

Solution - Task 05

October 8, 2018

1. Create a file 'myfile.txt' in your current folder using `f = open('myfile.txt', 'w')`. Try following methods on `f`: `.close()`, `.write()`, `.read()`, `.read(n)`, `.readline()`, `.readlines()`, `.seek(n)`. Also try with `open('myfile.txt')` as `f`:

Do it yourself.

2. Create a dictionary type variable in Python and use it in some context of your choice.

```
In [3]: states = {'Kolkata' : 'West Bengal', 'Mohali' : 'Punjab', 'Pune' : 'Maharashtra',
                 'Tirupati' : 'Andhra Pradesh', 'Berhampur' : 'Odisha', 'Thiruvananthapuram' : 'Kerala'}
        for x in states.keys():
            print "IISER", x, "is in", states[x]+'.'
```

```
IISER Pune is in Maharashtra.
IISER Tirupati is in Andhra Pradesh.
IISER Thiruvananthapuram is in Kerala.
IISER Berhampur is in Odisha.
IISER Mohali is in Punjab.
IISER Kolkata is in West Bengal.
```

3. Write a Python code to count the number of characters, words and sentences in a text file on your computer.

```
In [13]: f = open("myletter.txt", "r")
        text = f.read()
        print "Number of characters :", len(text)
        f.seek(0)
        L = f.readline().split(' ')
        print "Number of words :", len(L)
        f.seek(0)
        M = f.readline().split('.')
        print "Number of sentences :", len(M)-1
        f.close()
```

```
Number of characters : 460
Number of words : 68
Number of sentences : 3
```

4. Semester performance of a student is stored in a file called 'grades.txt'. The contents of this file are something like

Name : Amit Kulshrestha

Roll No. : MS18241

Course,Grade,Credits

BIO101,B,3

CHM101,B,3

MTH101,B,3

PHY101,C,3

BIO111,B,1

CHM111,A,1

PHY111,D,1

HSS101,C,2

IDC101,C,2

Write a Python code that calculates SPI and appends it in the file in the following way. "SPI of Amit Kulshrestha (Roll no. MS18241) is 7.16."

You should assume that grade to SPI conversion is as per IISER Mohali academics rules.

```
In [41]: conv = {'A' : 10, 'B' : 8, 'C' : 6, 'D' : 4, 'F' : 0}

f = open('grades.txt', 'r+')
L = f.readlines()
name = L[0].split(" : ")[1].split('\n')[0]
rno = L[1].split(" : ")[1].split('\n')[0]
del L[0:3]
n = len(L)
tot = 0
cre = 0
for i in range(n):
    M = L[i].split(',')
    tot = tot + conv[M[1]]*int(M[2])
    cre = cre + int(M[2])
cpi = float(tot)/float(cre)
f.close()
f = open('grades.txt', 'a')
s = "\nSPI of " + name + " (Roll no. " + rno + ") is " + str("%.2f" % cpi)
f.write(s)
f.close()
```

5. You write a letter to your best friend and save it in a file called 'letter.txt'. In order to avoid others reading this letter in an understandable way you encode it by replacing 'A' by 'B', 'B' by 'C', and so on. Write a program that creates a file called 'encodedletter.txt' which encodes 'letter.txt' as per your scheme. Now write a program that decodes the file 'encodedletter.txt'.

Think of alternate schemes of encoding and challenge your classmates through moodle forum to decode your scheme. Remember that an encoding scheme should be 'invertible', i.e., it should be possible to decode it in a unique manner.

```
In [42]: L = "ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz"
d = {}
for i in range(len(L)):
    d[L[i]] = L[(i+1)%52]
d['.'] = '.'
d[' '] = ' '
d['\n'] = '\n'
f = open("letter.txt", "r")
g = open("encodedletter.txt", "w")
f.seek(0)
l = f.read()
for x in l:
    if x in d.keys():
        g.write(d[x])
f.close()
g.close()

g = open("encodedletter.txt", "r")
for x in g:
    print x
```

J bn xsjujoh uijt tfdsfu mfuufs.

Uif qvsqptf pg uijt mfuufs jt up difdl jg uijt mfuufs dbo cf efdpefe

J ipqf op pof fmf lpxt uijt tfdsfu.

Ublf dbsf.