

Start here X Lab1stack.c X Lab3aLinearqueue.c X Lab3bCircularqueue.c X Lab4SLLe 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
```

```

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

```

Start here X Lab1stack.c X Lab3aLinearqueue.c X Lab3bCircularqueue.c X Lab4SLL.c X

```
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     return 0;
116 }
117
```

```
D:\Coding\C\LAB\Lab4SLLExi x + v
--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
```