Tom and Harry are two friends who are currently studying programming and data structures. Recently, they have covered the topic hashing and hash tables.

One fine day Tom came up with an interesting problem. The problem statement is as given below:
"Given a target value T and an array of integers V (the sequence of integers in the array V is such that it represents the values in the nodes of a binary tree as per the level order traversal), find all the pairs of indices of nodes such that the sum of their values will be T"

After hearing the problem statement Harry had some queries regarding the same. The conversation between them is given below:

Harry : Will the tree, that is being represented using V, be always a complete binary tree?

Tom : No, the tree need not be a complete binary tree.

**Harry** : So, how will the absence of a node get represented?

Tom : The value 10^9 is used to represent the absence of a node.

Harry : Alright! But what do you mean by indices of nodes? How is the indexing being done?

Tom : Indexing of nodes is done as per the pre-order traversal. The root will have index 0, the left child of the root (if it exists) will have index 1 and so on.

Harry : Can you explain the problem using an example?

Tom : Sure. Consider the tree given below. Here, V will be [15, 18, 10^9, 20, 10, 10, 10^9, 7] and let T be 25.
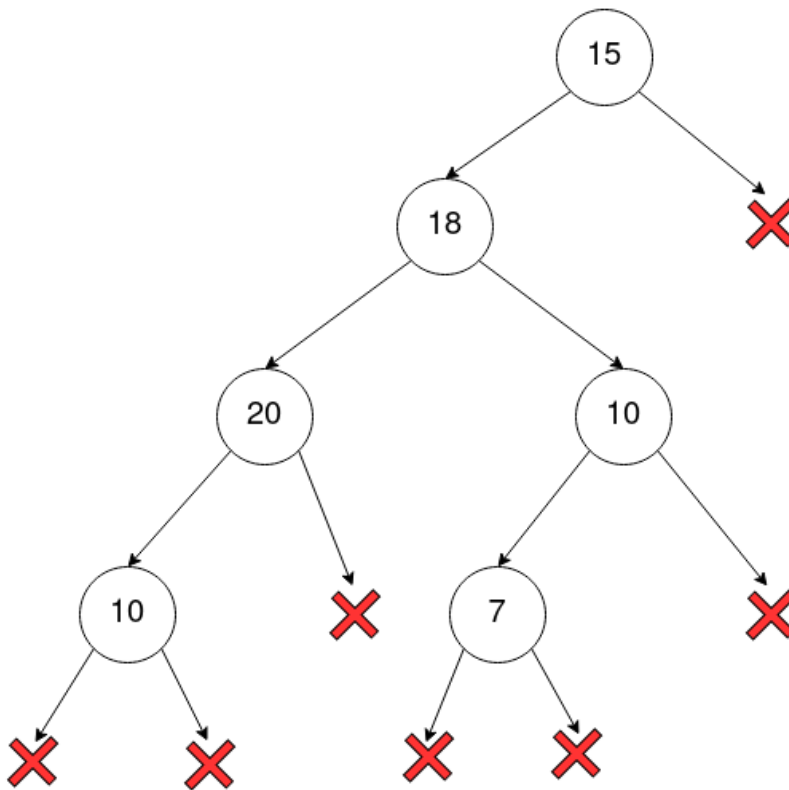
Tom : The pre-order traversal of the tree will result in: 15, 18, 20, 10, 10, 7
The indexing can be done as per the pre-order traversal. i.e,

0 -- 15

1 -- 18

2 -- 20

3 -- 10

4 -- 10

5 -- 7

Since the target value T is 25, following set of pairs will be the answer :

(0, 3)

(0, 4)

(1, 5)

Now, the problem statement is clear for Harry but he is finding it difficult to come up with an efficient solution. You, being a student of "CS2700: PDS" help Harry by writing an efficient solution for the above problem.

Additional info about the problem

Such a problem is useful to find feasibility pairs in real-world settings wherein an action requires multiple (in this case two) facilities. For instance, to build a plant, one may need a water resource as well as empty land of a certain area. Government or the private firm can perform a feasibility study of such a setup over a wide area, and come up with possible options. These options can then be fed through approval committees which can look at the socio-economic effects of each option and finalize.

Why would such options require a tree? Often, this is an implication of distance from a designated place which should be minimized (such as cargo airport or train station) or maximized (such as human settlement in case of a nuclear plant). One can also view the tree as a game-tree wherein partners cannot communicate (due to government restrictions for example) but need to find winning strategies. Such a pairing would help identify probabilities of winning.

Input Format

First line contains the target value **T**
Second line contains space separated set of integers **V**

Constraints

$-2 \times 10^6 \leq T \leq 2 \times 10^6$
$3 \leq |V| \leq 10^6$
$-10^6 \leq V_i \leq 10^6$

Output Format

Print each pair of indices on a new line. (A pair must be separated by a space)
If no such pair is present then print: -1 -1

Note: Let x_i y_i be the output (indices) on i^{th} line. Then the output must follow the below mentioned conditions:
$x_i < y_i$
$x_i \leq x_{i+1}$
If $x_i = x_{i+1}$ then $y_i < y_{i+1}$

Sample Input 0

```
25
15 18 1000000000 20 10 10 1000000000 7
```

Sample Output 0

```
0 3
0 4
1 5
```

Explanation 0

Given in the problem statement.

Sample Input 1

```
44
15 18 1000000000 20 10 10 1000000000 7
```

Sample Output 1

```
-1 -1
```

Explanation 1

V represents the same tree that is given in the problem statement but there is no pair of nodes whose sum of values is 44. So the output is: -1 -1
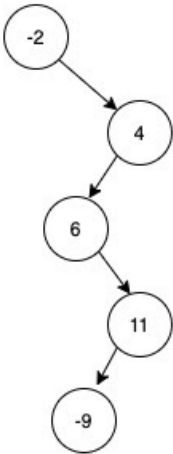
Sample Input 2

```
-10
-2 1000000000 4 6 1000000000 1000000000 11 -9
```

Sample Output 2

```
-1 -1
```

Explanation 2

V represents the tree that is given below:

There is no pair of nodes whose sum of values is -10. So the output is: -1 -1

Sample Input 3

```
-18
-200 -300 55 -421 -25 1000000000 -100 1000000000 1000000000 -100 -15 -8 1000000000 16 -10 20 1000000000 7 -67
22 28 1000000000 1000000000 1000000000 -1 -6 1000000000 1000000000 -6 82 -12 30 -100 82 -48 734 -73 -1 -3 49
-17 1000000000 1000000000 500 173 1000000000 1000000000 58 96 1000000000 1000000000 1000000000 1000000000
-203 -254 1000000000 1000000000 1 -1
```

Sample Output 3

```
3 27
4 7
4 20
7 15
7 25
8 33
9 19
9 35
9 38
10 28
10 34
12 23
15 20
16 26
17 36
20 25
24 30
```

Explanation 3