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#include<stdio.h>
#include<malloc.h>
#include<stdlib.h>
typedef struct node
{
    int data;
    struct node *next;
} node;
typedef struct freq
{
    int no;
    int count;
} func;
node* createnode(int d)
{
    node *nd;
    nd=(node*)malloc(sizeof(node));
    nd->data=d;
    nd->next=NULL;
    return nd;
}
node* createlist()
{
    int data;char ans;
    node *first,*last,*nd;
    first=NULL;
    while(1)
    {
        printf("enter data:-");
        scanf("%d",&data);
        nd= createnode(data);
        if(first==NULL)
            first=nd;
        else
            last->next=nd;
        last=nd;
        printf("do you want to continue(Y\N)?");
        fflush(stdin);
        scanf("%c",&ans);
        if(ans!='y' && ans!='Y')
            break;
    }
    return first;
}
void insertatbeg(node **first)
{
    node *nd;
    int d;
    printf("enter data");
    scanf("%d",&d);
    nd=createnode(d);
    nd->next=*first;
    *first=nd;
}
void insertatlast(node *first)

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{
    node *nd,*t;
    int d;
    printf("enter data");
    scanf("%d",&d);
    nd=createnode(d);
    t=first;
    while(t->next!=NULL)
    {
        t=t->next;
    }
    t->next=nd;
    nd->next=NULL;
}
void insertanywhere(node **first)
{
    node *nd,*prev,*t;
    prev=NULL;
    t=*first;
    int d,c=0,pos;
    printf("enter data");
    scanf("%d",&d);
    printf("enter position");
    scanf("%d",&pos);
    nd=createnode(d);
    while(t!=NULL)
    {
        c++;
        if(c==pos)
            break;
        prev=t;
        t=t->next;
    }
    nd->next=t;
    if(prev!=NULL)
        prev->next=nd;
    else
        *first=nd;
}
void delfirst(node **first)
{
    node *t;
    t=*first;
    *first=t->next;
    free(t);
}
void frequency(node *first)
{
    int i=0,j,n=0;
    func *a;
    node *t=first;
    while(t!=NULL)
    {
        t=t->next;
        n++;
    }
}

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    }
    a=(func*)malloc(n*sizeof(func));
    t=first;
    while(t!=NULL)
    {
        for(j=0;j<i;j++)
            if(a[j].no==t->data)
            {
                a[j].count++;
                break;
            }
        if(j==i)
        {
            a[i].no=t->data;
            a[i].count=1;
            i++;
        }
        t=t->next;
    }
    for(j=0;j<i;j++)
        printf("Freq(%d)=%d\n",a[j].no,a[j].count);
}

void dellast(node *first)
{
    node *t,*prev;
    t=first;
    prev=NULL;
    while(t->next!=NULL)
    {
        prev=t;
        t=t->next;
    }
    prev->next=NULL;
    free(t);
}

void delanywhere(node **first)
{
    node *prev,*t;
    int pos,c=0;
    prev=NULL;
    t=*first;
    printf("enter position");
    scanf("%d",&pos);
    while(t!=NULL)
    {
        c++;
        if(c==pos)
            break;
        prev=t;
        t=t->next;
    }
    if(prev!=NULL)
    {
        prev->next=t->next;
        free(t);
    }
}

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        }
        else
        {
            *first=t->next;
            free(t);
        }
    }
}
void printlist(node *first)
{
    node *t=first;
    while(t!=NULL)
    {
        printf("%d\t",t->data);
        t=t->next;
    }
}
int main()
{
    int c; node *start;
    start=NULL;
    while(1)
    {
        printf("1.create\n2.print\n3.Insert at first\n4.Insert at last\n5.Insert
anywhere\n6.Delete from first\n7.Delete from last\n8.Delete from any position\n9.show
frequency\n10.exit\n");
        printf("enter choice:-");
        scanf("%d",&c);
        switch(c)
        {
            case 1: start=createlist();
                    break;
            case 2: printlist(start);
                    break;
            case 3: insertatbeg(&start);
                    break;
            case 4: insertatlast(start);
                    break;
            case 5: insertanywhere(&start);
                    break;
            case 6: delfirst(&start);
                    break;
            case 7: dellast(start);
                    break;
            case 8: delanywhere(&start);
                    break;
            case 9: frequency(start);
                    break;
            case 10: exit(0);
        }
    }
}

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