

```
1  #include<stdio.h>
2  #include<stdlib.h>
3
4  struct Node{
5      int data;
6      struct Node* next;
7  };
8
9  struct Node* createNode(int data){
10     struct Node *newNode = (struct Node*)malloc(sizeof(struct Node));
11     newNode->data = data;
12     newNode->next = NULL;
13     return newNode;
14 }
15 struct Node* createList(){
16     struct Node *head = NULL, *temp, *newNode;
17     int n, data;
18     printf("Enter number of nodes: ");
19     scanf("%d", &n);
20     for(int i = 0; i < n; i++){
21         printf("Enter data: ");
22         scanf("%d", &data);
23         newNode = createNode(data);
24         if(head == NULL) head = newNode;
25         else {
26             temp = head;
27             while(temp->next != NULL)
28                 temp = temp->next;
29             temp->next = newNode;
30         }
31     }
32     return head;
33 }
34 void display(struct Node *head){
35     while(head != NULL){
36         printf("%d->", head->data);
37         head = head->next;
38     }
39     printf("NULL\n");
40 }
41 void sort(struct Node* head){
42     struct Node *i, *j;
43     int temp;
44     for(i = head; i != NULL; i = i->next){
45         for(j = i->next; j != NULL; j = j->next){
46             if(i->data > j->data){
47                 temp = i->data;
48                 i->data = j->data;
```

```

40 i->data = j->data;
41 j->data = temp;
42 }
43 }
44 }
45 }
46 }
47 }
48 }
49 }
50 }
51 struct Node *reverse(struct Node* head){
52     struct Node *prev = NULL, *curr = head,
53     *next = NULL;
54     while(curr != NULL){
55         next = curr->next;
56         curr->next = prev;
57         prev = curr;
58         curr = next;
59     }
60     return prev;
61 }
62 struct Node *concatenate(struct Node *head1, struct Node *head2){
63     if(head1 == NULL) return head2;
64     if(head2 == NULL) return head1;
65     struct Node *temp = head1;
66     while(temp->next != NULL)
67         temp = temp->next;
68     temp->next = head2;
69     return head1;
70 }
71 int main(){
72     struct Node *list1 = NULL, *list2 = NULL;
73     printf("Create List 1: \n");
74     list1 = createList();
75
76     printf("\nCreate List 2: \n");
77     list2 = createList();
78
79     printf("\nList 1: ");
80     display(list1);
81
82     printf("List 2: ");
83     display(list2);
84
85     sort(list1);
86     printf("\nList 1 After sorting: ");
87     display(list1);
88
89     list1 = reverse(list1);
90     printf("List1, After Reversing: ");
91     display(list1);
92
93     list1 = concatenate(list1, list2);
94     printf("After concatenation (list1 + list2): ");
95     display(list1);
96     return 0;
97 }

```

```
PS C:\Users\gsm22\OneDrive\Documents\DS> cd "c:\Users\gsm22\OneDrive\Documents\DS\"
```

Create List 1:

Enter number of nodes: 4

Enter data: 12

Enter data: 23

Enter data: 32

Enter data: 43

Create List 2:

Enter number of nodes: 3

Enter data: 3

Enter data: 52

Enter data: 63

List 1: 12->23->32->43->NULL

List 2: 3->52->63->NULL

List 1 After sorting: 12->23->32->43->NULL

List1, After Reversing: 43->32->23->12->NULL

After concatenation (list1 + list2): 43->32->23->12->3->52->63->NULL

```
PS C:\Users\gsm22\OneDrive\Documents\DS> █
```