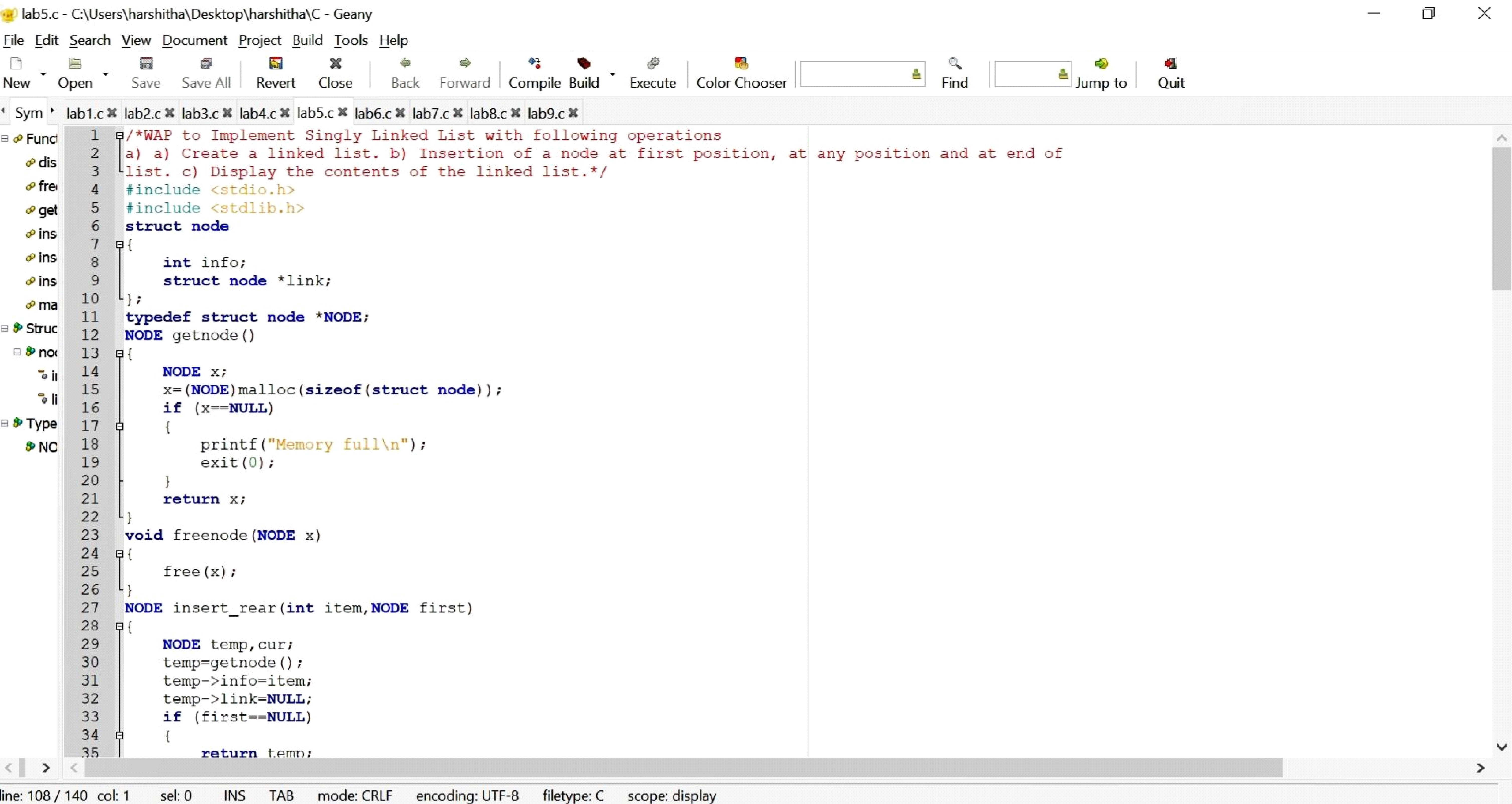

lab5.c - C:\Users\harshitha\Desktop\harshitha\C - Geany
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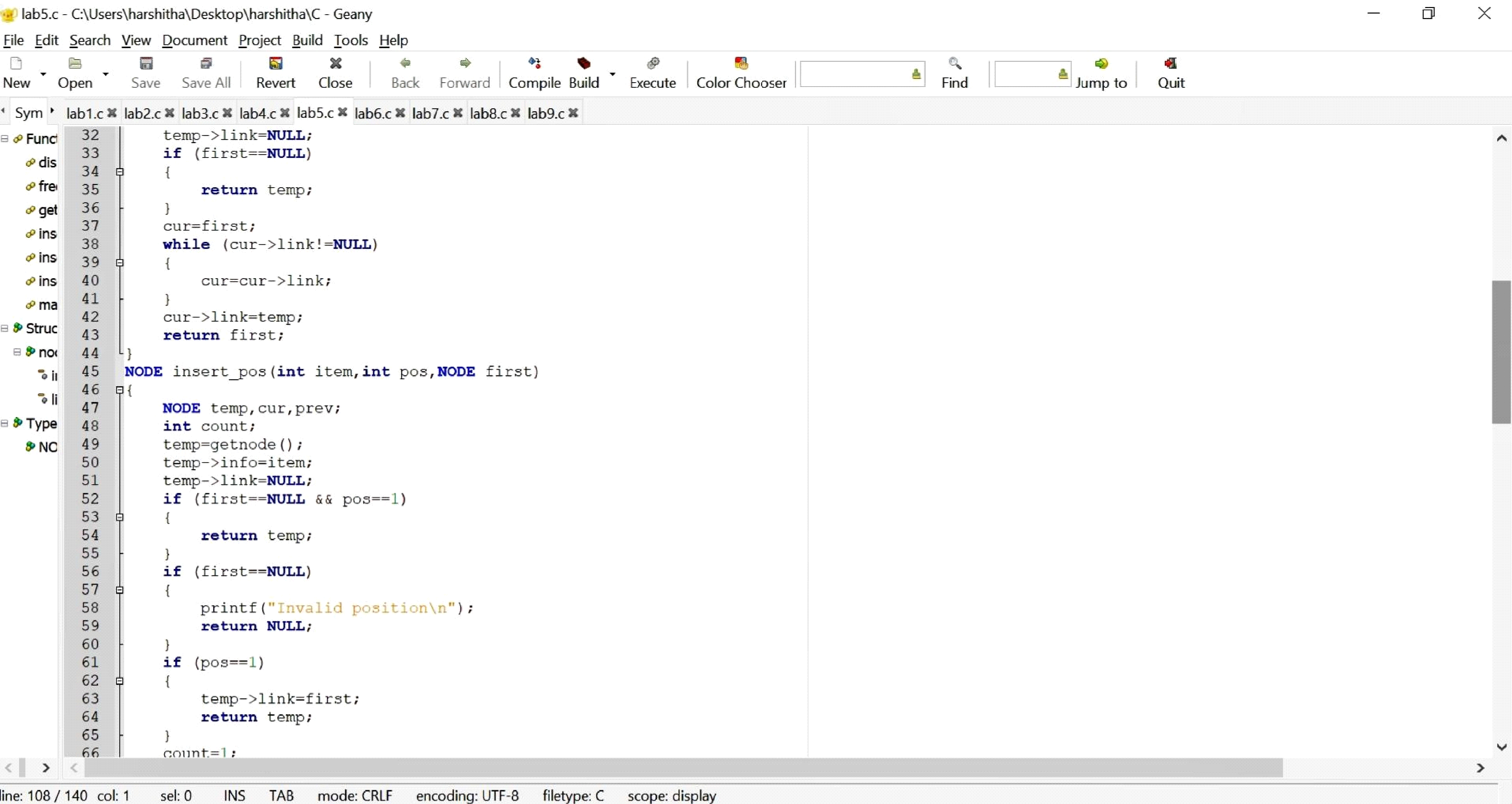
```c
/*WAP to Implement Singly Linked List with following operations
a) a) Create a linked list. b) Insertion of a node at first position, at any position and at end of
list. c) Display the contents of the linked list.*/
#include <stdio.h>
#include <stdlib.h>
struct node
{
    int info;
    struct node *link;
};
typedef struct node *NODE;
NODE getnode()
{
    NODE x;
    x=(NODE)malloc(sizeof(struct node));
    if (x==NULL)
    {
        printf("Memory full\n");
        exit(0);
    }
    return x;
}
void freenode(NODE x)
{
    free(x);
}
NODE insert_rear(int item,NODE first)
{
    NODE temp,cur;
    temp=getnode();
    temp->info=item;
    temp->link=NULL;
    if (first==NULL)
    {
        return temp;
```



```c
    temp->link=NULL;
    if (first==NULL)
    {
        return temp;
    }
    cur=first;
    while (cur->link!=NULL)
    {
        cur=cur->link;
    }
    cur->link=temp;
    return first;
}
NODE insert_pos(int item,int pos,NODE first)
{
    NODE temp,cur,prev;
    int count;
    temp=getnode();
    temp->info=item;
    temp->link=NULL;
    if (first==NULL && pos==1)
    {
        return temp;
    }
    if (first==NULL)
    {
        printf("Invalid position\n");
        return NULL;
    }
    if (pos==1)
    {
        temp->link=first;
        return temp;
    }
    count=1;
```

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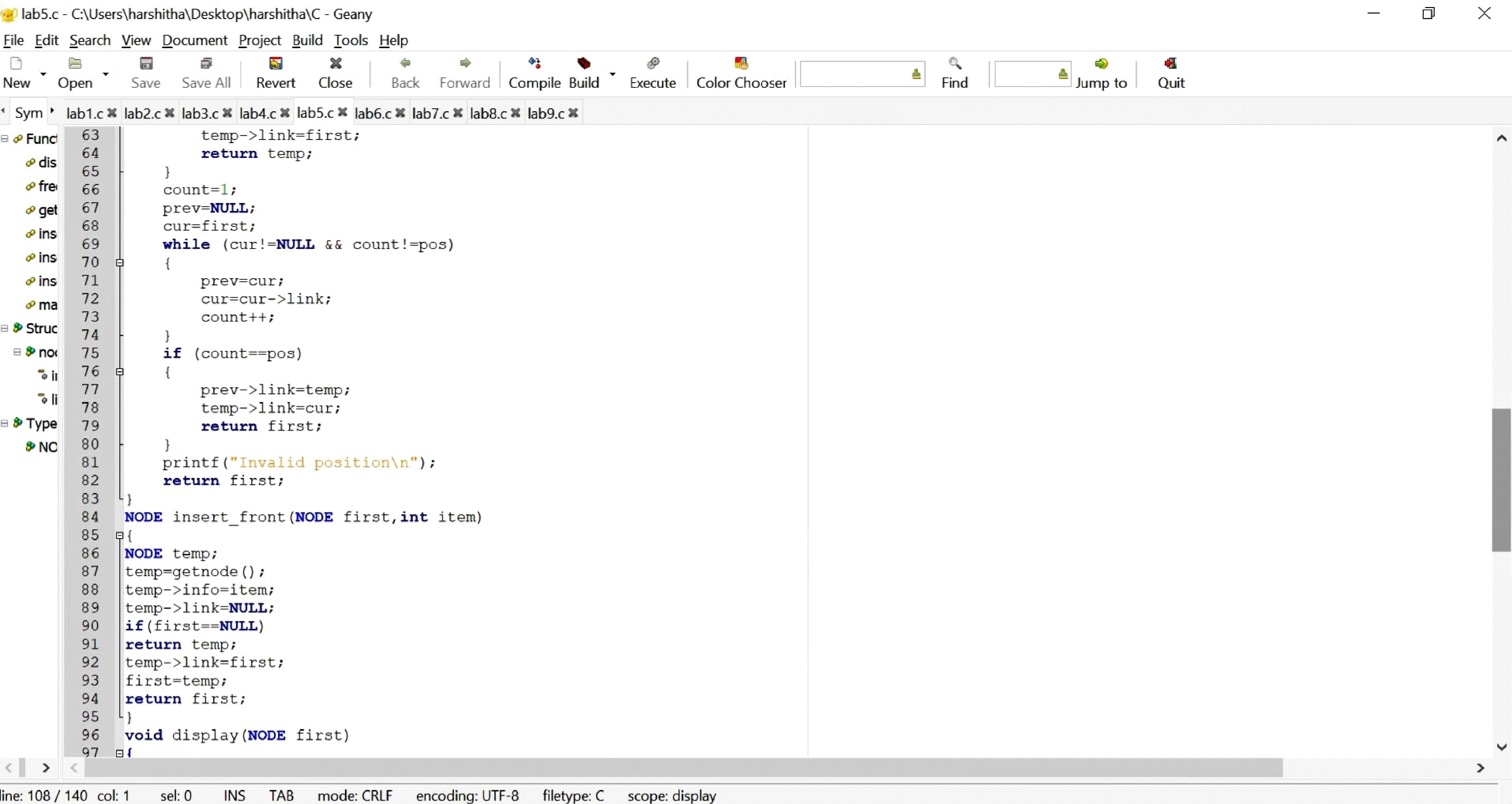

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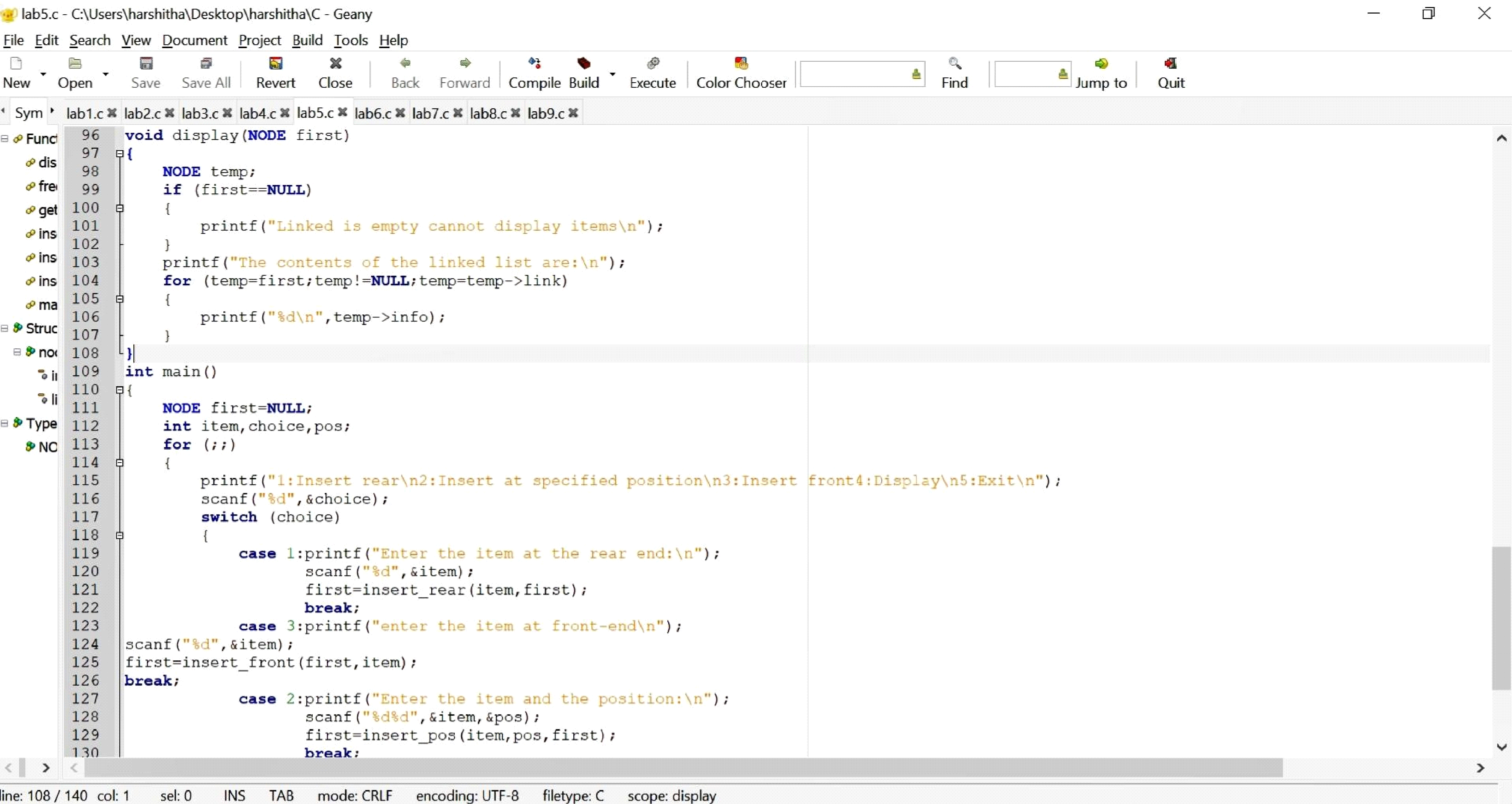
```c
        temp->link=first;
        return temp;
    }
    count=1;
    prev=NULL;
    cur=first;
    while (cur!=NULL && count!=pos)
    {
        prev=cur;
        cur=cur->link;
        count++;
    }
    if (count==pos)
    {
        prev->link=temp;
        temp->link=cur;
        return first;
    }
    printf("Invalid position\n");
    return first;
}
NODE insert_front(NODE first,int item)
{
NODE temp;
temp=getnode();
temp->info=item;
temp->link=NULL;
if(first==NULL)
return temp;
temp->link=first;
first=temp;
return first;
}
void display(NODE first)
{
```



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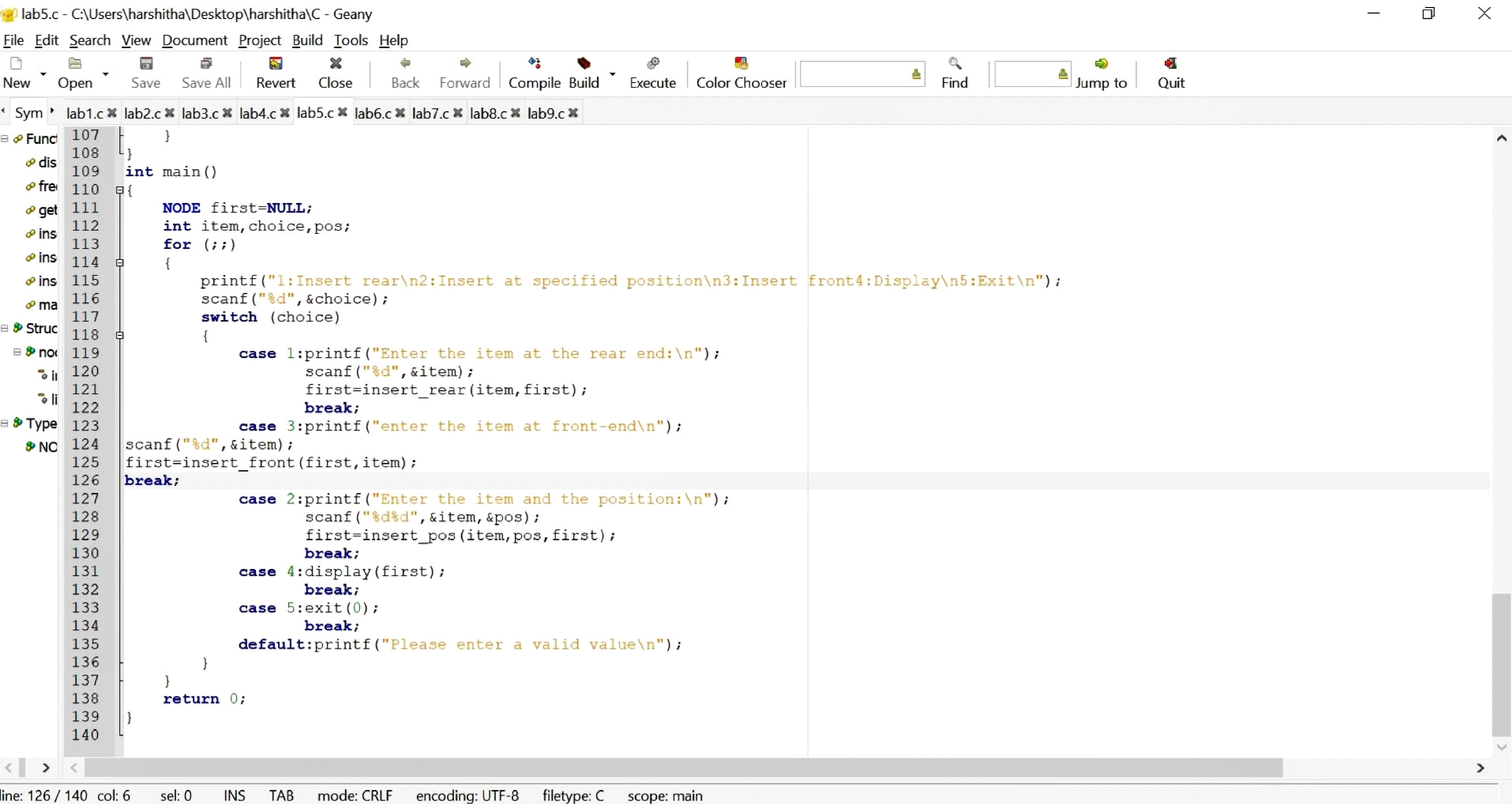
line: 108 / 140 col: 1 sel: 0 INS TAB mode: CRLF encoding: UTF-8 filetype: C scope: display

```
void display(NODE first)
{
    NODE temp;
    if (first==NULL)
    {
        printf("Linked is empty cannot display items\n");
    }
    printf("The contents of the linked list are:\n");
    for (temp=first;temp!=NULL;temp=temp->link)
    {
        printf("%d\n",temp->info);
    }
}
int main()
{
    NODE first=NULL;
    int item,choice,pos;
    for (;;)
    {
        printf("1:Insert rear\n2:Insert at specified position\n3:Insert front4:Display\n5:Exit\n");
        scanf("%d",&choice);
        switch (choice)
        {
            case 1:printf("Enter the item at the rear end:\n");
                   scanf("%d",&item);
                   first=insert_rear(item,first);
                   break;
            case 3:printf("enter the item at front-end\n");
scanf("%d",&item);
first=insert_front(first,item);
break;
            case 2:printf("Enter the item and the position:\n");
                   scanf("%d%d",&item,&pos);
                   first=insert_pos(item,pos,first);
                   break;
```



```
    }
}
int main()
{
    NODE first=NULL;
    int item,choice,pos;
    for (;;)
    {
        printf("1:Insert rear\n2:Insert at specified position\n3:Insert front4:Display\n5:Exit\n");
        scanf("%d",&choice);
        switch (choice)
        {
            case 1:printf("Enter the item at the rear end:\n");
                   scanf("%d",&item);
                   first=insert_rear(item,first);
                   break;
            case 3:printf("enter the item at front-end\n");
scanf("%d",&item);
first=insert_front(first,item);
break;
            case 2:printf("Enter the item and the position:\n");
                   scanf("%d%d",&item,&pos);
                   first=insert_pos(item,pos,first);
                   break;
            case 4:display(first);
                   break;
            case 5:exit(0);
                   break;
            default:printf("Please enter a valid value\n");
        }
    }
    return 0;
}

```

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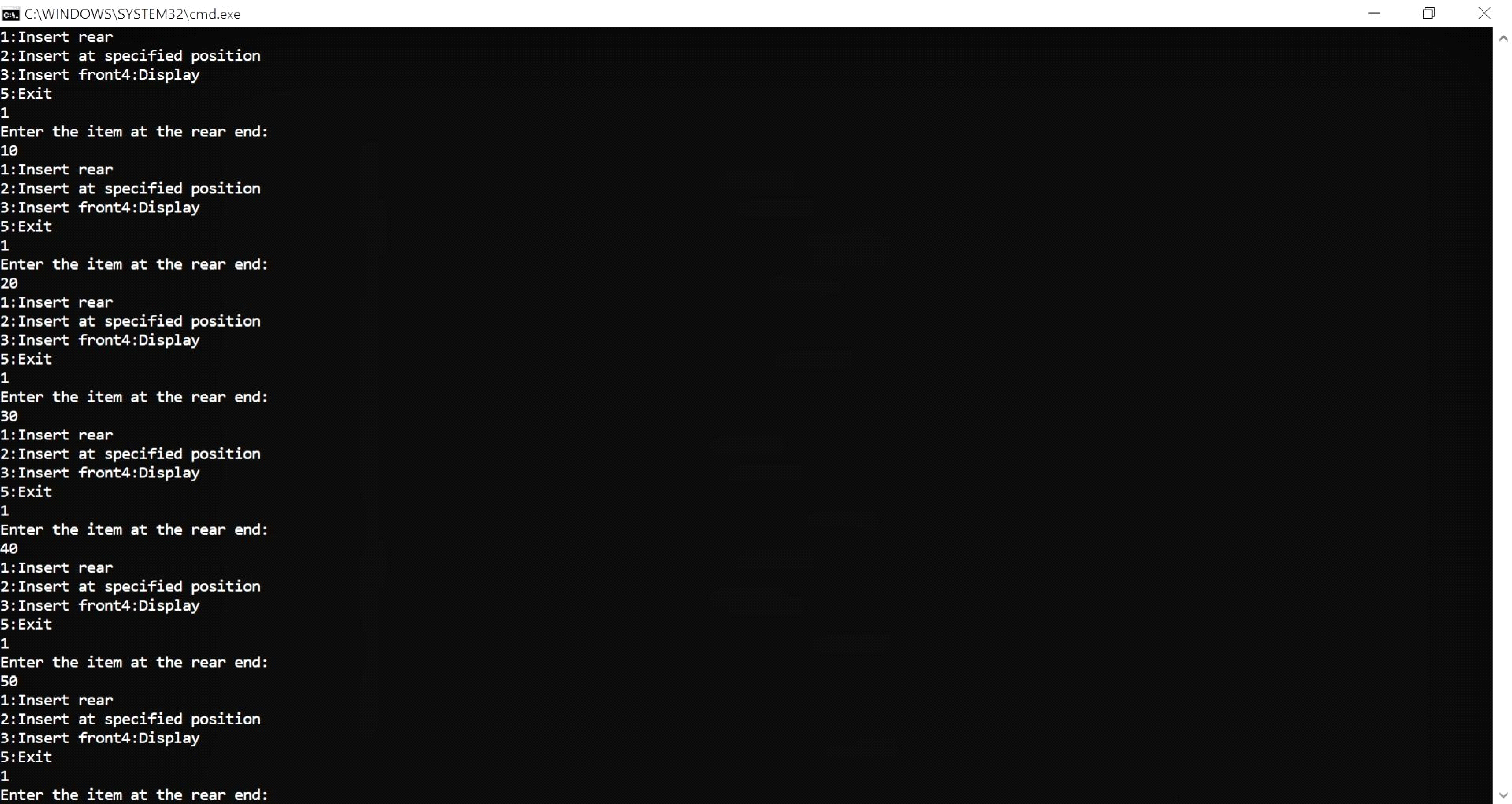
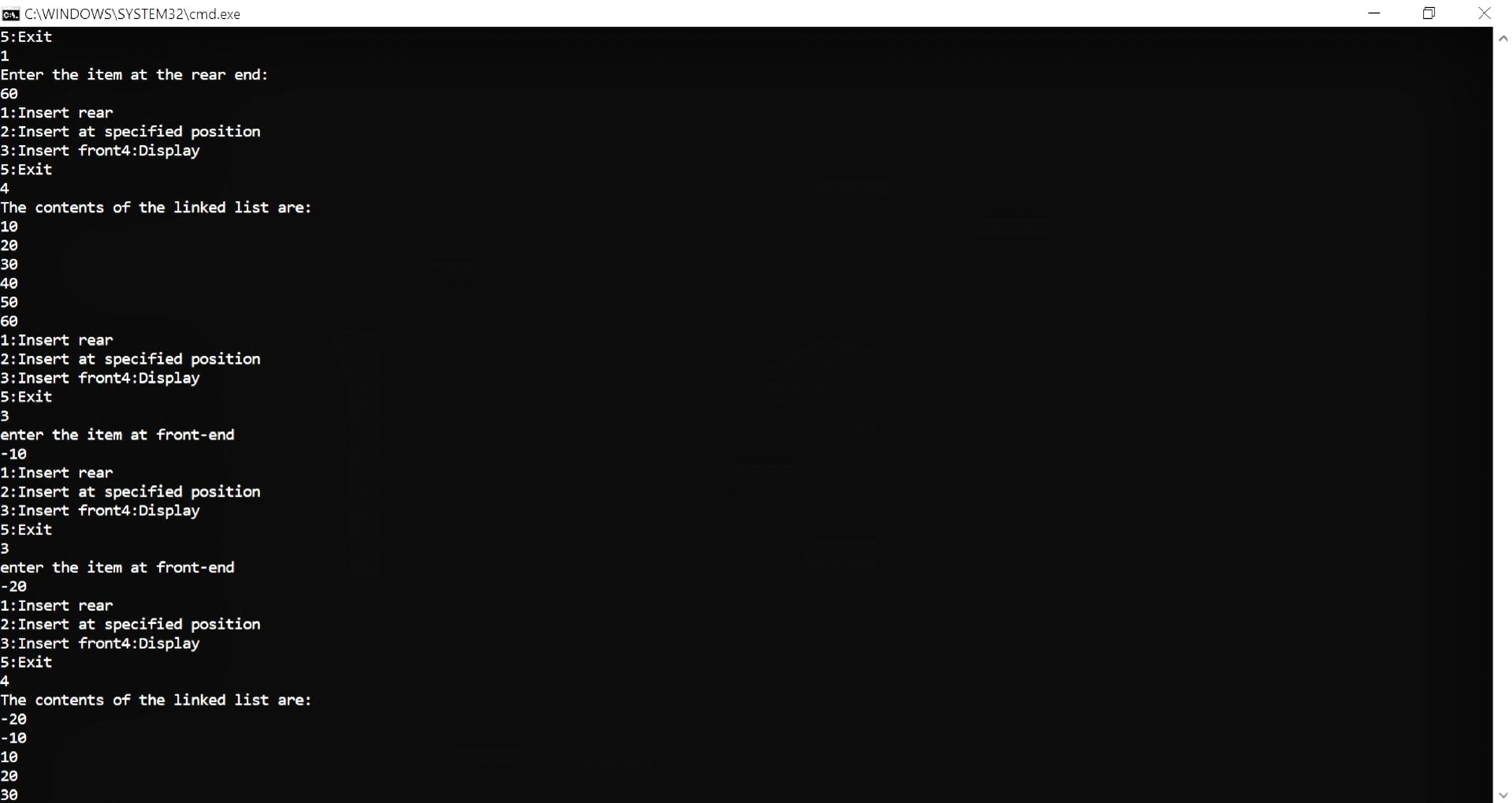
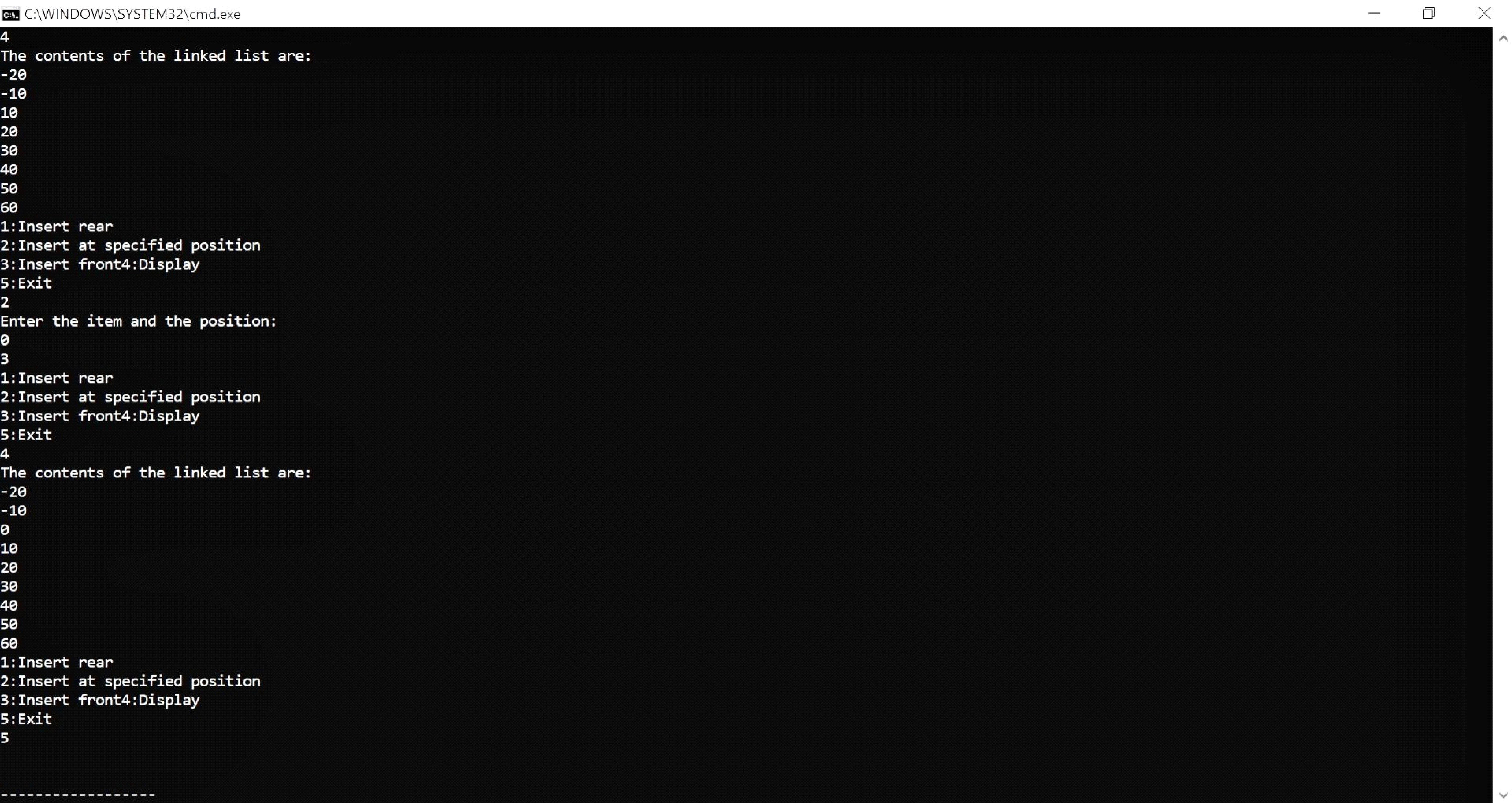


```
1:Insert rear
2:Insert at specified position
3:Insert front4:Display
5:Exit
1
Enter the item at the rear end:
10
1:Insert rear
2:Insert at specified position
3:Insert front4:Display
5:Exit
1
Enter the item at the rear end:
20
1:Insert rear
2:Insert at specified position
3:Insert front4:Display
5:Exit
1
Enter the item at the rear end:
30
1:Insert rear
2:Insert at specified position
3:Insert front4:Display
5:Exit
1
Enter the item at the rear end:
40
1:Insert rear
2:Insert at specified position
3:Insert front4:Display
5:Exit
1
Enter the item at the rear end:
50
1:Insert rear
2:Insert at specified position
3:Insert front4:Display
5:Exit
1
Enter the item at the rear end:
```



```
5:Exit
1
Enter the item at the rear end:
60
1:Insert rear
2:Insert at specified position
3:Insert front4:Display
5:Exit
4
The contents of the linked list are:
10
20
30
40
50
60
1:Insert rear
2:Insert at specified position
3:Insert front4:Display
5:Exit
3
enter the item at front-end
-10
1:Insert rear
2:Insert at specified position
3:Insert front4:Display
5:Exit
3
enter the item at front-end
-20
1:Insert rear
2:Insert at specified position
3:Insert front4:Display
5:Exit
4
The contents of the linked list are:
-20
-10
10
20
30
```



```
4
The contents of the linked list are:
-20
-10
10
20
30
40
50
60
1:Insert rear
2:Insert at specified position
3:Insert front4:Display
5:Exit
2
Enter the item and the position:
0
3
1:Insert rear
2:Insert at specified position
3:Insert front4:Display
5:Exit
4
The contents of the linked list are:
-20
-10
0
10
20
30
40
50
60
1:Insert rear
2:Insert at specified position
3:Insert front4:Display
5:Exit
5



------------------
```