

Single linked list insertion:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  struct node{
4      int data;
5      struct node *next;
6  };
7  struct node *head=NULL;
8  struct node* createnode(int data){
9      struct node* newnode=(struct node*) malloc(sizeof(struct node));
10     newnode->data=data;
11     newnode->next=NULL;
12     return newnode;
13 }
14 void insertatbegining(int data){
15     struct node* newnode=createnode(data);
16     newnode->next=head;
17     head=newnode;
18     printf("inserted %d at the beginning.\n",data);
19 }
20 void insertatend(int data){
21     struct node* newnode=createnode(data);
22     if (head==NULL){
23         head=newnode;
24     }
25     else
26     {
27         struct node* temp=head;
28         while(temp->next!=NULL)
29             temp=temp->next;
30         temp->next=newnode;
31     }
32     printf("inserted %d at the end.\n",data);
```

```

34 void insertatposition(int data,int position){
35     if(position < 1){
36         printf("invalid position!\n");
37         return;
38     }
39     struct node* newnode=createnode(data);
40     if(position==1){
41         newnode->next=head;
42         head=newnode;
43         printf("inserted %d at the end.\n",data,position);
44         return;
45     }
46     struct node* temp=head;
47     for(int i=1;temp!=NULL && i<position-1;i++){
48         temp=temp->next;
49         newnode->next=temp->next;
50         temp->next=newnode;
51         printf("inserted %d at the position.\n",data,position);
52 }void display(){
53     struct node* temp=head;
54     if(temp==NULL){
55         printf("list is empty\n");
56         return;
57     }
58     printf("Linked list:");
59     while(temp!=NULL){
60         printf("%d->",temp->data);
61         temp=temp->next;
62     }
63     printf("NULL\n");
64 }

```

```

65 int main() {
66     int choice, data, position;
67     while (1) {
68         printf("\n--- Linked List Menu ---\n");
69         printf("1. Insert at Beginning\n");
70         printf("2. Insert at End\n");
71         printf("3. Insert at Specific Position\n");
72         printf("4. Display\n");
73         printf("5. Exit\n");
74         printf("Enter your choice: ");
75         scanf("%d", &choice);
76         switch (choice) {
77             case 1:
78                 printf("Enter data: ");
79                 scanf("%d", &data);
80                 insertatbegining(data);
81                 break;
82             case 2:
83                 printf("Enter data: ");
84                 scanf("%d", &data);
85                 insertatend(data);
86                 break;
87             case 3:
88                 printf("Enter data: ");
89                 scanf("%d", &data);
90                 printf("Enter position: ");
91                 scanf("%d", &position);
92                 insertatposition(data, position);
93                 break;
94             case 4:
95                 display();
96                 break;
97             case 5:
98                 printf("Exiting...\n");
99                 exit(0);
100             default:
101                 printf("Invalid choice!\n");
102         }
103     }
104     return 0;
105 }

```

Out put:

```
--- Linked List Menu ---
1. Insert at Beginning
2. Insert at End
3. Insert at Specific Position
4. Display
5. Exit
Enter your choice: 1
Enter data: 12
inserted 12 at the beginning.
```

```
--- Linked List Menu ---
1. Insert at Beginning
2. Insert at End
3. Insert at Specific Position
4. Display
5. Exit
Enter your choice: 2
Enter data: 13
inserted 13 at the end.
```

```
--- Linked List Menu ---
1. Insert at Beginning
2. Insert at End
3. Insert at Specific Position
4. Display
5. Exit
Enter your choice: 3
Enter data: 10
Enter position: 2
inserted 10 at the position.
```

```
--- Linked List Menu ---
1. Insert at Beginning
2. Insert at End
3. Insert at Specific Position
4. Display
5. Exit
Enter your choice: 4
Linked list:12->10->13->NULL
```

```
--- Linked List Menu ---
1. Insert at Beginning
2. Insert at End
3. Insert at Specific Position
4. Display
5. Exit
```