

LAB-4 (Singly Linked List-INSERT)

```
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 void create() {
12     int n, i, val;
13     struct node *temp, *newnode;
14     printf("Enter number of nodes: ");
15     scanf("%d", &n);
16     for (i = 0; i < n; i++) {
17         newnode = (struct node *)malloc(sizeof(struct node));
18         printf("Enter data: ");
19         scanf("%d", &val);
20         newnode->data = val;
21         newnode->next = NULL;
22         if (head == NULL) {
23             head = newnode;
24             temp = head;
25         } else {
26             temp->next = newnode;
27             temp = newnode;
28         }
29     }
30 }
31
32 void insert_first() {
33     int val;
34     struct node *newnode;
35     newnode = (struct node *)malloc(sizeof(struct node));
36     printf("Enter data: ");
37     scanf("%d", &val);
38     newnode->data = val;
39     newnode->next = head;
40     head = newnode;
41 }
42
43 void insert_end() {
44     int val;
45     struct node *newnode, *temp;
46     newnode = (struct node *)malloc(sizeof(struct node));
47     printf("Enter data: ");
48     scanf("%d", &val);
49     newnode->data = val;
50     newnode->next = NULL;
51     if (head == NULL) {
52         head = newnode;
53         return;
54     }
55     temp = head;
56     while (temp->next != NULL)
57         temp = temp->next;
58     temp->next = newnode;
59 }
60
61 void insert_pos() {
62     int pos, val, i;
63     struct node *newnode, *temp;
64     printf("Enter position: ");
65     scanf("%d", &pos);
66     printf("Enter data: ");
67     scanf("%d", &val);
68     if (pos == 1) {
69         insert_first();
70         return;
71     }
72     newnode = (struct node *)malloc(sizeof(struct node));
73     newnode->data = val;
74     temp = head;
75     for (i = 1; i < pos - 1 && temp != NULL; i++)
76         temp = temp->next;
77     if (temp == NULL) {
78         printf("Invalid position\n");
79         free(newnode);
80         return;
```

OUTPUT:

```
C:\Users\Hrishikesh\OneDrive\Desktop\ds_report\lab-4\prg_4.exe
2.Insert at First
3.Insert at Position
4.Insert at End
5.Display
6.Exit
Enter choice: 4
Enter data: 500

1.Create
2.Insert at First
3.Insert at Position
4.Insert at End
5.Display
6.Exit
Enter choice: 5
90 100 200 500

1.Create
2.Insert at First
3.Insert at Position
4.Insert at End
5.Display
6.Exit
Enter choice: 6

Process returned 0 (0x0)  execution time : 24.377 s
Press any key to continue.
```