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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;
}

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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;
}

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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("\nEnode\tSSN\tName\t\tDept.\tSalary\tPh Number\n");
    while(cur!=NULL)
    {

        printf("\n%d\t %s\t %s\t\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");
}
}
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