

```
C linkedlist.c X
C linkedlist.c > main()
1 #include<stdio.h>
2 #include<stdlib.h>
3
4 struct Node {
5     int data;
6     struct Node *next;
7 };
8
9 struct Node *head = NULL;
10
11 struct Node* createNode(int data){
12     struct Node* newNode = (struct Node*)malloc(sizeof(struct Node));
13     newNode->data = data;
14     newNode->next = NULL;
15     return newNode;
16 }
17
18 void createlist(int n){
19     int data;
20     struct Node *temp, *newNode;
21     if(n<0){
22         printf("Number of node should be greater than 0.\n");
23         return ;
24     }
25     printf("Enter data for node 1: ");
26     scanf("%d",&data);
27     head = createNode(data);
28     temp = head;
29
30     for(int i=2;i<n;i++){
31         printf("Enter data for node %d: ",i);
32         scanf("%d",&data);
33         newNode = createNode(data);
34         temp->next = newNode;
35         temp = newNode;
36     }
37     printf("Linked list created successfully.\n");
38 }
39
40 void displaylist(){
41     struct Node *temp = head;
42     if(head == NULL){
43         printf("List is empty.\n");
44         return ;
45     }
46     printf("Linked List: ");
47     while(temp != NULL){
48         printf("%d->",temp->data);
49         temp = temp->next;
50     }
51     printf("NULL.\n");
52 }
53
54 void insertatBeginning(int data){
55     struct Node *newNode = createNode(data);
56     newNode->next = head;
57     head = newNode;
58     printf("Node inserted at the beginning.\n");
59 }
60
61 void insertatEnd(int data){
62     struct Node *newNode = CreateNode(data);
63     if(head == NULL){
64         head = newNode;
65         return ;
66     }
67     struct Node *temp = head;
68     while(temp->next != NULL){
69         temp = temp->next;
70     }
71     temp->next = newNode;
72     printf("Node inserted at the end.\n");
73 }
74
75 void insertatPosition(int data,int pos){
76     struct Node *newNode = createNode(data);
77     if(pos == 1){
78         newNode->next = head;
79         head = newNode;
80         printf("Node inserted at position 1.\n");
81         return ;
82     }
83     struct Node *temp = head;
84     for(int i = 1;i < pos-1 & temp != NULL;i++){
85         temp = temp->next;
86     }
87     if(temp == NULL){
88         printf("Position out of the range.\n");
89     }
90 }
```

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```

```
39
40 void insertatPosition(int data,int pos){
41     struct Node *newNode = createNode(data);
42     if(pos == 1){
43         newNode->next = head;
44         head = newNode;
45         printf("Node inserted at position 1.\n");
46         return ;
47     }
48     struct Node *temp = head;
49     for(int i = 1;i < pos-1 & temp != NULL;i++){
50         temp = temp->next;
51     }
52     if(temp == NULL){
53         printf("Position out of the range.\n");
54     }
55     struct Node *temp2 = temp->next;
56     temp->next = newNode;
57     newNode->next = temp2;
58     printf("Node inserted at position %d.\n",pos);
59 }
60
61 void displaylist(){
62     struct Node *temp = head;
63     if(head == NULL){
64         printf("List is empty.\n");
65         return ;
66     }
67     printf("Linked List: ");
68     while(temp != NULL){
69         printf("%d->",temp->data);
70         temp = temp->next;
71     }
72     printf("NULL.\n");
73 }
74
75 void insertatBeginning(int data){
76     struct Node *newNode = createNode(data);
77     if(head == NULL){
78         head = newNode;
79         return ;
80     }
81     struct Node *temp = head;
82     while(temp->next != NULL){
83         temp = temp->next;
84     }
85     temp->next = newNode;
86     printf("Node inserted at the beginning.\n");
87 }
88
89 void insertatEnd(int data){
90     struct Node *newNode = CreateNode(data);
91     if(head == NULL){
92         head = newNode;
93         return ;
94     }
95     struct Node *temp = head;
96     while(temp->next != NULL){
97         temp = temp->next;
98     }
99     temp->next = newNode;
100    printf("Node inserted at the end.\n");
101 }
```

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```
C linkedlist.c > ⚡ main()
73 void insertAtPosition(int data,int pos){
74     struct Node *newNode = createNode(data);
75     if(pos == 1){
76         newNode->next = head;
77         head = newNode;
78         printf("Node inserted at position 1.\n");
79         return ;
80     }
81     struct Node *temp = head;
82     for(int i = 1;i < pos-1 & temp != NULL;i++){
83         temp = temp->next;
84     }
85     if(temp == NULL){
86         printf("Position out of the range.\n");
87         free(newNode);
88     }else{
89         newNode->next = temp->next;
90         temp->next = newNode;
91         printf("Node inserted at position %d.\n", pos);
92     }
93 }
94
95 int main() {
96     int choice, n, data, pos;
97
98     while (1) {
99         printf("\n--- Singly Linked List Menu ---\n");
100        printf("1. Create List\n");
101        printf("2. Display List\n");
102        printf("3. Insert at Beginning\n");
103        printf("4. Insert at End\n");
104        printf("5. Insert at Any Position\n");
105        printf("6. Exit\n");
106        printf("Enter your choice: ");
107        scanf("%d", &choice);
108
109        switch (choice) {
110            case 1:
111                printf("Enter number of nodes: ");
112                scanf("%d", &n);
113                createlist(n);
114                break;
115            case 2:
116                displaylist();
117                break;
118            case 3:
119                printf("Enter data to insert: ");
120                scanf("%d", &data);
121
122            case 4:
123                printf("Enter data to insert: ");
124                scanf("%d", &data);
125                insertAtBeginning(data);
126                break;
127            case 5:
128                printf("Enter data to insert: ");
129                scanf("%d", &data);
130                printf("Enter position to insert: ");
131                scanf("%d", &pos);
132                insertAtPosition(data, pos);
133                break;
134            case 6:
135                printf("Exiting...\n");
136                exit(0);
137            default:
138                printf("Invalid choice! Try again.\n");
139        }
140    }
141
142    return 0;
143 }
```

```
C linkedlist.c > ⚡ main()
118     break;
119     case 3:
120         printf("Enter data to insert: ");
121         scanf("%d", &data);
122         insertAtBeginning(data);
123         break;
124     case 4:
125         printf("Enter data to insert: ");
126         scanf("%d", &data);
127         insertAtEnd(data);
128         break;
129     case 5:
130         printf("Enter data to insert: ");
131         scanf("%d", &data);
132         printf("Enter position to insert: ");
133         scanf("%d", &pos);
134         insertAtPosition(data, pos);
135         break;
136     case 6:
137         printf("Exiting...\n");
138         exit(0);
139     default:
140         printf("Invalid choice! Try again.\n");
141     }
142
143    return 0;
144 }
```

```
PS C:\Users\Admin\Desktop\IBM24CS176> cd "c:\Users\Admin\Desktop\IBM24CS176\" ; if ($?) { gcc linkedlist.c -o linkedlist } ; if ($?) { \linkedlist }

--- Singly Linked List Menu ---
1. Create List
2. Display List
3. Insert at Beginning
4. Insert at End
5. Insert at Any Position
6. Exit
Enter your choice: 1
Enter number of nodes:
5
Enter data for node 1: 12
Enter data for node 2: 23
Enter data for node 3: 56
Enter data for node 4: 45
Enter data for node 5: 38
Linked list created successfully.

--- Singly Linked List Menu ---
1. Create List
2. Display List
3. Insert at Beginning
4. Insert at End
5. Insert at Any Position
6. Exit
Enter your choice: 2
Linked List: 12->23->56->45->38->NULL.

--- Singly Linked List Menu ---
1. Create List
2. Display List
3. Insert at Beginning
4. Insert at End
5. Insert at Any Position
6. Exit
Enter your choice: 3
Enter data to insert: 78
Node inserted at the beginning.

--- Singly Linked List Menu ---
1. Create List
2. Display List
3. Insert at Beginning
4. Insert at End
5. Insert at Any Position
6. Exit
Enter your choice: 2
Linked List: 78->12->23->56->45->38->NULL.

--- Singly Linked List Menu ---
1. Create List
2. Display List
3. Insert at Beginning
4. Insert at End
5. Insert at Any Position
6. Exit
Enter your choice: 4
Enter data to insert: 02
Node inserted at the end.

--- Singly Linked List Menu ---
1. Create List
2. Display List
3. Insert at Beginning
4. Insert at End
5. Insert at Any Position
6. Exit
Enter your choice: 2
Linked List: 78->12->23->56->45->38->02->NULL.

--- Singly Linked List Menu ---
1. Create List
2. Display List
3. Insert at Beginning
4. Insert at End
5. Insert at Any Position
6. Exit
Enter your choice: 5
Enter data to insert: 98
Enter position to insert: 5
Node inserted at position 5.

--- Singly Linked List Menu ---
1. Create List
2. Display List
3. Insert at Beginning
4. Insert at End
5. Insert at Any Position
6. Exit
Enter your choice: 2
Linked List: 78->12->23->56->98->45->38->2->NULL.

--- Singly Linked List Menu ---
1. Create List
2. Display List
3. Insert at Beginning
4. Insert at End
5. Insert at Any Position
6. Exit
Enter your choice: 6
Exiting...

```

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