

Task 2

Linked List Middle Element Search

You are given a singly linked list. Write a function to find the middle element without using any extra space and only one traversal through the linked list.

ANS:

```
package Assignmentday12.com;
class ListNode {
    int val;
    ListNode next;
    ListNode(int x) { val = x; }
}
public class Task2 {
    public static int findMiddleElement(ListNode head) {
        ListNode slow = head;
        ListNode fast = head;
        while (fast != null && fast.next != null) {
            slow = slow.next;
            fast = fast.next.next;
        }
        return slow.val;
    }
    public static void main(String[] args) {
        // Example linked list: 1 -> 2 -> 3 -> 4 -> 5 -> null
        ListNode head = new ListNode(1);
        head.next = new ListNode(2);
        head.next.next = new ListNode(3);
        head.next.next.next = new ListNode(4);
        head.next.next.next.next = new ListNode(5);
        int middleElement = findMiddleElement(head);
        System.out.println("Middle element: " + middleElement);
    }
}
```

OUTPUT

Middle element: 3