```c
#include<stdio.h>
#include<stdlib.h>
struct node
{
    int data;
    struct node *next;
};
struct node *start=0;
struct node *createNode()
{
    struct node *cn;
    cn = (struct node*)malloc(sizeof(struct node));
    printf("\nEnter data:");
    scanf("%d",&cn->data);
    cn->next = 0;
    return cn;
}
void insertStart()
{
    struct node *is;
    is = createNode();
    if(start == 0)
    {
        start = is;
    }
    else
    {
        is->next = start;
        start=is;
    }
}
void insertMiddle()
{   int data;
    struct node *t2, *k3;
    t2=createNode();
    printf("Enter the data after which you want to insert: ");
    scanf("%d", &data);
    if(start==0)
    {
        start=t2;
    }
    else
    {
        k3=start;
        while(k3->data!=data)
        {
            k3=k3->next;
        }
        t2->next=k3->next;
        k3->next=t2;

    }

}
void insertEnd()
{
    struct node *ie,*search;
    ie=createNode();
    if(start == 0)
    {
        start = ie;
    }
    else
    {
        search=start;
        while(search->next != 0)
        {
            search=search->next;
        }
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            search->next = ie;
        }
    }
    void deleteStart()
    {
        struct node *ds;
        if(start == 0)
        {
            printf("\nNo Data found for delete.");
        }
        else
        {
            ds = start;
            start = start->next;
            ds->next=0;
            free(ds);
            printf("\nDeleted Succesfully");
        }
    }
    void deleteMiddle()
    {
        struct node *dm,*search;
        int loc_data;
        if(start==0 || start->next == 0)
        {
            printf("\nNot Sufficient data found to apply this operation.");
            return;
        }
        search=start;
        printf("\nEnter the data that you want to delete :");
        scanf("%d",&loc_data);
        if(start->data == loc_data)
        {
            printf("\nPlease apply delete from start method.");
            return;
        }
        while(search->next->data != loc_data)
        {
            search=search->next;
        }
        dm = search->next;
        search->next=dm->next;
        dm->next=0;
        free(dm);
        printf("\nDeleted Succesfully");
    }
    void deleteEnd()
    {
        struct node *search,*de;
        if(start == 0)
        {
            printf("\nNo Data found for delete.");
            return;
        }
        if(start->next == 0)
        {
            de=start;
            start=0;
            free(de);
        }
        else
        {
            search=start;
            while(search->next->next != 0)
            {
                search=search->next;
            }
            de=search->next;
            search->next=0;
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            free(de);
        }
        printf("\nDeleted Succesfully.");
    }
    void display()
    {
        struct node *ds;
        if(start == 0)
        {
            printf("\nNo data found in list.");
        }
        else
        {
            ds=start;
            printf("\nYour data = [");
            while(ds != 0)
            {
                printf("%d,",ds->data);
                ds = ds->next;
            }
            printf("]");
        }
    }
    int main()
    {
        int ch;
        printf("1. Insert at Start.\n");
        printf("2. Insert at middle.\n");
        printf("3. Insert at end.\n");
        printf("4. Delete from Start.\n");
        printf("5. Delete from Middle.\n");
        printf("6. Delete from End.\n");
        printf("7. Display.\n");
        printf("8. Exit.");
        while(1)
        {
            printf("\n\n>>Enter your choice :");
            scanf("%d",&ch);
            switch(ch)
            {
                case 1:
                    insertStart();
                    break;
                case 2:
                    insertMiddle();
                    break;
                case 3:
                    insertEnd();
                    break;
                case 4:
                    deleteStart();
                    break;
                case 5:
                    deleteMiddle();
                    break;
                case 6:
                    deleteEnd();
                    break;
                case 7:
                    display();
                    break;
                case 8:
                    exit(0);
                    break;
                default:
                    printf("You have entered a invaid input.");
            }
        }

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208         return 0;
209     }
210
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