# Python

# pycharm

## formatting

Cntrl + alt + L

# Anaconda SSL error

conda config --set ssl\_verify false

# Linux basic commands

find ./GFG -name sample.txt

# 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

## .py to exe

from tkinter import \*

root = Tk()

# root.iconbitmap('C:\page\Code-Sign\exe\treeleaf\_83777.ico')

topFrame = Frame(root)

topFrame.pack()

bottomFrame = Frame(root)

bottomFrame.pack(side=BOTTOM)

button1 = Button(topFrame, text='Button 1', fg="red")

button2 = Button(topFrame, text='Button 2', fg="blue")

button3 = Button(topFrame, text='Button 3', fg="green")

button4 = Button(bottomFrame, text='Button 4', fg="purple")

button1.pack(side=LEFT)

button2.pack(side=LEFT)

button3.pack(side=LEFT)

button4.pack(side=BOTTOM)

root.mainloop()



* pip install pyinstaller
* pyinstaller.exe --onefile -w --icon=treeleaf\_83777.ico myFile.py

## .py to exe – 2

> https://pypi.org/project/auto-py-to-exe/

# Debugger

* import pdb
* pdb.pm()

## Jupyter notebook

from IPython.core.debugger import set\_trace

set\_trace()

# pickling

## save

import pickle

# take user input to take the amount of data

number\_of\_data = int(input('Enter the number of data : '))

data = []

# take input of the data

for i in range(number\_of\_data):

raw = input('Enter data '+str(i)+' : ')

data.append(raw)

# open a file, where you ant to store the data

file = open('important', 'wb')

# or

file = open('index.pickle', 'wb')

# dump information to that file

pickle.dump(data, file)

# close the file

file.close()

## load

import pickle

# open a file, where you stored the pickled data

file = open('important', 'rb')

# dump information to that file

data = pickle.load(file)

# close the file

file.close()

print('Showing the pickled data:')

cnt = 0

for item in data:

print('The data ', cnt, ' is : ', item)

cnt += 1



import pdb

def transform(x, y):

pdb.set\_trace()

z = x+ y

z = 5

x = 50

y = 60

pdb.set\_trace()

transform(5, 10)

print('z = ' + str(z))

# Pandas

## Read csv

|  |
| --- |
| # importing Pandas library  import pandas as pd    pd.read\_csv(filepath\_or\_buffer = "pokemon.csv")    # makes the passed rows header  pd.read\_csv("pokemon.csv", header =[1, 2])    # make the passed column as index instead of 0, 1, 2, 3....  pd.read\_csv("pokemon.csv", index\_col ='Type')    # uses passed cols only for data frame  pd.read\_csv("pokemon.csv", usecols =["Type"])    # reutruns pandas series if there is only one colunmn  pd.read\_csv("pokemon.csv", usecols =["Type"],                                squeeze = True)    # skips the passed rows in new series  pd.read\_csv("pokemon.csv",              skiprows = [1, 2, 3, 4]) |

# Program to create series

import pandas as pd # Import Panda Library

# Program to Create series with scalar values

Data =[1, 3, 4, 5, 6, 2, 9] # Numeric data

# Creating series with default index values

s = pd.Series(Data)

# predefined index values

Index =['a', 'b', 'c', 'd', 'e', 'f', 'g']

# Creating series with predefined index values

si = pd.Series(Data, Index)

## When Data contains Dictionary

# Program to Create Dictionary series

dictionary ={'a':1, 'b':2, 'c':3, 'd':4, 'e':5}

# Creating series of Dictionary type

sd = pd.Series(dictionary)

## When Data contains Ndarray

# Program to Create ndarray series

Data =[[2, 3, 4], [5, 6, 7]] # Defining 2darray

# Creating series of 2darray

snd = pd.Series(Data)

## Creation of DataFrame

# Program to Create DataFrame

import pandas as pd # Import Library

a = pd.DataFrame(Data) # Create DataFrame with Data

## Datafame with headers

import pandas as pd

# Program to Create ndarray series

Data =[[2, 3, 4], [5, 6, 7]] # Defining 2darray

# Creating series of 2darray

snd = pd.Series(Data)

a = pd.DataFrame(Data)

a.to\_csv("test.csv", index=False,  header=["Letter", "Number", "Symbol"])

## One or more dictionaries

Here, Data can be:

* One or more dictionaries
* One or more Series
* 2D-numpy Ndarray

# Program to Create Data Frame with two dictionaries

dict1 ={'a':1, 'b':2, 'c':3, 'd':4}  # Define Dictionary 1

dict2 ={'a':5, 'b':6, 'c':7, 'd':8, 'e':9} # Define Dictionary 2

Data = {'first':dict1, 'second':dict2} # Define Data with dict1 and dict2

df = pd.DataFrame(Data) # Create DataFrame

|  |  |  |
| --- | --- | --- |
|  | first | second |
| a | 1 | 5 |
| b | 2 | 6 |
| c | 3 | 7 |
| d | 4 | 8 |
| e |  | 9 |

## When Data is Series

# Program to create Dataframe of three series

import pandas as pd

s1 = pd.Series([1, 3, 4, 5, 6, 2, 9])        # Define series 1

s2 = pd.Series([1.1, 3.5, 4.7, 5.8, 2.9, 9.3]) # Define series 2

s3 = pd.Series(['a', 'b', 'c', 'd', 'e'])    # Define series 3

Data ={'first':s1, 'second':s2, 'third':s3} # Define Data

dfseries = pd.DataFrame(Data)            # Create DataFrame

## When Data is 2D-numpy ndarray

Note: One constraint has to be maintained while creating DataFrame of 2D arrays – Dimensions of 2D array must be same.

# Program to create DataFrame from 2D array

import pandas as pd # Import Library

d1 =[[2, 3, 4], [5, 6, 7]] # Define 2d array 1

d2 =[[2, 4, 8], [1, 3, 9]] # Define 2d array 2

Data ={'first': d1, 'second': d2} # Define Data

df2d = pd.DataFrame(Data) # Create DataFrame

|  |  |  |
| --- | --- | --- |
|  | first | second |
| 0 | [2, 3, 4] | [2, 4, 8] |
| 1 | [5, 6, 7] | [1, 3, 9] |

## Save dataframe

from pandas import DataFrame

cars = {'Brand': ['Honda Civic','Toyota Corolla','Ford Focus','Audi A4'],

'Price': [22000,25000,27000,35000]

}

df = DataFrame(cars, columns= ['Brand', 'Price'])

export\_csv = df.to\_csv (r'C:\Users\Ron\Desktop\export\_dataframe.csv', index = None, header=True) #Don't forget to add '.csv' at the end of the path

print (df)

## dataframe with different row length – dict of list {“sample”: [1,2,3]}

df\_out = pd.DataFrame(dict([ (k,pd.Series(v)) for k,v in sents\_d.items() ]))

## Adding multiple sheet

import pandas as pd  
  
df1 = pd.DataFrame({'Data': ['a', 'b', 'c', 'd']})  
  
df2 = pd.DataFrame({'Data': [1, 2, 3, 4]})  
  
df3 = pd.DataFrame({'Data': [1.1, 1.2, 1.3, 1.4]})  
  
writer = pd.ExcelWriter('multiple.xlsx', engine='xlsxwriter')  
  
df1.to\_excel(writer, sheet\_name='Sheeta')  
  
df2.to\_excel(writer, sheet\_name='Sheetb')  
  
df3.to\_excel(writer, sheet\_name='Sheetc')  
  
writer.save()

# Threding

## Simple thread

import threading

import time

def sleeper(n, name):

print('Hi {} sleep 5 sec'.format(name))

time.sleep(n)

print('{} has woken up from sleep'.format(name))

t = threading.Thread(target=sleeper, name = 'thread1', args = (5,'thread1'))

t.start()

print('hello')

# after compleating exicution of thread the later code will exicute

t.join()

print('hello')

## threading cuncurrent

import threading

import time

def sleeper(n, name):

print('Hi {} sleep 5 sec'.format(name))

time.sleep(n)

print('{} has woken up from sleep'.format(name))

threads\_list = []

start = time.time()

for i in range(5):

t = threading.Thread(target = sleeper,

name = "thread{}".format(i),

args = (5, 'thread{}'.format(i)))

threads\_list.append(t)

t.start()

print('{} has started'.format(t.name))

for t in threads\_list:

t.join()

end = time.time()

print('time taken:', end-start)

print('all five threads finished')

normal code

start = time.time()

for i in range(5):

print("iteration %d started"%i)

sleeper(5,i)

end = time.time()

print('time taken:', end-start)

print('all five threads finished')

## Thread with return value

import concurrent.futures

def foo(bar):

print('hello {}'.format(bar))

return 'foo'

with concurrent.futures.ThreadPoolExecutor() as executor:

future = executor.submit(foo, 'world!')

return\_value = future.result()

print(return\_value)

## multithread with return value

import concurrent.futures

import time

URLS = ['http://www.foxnews.com/',

'http://www.cnn.com/',

'http://europe.wsj.com/',

'http://www.bbc.co.uk/',

'http://some-made-up-domain.com/']

# Retrieve a single page and report the URL and contents

def load\_url(url, timeout):

print("start ", url)

time.sleep(5)

return url, timeout

# We can use a with statement to ensure threads are cleaned up promptly

with concurrent.futures.ThreadPoolExecutor(max\_workers=5) as executor:

# Start the load operations and mark each future with its URL

future\_to\_url = {executor.submit(load\_url, url, 60): url for url in URLS}

for future in concurrent.futures.as\_completed(future\_to\_url):

url = future\_to\_url[future]

try:

data = future.result()

except Exception as exc:

print('%r generated an exception: %s' % (url, exc))

else:

print(data)

# database

## Sqlite3

### Create a Table

#!/usr/bin/python

import sqlite3

conn = sqlite3.connect('test.db')

print ("Opened database successfully")

conn.execute('''CREATE TABLE COMPANY

(ID INTEGER PRIMARY KEY AUTOINCREMENT,

NAME TEXT NOT NULL,

AGE INT NOT NULL,

ADDRESS CHAR(50),

SALARY REAL);''')

print ("Table created successfully")

conn.close()

# INTEGER PRIMARY KEY AUTOINCREMENT

### INSERT Operation

#!/usr/bin/python

import sqlite3

conn = sqlite3.connect('test.db')

print ("Opened database successfully")

conn.execute("INSERT INTO COMPANY (ID,NAME,AGE,ADDRESS,SALARY) \

VALUES (1, 'Paul', 32, 'California', 20000.00 )");

conn.execute("INSERT INTO COMPANY (ID,NAME,AGE,ADDRESS,SALARY) \

VALUES (2, 'Allen', 25, 'Texas', 15000.00 )");

conn.execute("INSERT INTO COMPANY (ID,NAME,AGE,ADDRESS,SALARY) \

VALUES (3, 'Teddy', 23, 'Norway', 20000.00 )");

conn.execute("INSERT INTO COMPANY (ID,NAME,AGE,ADDRESS,SALARY) \

VALUES (4, 'Mark', 25, 'Rich-Mond ', 65000.00 )");

conn.commit()

print ("Records created successfully")

conn.close()

### SELECT Operation

#!/usr/bin/python

import sqlite3

conn = sqlite3.connect('test.db')

print ("Opened database successfully")

cursor = conn.execute("SELECT id, name, address, salary from COMPANY")

for row in cursor:

print ("ID = ", row[0])

print ("NAME = ", row[1])

print ("ADDRESS = ", row[2])

print ("SALARY = ", row[3], "\n")

print ("Operation done successfully")

conn.close()

### UPDATE Operation

#!/usr/bin/python

import sqlite3

conn = sqlite3.connect('test.db')

print ("Opened database successfully")

conn.execute("UPDATE COMPANY set SALARY = 25000.00 where ID = 1")

conn.commit()

print ("Total number of rows updated :", conn.total\_changes)

cursor = conn.execute("SELECT id, name, address, salary from COMPANY")

for row in cursor:

print ("ID = ", row[0])

print ("NAME = ", row[1])

print ("ADDRESS = ", row[2])

print ("SALARY = ", row[3], "\n")

print ("Operation done successfully")

conn.close()

### DELETE Operation

#!/usr/bin/python

import sqlite3

conn = sqlite3.connect('test.db')

print ("Opened database successfully")

conn.execute("DELETE from COMPANY where ID = 2;")

conn.commit()

print ("Total number of rows deleted :", conn.total\_changes)

cursor = conn.execute("SELECT id, name, address, salary from COMPANY")

for row in cursor:

print ("ID = ", row[0])

print ("NAME = ", row[1])

print ("ADDRESS = ", row[2])

print ("SALARY = ", row[3], "\n")

print("Operation done successfully")

conn.close()

# Scheduler

* pip install schedule

import schedule

import time

def job():

print("I'm working...")

schedule.every(10).minutes.do(job)

schedule.every().hour.do(job)

schedule.every().day.at("10:30").do(job)

schedule.every(5).to(10).minutes.do(job)

schedule.every().monday.do(job)

schedule.every().wednesday.at("13:15").do(job)

schedule.every().minute.at(":17").do(job)

while True:

schedule.run\_pending()

time.sleep(1)

## Convert mp3 to wav

Download this zip [file](http://blog.gregzaal.com/how-to-install-ffmpeg-on-windows/#:~:text=If%20you%20try%20that%20right,and%20it'll%20understand%20us.)

Ffmpg [download](https://ffmpeg.zeranoe.com/builds/)

import subprocess

command = "ffmpeg -i temp.3gp -ab 160k -ac 2 -ar 44100 -vn audio.wav"

subprocess.call(command, shell=True)

## Voice call – twillo

<https://www.youtube.com/watch?v=-AChTCBoTUM>

import os

from twilio.rest import Client

account\_sid = "AC0ea4768da20941b347bcae28d99e5d77"

auth\_token = "d5e38b025fe43f6dc8a29f7a68c68538"

client =  Client(account\_sid, auth\_token)

call = client.calls.create(

    to = "+919447838962",

    from\_ = "+1 919 587 8152",

    # url = "https://demo.twilio.com/welcome/voice/"

    url = "https://demo.twilio.com/docs/voice.xml"

)

print(call.sid)

## .so file location

$ import sys

$ sys.path

* user lib python3 dist package –

## Telegram bot

<https://pypi.org/project/pyTelegramBotAPI/>

## Base64 encoding and decoding image

import base64

img2 = "jijo1.jpg"

with open(img1, "rb") as image\_file:

    encoded\_string = base64.b64encode(image\_file.read())

decode

import base64

from PIL import Image

from io import BytesIO

import PIL

face\_bs64 = request.POST['image1']

try:

    enc = base64.b64decode(face\_bs64)

    image1\_pil = PIL.Image.open(BytesIO(base64.b64decode(enc)))

    image1\_f = True

except:

    image1\_f = False

    status = 406

    error.append("Invalid image or base64 encryption error" )

# Shell script

## Face analytics start

#!/bin/sh

set -x

if [ -z "$STY" ]; then exec screen -dm -S face\_analytic /bin/bash "$0"; fi

cd /home/zcadmin/AI\_Projects/ImageProcessing\_DL

source  env/faceanalytics/bin/activate

cd faceanalytic

stunnel4 stunnel/dev\_https & python3 manage.py runserver 0.0.0.0:8444& HTTPS=1 python3 manage.py runserver 0.0.0.0:8000

## face analytics stop

#!/bin/sh

sudo netstat -tulpn | grep 8000 | awk {'print $7'} | cut -d "/" -f1 | xargs kill -9

sudo netstat -tulpn | grep 8444 | awk {'print $7'} | cut -d "/" -f1 | xargs kill -9

sudo netstat -tulpn | grep 8443 | awk {'print $7'} | cut -d "/" -f1 | xargs kill -9

ps -ef  |grep stunnel

# Sent mail

from email import encoders

from email.message import Message

from email.mime.base import MIMEBase

from email.mime.multipart import MIMEMultipart

from email.mime.text import MIMEText

import smtplib

signature = """

<br>

Warm regards, <br>

    <b style="color : red;">Switch Books</b> <br>

    +91 9447838962 | switchbooks.in

"""

fromaddr = "alancyriac111@gmail.com"

toaddr = "abhijithm2447@gmail.com"

msg = MIMEMultipart()

msg['From'] = fromaddr

msg['To'] = toaddr

msg['Subject'] = "Switch Books with sn"

body=("Hello Abhijith, Thank you for joining in the testing, regards by Switch Books" + signature)

msg.attach(MIMEText(body, 'html'))

server = smtplib.SMTP('smtp.gmail.com', 587)

server.starttls()

server.login(fromaddr, "Alancyriac@1996")

text = msg.as\_string()

server.sendmail(fromaddr, toaddr, text)

print("Mailed")

server.quit()

# E: Unable to locate package python3-pip

sudo add-apt-repository universe

sudo apt-get update

sudo apt-get install -y python3-pip

# Sent mail in linux cmd

sudo apt-get install ssmtp

# gksu gedit /etc/ssmtp/ssmtp.conf

Sudo vim /etc/ssmtp/ssmtp.conf

# The place where the mail goes. The actual machine name is required no

# MX records are consulted. Commonly mailhosts are named mail.domain.com

# mailhub=mail

mailhub = smtp.gmail.com:587

AuthUser = alancyriac111@gmail.com

AuthPass= Alancyriac@1996

UseTLS=YES

UseSTARTTLS=YES

# Where will the mail seem to come from?

#rewriteDomain=

rewriteDomain=gmail.com

# The full hostname

#hostname=ip-172-31-5-66.us-east-2.compute.internal

hostname=alancyriac111@gmail.com

# Are users allowed to set their own From: address?

# YES - Allow the user to specify their own From: address

# NO - Use the system generated From: address

FromLineOverride=YES

Vim save and exit

1. Switch to command mode by pressing the ESC key.
2. Press : (colon) to open the prompt bar in the bottom left corner of the window.
3. Type x after the colon and hit Enter. This will **save** the changes and **exit**.

Exit vim and type

$ ssmtp [alancyriac111@gmail.com](mailto:alancyriac111@gmail.com)

## method2

https://embedjournal.com/how-to-use-gmail-from-terminal-linux/

#Gmail account

defaults

#change the location of the log file to any desired location.

logfile ~/msmtp.log

account gmail

auth on

host smtp.gmail.com

from alancyriac111@gmail.com

auth on

tls on

tls\_trust\_file /etc/ssl/certs/ca-certificates.crt

user alancyriac111@gmail.com

password Alancyriac@1996

port 587

#set gmail as your default mail server.

account default : gmail

## sent mail office machine

import smtplib  
sender\_email = "manu.n@zerone-consulting.com"  
receiver\_email = "manu.n@zerone-consulting.com"  
message = """\  
Subject: Hi there  
This message is sent from Python new."""

smtp\_server = "192.168.0.5"  
port = 25 # For starttls  
sender\_email = "manu.n@zerone-consulting.com"  
password = ""  
# Try to log in to server and send email  
try:  
server = smtplib.SMTP(smtp\_server,port)

except Exception as e:  
print(e)

server.sendmail(sender\_email, receiver\_email, message)

## install heirloom-mailx

vim /etc/apt/sources.list

add below entry

deb http://security.ubuntu.com/ubuntu trusty-security main universe

save and close

sudo apt update

sudo apt install heirloom-mailx –y

# PDF creation

<https://pypi.org/project/pdfkit/>

from pyhtml2pdf import converter

converter.convert('https://pypi.org', 'sample.pdf')

# Jupyter change env

* ipython kernal --user --name=polyp

# Web scrapping

# Wget : not recognised

<https://www.youtube.com/watch?v=CkpTEJH6xkg>

download exe

<https://eternallybored.org/misc/wget/>

paste exe in C:\Windows\System32

# Profiler – runtime checker

<https://www.youtube.com/watch?v=qhb7cehwChc>

* python -m cProfile -o sample.prof demo.py
* snakeviz sample.prof

## Profiler for django

### Djanog-debug-toolbar

<https://www.youtube.com/watch?v=qWLk9S6mvAY>

* installatioin

<https://django-debug-toolbar.readthedocs.io/en/latest/installation.html#installation>

### dajngo cprofiler

<https://pypi.org/project/django-cprofile-middleware/>

# regular expression

https://www.youtube.com/watch?v=K8L6KVGG-7o

## match

import re

sentance = """abcdef

ABCDEF"""

pattern = re.compile(r'abc')

matches = pattern.finditer(sentance)

for match in matches:

    print(match)

<\_sre.SRE\_Match object; span=(0, 3), match='abc'>

## Escape char

sentance = """abcdef

ABCDEF

.

"""

pattern = re.compile(r'\.')

matches = pattern.finditer(sentance)

for match in matches:

    print(match)

<\_sre.SRE\_Match object; span=(15, 16), match='.'>

## . any char except new line

sentance = """abcdef

ABCDEF

.

"""

pattern = re.compile(r'.')

matches = pattern.finditer(sentance)

for match in matches:

    print(match)

<\_sre.SRE\_Match object; span=(0, 1), match='a'>

<\_sre.SRE\_Match object; span=(1, 2), match='b'>

<\_sre.SRE\_Match object; span=(2, 3), match='c'>

<\_sre.SRE\_Match object; span=(3, 4), match='d'>

<\_sre.SRE\_Match object; span=(4, 5), match='e'>

<\_sre.SRE\_Match object; span=(5, 6), match='f'>

<\_sre.SRE\_Match object; span=(6, 7), match=' '>

<\_sre.SRE\_Match object; span=(8, 9), match='A'>

<\_sre.SRE\_Match object; span=(9, 10), match='B'>

<\_sre.SRE\_Match object; span=(10, 11), match='C'>

<\_sre.SRE\_Match object; span=(11, 12), match='D'>

<\_sre.SRE\_Match object; span=(12, 13), match='E'>

<\_sre.SRE\_Match object; span=(13, 14), match='F'>

<\_sre.SRE\_Match object; span=(15, 16), match='.'>

## \d – digit between (0-9)

sentance = """abcdef

ABCDEF

.

11345

"""

pattern = re.compile(r'\d')

matches = pattern.finditer(sentance)

for match in matches:

    print(match)

<\_sre.SRE\_Match object; span=(17, 18), match='1'>

<\_sre.SRE\_Match object; span=(18, 19), match='1'>

<\_sre.SRE\_Match object; span=(19, 20), match='3'>

<\_sre.SRE\_Match object; span=(20, 21), match='4'>

<\_sre.SRE\_Match object; span=(21, 22), match='5'>

## \D – not a dig(0-9)

sentance = """abcdef

ABCDEF

.

11345

"""

pattern = re.compile(r'\D')

matches = pattern.finditer(sentance)

for match in matches:

    print(match)

<\_sre.SRE\_Match object; span=(0, 1), match='a'>

<\_sre.SRE\_Match object; span=(1, 2), match='b'>

<\_sre.SRE\_Match object; span=(2, 3), match='c'>

<\_sre.SRE\_Match object; span=(3, 4), match='d'>

<\_sre.SRE\_Match object; span=(4, 5), match='e'>

<\_sre.SRE\_Match object; span=(5, 6), match='f'>

<\_sre.SRE\_Match object; span=(6, 7), match=' '>

<\_sre.SRE\_Match object; span=(7, 8), match='\n'>

<\_sre.SRE\_Match object; span=(8, 9), match='A'>

<\_sre.SRE\_Match object; span=(9, 10), match='B'>

<\_sre.SRE\_Match object; span=(10, 11), match='C'>

<\_sre.SRE\_Match object; span=(11, 12), match='D'>

<\_sre.SRE\_Match object; span=(12, 13), match='E'>

<\_sre.SRE\_Match object; span=(13, 14), match='F'>

<\_sre.SRE\_Match object; span=(14, 15), match='\n'>

<\_sre.SRE\_Match object; span=(15, 16), match='.'>

<\_sre.SRE\_Match object; span=(16, 17), match='\n'>

<\_sre.SRE\_Match object; span=(22, 23), match='\n'>

## \w word char(a-z, A-Z, 0-9,\_)

## \W not word char(a-z, A-Z, 0-9,\_)

## \s whitespace (space, tab, newline)

## \S not whitespace (space, tab, newline)

## \b word boundary

sentance = """abcdefhi helloh

ABCDEF

.

11345

"""

pattern = re.compile(r'\bh')

matches = pattern.finditer(sentance)

for match in matches:

    print(match)

<\_sre.SRE\_Match object; span=(9, 10), match='h'>

## \B not word boundary

sentance = """abcdefhi helloh

ABCDEF

.

11345

"""

pattern = re.compile(r'\Bh')

matches = pattern.finditer(sentance)

for match in matches:

    print(match)

<\_sre.SRE\_Match object; span=(6, 7), match='h'>

<\_sre.SRE\_Match object; span=(14, 15), match='h'>

## ^ beginning of string

sentance = """abcdefhi helloh

ABCDEF

.

11345

"""

pattern = re.compile(r'^h')

matches = pattern.finditer(sentance)

for match in matches:

    print(match)

None

## $ end of string

## 555-666-7777 pattern

sentance = """555-666-7777

568.968.8766

65-99-35

"""

pattern = re.compile(r'\d\d\d.\d\d\d.\d\d\d\d')

matches = pattern.finditer(sentance)

for match in matches:

    print(match)

<\_sre.SRE\_Match object; span=(0, 12), match='555-666-7777'>

<\_sre.SRE\_Match object; span=(13, 25), match='568.968.8766'>

## [] pack

sentance = """555-666-7777

568.968.8766

568\*968\*8766

65-99-35

"""

pattern = re.compile(r'\d\d\d[-.]\d\d\d[-.]\d\d\d\d')

matches = pattern.finditer(sentance)

for match in matches:

    print(match)

<\_sre.SRE\_Match object; span=(0, 12), match='555-666-7777'>

<\_sre.SRE\_Match object; span=(13, 25), match='568.968.8766'>

sentance = """555-666-7777

568.968.8766

568\*968\*8766

600.968.8766

500-968-8766

"""

pattern = re.compile(r'[56]00[-.]\d\d\d[-.]\d\d\d\d')

matches = pattern.finditer(sentance)

for match in matches:

    print(match)

<\_sre.SRE\_Match object; span=(39, 51), match='600.968.8766'>

<\_sre.SRE\_Match object; span=(52, 64), match='500-968-8766'>

## [1-5] – range

sentance = """555-666-7727

568.968.8766

568\*968\*8766

600.968.8766

500-968-8766

"""

pattern = re.compile(r'[1-5]')

matches = pattern.finditer(sentance)

for match in matches:

    print(match)

<\_sre.SRE\_Match object; span=(0, 1), match='5'>

<\_sre.SRE\_Match object; span=(1, 2), match='5'>

<\_sre.SRE\_Match object; span=(2, 3), match='5'>

<\_sre.SRE\_Match object; span=(10, 11), match='2'>

<\_sre.SRE\_Match object; span=(13, 14), match='5'>

<\_sre.SRE\_Match object; span=(26, 27), match='5'>

<\_sre.SRE\_Match object; span=(52, 53), match='5'>

## [^a-zA-Z] not character

text = "this is w10221 \n test AA~"

pattern = re.compile(r'[^a-zA-Z]')

matches = pattern.finditer(text)

for m in matches:

    print(m)

<\_sre.SRE\_Match object; span=(4, 5), match=' '>

<\_sre.SRE\_Match object; span=(7, 8), match=' '>

<\_sre.SRE\_Match object; span=(9, 10), match='1'>

<\_sre.SRE\_Match object; span=(10, 11), match='0'>

<\_sre.SRE\_Match object; span=(11, 12), match='2'>

<\_sre.SRE\_Match object; span=(12, 13), match='2'>

<\_sre.SRE\_Match object; span=(13, 14), match='1'>

<\_sre.SRE\_Match object; span=(14, 15), match=' '>

<\_sre.SRE\_Match object; span=(15, 16), match='\n'>

<\_sre.SRE\_Match object; span=(16, 17), match=' '>

<\_sre.SRE\_Match object; span=(21, 22), match=' '>

<\_sre.SRE\_Match object; span=(24, 25), match='~'>

text = "cat mat bat"

pattern = re.compile(r'[^b]at')

matches = pattern.finditer(text)

for m in matches:

    print(m)

<\_sre.SRE\_Match object; span=(0, 3), match='cat'>

<\_sre.SRE\_Match object; span=(4, 7), match='mat'>

## ? zero or one

text = """Mr. Schafer

Mr Smit

Ms David

Mrs. Robinson

Mr. T"""

pattern = re.compile(r'Mr\.?')

matches = pattern.finditer(text)

for m in matches:

    print(m)

<\_sre.SRE\_Match object; span=(0, 3), match='Mr.'>

<\_sre.SRE\_Match object; span=(12, 14), match='Mr'>

<\_sre.SRE\_Match object; span=(29, 31), match='Mr'>

<\_sre.SRE\_Match object; span=(43, 46), match='Mr.'>

## Mrs/Ms Name matching

text = """Mr. Schafer

Mr Smit

Ms David

Mrs. Robinson

Mr. T"""

pattern = re.compile(r'M(r|s|rs)\.?\s[A-Z]\w\*')

matches = pattern.finditer(text)

for m in matches:

    print(m)

<\_sre.SRE\_Match object; span=(0, 11), match='Mr. Schafer'>

<\_sre.SRE\_Match object; span=(12, 19), match='Mr Smit'>

<\_sre.SRE\_Match object; span=(20, 28), match='Ms David'>

<\_sre.SRE\_Match object; span=(29, 42), match='Mrs. Robinson'>

<\_sre.SRE\_Match object; span=(43, 48), match='Mr. T'>

## Groupping ()

text = """

https://www.google.com

http://coreyms.com

https://youtube.com

https://www.nasa.gov

"""

pattern = re.compile(r'https?://(www\.)?(\w+)(\.\w+)')

matches = pattern.finditer(text)

for m in matches:

    print(m)

    print(m.group(2))

<\_sre.SRE\_Match object; span=(1, 23), match='https://www.google.com'>

google

<\_sre.SRE\_Match object; span=(24, 42), match='http://coreyms.com'>

coreyms

<\_sre.SRE\_Match object; span=(43, 62), match='https://youtube.com'>

youtube

<\_sre.SRE\_Match object; span=(63, 83), match='https://www.nasa.gov'>

Nasa

## Sub with group

text = """

https://www.google.com

http://coreyms.com

https://youtube.com

https://www.nasa.gov

"""

pattern = re.compile(r'https?://(www\.)?(\w+)(\.\w+)')

substituted = pattern.sub(r'\2\3', text)

print(substituted)

google.com

coreyms.com

youtube.com

nasa.gov

# Jupyter Notebook

<https://www.youtube.com/watch?v=wb6k_T4rKBQ&list=PLtPIclEQf-3fhfoFQU2MJYnQ6CyjQLQEa>

## Interactive widget

from IPython.display import display

import ipywidgets as widgets

import matplotlib.pyplot as plt

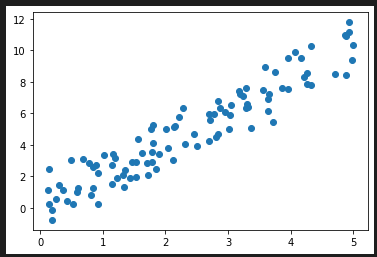
import numpy as np

x = np.random.uniform(0, 5, size=100)

ep = np.random.normal(size = 100)

y = 2\*x + ep

plt.scatter(x,y)



x\_values = np.linspace(0, 5 , 1000)

# slider

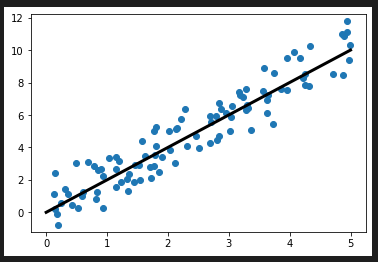
def slop\_viz(m=1):

    plt.scatter(x, y)

    plt.plot(x\_values, m \* x\_values, lw = 3, color="black")

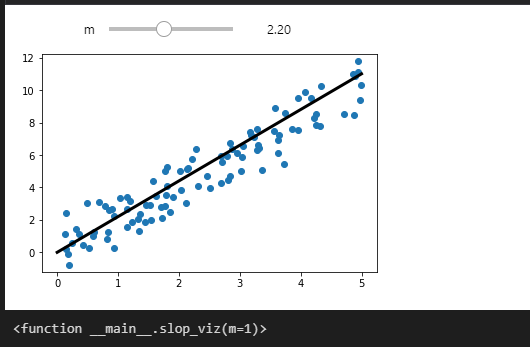
    plt.ylim(-1.2, 12.2)

slop\_viz(m=2)



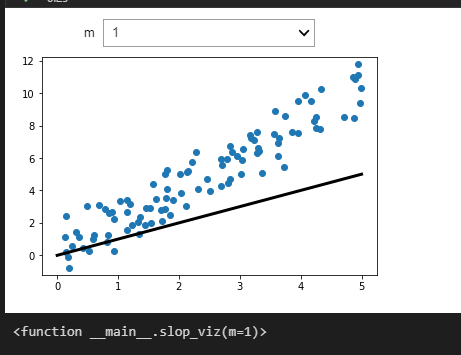
### # slider

widgets.interact(slop\_viz, m = (0.2, 5 , 0.2))



### # dropdown

widgets.interact(slop\_viz, m = [0,1,2,3,4,5])



### # checkbox

def slop\_viz\_updated(m=1, line = False, text = ""):

    plt.scatter(x, y)

    if line:

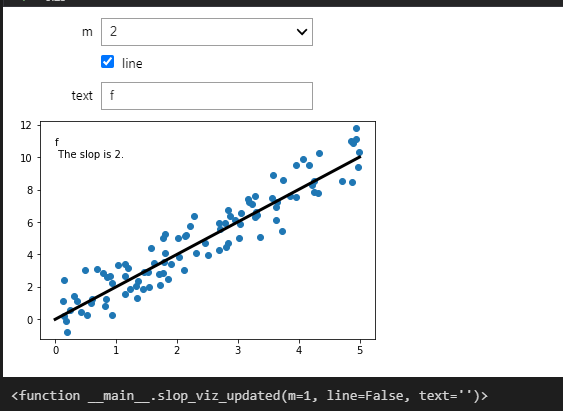
        plt.plot(x\_values, m \* x\_values, lw = 3, color="black")

    if text:

        plt.text(0, 10, f"{text}\n The slop is {m}.")

    plt.ylim(-1.2, 12.2)

widgets.interact(slop\_viz\_updated, m = [0,1,2,3,4,5], line = False, text="")



### # custom widget

radio\_btn = widgets.RadioButtons(

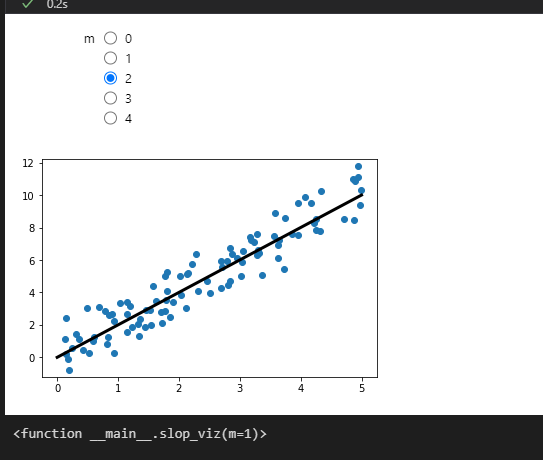
    options = [0,1,2,3,4],

    value = 1,

    desciption = "Slop:"

)

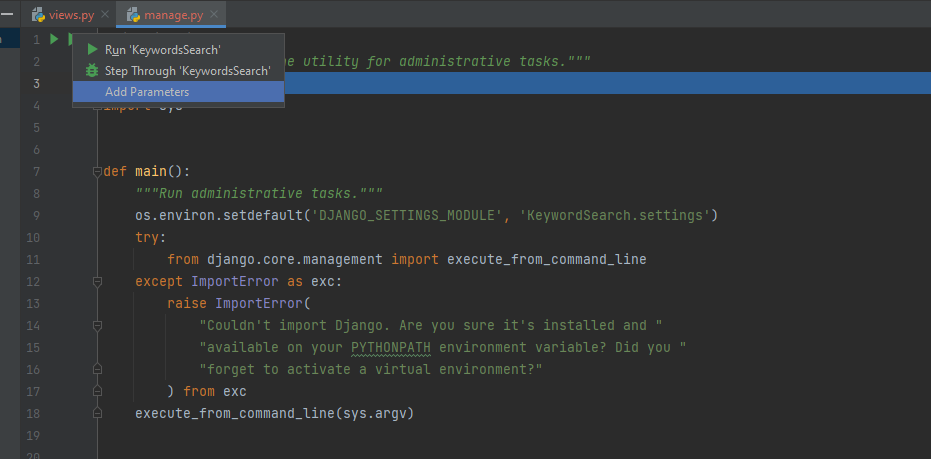
widgets.interact(slop\_viz, m= radio\_btn)

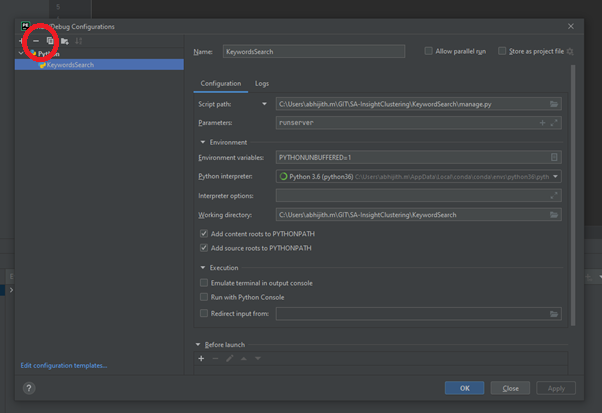


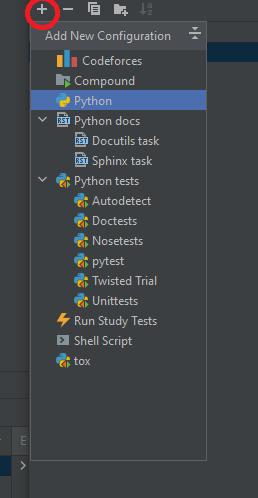
# Pycharm Django setup

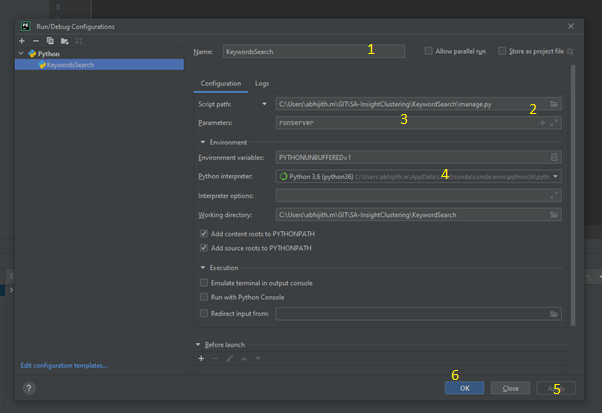
<https://www.youtube.com/watch?v=34Gum_6iGFM>

* right click run button









# Sort dictionary with value

<https://stackoverflow.com/a/613218/7360872>