

Multiple Interpreters for Multi-Core Support

Adding Something New to the Python Language

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The Problem

Existing Solutions

Possible Solutions

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Existing Solutions

Possible Solutions

- concurrency
- parallelism
- multi-core
- the GIL

- perception
- PyCon 2015 Language Summit
- PyCon 2015 (Dave Beazley)
- follow-up

- research & spelunking
- private emails
- hangouts with Guido
- more research
- python-ideas (May 2015)
- Hacker News
- more research
- some prototyping
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The Problem

Existing Solutions

Possible Solutions

- threading (stdlib)
- multiprocessing (stdlib)
- asyncio (stdlib, 3.4+)

The Problem

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- subinterpreters + CSP
- multiprocessing - pickle
- kill the GIL
- pyparallel
- documentation
- PR / marketing
- do nothing

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Something else?

subinterpreters + CSP

- effectively “shared-nothing” threads
- minimum changes for Python 3.6
- (mod-wsgi)
- most isolated

subinterpreters + CSP

- fix ups (e.g. bugs, isolation, startup)
 - expose in stdlib
 - safely share objects between
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- run each in single OS thread
 - eliminate GIL in subinterpreters
 - no threads or forking

sharing objects between interpreters

- channels
- immutable objects (e.g. tuple, str)
- “frozen” / isolated objects?
- views
- ownership
- unsafe mode

Communicating Sequential Processes

Tony Hoare

python-csp (Sarah Mount)

References:

<https://mail.python.org/pipermail/python-ideas/2015-June/034177.html>

<https://news.ycombinator.com/item?id=9861966>

<http://python-csp.readthedocs.org/en/latest/>

Thanks!

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<https://bitbucket.org/ericsnowcurrently/presentations/src/default/utpy-aug2015/>