Laboratory 06

COMSC-122

Fall 2017

Laboratory 06

- In this lab we will be generating a file of Random numbers called: *YourName*-Lab6-1.py
- We can use what we learned in Program 5-17 and Program 6-11 to assist us in doing this.
- Here are the requirements of the program:
  - The program asks you how many random numbers you want to generate.
  - The program then asks you what is the range of the random numbers:
    - What is the lower bound on the random number?
    - What is the upper bound on the random number?
  - Then the random number generator proceeds to generate a file called: **numbers.txt** , containing those random numbers.
- After you've run the program, look at the contents of **numbers.txt** and see if the integers generated are all in the range that you specified.

Laboratory 06B

- Write a second program that will calculate the average of all the numbers contained in **numbers.txt**.
- Call this program: *YourName-Lab6-2.py*
- Be sure to ask the instructor to look at your results so that you may be given full credit before the class is over.

Program 5-17

- Generating a series of Random Numbers

Program 5-17 (random_numbers2.py)

```
1  # This program displays five random
2  # numbers in the range of 1 through 100.
3  import random
4
5  def main():
6      for count in range(5):
7          # Get a random number.
8          number = random.randint(1, 100)
9          # Display the number.
10         print(number)
11
12 # Call the main function.
13 main()
```

Program 6-11 (save_running_times.py)

```
1  # This program saves a sequence of video running times
2  # to the video_times.txt file.
3
4  def main():
5      # Get the number of videos in the project.
6      num_videos = int(input('How many videos are in the project? '))
7
8      # Open the file to hold the running times.
9      video_file = open('video_times.txt', 'w')
10
11     # Get each video's running time and write
12     # it to the file.
13     print('Enter the running times for each video.')
14     for count in range(1, num_videos + 1):
15         run_time = float(input('Video #' + str(count) + ': '))
16         video_file.write(str(run_time) + '\n')
17
18     # Close the file.
19     video_file.close()
20     print('The times have been saved to video_times.txt.')
21
22 # Call the main function.
23 main()
```

Program 6-11

Program 6-12 (read_running_times.py)

```
1  # This program the values in the video_times.txt
2  # file and calculates their total.
3
4  def main():
5      # Open the video_times.txt file for reading.
6      video_file = open('video_times.txt', 'r')
7
8      # Initialize an accumulator to 0.0.
9      total = 0.0
10
11     # Initialize a variable to keep count of the videos.
12     count = 0
13
14     print('Here are the running times for each video:')
15
16     # Get the values from the file and total them.
17     for line in video_file:
18         # Convert a line to a float.
19         run_time = float(line)
```

Program 6-12

```
20
21          # Add 1 to the count variable.
22          count += 1
23
24          # Display the time.
25          print('Video #', count, ': ', run_time, sep='')
26
27          # Add the time to total.
28          total += run_time
29
30      # Close the file.
31      video_file.close()
32
33      # Display the total of the running times.
34      print('The total running time is', total, 'seconds.')
35
36  # Call the main function.
37  main()
```

Program Output

```
Here are the running times for each video:
Video #1: 24.5
Video #2: 12.2
Video #3: 14.6
Video #4: 20.4
Video #5: 22.5
Video #6: 19.3
The total running time is 113.5 seconds.
```

Program 6-12

Use of the Python For Loop to read the file.