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

struct node
{
    char ssn[25],name[25],dept[25];
    int sal;
    long int phone;
    struct node *llink;
    struct node *rlink;
};

typedef struct node * NODE;

NODE start = NULL;
int count=0;

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

    if(enode == NULL)
    {
        printf("\nMemory is not available");
        exit(0);
    }
    printf("\nEnter the ssn,Name,Dept, sal,PhoneNo of the employee:");
    scanf("%s %s %s %d %ld",enode->ssn, enode->name, enode->dept, &enode->sal, &enode->phone);
    enode->llink=NULL;
    enode->rlink=NULL;
    count++;
    return enode;
}

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

    temp->rlink = start;
    start->llink = temp;
    return temp;
}

NODE deletefront()
{
    NODE temp;

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if(start == NULL)
{
    printf("\nD Linked list is empty");
    return NULL;
}

if(start->rlink == NULL)
{
    printf("\nThe employee node with ssn:%s is deleted ",start-
>ssn);
    count--;
    free(start);
    return NULL;
}
temp = start;
start = start->rlink;
temp-> rlink = NULL;
start->llink = NULL;
printf("\nThe Employee node with ssn:%s is deleted",temp->ssn);
count--;
free(temp);
return start;
}

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

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

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

if(start->rlink == NULL)
{

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        printf("\nThe Employee node with the ssn:%s is deleted",start-
>ssn);
        free(start);
        count--;
        return NULL;
    }

    prev = NULL;
    cur = start;
    while(cur->rlink!=NULL)
    {
        prev = cur;
        cur = cur->rlink;
    }
    cur->llink = NULL;
    printf("\nThe employee node with the ssn:%s is deleted",cur->ssn);
    free(cur);
    prev->rlink = NULL;
    count--;
    return start;
}

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

    if(start == NULL)
    {

        printf("\nNo Contents to display in DLL \n");
        return;
    }
    printf("\nThe contents of DLL: \n");
    cur = start;
    printf("\nNode\tSSN\tName\tDept.\tSalary\tPh Number\n");
    while(cur!=NULL)
    {

        printf("\n%d\t %s\t %s\t %d\t %ld\n",num,cur->ssn, cur-
>name,cur->dept, cur->sal,cur->phone);
        cur = cur->rlink;
        num++;
    }
    printf("\n No of employee nodes is %d \n",count);
}

void deqdemo()
{
    int ch;
    while(1)
    {
        printf("\n-----DEQ Demo using DLL-----\n");

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    printf("\n1:InsertQFront \n2: DeleteQfront \n3: InsertQRear
\n4:DeleteqRear \n5:Display \n6:Exit\n");
    printf("\nEnter your choice");
    scanf("%d",&ch);

switch(ch)
{
    case 1: start = insertfront();
        break;
    case 2: start = deletefront();
        break;
    case 3: start = insertend();
        break;
    case 4: start = deleteend();
        break;
    case 5: display();
        break;
    default : return;
}
}

void main()
{
    int ch,i,n;
    clrscr();
    while(1)
    {
        printf("\n~~~Menu~~~");
        printf("\nEnter your choice for DLL operation \n");
        printf("\n1>Create DLL of Student Nodes");
        printf("\n2:DisplayStatus");
        printf("\n3:InsertAtEnd");
        printf("\n4:DeleteAtEnd");
        printf("\n5:InsertAtFront");
        printf("\n6:DeleteAtFront");
        printf("\n7:DEQ Demo using DLL");
        printf("\n8:Exit \n");
        printf("\nEnter your choice:");
        scanf("%d",&ch);

switch(ch)
{
case 1 : printf("\nEnter the no of Employees:      ");
        scanf("%d",&n);
        for(i=1;i<=n;i++)
            start = insertend();
        break;

case 2: display();
        break;

case 3: start = insertend();
}
}

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        break;

case 4: start = deleteend();
        break;

case 5: start = insertfront();
        break;

case 6: start = deletefront();
        break;
case 7: deqdemo();
        break;

case 8: exit(0);

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

    }
}
}
```