Term Project

Algorithm Design

Noorul Zumana Shajahan 5916887

1330. Intervals

Time limit: 0.5 second

Memory limit: 64 MB

Difficulty Level: 101

Problem

After the Vybegallo's "ideal consumer" incident in the Scientific Research Institute for Thaumaturgy and Spellcraft, an automatic security system is being put into operation urgently. It is to guarantee that in any case the total hyperfield intensity won't exceed a critical value. They pin hopes on Sasha Privalov and his Aldan machine to automagically process readings of sensors that are located all over the Institute.

All the sensors are numbered with integers ranging from 1 to N ($1 \le N \le 10000$). The reading of ith hyperfield intensity sensor is integer k_i ($-10000 \le k_i \le 10000$). Aldan is to process quickly queries like "What is the sum of intensities read from the sensors with numbers from i to j ($i \le j$)? The number of queries Q is expected to be rather large ($0 \le Q \le 100000$).

Input

The first input line contains integer N. The following N lines contain k_i numbers (one at a line). Then there are the integer Q and Q pairs of numbers i, j (each pair is in a separate line).

Output

Should contain Q lines with the sums of the corresponding intensity sensors readings.

Problem Solution

```
#  Noorul Zumana Shajahan 5916887
import sys
N = int(sys.stdin.readline())
s = [0] * 20000
s[0] = 0

for i in range(1,N+1):
    a = int(sys.stdin.readline())
    s[i] = s[i-1] + a

Q = int(sys.stdin.readline())

for j in range(0,Q):
    l,x = sys.stdin.readline().split()
    l = int(l)
    x = int(x)
    print(s[x] - s[l-1])

```

Problem Analysis

```
1   #  Noorul Zumana Shajahan 5916887
2   import sys
3   N = int(sys.stdin.readline())
4   s = [0] * 20000
5   s[0] = 0
6
7   for i in range(1,N+1):
8       a = int(sys.stdin.readline())
9       s[i] = s[i-1] + a
10
11  Q = int(sys.stdin.readline())
12
13  for j in range(0,Q):
14      l,x = sys.stdin.readline().split()
15      l = int(l)
16      x = int(x)
17      print(s[x] - s[l-1])
18
```

For this problem I used simple loop to compute the answer. First the input was taken (line 3). From line 7-9, it takes the input value for the sensors and store it in array s. Line 11 takes another input Q which indicates how many pairs of intensity will be taken. Line 12-17 takes the pair of intensity, split it, convert it to integer and then computes the sum of corresponding intensities

Test Case

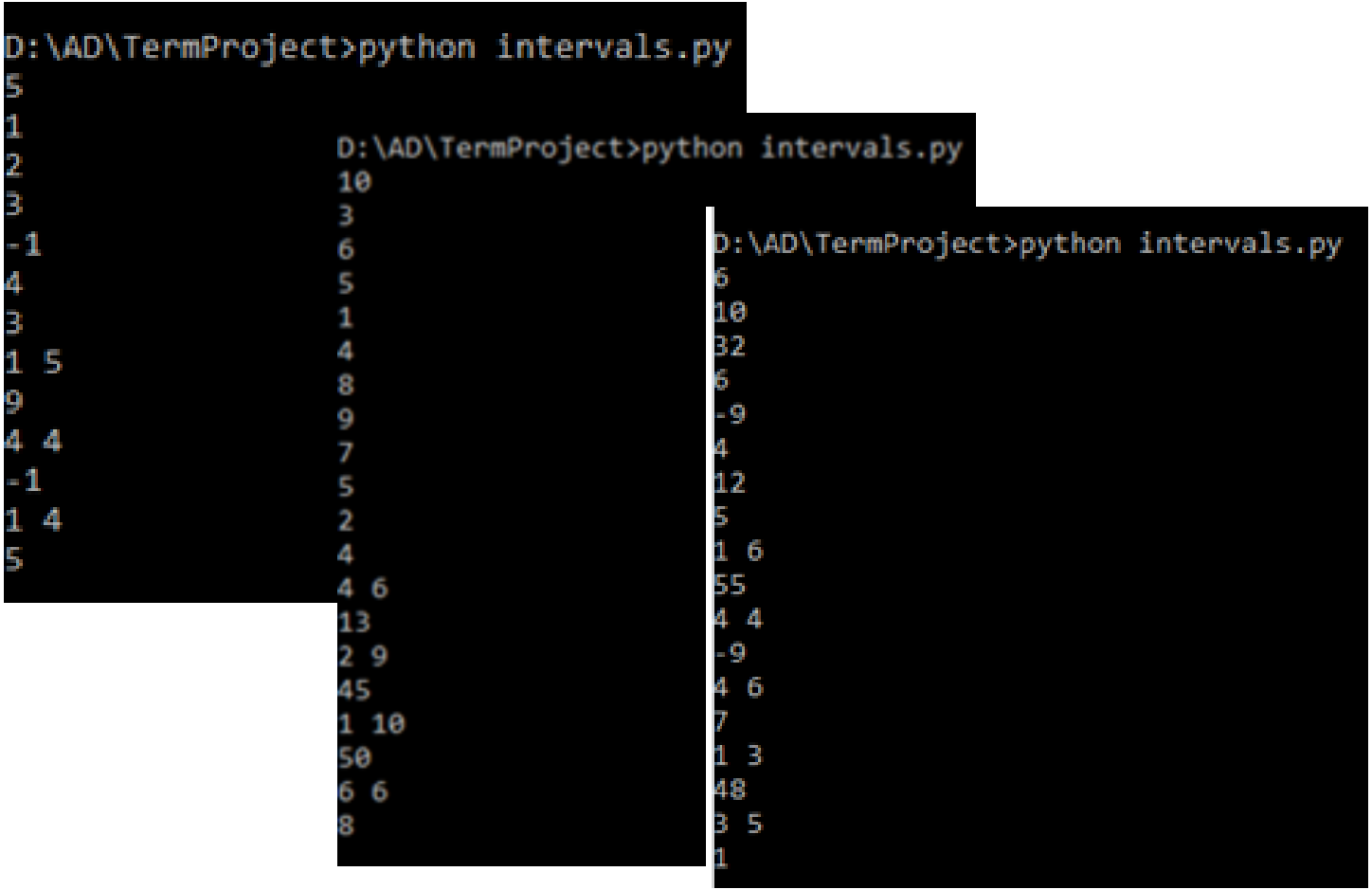
input	output
5 1 2 3 -1 4 3 1 5 4 4 1 4	9 -1 5

Test Case

input	output
10 3 6 5 1 4 8 9 7 5 2 4 4 6 2 9 1 10 6 6	13 45 51 8

Test Case

input	output
6 10 32 6 -9 4 12 5 1 6 4 4 4 6 1 3 3 5	55 -9 7 48 1


D:\AD\TermProject>python intervals.py
5
1
2
3
-1
4
3
1 5
9
4 4
-1
1 4
5
D:\AD\TermProject>python intervals.py
10
3
6
5
1
4
8
9
7
5
2
4
4 6
13
2 9
45
1 10
50
6 6
8
D:\AD\TermProject>python intervals.py
6
10
32
6
-9
4
12
5
1 6
55
4 4
-9
4 6
7
1 3
48
3 5
1

Submission Result

8648543	17:40:11 21 Nov 2019	Zumana	1330. Intervals	Python 2.7	Accepted		0.421	2 088 KB

Reference

https://acm.timus.ru/forum/?space=1&num=1330