7.Develop a menu driven Program in C for the following operations on Singly Linked List (SLL) of Student Data with the fields: USN, Name, Programme, Sem, PhNo

a. Create a SLL of N Students Data by using front insertion.
b. Display the status of SLL and count the number of nodes in it
c. Perform Insertion / Deletion at End of SLL
d. Perform Insertion / Deletion at Front of SLL(Demonstration of stack)
e. Exit

```
#include<stdio.h>

#include<stdlib.h>

struct node
{
   char usn[25], name[25], branch[25];
   int sem;
   long int phone;
   struct node * link;
};
typedef struct node * NODE;

NODE start = NULL;
int count = 0;

NODE create()
{
   NODE snode;
   snode = (NODE) malloc(sizeof(struct node));

   if (snode == NULL)
   {
      printf("\nMemory is not available");
      exit(1);
   }
   printf("\nEnter the usn,Name,Branch, sem,PhoneNo of the student:");
   scanf("%s %s %s %d %ld", snode -> usn, snode -> name, snode -> branch, & snode ->
sem, & snode -> phone);
   snode -> link = NULL;
   count++;
   return snode;
}

NODE insertfront()
{
   NODE temp;
   temp = create();
   if (start == NULL)
   {
      return temp;
```

```
    }

    temp -> link = start;
    return temp;
}

NODE deletefront()
{
    NODE temp;
    if (start == NULL)
    {
        printf("\nLinked list is empty");
        return NULL;
    }

    if (start -> link == NULL)
    {
        printf("\nThe Student node with usn:%s is deleted ", start -> usn);
        count--;
        free(start);
        return NULL;
    }
    temp = start;
    start = start -> link;
    printf("\nThe Student node with usn:%s is deleted", temp -> usn);
    count--;
    free(temp);
    return start;
}

NODE insertend()
{
    NODE cur, temp;
    temp = create();

    if (start == NULL)
    {
        return temp;
    }
    cur = start;
    while (cur -> link != NULL)
    {
        cur = cur -> link;
    }
    cur -> link = temp;
    return start;
}

NODE deleteend()
{
```

```
    NODE cur, prev;
    if (start == NULL)
    {
        printf("\nLinked List is empty");
        return NULL;
    }

    if (start -> link == NULL)
    {
        printf("\nThe student node with the usn:%s is deleted", start -> usn);
        free(start);
        count--;
        return NULL;
    }

    prev = NULL;
    cur = start;
    while (cur -> link != NULL)
    {
        prev = cur;
        cur = cur -> link;
    }

    printf("\nThe student node with the usn:%s is deleted", cur -> usn);
    free(cur);
    prev -> link = NULL;
    count--;
    return start;
}

void display()
{
    NODE cur;
    int num = 1;

    if (start == NULL)
    {

        printf("\nNo Contents to display in SLL \n");
        return;
    }
    printf("\nThe contents of SLL: \n");
    cur = start;
    while (cur != NULL)
    {
        printf("\n|%d| |USN:%s| |Name:%s| |Branch:%s| |Sem:%d| |Ph:%ld|", num, cur -> usn,
cur -> name, cur -> branch, cur -> sem, cur -> phone);
        cur = cur -> link;
        num++;
    }
```

```
    printf("\n No of student nodes is %d \n", count);
}

void stackdemo()
{
    int ch;
    while (1)
    {
        printf("\n--------Stack Demo using SLL--------\n");
        printf("\n1:Push operation \n2: Pop operation \n3: Display \n4:Exit \n");
        printf("\nEnter your choice for stack demo:");
        scanf("%d", & ch);

        switch (ch)
        {
        case 1:
            start = insertfront();
            break;
        case 2:
            start = deletefront();
            break;
        case 3:
            display();
            break;
        default:
            return;
        }
    }
    return;
}

int main()
{
    int ch, i, n;
    while (1)
    {
        printf("\n--------Menu--------");
        printf("\nEnter your choice for SLL operation \n");
        printf("\n1:Create SLL of Student Nodes");
        printf("\n2:DisplayStatus");
        printf("\n3:InsertAtEnd");
        printf("\n4:DeleteAtEnd");
        printf("\n5:Stack Demo using SLL(Insertion and Deletion at Front)");
        printf("\n6:Exit \n");
        printf("\nEnter your choice:");
        scanf("%d", & ch);

        switch (ch)
        {
        case 1:
```

```
            printf("\nEnter the no of students: ");
            scanf("%d", & n);
            for (i = 1; i <= n; i++)
                start = insertfront();
            break;

        case 2:
            display();
            break;

        case 3:
            start = insertend();
            break;

        case 4:
            start = deleteend();
            break;

        case 5:
            stackdemo();
            break;

        case 6:
            exit(0);

        default:
            printf("\nPlease enter the valid choice");

        }
    }
}
```

OUTPUT

```
--------Menu--------
Enter your choice for SLL operation

1:Create SLL of Student Nodes
2:DisplayStatus
3:InsertAtEnd
4:DeleteAtEnd
5:Stack Demo using SLL(Insertion and Deletion at Front)
6:Exit

Enter your choice:1
```

```
Enter the no of students: 3
Enter the usn,Name,Branch, sem,PhoneNo of the student:
1ME21CS017
Braham
CSE
5
8768586443

Enter the usn,Name,Branch, sem,PhoneNo of the student:
1ME21CS015
Bikash
CSE
5
8734687996

Enter the usn,Name,Branch, sem,PhoneNo of the student:
1ME21AI015
Shoaib
AI&ML
5
6748353877

--------Menu--------
Enter your choice for SLL operation

1:Create SLL of Student Nodes
2:DisplayStatus
3:InsertAtEnd
4:DeleteAtEnd
5:Stack Demo using SLL(Insertion and Deletion at Front)
6:Exit

Enter your choice:2
The contents of SLL:

|1| |USN:1ME21AI015| |Name:Shoaib| |Branch:AI&ML| |Sem:5| |Ph:6748353877|
|2| |USN:1ME21CS015| |Name:Bikash| |Branch:CSE  | |Sem:5| |Ph:8734687996|
|3| |USN:1ME21CS017| |Name:Braham| |Branch:CSE  | |Sem:5| |Ph:8768586443|
 No of student nodes is 3

--------Menu--------
Enter your choice for SLL operation

1:Create SLL of Student Nodes
2:DisplayStatus
3:InsertAtEnd
4:DeleteAtEnd
5:Stack Demo using SLL(Insertion and Deletion at Front)
6:Exit
```

```
Enter your choice:3

Enter the usn,Name,Branch, sem,PhoneNo of the student:
1ME21CS068
Rajan
CSE
5
3426527765

--------Menu--------
Enter your choice for SLL operation

1:Create SLL of Student Nodes
2:DisplayStatus
3:InsertAtEnd
4:DeleteAtEnd
5:Stack Demo using SLL(Insertion and Deletion at Front)
6:Exit

Enter your choice:2
The contents of SLL:

|1| |USN:1ME21AI015| |Name:Shoaib| |Branch:AI&ML| |Sem:5| |Ph:6748353877|
|2| |USN:1ME21CS015| |Name:Bikash| |Branch:CSE  | |Sem:5| |Ph:8734687996|
|3| |USN:1ME21CS017| |Name:Braham| |Branch:CSE  | |Sem:5| |Ph:8768586443|
|4| |USN:1ME21CS068| |Name:Rajan | |Branch:CSE  | |Sem:5| |Ph:3426527765|
 No of student nodes is 4

--------Menu--------
Enter your choice for SLL operation

1:Create SLL of Student Nodes
2:DisplayStatus
3:InsertAtEnd
4:DeleteAtEnd
5:Stack Demo using SLL(Insertion and Deletion at Front)
6:Exit

Enter your choice:4
The student node with the usn:1ME21CS068 is deleted

--------Menu--------
Enter your choice for SLL operation

1:Create SLL of Student Nodes
2:DisplayStatus
3:InsertAtEnd
4:DeleteAtEnd
5:Stack Demo using SLL(Insertion and Deletion at Front)
6:Exit
```

```
Enter your choice:2
The contents of SLL:

|1| |USN:1ME21AI015| |Name:Shoaib| |Branch:AI&ML| |Sem:5| |Ph:6748353877|
|2| |USN:1ME21CS015| |Name:Bikash| |Branch:CSE  | |Sem:5| |Ph:8734687996|
|3| |USN:1ME21CS017| |Name:Braham| |Branch:CSE  | |Sem:5| |Ph:8768586443|
 No of student nodes is 3

--------Menu--------
Enter your choice for SLL operation

1:Create SLL of Student Nodes
2:DisplayStatus
3:InsertAtEnd
4:DeleteAtEnd
5:Stack Demo using SLL(Insertion and Deletion at Front)
6:Exit

Enter your choice:4
The student node with the usn:1ME21CS017 is deleted

--------Menu--------
Enter your choice for SLL operation

1:Create SLL of Student Nodes
2:DisplayStatus
3:InsertAtEnd
4:DeleteAtEnd
5:Stack Demo using SLL(Insertion and Deletion at Front)
6:Exit

Enter your choice:5
--------Stack Demo using SLL--------

1:Push operation
2: Pop operation
3: Display
4:Exit

Enter your choice for stack demo:1

Enter the usn,Name,Branch, sem,PhoneNo of the student:
1ME21CS005
Aman
CSE
5
6587594335

--------Stack Demo using SLL--------
```

1:Push operation
2: Pop operation
3: Display
4:Exit

Enter your choice for stack demo:3
The contents of SLL:

|1| |USN:1ME21CS005| |Name:Aman | |Branch:CSE | |Sem:5| |Ph:6587594335|
|2| |USN:1ME21AI015| |Name:Shoaib| |Branch:AI&ML| |Sem:5| |Ph:6748353877|
|3| |USN:1ME21CS015| |Name:Bikash| |Branch:CSE | |Sem:5| |Ph:8734687996|
 No of student nodes is 3

--------Stack Demo using SLL--------

1: Push operation
2: Pop operation
3: Display
4: Exit

Enter your choice for stack demo:1

Enter the usn,Name,Branch, sem,PhoneNo of the student:
1ME21CS092
Shubham
CSE
5
9869754354

--------Stack Demo using SLL--------
1:Push operation
2: Pop operation
3: Display
4:Exit

Enter your choice for stack demo:3
The contents of SLL:

1		USN:1ME21CS092		Name:Shubham		Branch:CSE		Sem:5		Ph:9869754354
2		USN:1ME21CS005		Name:Aman		Branch:CSE		Sem:5		Ph:6587594335
3		USN:1ME21AI015		Name:Shoaib		Branch:AI&ML		Sem:5		Ph:6748353877
4		USN:1ME21CS015		Name:Bikash		Branch:CSE		Sem:5		Ph:8734687996
 No of student nodes is 4

--------Stack Demo using SLL--------

1:Push operation
2: Pop operation
3: Display

4:Exit

Enter your choice for stack demo:2
The Student node with usn:1ME21CS092 is deleted

--------Stack Demo using SLL--------

1:Push operation
2: Pop operation
3: Display
4:Exit

Enter your choice for stack demo:3
The contents of SLL:

|1| |USN:1ME21CS005| |Name:Aman | |Branch:CSE | |Sem:5| |Ph:6587594335|
|2| |USN:1ME21AI015| |Name:Shoaib| |Branch:AI&ML| |Sem:5| |Ph:6748353877|
|3| |USN:1ME21CS015| |Name:Bikash| |Branch:CSE | |Sem:5| |Ph:8734687996|
 No of student nodes is 3

--------Stack Demo using SLL--------

1: Push operation
2: Pop operation
3: Display
4: Exit

Enter your choice for stack demo:4

--------Menu--------
Enter your choice for SLL operation

1:Create SLL of Student Nodes
2:DisplayStatus
3:InsertAtEnd
4:DeleteAtEnd
5:Stack Demo using SLL(Insertion and Deletion at Front)
6:Exit

Enter your choice:6