Scripting and Computer Environments - CSE 505
IIIT Hyderabad - Monsoon 2016
LAB WORK

Lab No. 6
Lab Date: 25/10/2016

Guidelines :

    1. Read all questions carefully.

    2. Please use *man* and *apropos* before calling a TA for help.

Submission Format :

    1. Create a folder <rollno>_lab<lab_no>. All your work should be in this folderONLY

    2. You have to generate a script file with the name <rollno>_ lab<lab no>.script

    3. Create <Question_no>.py for all questions in section

    4. Directory Structure :

        |d- <rollno>_lab<lab_no>

        |f- <Question_no>.py

        |d/f- All files/directories created in this session

5. Zip the folder to <rollno>_lab<lab_no>.tar and upload it

Lab Questions

Q 1.

Write a module names *Primes.py* and define the following functions in it
- *countOddPrimes*
      which takes an argument *n* and returns the <u>count</u> of all the odd primes numbers.
- <u>getOddPrimes</u>
      which takes an argument *n* and returns the <u>list</u> of all the odd primes numbers in
      descending order.
Write another module *Main.py* which accepts 2 command line arguments and calls the functions defined in

Python Main.py <n> <ModuleName>
E.g.,
$ Python Main.py 10 countOddPrimes
3
$ Python Main.py 10 getOddPrimes
7, 5, 3

Q 2.

List out all the unique occurrences of the words that are present in the file *Quotes.txt*, along with their frequencies, in the same order as they appear.(usage of OrderedDict is not allowed)

Ex: I am a bad police officer, because I am not a good police officer.

Output:

<I:2>; <am:2>; <a:2>; <bad:1>; <police:2>; <officer:2>; <,:1>; <because:1>; <not:1>; <good:1>

Q 3.

Split the text that present in the file *tweets.txt* and write the words to the file *words.txt* in the decreasing order of their frequency. While splitting the words, see that all the punctuation marks are removed and you retain all the emoticons as a single word. E.g., :) :-) :D :-D each of these emoticons must be treated as a single word.

<u>List of possible emoticons:</u>   :)   :-)   :D   :-D   :(:-(:-| :'(:-'(:o   :-o <3

<u>Sample Input:</u>

I <3 KFC… I am <3 in it!!!:)

<u>Output:</u> *here …. And !!!! are ignored as they are punctuation marks and not a part of emoticons.*

I : 2

<3 : 2

KFC : 1

am : 1

In : 1

It : 1

:) : 1

Q 4.

Siddharth, Aayush, Deeksha and Tanushree were in Bangluru doing their internships during this summer break. Our Micro-Baba went to Bangaluru for some work. Micro-Baba is a serial movie watcher, he watches at least one movie a day. Because of the work he was not able to watch a single movie for 2 consecutive days, now Micro-Baba started to lose his temper, sensing the gravity of the situation Siddharth, Aayush, Deeksha and Tanushree immediately booked tickets of 'Jungle Book' movie and asked Micro-Baba to meet them at the theater near Silk board junction. Because of the work Micro-Baba started late, considering the Bangaluru's traffic woes, it was near impossible for him to reach theater at time. As he is Micro-Baba, he decided to do the impossible. He took his bike, went at express speed, did some crazy maneuvers on the road and finally reached the theater on time.

After the movie Baba narrated how he was able to reach theater just on time and showed his bike's speed data(recorded per second), Siddharth decided to analyse this data, he wanted to know his maximum, minimum and average speed, he also wants to know the duration of longest interval in which he was accelerating. Your job is to help Siddharth in finding these data.

Read input from speed.txt file

Sample input
10 20 30 40 0

Output
Minimum speed - 10
Maximum speed - 40
Average speed - 20
Longest Interval - 4

Q 5. Vigenère Cipher(S)

Vigenere Cipher is a method of encrypting alphabetic text. It uses a simple form of
polyalphabetic substitution. A polyalphabetic cipher is any cipher based on substitution,
using multiple substitution alphabets .
You need to encrypt a given word using vigenere cipher and output the encrypted text.
Consider the following example:

Input Text: SHWETAANDKANIKA
Key: JUHI
O/P Cipher Text: BBDMCUHVMEHVREH

Procedure: Need to first append the key with itself until it reaches the length of Input text.
Here in our case input text is 15 characters. So repeat key until it becomes 15 characters.
In our case Key will become JUHIJUHIJUHIJUH

SHWETAANDKANIKA (input string)
JUHIJUHIJUHIJU (polyalphabetic key)

BBDMCUHVMEHVREH (encrypted text as output)

How to do => Now perform addition of each letter of key and input string.
Eg: (S+J)%26 = (17 + 10)%26 = 27 % 26 = 1, 1 is B
Similarly, do it for all characters of the input string.

Note: please take input string and key as input arguments 1 and 2.
Output Cipher text on console. Please don't ask for doubts!

Q 6.
Generate the pattern shown in the figure below:(S)

```
master@master-Dell-System-Inspiron-N4110: ~/Sem3/Scripting/lab5
[ master lab5 $ Mon Oct 24 ]
python  code.py
         +
        +++
       +++++
      +++++++
     +++++++++
    +++++++++++
   +++++++++++++
    +++++++++++
     +++++++++
      +++++++
       +++++
        +++
         +

[ master lab5 $ Mon Oct 24 ]
```

Take n as input from the command line. (Note n hasn't been taken here from command line
in the above figure.)
In the above figure n = 7, so we print 1,3,5,7,9,11,13,11,9,7,5,3,1
If n is the input, the output contains (2*n - 1) rows as output.

Q 7.
Micro Baba, the Coder, is coding on a crazy computer. If you don't type in a word for a c
consecutive seconds, everything you typed disappear!
More formally, if you typed a word at second a and then the next word at second b, then if
$b - a \leq c$, just the new word is appended to other words on the screen. If $b - a > c$, then
everything on the screen disappears and after that the word you have typed appears on the
screen.
For example, if $c = 5$ and you typed words at seconds 1, 3, 8, 14, 19, 20 then at the second 8
there will be 3 words on the screen. After that, everything disappears at the second 13
because nothing was typed. At the seconds 14 and 19 another two words are typed, and
finally, at the second 20, one more word is typed, and a total of 3 words remain on the
screen.
You're given the times when **Micro Baba** the Coder typed the words. Determine how many
words remain on the screen after he finished typing everything.

Input

The first line contains two integers n and c ($1 \leq n \leq 100\,000$, $1 \leq c \leq 10^9$) — the number of words **Micro Baba** the Coder typed and the crazy computer delay respectively.

The next line contains n integers $t_1, t_2, ..., t_n$ ($1 \leq t_1 < t_2 < ... < t_n \leq 10^9$), where t_i denotes the second when **Micro Baba** the Coder typed the i-th word.

Output

Print a single positive integer, the number of words that remain on the screen after all n words was typed, in other words, at the second t_n.

Examples

Input

6 5

1 3 8 14 19 20

Output

3

Input

6 1

1 3 5 7 9 10

Output

2

Note

The first sample is already explained in the problem statement.

For the second sample, after typing the first word at the second 1, it disappears because the next word is typed at the second 3 and 3 - 1 > 1. Similarly, only 1 word will remain at the second 9. Then, a word is typed at the second 10, so there will be two words on the screen, as the old word won't disappear because 10 - 9 ≤ 1.

Q 8.

Python come in very handy when dealing with data, for data crunching, machine learning, interactions on the web.

Today we aim to make a authentication mechanism using Python.

Using python dictionaries to simulate database for user information.

Give the user two options,

      a. Add new User

      b. Log In with existing credentials

a. For new user registration in system, input parameters are

NAME,ROLL,EMAIL,PASSWORD(comma seperated values).

Validate entries as-

      -   emailId – Only valid iiit email id acceptable

      -   Password length at least 8 characters

      -   Roll number should be a integer [optional if you do not know python regex]

If valid entry- print "Success"

Else print - "Registration Failed"

b. For logging in, input parameters are ROLL/EMAIL,PASSWORD
 Input can be roll number or email, both are valid.
If authentication is successful print "yes"
Else print "No"
(Please print output same as defined in output format)

Output : python 8.py

Welcome to IIIT authentication system
Choose:
1-Register New User
2-Log In
Any other - Exit program

1
alia,20160047,alia@students.iiit.ac.in,**alia**

Success

2
20160047,**alia**

Yes

2
alia@students.iiit.ac.in,**alia**

Yes

2
ajay,ajay1234

No

1
neha,ababab,neha@gmail.com,neha

Registration Failed

4

OK Bye