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Exercise Set 7: FILE it for later ...

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ENGR 1330 ES-7 - Homework

In [1]:
```
# Preamble script block to identify host, user, and kernel
import sys
! hostname
! whoami
print(sys.executable)
print(sys.version)
print(sys.version_info)
```

```
DESKTOP-6HAS1BN
desktop-6has1bn\medra
C:\Users\medra\anaconda3\python.exe
3.8.5 (default, Sep  3 2020, 21:29:08) [MSC v.1916 64 bit (AMD64)]
sys.version_info(major=3, minor=8, micro=5, releaselevel='final', serial=0)
```

Reading and Writing Files

Exercise 0

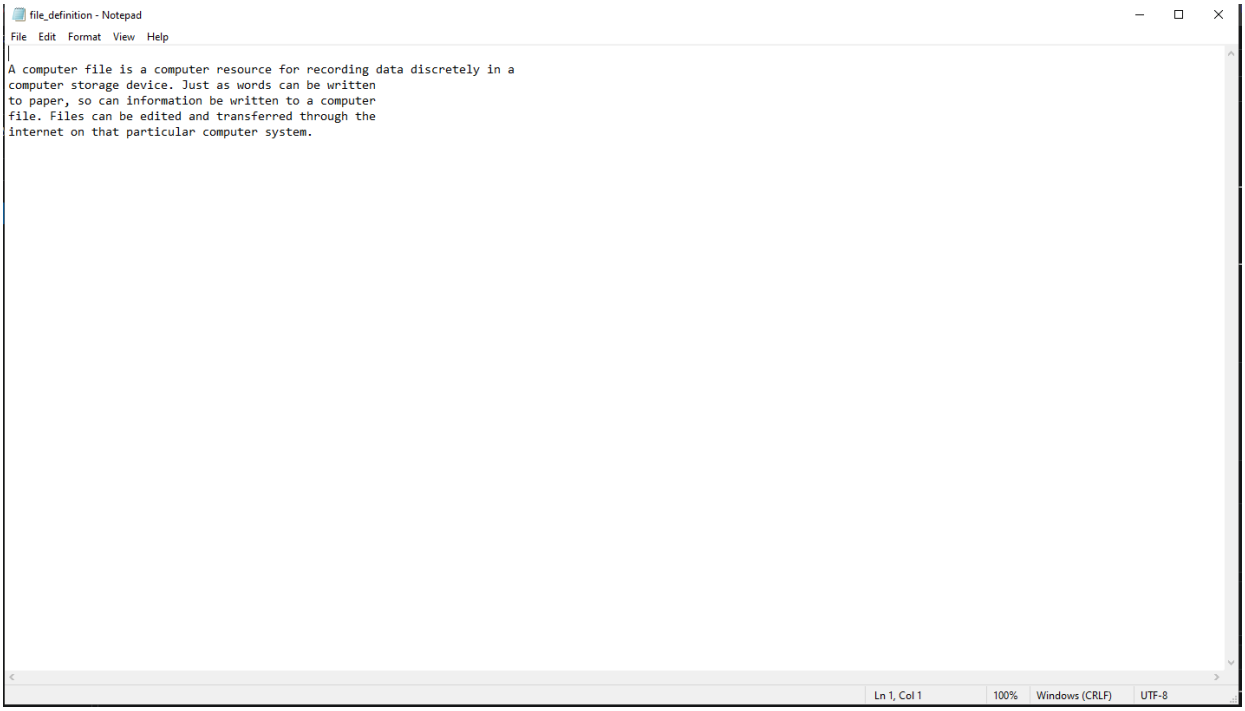
Consider the object below named definition

In [5]:
```
definition = """
A computer file is a computer resource for recording data discretely in a
computer storage device. Just as words can be written
to paper, so can information be written to a computer
file. Files can be edited and transferred through the
internet on that particular computer system."""
```

Write this into a file with the name `file_definition.txt` . When done, open the file using an editor and screen capture the contents for your solution

In [6]:
```
# code block for your solution
myfile = open('file_definition.txt','w')
myfile.write(definition)
myfile.close()
```

Screen capture of file (put the filename into the object below, then elevate (remove the leading spaces and run the markdown cell to render the image)



In [ ]:

Exercise 1

The code cell below will generate a file

In [7]:
```
long_file = """V. ad Lesbiam

VIVAMUS mea Lesbia, atque amemus,
rumoresque senum severiorum
omnes unius aestimemus assis!
soles occidere et redire possunt:
nobis cum semel occidit breuis lux,
nox est perpetua una dormienda.
da mi basia mille, deinde centum,
dein mille altera, dein secunda centum,
deinde usque altera mille, deinde centum.
dein, cum milia multa fecerimus,
conturbabimus illa, ne sciamus,
aut ne quis malus inuidere possit,
cum tantum sciat esse basiorum.
(GAIUS VALERIUS CATULLUS)"""

open('long_file.txt','w').write(long_file)
```

Out[7]: 482

Read the contents of long_file.txt line-by-line and print each line as it is read.

In [11]:
```
# open the connection
# for ... # read line-by-line
```

```
strings = []
myfile = open("long_file.txt","r")
for line in myfile:
    strings.append(str(line))

    print(str(line), end ="")
#     print()  # each line
```

```
V. ad Lesbiam

VIVAMUS mea Lesbia, atque amemus,
rumoresque senum severiorum
omnes unius aestimemus assis!
soles occidere et redire possunt:
nobis cum semel occidit breuis lux,
nox est perpetua una dormienda.
da mi basia mille, deinde centum,
dein mille altera, dein secunda centum,
deinde usque altera mille, deinde centum.
dein, cum milia multa fecerimus,
conturbabimus illa, ne sciamus,
aut ne quis malus inuidere possit,
cum tantum sciat esse basiorum.
(GAIUS VALERIUS CATULLUS)
```

Exercise 2

Build a script to read http://54.243.252.9/engr-1330-webroot/8-Labs/Lab07/pythonista.txt (you can download a copy of the file) line-by-line. Then after each line is read, replace any occurance of "Pythonista" with "Python newbie" in each line, and replace any occurance of "Python snake" with "Python guru" in each line. Write the output to another file named "python_newbie_and_the_guru.txt" and show the contents of the new file in a text editor.

In [13]:
```
# open the input connection
myfile = open('pythonista.txt','r')
out = open('python_newbie_and_the_guru.txt','w')
# open an output connection
for line in myfile:
    temps = str(line)
    temps = temps.replace("Pythonista","Python newbie")
    temps = temps.replace("Python snake","Python guru")
    print(temps, end = "")
    out.write(temps)
myfile.close()
out.close()
# read line-by-line from input
#    replace pythonista with python newbie in line just read
#    replace Python snake with Python guru in line just read
#    write updated line to output
```

```
A blue Python newbie, green behind the ears, went to Pythonia.
She wanted to visit the famous wise green Python guru.
She wanted to ask her about the white way to avoid the black.
The bright path to program in a yellow, green, or blue style.
The green Python turned red, when she addressed her.
The Python newbie turned yellow in turn.
After a long but not endless loop  the wise Python uttered:
"The rainbow!"
```

Exercise 3

The file http://54.243.252.9/engr-1330-webroot/8-Labs/Lab07/ts-data.txt contains two columns as shown below:

```
Time,Speed
0.0,0.0
1.0,3.0
2.0,7.0
3.0,12.0
4.0,20.0
5.0,30.0
6.0,45.6
```

The first column is time in seconds, the second is the speed of an object in meters/second.

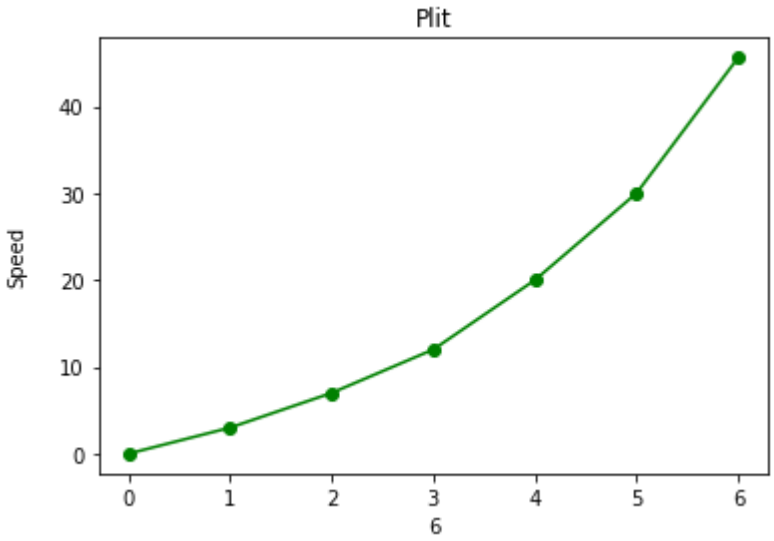
Build a script that reads the data in the file, and then captures from the first row the two column labels (as strings) to be passed to the `plotAline` function below. Also put the numeric values into two lists as floats for passing to the `plotAline` function. Put your code after the `plotAline` definition

In [14]:
```
# use this code as-is!
def plotAline(list1,list2,strx,stry,strtitle): # plot list1 on x, list2 on y, xlabel, y
    from matplotlib import pyplot as plt # import the plotting library from matplotlibp
    plt.plot( list1, list2, color ='green', marker ='o', linestyle ='solid') # create a
    plt.title(strtitle)# add a title
    plt.ylabel(stry)# add a label to the x and y-axes
    plt.xlabel(strx)
    plt.show() # display the plot
    return #null return
```

In [27]:
```
matrix = []
first = []
second = []

myfile = open('ts-data.txt','r')
line1 = (myfile.readline().split(","))

x = str(line[0])
y = str(line1[1])
for line in myfile:
    matrix.append([float(n) for n in line.strip().split(",")])
myfile.close()
for i in range(0,len(matrix)):
    first.append(matrix[i][0])
    second.append(matrix[i][1])
plot_title = 'Plit'
plotAline(first,second,x,y,plot_title)
```



References

1. List processing tips https://www.programiz.com/python-programming/del

2. Character replacement tips https://www.geeksforgeeks.org/python-string-replace/

3. Python file manipulations https://www.tutorialspoint.com/python/python_files_io.htm

In [ ]: