Practice exercises: Week 6 (File I/O handling in Python)

1. Write code that uses *read(), readline()* and *readlines()* functions to read the contents of the file **"data.txt"** and print. [download the data.txt file attached and save it in the location where you save your code for easy access]. The output should be

read() →
```
Mary had a little lamb
little lamb
little lamb
```

readline() →
```
Mary had a little lamb
```

readlines() →
```
['Mary had a little lamb\n', 'little lamb\n', 'little lamb\n']
```

Code:

```
1 file=open("data.txt","r")
2 #text=file.read()
3 #text=file.readline()
4 text=file.readlines()
5 print(text)
6 file.close()
```

2. Write a program that accepts student names as input and store them in a new file called **"names.txt"** as series of text with single space (Assume just first name only) until user enters "no". Then read the names written in that file and displays all names in vertical order and total number of names stored in the file. The sample run for reading the file is here.

```
>>> %Run ReadNameList.py
Alice
Alisa
Monica
Tommy
Dora
Joyce
Bob
Sam
Tomas
Jack
Marry
John
Adela
Steven
Zak
Lili
Tina
Total number is: 17
```

```
f = open("names.txt","r")
lst_name = f.readlines()
f.close()
n=0
for name in lst_name:
    print(name,end='')
    n+=1
print("Total number is:",n)
```

3. The file **"score.txt"** contains scores obtained by a player in the sports. Write code to calculate the final average score of the player. The final average score is computed as

   Sum of all scores – (highest score +lowest score) /(total no. of scores – 2).

```
f = open("score.txt","r")
scorelist = f.readlines()
f.close()
n=0
sumscore=0
highscore=0
lowscore=100
for score in scorelist:
    score=float(score)
    sumscore+=score
    n+=1
    if score>highscore:
        highscore=score
    if score<lowscore:
        lowscore=score
finalscore=(sumscore-highscore-lowscore)/(n-2)
print("The highest score is:",highscore)
print("The lowest score is:",lowscore)
print("The final score is:",finalscore)
```

4. Write code to create a file called **"LeapYears.txt"** and write all leap years identified in between 1900 and 2000 in it. It should be noted, leap years between 1900 and 2000 must be found by using leap year calculation[refer exercise 2 – Week 4 programming assignment]. Then the identified leap year should be written in the aforementioned file. If the file already exists, then it should be rewritten. Then read those years from the file **"LeapYears.txt"** for display. The sample run is here:

```
file=open("LeapYears.txt","w")
str1="Leap years from 1900 to 2000:\n"
for i in range(1900,2001):
    if i%4==0 and i%100!=0 or i%400==0:
        str1=str1+str(i)+'\n'
file.write(str1)
file.close()
f1=open("LeapYears.txt")
for i in f1:
    print(i)
f1.close()
```

5. Open the file created in exercise 4 **[“LeapYears.txt”]** that contains leap years data that were in between 1900-2000. Then append the same file with some more leap years that were in between 2001 and 2100 [computation for leap years should be done again like you did in Exercise 4]. Read all data from the file to display leap years that were identified in between the years 1950 and 2050 only.

```
file=open("LeapYears.txt","a")
str1="Leap years from 2001 to 2100:\n"
for i in range(2001,2100):
    if i%4==0 and i%100!=0 or i%400==0:
        str1=str1+str(i)+'\n'
file.write(str1)
file.close()
f1=open("LeapYears.txt")
for i in f1:
    if len(i.strip())>5:
        continue
    elif int(i)>=1950 and int(i)<=2050:
        print(i)

f1.close()
```

6. Write **100** integers created randomly into the new file called ***“randomnumbers.txt”.*** Integers are separated by “\n” in the file. Read the data back from the file and display the sorted data.

```
import random
file=open("“randomnumbers.txt","w")
for i in range(1,100):
    x = random.randint(1,100000) # end value is optional here
    file.write(str(x)+"\n")
file.close()

f1=open("“randomnumbers.txt")
```

```
for i in f1:
    print(i)

f1.close()
```