The Mean Node

Problem Code: **MEANND**

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You are provided a doubly circular linked list of n numbers, where the elements of list are all indexed according to their order of insertion, with the indexing starting from 1 at the head node. Given two integers i and k, locate the following three nodes: i) the node N_i which is located at index i, ii) the node N_{i-k} which precedes N_i by k links in the backward direction, and iii) the node N_{i+k} which succeeds N_i by k links in the forward direction. For any $1 \leq j \leq n$, let V_j denote the value contained in the node N_j. You need to insert a new node at the $(i+1)$-th position which contains the average of the values V_i, V_{i-k} and V_{i+k}.

For example, consider the circular list of numbers 4 7 10 8 5, and the inputs $i = 2$ and $k = 1$. In this case, we have $V_i = V_2 = 7$, $V_{i-k} = V_1 = 4$ and $V_{i+k} = V_3 = 10$. So, we insert a new node having value $\frac{7+4+10}{3} = 7.00$ immediately after the node N_i. Thus, the resultant list will be as follows: 4 7 7 10 8 5

NOTE: The numbers in the list may not only be integers!

Input:

- The first line of input contains a single integer N denoting the number of elements in the list.
- Second line contains N space separated numbers in the order, index starting with 1.
- Third line consists of a single integer Q, denoting the number of operations to be performed.
- Each of the subsequent Q lines contains 2 integers i and k where i is the index of the node in the list and k is the position of node relative to the ith node in both directions as explained above.

Output:

Print final list of numbers correct upto 2 decimal places after the q operations have been performed, starting from index 1 which is assumed to be pointed by the head pointer

Constraints

- $1 \leq N \leq 100$
- $1 \leq Q \leq 50$

Sample Input:

```
5
4 7 10 8 5
1
2 1
```

Sample Output:

```
4.00 7.00 7.00 10.00 8.00 5.00
```

NOTE: Print the final list correct up to 2 decimal places as shown.

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Source Limit:	50000 Bytes
Languages:	C, CPP14, JAVA, PYTH, PYTH 3.6

Comments