

Start here X Lab1stack.c X Lab3aLinearqueue.c X Lab3bCircularqueue.c X Lab4SLLc X

```
1 #include<stdio.h>
2 #include<stdlib.h>
3 struct Node
4 {
5     int data;
6     struct Node *next;
7 };
8
9 struct Node *createNode(int data)
10 {
11     struct Node *newNode=(struct Node*)malloc(sizeof(struct Node));
12     if(newNode==NULL)
13     {
14         printf("Memory allocation failed!\n");
15         exit(1);
16     }
17     newNode->data=data;
18     newNode->next=NULL;
19     return newNode;
20 }
21 void insertatBeginning(struct Node **head,int data)
22 {
23     struct Node *newNode=createNode(data);
24     newNode->next=*head;
25     *head=newNode;
26 }
27
28 void insertatEnd(struct Node **head,int data)
29 {
30     struct Node *newNode=createNode(data);
31     if(*head==NULL)
32     {
33         *head=newNode;
34         return ;
35     }
36     struct Node *temp=*head;
37     while(temp->next!=NULL){
38         temp=temp->next;
39     }
40     temp->next=newNode;
41 }
42
43 }
```

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```
43 void insertatPosition(struct Node **head,int data,int position){
44     if(position<1){
45         printf("Invalid position !\n");
46         return ;
47     }
48     if(position==1){
49         insertatBeginning(head,data);
50         return ;
51     }
52     struct Node *newNode=createNode(data);
53     struct Node *temp=*head;
54     for(int i=1;temp!=NULL&&i<position-1;i++)
55         temp=temp->next;
56     if(temp==NULL){
57         printf("Position out of range!\n");
58         free(newNode);
59         return;
60     }
61     newNode->next=temp->next;
62     temp->next=newNode;
63 }
64
65 void displaylist(struct Node *head) {
66     if(head==NULL){
67         printf ("List is empty.\n");
68         return ;
69     }
70     printf("Linked List:");
71     struct Node *temp=head;
72     while(temp!=NULL){
73         printf("%d->",temp->data);
74         temp =temp->next;
75     }
76     printf("NULL\n");
77 }
78
79 int main()
80 {
81     struct Node *head=NULL;
82     int choice,data,position;
83     while(1){
84         printf("\n--Singly Linked list menu--\n");
85 }
```

```
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76     }
77     printf("NULL\n");
78 }
79
80 int main()
81 {
82     struct Node *head=NULL;
83     int choice,data,position;
84     while(1){
85         printf("\n--Singly Linked list menu--\n");
86         printf("1.Insert at Beginning\n");
87         printf("2.Insert at End\n");
88         printf("3.Insert at Position\n");
89         printf("4.Display List\n");
90         printf("5.Exit\n");
91         printf("Enter your choice:");
92         scanf("%d",&choice);
93         switch(choice){
94             case 1:printf("Enter Data:");
95                     scanf("%d",&data);
96                     insertatBeginning(&head,data);
97                     break;
98             case 2:printf("Enter data:");
99                     scanf("%d",&data);
100                    insertatEnd(&head,data);
101                    break;
102             case 3:printf("Enter data:");
103                     scanf("%d",&data);
104                     printf("Enter Position:");
105                     scanf("%d",&position);
106                     insertatPosition(&head,data,position);
107                     break;
108             case 4:displaylist(head);
109                     break;
110             case 5:printf("Exciting ....\n");
111                     exit(0);
112             default:printf("Invalid choice! Try again.\n");
113         }
114     }
115 }
116
117 }
```

```
D:\Coding\CLAB\Lab4SLL.exe + - X
```

```
--Singly Linked list menu--  
1.Insert at Beginning  
2.Insert at End  
3.Insert at Position  
4.Display List  
5.Exit  
Enter your choice:1  
Enter Data:23  
  
--Singly Linked list menu--  
1.Insert at Beginning  
2.Insert at End  
3.Insert at Position  
4.Display List  
5.Exit  
Enter your choice:2  
Enter data:46  
  
--Singly Linked list menu--  
1.Insert at Beginning  
2.Insert at End  
3.Insert at Position  
4.Display List  
5.Exit  
Enter your choice:2  
Enter data:69  
  
--Singly Linked list menu--  
1.Insert at Beginning  
2.Insert at End  
3.Insert at Position  
4.Display List  
5.Exit  
Enter your choice:4  
Linked List:23->46->69->NULL  
  
--Singly Linked list menu--  
1.Insert at Beginning  
2.Insert at End  
3.Insert at Position  
4.Display List  
5.Exit  
Enter your choice:5  
Exciting ....  
  
Process returned 0 (0x0) execution time : 22.860 s
```