# Python

# Os

## Assure path exist

def assure\_path\_exists(path):

dir = os.path.dirname(path)

if not os.path.exists(dir):

os.makedirs(dir)

# convert python



## .py to .c

* Install cython

pip install cython or pip3 install cython

* Create file > test.py

print("Convert python to cython")

* In cmd

>cython test.py

* It will create a test.c file

## .py to .pyc

* Create file > test.py

print("Convert python to cython")

* In cmd
* > python
* >>> import py\_compile
* >>> py\_compile.compile(‘test.py’)
* This will create test.pyc file

## .py to .pyx

* Create Pythagoras.py

import time

def count\_triples(limit):

result = 0

for a in range(1, limit + 1):

for b in range(a + 1, limit + 1):

for c in range (b + 1, limit + 1):

if c \* c > a \* a + b \* b:

break

if c \* c == (a \* a + b \* b):

result += 1

return result

if \_\_name\_\_ == '\_\_main\_\_':

start = time.time()

result = count\_triples(1000)

duration = time.time() - start

print(result, duration)

* Python Pythagoras.py
  + 881 9.497968435287476
* Create pyth\_triples.pyx

def count\_triples(limit):

result = 0

for a in range(1, limit + 1):

for b in range(a + 1, limit + 1):

for c in range (b + 1, limit + 1):

if c \* c > a \* a + b \* b:

break

if c \* c == (a \* a + b \* b):

result += 1

return result

* In cmd
* pip install cython
* create main.py

import time

import pyximport; pyximport.install()

import pyth\_triples

def main():

start = time.time()

result = pyth\_triples.count\_triples(1000)

duration = time.time() - start

print(result, duration)

if \_\_name\_\_ == "\_\_main\_\_":

main()

* python main.py
  + 881 6.446093320846558
* Create file setup.py

from distutils.core import setup

from Cython.Build import cythonize

setup(

ext\_modules = cythonize("pyth\_triples.pyx")

)

* python setup.py build\_ext –inplace
* it will create pyth\_triples.c, pyth\_triples.cp36-win\_amd64.pyd and a build folder
* edit main.py

import time

# import pyximport; pyximport.install()

import pyth\_triples

def main():

start = time.time()

result = pyth\_triples.count\_triples(1000)

duration = time.time() - start

print(result, duration)

if \_\_name\_\_ == "\_\_main\_\_":

main()

* python main.py
  + 881 6.341957330703735
* Edit pyth\_triples.pyx as

### Cdef declarations

list

cdef list foo = []

string

cdef char\* c\_string = NULL

float

cdef float x = 5.0

file

cdef FILE\* p

cdef int x,y,z

cdef char \*s

cdef float x = 5.2 (single precision)

cdef double x = 40.5 (double precision)

cdef list languages

cdef dict abc\_dict

cdef object thing

def count\_triples(limit):

cdef int result = 0

cdef int a = 0

cdef int b = 0

cdef int c = 0

for a in range(1, limit + 1):

for b in range(a + 1, limit + 1):

for c in range (b + 1, limit + 1):

if c \* c > a \* a + b \* b:

break

if c \* c == (a \* a + b \* b):

result += 1

return result

* Delete or move file > pyth\_triples.c, pyth\_triples.cp36-win\_amd64.pyd
* Python main.py
  + 881 0.03200125694274902
* python setup.py build\_ext –i
* python main.py
* in ubuntu >
* python setup.py build\_ext -i
* It will crate an .so file in the same directory