('/some/dir'):  
    dist = os.path.join(wheelhouse, dist)  
    builder.add_dist_location(dist)  
builder.build(...)
```

Pex only wheels

Pex dependency resolution different from pip: why worry?

Caveats

No manylinux wheels

Caveats

Python installed in shebang

Caveats

No windows support

Caveats

No PyPy support