143. Reorder List

题目描述：https://leetcode.com/problems/reorder-list/

> 给定一个数组:L1 --> L2 --> L3 --> L4 --> L5 --> NULL
> 要求将它的顺序变成:L1 --> L5 --> L2 --> L4 --> L3 --> NULL

解题思路：

找到前半段和后半段。将后半段逆序，然后挨个插入前半段。

代码：

```
/**
 * Definition for singly-linked list.
 * struct ListNode {
 *     int val;
 *     ListNode *next;
 *     ListNode(int x) : val(x), next(NULL) {}
 * };
 */
class Solution {
public:
    ListNode * reverseList(ListNode* head){
        ListNode* fakeHead = NULL;
        ListNode * pre = fakeHead;
        ListNode * now = head;
        while(now){
            ListNode *tmp = now->next;
            now->next = pre;
            pre = now;
            now = tmp;
        }
        return pre;
    }
    void reorderList(ListNode* head) {
        if(head == NULL || head->next == NULL){
            return ;
        }
        ListNode* s = head;
        ListNode* f = head->next;
        while(f && f->next){
            s = s->next;
            f = f->next->next;
        }
        ListNode *h = s->next;
        s->next = NULL;
        ListNode *p = head;
        ListNode *l = reverseList(h);
        while(p && l){
            ListNode *t1 = p->next;
            ListNode *t2 = l->next;
            p->next = l;
            l->next = t1;
            p = t1;
            l = t2;
        }
        return ;
    }
};
```