In [1]:
```
def f1():
    print("F1 block")
    f2() # nested call
    print("Exit from F1 block")

def f2():
    print("Hello")
    print("Exit from f2 block")

f1()
print("Exit from main script")
```

```
F1 block
Hello
Exit from f2 block
Exit from F1 block
Exit from main script
```

In [ ]:
```
# File Handling (str,list)
# --------------------------
# Keyboard(STDIN) ------------Python----------------------Monitor(STDOUT)
#                   input()   ======          print()
#                              |
#                           FileHandling(Storage)

# 1. Reading data from <FILE> -->Python -->display to monitor (not using Keyboard
# 2. Python -->create a newFILE,write data to FILE (not using monitor)
# 3. Reading data from <FILE> -->Python-->Create/Write data to FILE(not using I/O

| user layer: python  0x1234 -> fileobject(or)fileHandler
|                |(1) | (5)
| Kernel layer  systemcall
|                 |
|                FS(2)    |________|0x1234(4)
|                 |
|                DD - DC
|                 |
| Hardware layer: Storage(3)

fileObject=open("inputfile","mode")
mode - operation
r - read
w - write
a - append
rb - readbinary
wb - writebinary
fileObject.close()
```

In [5]:
```
# 1. Reading data from <FILE> -->Python -->display to monitor
# FH=open("inputfile","r") (or) open("inputfile") # default mode is read 'r'
# FH.read() (or) FH.readlines()
# FH.close()
FH=open("D:\\emp.csv","r")
print(FH.read())
print("") # empty line
FH=open("D:\\emp.csv","r")
FH.readlines()
```

```
ram,sales,pune,1000
ashi,prod,bglore,2345
xerox,sales,chennai,45900
yahoo,prod,pune,32450
anu,HR,hyd,4560
biju,prod,bglore,4567
vijay,hr,chennai,3453
theeb,sales,hyd,5678
nithin,prod,pune,1236
```

Out[5]:
```
['ram,sales,pune,1000\n',
 'ashi,prod,bglore,2345\n',
 'xerox,sales,chennai,45900\n',
 'yahoo,prod,pune,32450\n',
 'anu,HR,hyd,4560\n',
 'biju,prod,bglore,4567\n',
 'vijay,hr,chennai,3453\n',
 'theeb,sales,hyd,5678\n',
 'nithin,prod,pune,1236']
```

In [8]:
```
F=open("D:\\emp.csv")
F.read()
F.read()
F.readlines()
```

Out[8]:
```
[]
```

In [9]:
```
F=open("D:\\emp.csv")
s=F.read()
F.close()
F=open("D:\\emp.csv")
L=F.readlines()
F.close()
print(type(s),len(s))
print(type(L),len(L))
```

```
<class 'str'> 192
<class 'list'> 9
```

In [15]:
```
for var in L:
    print(var.strip()) # remove \n char
```

```
ram,sales,pune,1000
ashi,prod,bglore,2345
xerox,sales,chennai,45900
yahoo,prod,pune,32450
anu,HR,hyd,4560
biju,prod,bglore,4567
vijay,hr,chennai,3453
theeb,sales,hyd,5678
nithin,prod,pune,1236
```

In [16]:
```
for var in L[-3:]:
    print(var.strip())
```

```
vijay,hr,chennai,3453
theeb,sales,hyd,5678
nithin,prod,pune,1236
```

In [17]:
```
for var in L[:3]:
    print(var.strip())
```

```
ram,sales,pune,1000
ashi,prod,bglore,2345
xerox,sales,chennai,45900
```

In [18]:
```
for var in L[1:5]:
    print(var.strip())
```

```
ashi,prod,bglore,2345
xerox,sales,chennai,45900
yahoo,prod,pune,32450
anu,HR,hyd,4560
```

In [19]:
```
# 2 python -->create/Write data to FILE
# open("Resultfile","w")
#       ^^^^^^^^^    |__create/write

WH=open("D:\\r1.log","w")
for var in range(5):
    v=input("Enter a server name:")
    WH.write(v+"\n") # writing data to FILE
WH.close()
```

```
Enter a server name:unix
Enter a server name:Linux
Enter a server name:aix
Enter a server name:minix
Enter a server name:winx
```

In [20]:
```
F=open("D:\\r1.log")
F.read()
```

Out[20]:
```
'unix\nLinux\naix\nminix\nwinx\n'
```

In [21]:
```
#3.Reading data from <FILE> -->Python-->Create/Write data to FILE(not using I/O)
FH=open("D:\\r1.log")
WH=open("D:\\r2.log","w")
s=FH.read()
WH.write(s)
FH.close()
WH.close()
```

In [22]:
```
F=open("D:\\r2.log")
F.read()
```

Out[22]:
```
'unix\nLinux\naix\nminix\nwinx\n'
```

In [23]:
```
FH=open("C:\\Users\\Public\\Pictures\\Sample Pictures\\Koala.jpg","rb")
WH=open("D:\\test.png","wb")
s=FH.read()
WH.write(s)
WH.close()
FH.close()
```

In [ ]:
```
# block style
# --------------
#  |__with as - python keywords
#
apelix@krosumlabs:~$ python
Python 2.7.2+ (default, Oct  4 2011, 20:03:08)
[GCC 4.6.1] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>>
>>> open("emp.csv","r")
<open file 'emp.csv', mode 'r' at 0xb778de90>
>>>
>>> open("/var/log/boot.log","r")
<open file '/var/log/boot.log', mode 'r' at 0xb778dc80>
>>>
>>> open("/var/log/boot.log")
<open file '/var/log/boot.log', mode 'r' at 0xb778de90>
>>>
>>> open("/etc/shadow")
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
IOError: [Errno 13] Permission denied: '/etc/shadow'
>>>
>>> open("pp.log")
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
IOError: [Errno 2] No such file or directory: 'pp.log'
>>>
>>>
>>> open("emp.csv")
<open file 'emp.csv', mode 'r' at 0xb778dc80>
>>>
>>> F=open("emp.csv")
>>> F.read()
'ram,sales,pune,1000\nashi,prod,bglore,2345\nxerox,sales,chennai,45900\nyahoo,prc
>>> F.read()
''
>>> F=open("emp.csv")
>>> F.readlines()
['ram,sales,pune,1000\n', 'ashi,prod,bglore,2345\n', 'xerox,sales,chennai,45900\r
>>> F.readlines()
[]
>>> F.readlines()
[]
>>> F=open("emp.csv")
>>> F.readlines()
['ram,sales,pune,1000\n', 'ashi,prod,bglore,2345\n', 'xerox,sales,chennai,45900\r
>>> F=open("emp.csv")
>>> F.readlines()
['ram,sales,pune,1000\n', 'ashi,prod,bglore,2345\n', 'xerox,sales,chennai,45900\r
>>>
apelix@krosumlabs:~$
apelix@krosumlabs:~$ mkdir Temp
apelix@krosumlabs:~$ cd Temp
apelix@krosumlabs:~/Temp$ ls
apelix@krosumlabs:~/Temp$
```

```
apelix@krosumlabs:~/Temp$ python
Python 2.7.2+ (default, Oct  4 2011, 20:03:08)
[GCC 4.6.1] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>> open("r1.log","w")
<open file 'r1.log', mode 'w' at 0xb789be90>
>>> exit()
apelix@krosumlabs:~/Temp$ ls
r1.log
apelix@krosumlabs:~/Temp$ cat r1.log
apelix@krosumlabs:~/Temp$ ls -l r1.log
-rw-rw-r-- 1 apelix apelix 0 2021-02-23 10:05 r1.log
apelix@krosumlabs:~/Temp$ ps >r1.log
apelix@krosumlabs:~/Temp$ ls -l r1.log
-rw-rw-r-- 1 apelix apelix 84 2021-02-23 10:06 r1.log
apelix@krosumlabs:~/Temp$ python
Python 2.7.2+ (default, Oct  4 2011, 20:03:08)
[GCC 4.6.1] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>> open("r1.log","w")
<open file 'r1.log', mode 'w' at 0xb7786e90>
>>>
apelix@krosumlabs:~/Temp$ ls -l r1.log
-rw-rw-r-- 1 apelix apelix 0 2021-02-23 10:06 r1.log
apelix@krosumlabs:~/Temp$ cat r1.log
apelix@krosumlabs:~/Temp$
apelix@krosumlabs:~/Temp$ python
Python 2.7.2+ (default, Oct  4 2011, 20:03:08)
[GCC 4.6.1] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>> WH=open("r1.log","w")
>>>
>>> # WH.write("Single String\n")
... WH.write("sample test\n")
>>> WH.write("343432\n")
>>> WH.write(2342432)
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
TypeError: expected a character buffer object
>>> cost=34345.343
>>> print("cost")
cost
>>> WH.write(str(cost)+"\n")
>>> WH.write("data1","data2","data3")
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
TypeError: function takes exactly 1 argument (3 given)
>>> WH.write("data1"+"data2"+"\t"+"data3\n")
>>> ename="arun"
>>> edept="sales"
>>> WH.write("emp name is:"+ename+"working dept is:"+edept+"\n")
>>> WH.write("emp name is:{}\t Working dept is:{}\n".format(ename,edept))
>>> WH.close()
>>> WH=open("e1.csv","w")
>>>
>>> WH.write("arun,sales,pune,1000\n")
>>> en="vijay"
```

```
>>> ed='admin'
>>> ec='bglore'
>>> ecost=34344
>>>
>>> WH.write(en+","+ed+","+ec+","+str(ecost)+"\n")
>>> WH.close()
>>>
>>>
>>>
>>> F=open("r1.log")
>>> F.read()
'sample test\n343432\n34345.343\ndata1data2\tdata3\nemp name is:arunworking dept
>>>
>>> with open("r1.log") as F:
...     print(F.read())
...
sample test
343432
34345.343
data1data2  data3
emp name is:arunworking dept is:sales
emp name is:arun     Working dept is:sales

>>> msg="sample test data"
>>> WH=open("r2.log","w")
>>> WH.write(msg+"\n")
>>> WH.close()
>>> with open("r3.log","w") as WH:
...     WH.write(msg+"\n")
...
>>> with open("r3.log") as FH:
...     print(FH.read())
...
sample test data

>>>
>>>
>>> with open("/etc/passwd") as FH:
...     with open("r4.log","w") as WH:
...             for var in FH.readlines()[2:8]:
...                     WH.write(var)
...
>>> with open("r4.log") as FH:
...     print(FH.read())
...
bin:x:2:2:bin:/bin:/bin/sh
sys:x:3:3:sys:/dev:/bin/sh
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/bin/sh
man:x:6:12:man:/var/cache/man:/bin/sh
lp:x:7:7:lp:/var/spool/lpd:/bin/sh

>>> s='bin:x:2:/bin:/bin/sh'
>>> s.split(":")
['bin', 'x', '2', '/bin', '/bin/sh']
>>>
>>> s.split(":")[0]
```

```
'bin'
>>> s.split(":")[1]
'x'
>>> type(s.split(":"))
<type 'list'>
>>> s.split(":")[-3:]
['2', '/bin', '/bin/sh']
>>> s.split(":")[-2:]
['/bin', '/bin/sh']
>>> s.split(":")
['bin', 'x', '2', '/bin', '/bin/sh']
>>> L=s.split(":")
>>> L[-2:]
['/bin', '/bin/sh']
>>>
>>>
>>> s='root:x:bin\n'
>>> s[2:7]
'ot:x:'
>>> L=['root:x:bin\n','user:x:bin\n','userA:x:bin\n']
>>> L[2:]
['userA:x:bin\n']
>>> L[1:]
['user:x:bin\n', 'userA:x:bin\n']
>>>
>>> d={"SHELL":'/bin/bash','HOME':'/home/apelix','PORT':445}
>>>
>>> with open("r5.csv","w") as WH:
...     for var in d:
...             WH.write("{},{}".format(var,d[var]))
...
>>> with open("r5.csv") as FH:
...     print(FH.read())
...
HOME,/home/apelixSHELL,/bin/bashPORT,445
>>>
>>> with open("r5.csv","w") as WH:
...     for var in d:
...             WH.write("{},{},".format(var,d[var]))
...
>>> with open("r5.csv","w") as WH:
...     pass
...
>>> with open("r5.csv","w") as WH:
...     for var in d:
...             WH.write("{},{},".format(var,d[var]))
...
>>> with open("r5.csv") as FH:
...     print(FH.read())
...
HOME,/home/apelix,SHELL,/bin/bash,PORT,445,
>>> d
{'HOME': '/home/apelix', 'SHELL': '/bin/bash', 'PORT': 445}
>>>
>>> for var in d:
...     print(var)
...
```

```
HOME
SHELL
PORT
>>> for var in d:
...     print(d[var])
...
/home/apelix
/bin/bash
445
>>> for var in d:
...     print("{}\t{}".format(var,d[var]))
...
HOME    /home/apelix
SHELL   /bin/bash
PORT    445
```

In [ ]:

```
# create a newfile  wh=open("db.log","w")
# connect DB
# insert
# select
# |_write to FILE  wh.write("selected db result")
#                  wh.close()
#
# L=select db
# with open("db1.log","w") as WH:
#       for var in L:
#            WH.write(var+"\n")
```

In [ ]:
```
'''
File: property.txt
----------------------
interface=eth0
onboot=none
bootproto=dhcp
IP=10.20.30.40
PREFIX=24

STEP 1: create an empty dict
STEP 2: using fileHandling - read property.txt file - line by line
STEP 3: each line ->split into multiplevalues
STEP 4: add input data into dict
STEP 5: display key/value details to monitor
STEP 6: update - interface ->eth1
        update - onboot ->YES
        update - bootproto ->None
        ADD    - DNS1 ->123.456.452.434
        ADD    - DOMAIN -> example.com
STEP 7: display updated dict Key/Value details to monitor
STEP 8: create a newProperty.txt file ,write updated dict details into FILE
        (same inputproperty.txt file format)
         interface=eth1
         onboot=YES
'''
```

In [33]:
```
d={} # empty dictionary
with open("D:\\property.txt") as FH:
    for var in FH.readlines():
        var=var.strip() # remove \n char
        K,V=var.split("=")
        d[K]=V # d.setdefault(K,V)

for var in d:
    print("{}\t{}".format(var,d[var]))

d['interface']='eth1'
d['onboot']="YES"
d['bootproto']=None
d['DOMAIN']='example.com'
d['DNS1']='123.456.452.434'
print("")
for var in d:
    print("{}-->{}".format(var,d[var]))

with open("D:\\newproperty.txt","w") as WH:
    for var in d:
        WH.write("{}={}\n".format(var,d[var]))
```

```
interface       eth0
onboot  none
bootproto       dhcp
IP      10.20.30.40
PREFIX  24

interface-->eth1
onboot-->YES
bootproto-->None
IP-->10.20.30.40
PREFIX-->24
DOMAIN-->example.com
DNS1-->123.456.452.434
```

In [44]:
```
def f1():
    d={} # empty dictionary
    return d

def f2(d):
    with open("D:\\property.txt") as FH:
        for var in FH.readlines():
            var=var.strip() # remove \n char
            K,V=var.split("=")
            d[K]=V # d.setdefault(K,V)
    return d

def f3(d):
    for var in d:
        print("{}\t{}".format(var,d[var]))
def f4(d):
    d['interface']='eth1'
    d['onboot']="YES"
    d['bootproto']=None
    d['DOMAIN']='example.com'
    d['DNS1']='123.456.452.434'
    return d

def f5(d):
    with open("D:\\newproperty.txt","w") as WH:
        for var in d:
            WH.write("{}={}\n".format(var,d[var]))

rv1=f1()
rv2=f2(rv1)
f3(rv2)
rv3=f4(rv2)
print("Updated dict details:-")
f3(rv3)
f5(rv3)
```

```
interface       eth0
onboot  none
bootproto       dhcp
IP      10.20.30.40
PREFIX  24
Updated dict details:-
interface       eth1
onboot  YES
bootproto       None
IP      10.20.30.40
PREFIX  24
DOMAIN  example.com
DNS1    123.456.452.434
```

In [43]:
```
F=open("D:\\property.txt")
s=F.read()
s=s.strip()
L=s.split("=")
L[1]
```

Out[43]:
```
'eth0\nonboot'
```

In [ ]:
```
# in python -> module ->existing python file(.py/.pyc)
# code - reusability
# import <filename>
#  <filename>.member
#               |__variable,function,class etc.,
#
# file:ab.py
# ----------------
# var=100
# ----------------
# import ab
# print(ab.var)
# print(ab.var+1000)
# if(ab.var>500):
#          ...
#
# >>> import ab
# >>> help(ab)
#

# import filename
#    |__ python find/search -> filename.py/filename.pyc ->refer sys.path variable
#                                                          --------
#                                                            |
#                                                          py ->pyc
#

import filename  ->['','C:\\',"D:\\"]
```

In [45]:
```
import sys
sys.path
```

Out[45]:
```
['C:\\Users\\Karthikeyan',
 'D:\\PYTHON_Examples',
 'C:\\Users\\Karthikeyan',
 'C:\\Users\\Karthikeyan\\anaconda3\\python38.zip',
 'C:\\Users\\Karthikeyan\\anaconda3\\DLLs',
 'C:\\Users\\Karthikeyan\\anaconda3\\lib',
 'C:\\Users\\Karthikeyan\\anaconda3',
 '',
 'C:\\Users\\Karthikeyan\\anaconda3\\lib\\site-packages',
 'C:\\Users\\Karthikeyan\\anaconda3\\lib\\site-packages\\win32',
 'C:\\Users\\Karthikeyan\\anaconda3\\lib\\site-packages\\win32\\lib',
 'C:\\Users\\Karthikeyan\\anaconda3\\lib\\site-packages\\Pythonwin',
 'C:\\Users\\Karthikeyan\\anaconda3\\lib\\site-packages\\IPython\\extensions',
 'C:\\Users\\Karthikeyan\\.ipython']
```

In [46]:
```
#project/p1.py p2.py p3.py ... p50.py

import os,sys,pprint
import re
import json
import requests
```

In [ ]:
```
To create a package
STEP 1: create a folder/directory
STEP 2: collect/copy/move all .py files into folder
STEP 3: create package intialized file -> __init__.py
STEP 4: import all the external symbols to package initialize file
STEP 5: test your package -> import <directory>
```

In [ ]:

```
file:ab.py
--------------
port=1234
def f1():
    print("Hello")
---------------------------
 |
 |
 |
 |
symbol/dict table

 Key   |  Value
 --------------
 __main__.port | 1234
 --------------
 __main__.f1   | 0x13435
 ----------------
```

```
   file:p1.py
       ------------
   import ab
   var=120
       print(ab.port)
           print(var)
ab.f1()
f1() -->Error ==>__main__.f1
------------------
    |
          |
Key    | Value
         ----------------
         __main__.var| 120
             ------------------
         ab.port|1234
             --------------------
         ab.f1|0x13435
--------------------
```

```
 root@host~]# ls {Enter}
 a.py b.py

 root@host~]# cat a.py
 Success
 root@host~]# cat /etc/passwd{Enter}  ------------  import filename; filename.me
 Success
 root@host~]# cat passwd{Enter}
 No Such File -Error
                        Sytnax:-
                        --------
 root@host~]# cp /etc/passwd .  ---------------- from module import member
 root@host~]# cat passwd{Enter}
 Success                    from ab import f1,port
                        print(port) ->1234
                        f1() -->Hello

                       from module import *
```

```
root@host D1]# ls
passwd
root@host D1]# cat passwd
12345
root@host D1]# cp /etc/passwd .
root@host D1]# ls
passwd
root@host D1]# cat passwd
root:x
sadfda:x
sadfasd:x
```

In [ ]: