

```
C:\linkedlist > @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     temp->next = newNode;
71     printf("Node inserted at the end.\n");
72 }
73
74 void insertAtPosition(int data,int pos){
75     struct Node *newNode = createNode(data);
76     if(pos == 1){
77         newNode->next = head;
78         head = newNode;
79         printf("Node inserted at position 1.\n");
80         return ;
81     }
82     struct Node *temp = head;
83     for(int i = 1;i < pos-1 & temp != NULL;i++){
84         temp = temp->next;
85     }
86     if(temp == NULL){
87         printf("Position out of the range.\n");
88     }
89     newNode->next = temp->next;
90     temp->next = newNode;
91     printf("Node inserted at position %d.\n",pos);
92 }
```

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```
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("struct Node *temp\n");
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     temp->next = newNode;
71     printf("Node inserted at the end.\n");
72 }
73
74 void insertAtPosition(int data,int pos){
75     struct Node *newNode = createNode(data);
76     if(pos == 1){
77         newNode->next = head;
78         head = newNode;
79         printf("Node inserted at position 1.\n");
80         return ;
81     }
82     struct Node *temp = head;
83     for(int i = 1;i < pos-1 & temp != NULL;i++){
84         temp = temp->next;
85     }
86     if(temp == NULL){
87         printf("Position out of the range.\n");
88     }
89     newNode->next = temp->next;
90     temp->next = newNode;
91     printf("Node inserted at position %d.\n",pos);
92 }
```

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```
C:\linkedlist> gcc main.c
73
74 void insertAtPosition(int data,int pos){
75     struct Node *newNode = createNode(data);
76     if(pos == 1){
77         newNode->next = head;
78         head = newNode;
79         printf("Node inserted at position 1.\n");
80         return ;
81     }
82     struct Node *temp = head;
83     for(int i = 1; i < pos-1 & temp != NULL; i++){
84         temp = temp->next;
85     }
86     if(temp == NULL){
87         printf("Position out of the range.\n");
88         free(newNode);
89     }else{
90         newNode->next = temp->next;
91         temp->next = newNode;
92         printf("Node inserted at position %d.\n", pos);
93     }
94 }
95
96 int main() {
97     int choice, n, data, pos;
98
99     while (1) {
100         printf("\n--- Singly Linked List Menu ---\n");
101         printf("1. Create List\n");
102         printf("2. Display List\n");
103         printf("3. Insert at Beginning\n");
104         printf("4. Insert at End\n");
105         printf("5. Insert at Any Position\n");
106         printf("6. Exit\n");
107         printf("Enter your choice: ");
108         scanf("%d", &choice);
109
110         switch (choice) {
111             case 1:
112                 printf("Enter number of nodes: ");
113                 scanf("%d", &n);
114                 createlist(n);
115                 break;
116             case 2:
117                 displaylist();
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 int data 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 }
```

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```
C:\linkedlist> gcc main.c
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 int data 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 }
```

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```
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: 82
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->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: 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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```
PS C:\Users\Admin\Desktop\18024CS176> cd "c:\Users\Admin\Desktop\18024CS176" ; 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
Exiting...
```

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