

Problem 4: Jill Rides Again

(Hard-Advanced)

(Adapted from UVa 00507)

Jill likes to ride her bicycle, but since the pretty city of Greenhills where she lives has grown, Jill often uses the excellent public bus system for part of her journey. She has a folding bicycle which she carries with her when she uses the bus for the first part of her trip. When the bus reaches some pleasant part of the city, Jill gets off and rides her bicycle. She follows the bus route until she arrives at her destination or comes to a part of the city she does not like. She will board the bus to finish her trip in the latter event.

Through years of experience, Jill has rated each road on an integer scale of "niceness". Positive niceness values indicate roads Jill likes; negative values are used for roads she does not like. There are no zero values. Jill plans where to leave the bus and start bicycling and where to stop bicycling and re-join the bus so that the **sum of niceness values of the roads she bicycles on is maximised**. This means that she will sometimes cycle along a road she does not like, provided that it joins up two other parts of her journey involving roads she likes enough to compensate. It may be that no part of the route is suitable for cycling, so Jill takes the bus for its entire route. Conversely, it may be that the whole route is so nice that Jill will not use the bus at all.

Jill feels that a computer program could help her identify the best part to cycle for a bus route. She has thus asked you to help her with this problem.

Input Format

The input begins with the number of stops on the route: an integer s on a line by itself. This is followed by $s - 1$ lines, each line i contains an integer n_i representing Jill's assessment of the niceness of the road between the two stops i and $i + 1$.

Constraints

- $2 \leq s \leq 20000$
- $1 \leq i \leq s$
- Each "niceness" score is an integer between -10^4 and 10^4 inclusive

The time limit for this problem is 1 second.

Output Format

Your program should identify the beginning bus stop i and the ending bus stop j that results in that segment of the route yielding the maximal sum of niceness, $m = n_i + n_{i+1} + \dots + n_{j-1}$. If more than one segment is maximally nice, choose the

one with the longest cycle ride (largest $j - i$). To break ties in the case of longest maximal segments, choose the segment that begins with the earliest stop (lowest i).

Your program should output a single line in the form:

The nicest part of the route is between stops i and j

However, if the maximal sum is not positive, your program should instead print:

The route has no nice parts

Sample Input 1

```
3
-1
6
```

Sample Output 1

The nicest part of the route is between stops 2 and 3

Sample Input 2

```
10
4
-5
4
-3
4
4
-4
4
-5
```

Sample Output 2

The nicest part of the route is between stops 3 and 9

Sample Input 3

```
4
-2
-3
-4
```

Sample Output 3

The route has no nice parts

Sample Input 4

4
1
2
3

Sample Output 4

The nicest part of the route is between stops 1 and 4

Hint

Znkvzhz Fhoneenl Ceboy rz.