876. Middle of the Linked List:

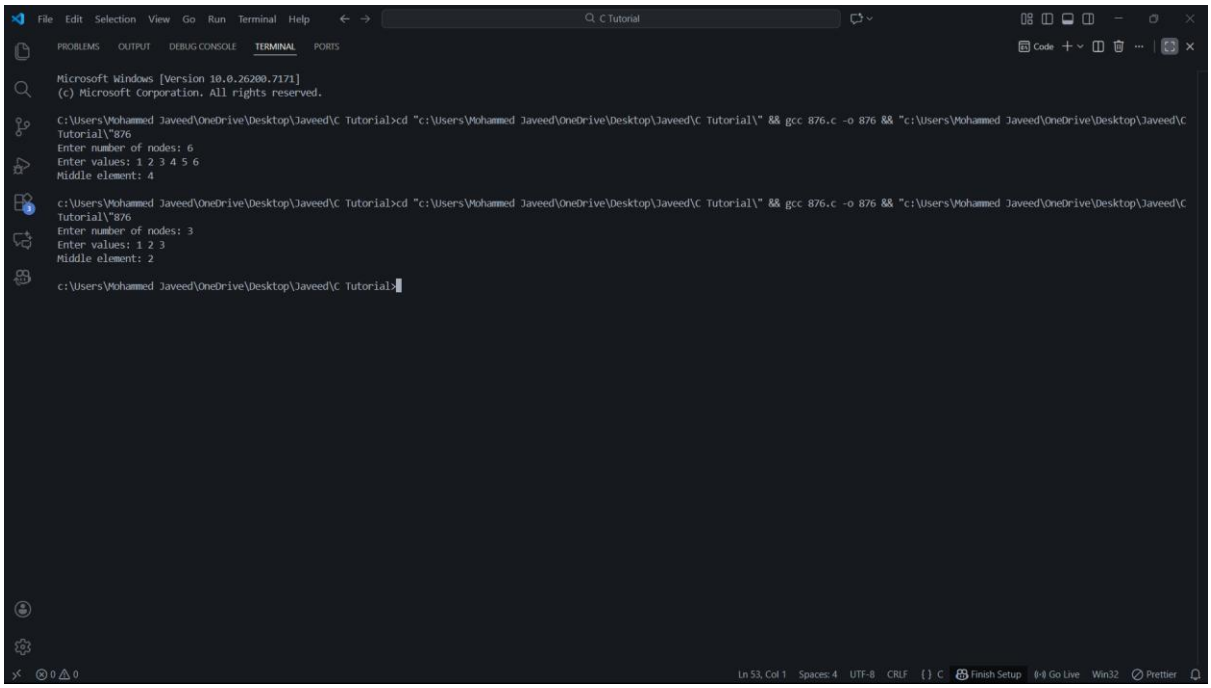
Given the head of a singly linked list, return *the middle node of the linked list*. if there are two middle nodes, return the second middle node.

Solution:

```
#include <stdio.h>
#include <stdlib.h>
struct ListNode
{
   int val;
   struct ListNode *next;
};

struct ListNode* middleNode(struct ListNode* head)
 {
   struct ListNode *tort = head, *hare = head;
   while (hare != NULL && hare->next != NULL)
  {
      tort = tort->next;
      hare = hare->next->next;
   }
   return tort;
}

struct ListNode* insertAtEnd(struct ListNode* head, int val)
{
   struct ListNode* newNode = (struct ListNode*)malloc(sizeof(struct ListNode));
   newNode->val = val;
   newNode->next = NULL;
   if (head == NULL)
      return newNode;
   struct ListNode* temp = head;
   while (temp->next != NULL)
      temp = temp->next;
```

```
    temp->next = newNode;
    return head;
}
int main()
 {
    struct ListNode* head = NULL;
    int n, x;

    printf("Enter number of nodes: ");
    scanf("%d", &n);
    printf("Enter values: ");
    for (int i = 0; i < n; i++)
   {
        scanf("%d", &x);
        head = insertAtEnd(head, x);
    }
    struct ListNode* mid = middleNode(head);
    printf("Middle element: %d\n", mid->val);
    return 0;
}
```

OUTPUT:


File Edit Selection View Go Run Terminal Help
C Tutorial
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Code
Microsoft Windows [Version 10.0.26200.7171]
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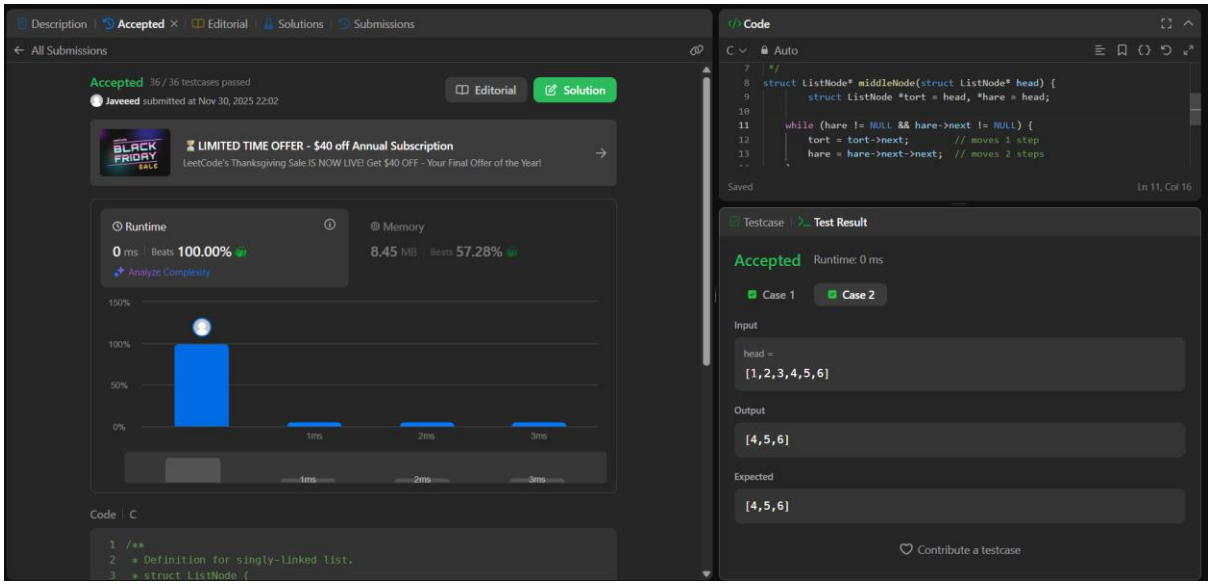
C:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial>cd "c:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial\" && gcc 876.c -o 876 && "c:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial\"876
Enter number of nodes: 6
Enter values: 1 2 3 4 5 6
Middle element: 4
c:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial>cd "c:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial\" && gcc 876.c -o 876 && "c:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial\"876
Enter number of nodes: 3
Enter values: 1 2 3
Middle element: 2
c:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial>
Ln 53, Col 1 Spaces: 4 UTF-8 CRLF C Finish Setup Go Live Win32 Prettier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All Submissions
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Runtime
0 ms Beats 100.00%
Analyze Complexity
Memory
8.45 MB Beats 57.28%
Code C
1 /**
2 * Definition for singly-linked list.
3 * struct ListNode {
Code
C Auto
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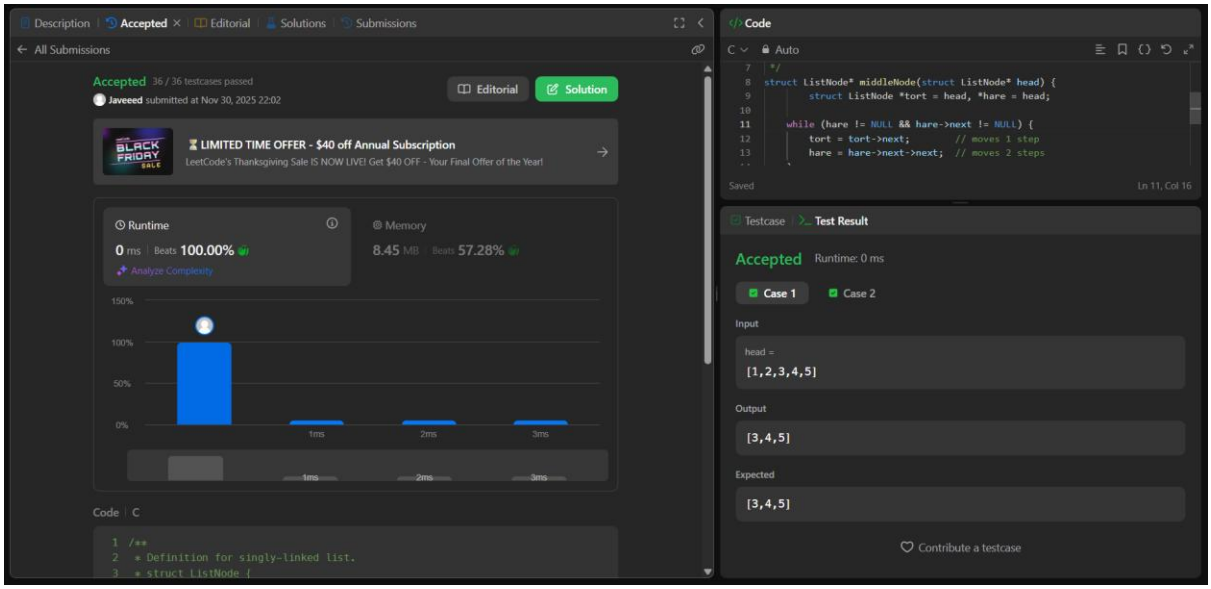
struct ListNode *tort = head, *hare = head;
while (hare != NULL && hare->next != NULL) {
tort = tort->next; // moves 1 step
hare = hare->next->next; // moves 2 steps
Saved
Ln 11, Col 16
Testcase Test Result
Accepted Runtime: 0 ms
Case 1 Case 2
Input
head =
[1,2,3,4,5,6]
Output
[4,5,6]
Expected
[4,5,6]
Contribute a testcase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