

8. Develop a menu driven Program in C for the following operations on Doubly Linked List (DLL) of Employee Data with the fields :

SSN, Name, Dept, Designation, Sal, PhNo

- Create a DLL of N Employees Data by using end insertion.
- Display the status of DLL and count the number of nodes in it
- Perform Insertion and Deletion at End of DLL
- Perform Insertion and Deletion at Front of DLL
- Demonstrate how this DLL can be used as Double Ended Queue.
- Exit

```
→ #include<stdio.h>
#include<stdlib.h>

int n=0,count=0;
struct node{
    char ssn[12],name[20],dept[25],desig[20];
    unsigned long long int phno;
    float sal;
    struct node *prev,*next;
};

typedef struct node *NODE;
NODE x,temp,FIRST=NULL,END=NULL;

NODE getnode(){
    x=(NODE)malloc(sizeof(struct node));
    x->prev=x->next=NULL;
    return x;
}

void read(){
    temp=getnode();
    printf("Enter SSN : ");
    scanf("%s",temp->ssn);
    printf("Enter Name :\n");
    scanf("%s",temp->name);
    printf("Enter Department : ");
    scanf("%s",temp->dept);
    printf("Enter Designation : ");
    scanf("%s",temp->desig);
    printf("Enter Phone : ");
    scanf("%llu",&temp->phno);
    printf("Enter Salary : ");
    scanf("%f",&temp->sal);
}

void Insertionend(){
    printf("Enter the details of the employee\n");
    read();
    if(FIRST==NULL)
        FIRST=END=temp;
    else{
        END->next=temp;
        temp->prev=END;
        END=temp;
    }
}

void Create_DLL(){
    printf("Enter the number of Employees : ");
    scanf("%d",&n);
    while(n>0)
        Insertionend();
}

void display_count(){
    temp=FIRST;
    if(FIRST==NULL)
        printf("The Employee detail is NULL and count is %d\n",count);
    else{
        printf("Employee details:\n");
        printf("SSN \tEMPLOYEE NAME\tDEPARTMENT\tDESIGNATION\tPHONE NUMBER\tSALARY");
        while(temp!=NULL){
            count++;
            printf("\n%s\t%s\t%s\t\t%s\t\t%llu\t\t%0.2f",\
                temp->ssn,temp->name,temp->dept,temp->desig,temp->phno,temp->sal);
            temp=temp->next;
        }
        printf("\n Employee count is %d\n",count);
    }
}

void Insertionfront(){
    printf("Enter the details of the employee\n");
    read();
    if(FIRST==NULL)
        FIRST=END=temp;
    else{
        temp->next=FIRST;
        FIRST->prev=temp;
        FIRST=temp;
    }
}

void Deletionfront(){
    temp=FIRST;
    if(FIRST==NULL)
        printf("List is empty !\n");
    else{
        printf("Deleted element is %s\n",temp->ssn);
        count--;
        if(FIRST==END)
            FIRST=END=NULL;
        else{
            FIRST=FIRST->next;
            FIRST->prev=NULL;
        }
        free(temp);
    }
}

void Deletionend(){
    temp=END;
    if(FIRST==NULL)
        printf("List is empty !\n");
    else{
        printf("Deleted element is %s\n",temp->ssn);
        count--;
        if(FIRST==END)
            FIRST=END=NULL;
        else{
            END=END->prev;
            END->next=NULL;
        }
        free(temp);
    }
}

int main(){
    int choice;
    printf("\n1.Create DLL of N Employees \
        \n2.Display DLL \
        \n3.Insertion at front \
        \n4.Insertion at end \
        \n5.Deletion at front \
        \n6.Deletion at end \
        \n7.Exit\n");
    while(1){
        printf("\n> ");
        scanf("%d",&choice);
        switch(choice){
            case 1 :
                Create_DLL();
                break;
            case 2:
                display_count();
                break;
            case 3:
                Insertionfront();
                break;
            case 4:
                Insertionend();
                break;
            case 5:
                Deletionfront();
                break;
            case 6:
                Deletionend();
                break;
            case 7:
                exit(0);
                break;
            default: printf("Invalid Choice !\n");
        }
    }
}
```