

## Maximum Twin Sum of a Linked List

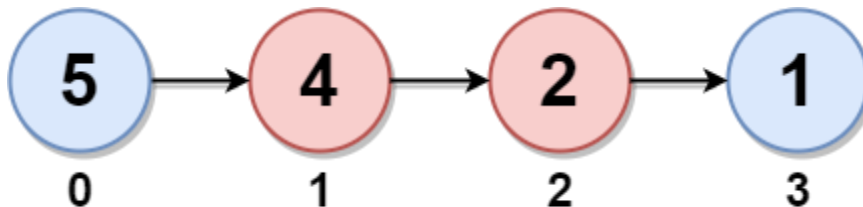
In a linked list of size  $n$ , where  $n$  is **even**, the  $i^{\text{th}}$  node (**0-indexed**) of the linked list is known as the **twin** of the  $(n-1-i)^{\text{th}}$  node, if  $0 \leq i \leq (n/2) - 1$ .

- For example, if  $n = 4$ , then node 0 is the twin of node 3, and node 1 is the twin of node 2. These are the only nodes with twins for  $n = 4$ .

The **twin sum** is defined as the sum of a node and its twin.

Given the head of a linked list with even length, return *the maximum twin sum of the linked list*.

**Example 1:**



**Input:** head = [5,4,2,1]

**Output:** 6

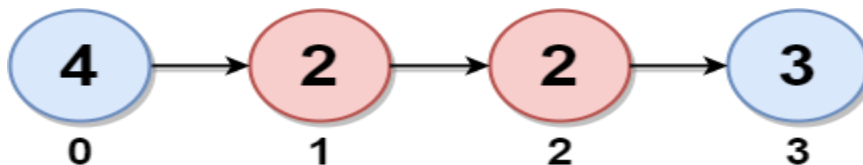
**Explanation:**

Nodes 0 and 1 are the twins of nodes 3 and 2, respectively. All have twin sum = 6.

There are no other nodes with twins in the linked list.

Thus, the maximum twin sum of the linked list is 6.

**Example 2:**



**Input:** head = [4,2,2,3]

**Output:** 7

**Explanation:**

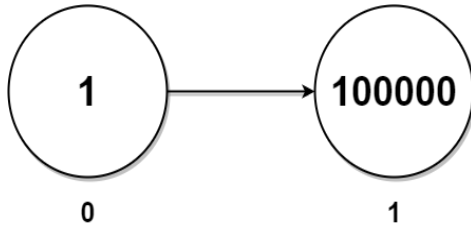
The nodes with twins present in this linked list are:

- Node 0 is the twin of node 3 having a twin sum of  $4 + 3 = 7$ .

- Node 1 is the twin of node 2 having a twin sum of  $2 + 2 = 4$ .

Thus, the maximum twin sum of the linked list is  $\max(7, 4) = 7$ .

**Example 3:**



**Input:** head = [1,100000]

**Output:** 100001

**Explanation:**

There is only one node with a twin in the linked list having twin sum of  $1 + 100000 = 100001$ .

**Constraints:**

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