

5915. Find the Minimum and Maximum Number of Nodes Between Critical Points

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A **critical point** in a linked list is defined as **either** a **local maxima** or a **local minima**.

A node is a **local maxima** if the current node has a value **strictly greater** than the previous node and the next node.

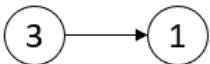
A node is a **local minima** if the current node has a value **strictly smaller** than the previous node and the next node.

Note that a node can only be a local maxima/minima if there exists **both** a previous node and a next node.

Given a linked list `head`, return an array of length 2 containing `[minDistance, maxDistance]` where `minDistance` is the **minimum distance** between **any two distinct** critical points and `maxDistance` is the **maximum distance** between **any two distinct** critical points. If there are **fewer** than two critical points, return `[-1, -1]`.

User Accepted:	0
User Tried:	0
Total Accepted:	0
Total Submissions:	0
Difficulty:	Medium

Example 1:



Input: `head = [3,1]`

Output: `[-1,-1]`

Explanation: There are no critical points in `[3,1]`.

Example 2:



Input: `head = [5,3,1,2,5,1,2]`

Output: `[1,3]`

Explanation: There are three critical points:

- `[5,3,1,2,5,1,2]`: The third node is a local minima because 1 is less than 3 and 2.
- `[5,3,1,2,5,1,2]`: The fifth node is a local maxima because 5 is greater than 2 and 1.
- `[5,3,1,2,5,1,2]`: The sixth node is a local minima because 1 is less than 5 and 2.

The minimum distance is between the fifth and the sixth node. `minDistance = 6 - 5 = 1`.

The maximum distance is between the third and the sixth node. `maxDistance = 6 - 3 = 3`.

Example 3:



Input: `head = [1,3,2,2,3,2,2,2,7]`

Output: `[3,3]`

Explanation: There are two critical points:

- `[1,3,2,2,3,2,2,2,7]`: The second node is a local maxima because 3 is greater than 1 and 2.
- `[1,3,2,2,3,2,2,2,7]`: The fifth node is a local maxima because 3 is greater than 2 and 2.

Both the minimum and maximum distances are between the second and the fifth node.

Thus, `minDistance` and `maxDistance` is `5 - 2 = 3`.

Note that the last node is not considered a local maxima because it does not have a next node.

Example 4:



Input: `head = [2,3,3,2]`

Output: `[-1,-1]`

Explanation: There are no critical points in `[2,3,3,2]`.

Constraints:

- The number of nodes in the list is in the range $[2, 10^5]$.
- $1 \leq \text{Node.val} \leq 10^5$

JavaScript



```

1 const getAllData = (list) => {
2   let res = [];
3   let current = list;
4   while (current) {
5     res.push(current.val);
6     current = current.next;
7   }
8   return res;
9 };
10
11 const createL = (arr) => {
12   let tmp, node = null;
13   let n = arr.length;
14   for (let i = n - 1; ~i; i--) {
15     if (!node) {
16       node = new ListNode(arr[i]);
17     } else {
18       tmp = new ListNode(arr[i]);
19       tmp.next = node;
20       node = tmp;
21     }
22   }
23   return node;
24 };
25
26 const stin = (a) => a.sort((x, y) => x - y);
27
28 const nodesBetweenCriticalPoints = (head) => {
29   let a = getAllData(head), n = a.length;
30   // let minima = [], maxima = [];
31   let critical = [];
32   for (let i = 1; i + 1 < n; i++) {
33     if (a[i] < a[i - 1] && a[i] < a[i + 1]) critical.push(i + 1);
34     if (a[i] > a[i - 1] && a[i] > a[i + 1]) critical.push(i + 1);
35   }
36   let res = [-1, -1];
37   stin(critical);
38   let cn = critical.length;
39   if (cn < 2) return res;
40   res[1] = critical[cn - 1] - critical[0];
41   let min = Number.MAX_SAFE_INTEGER;
42   for (let i = 1; i < cn; i++) {
43     min = Math.min(min, critical[i] - critical[i - 1]);
44   }
45   res[0] = min;
46   // pr(res);
47   return res;
48 };

```

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