#include<stdio.h>

#include<conio.h>

#include<stdlib.h>

typedef struct cautrucNode

{

int info;

struct cautrucNode \*next;

}NODE;

typedef struct stack

{

NODE \*head;

NODE \*tail;

}LIST;

void khoitao(LIST &L)

{

L.head = NULL;

L.tail = NULL;

}

NODE \*taophantu(int x)

{

NODE \*p;

p = new NODE;

if (p==NULL)

{

return NULL;

}

p->info = x;

p->next = NULL;

return p;

}

void themdau(LIST &L, int x)

{

NODE \*moi;

moi=taophantu(x);

if(L.head==NULL)

L.head=L.tail=moi;

else

{

moi->next=L.head;

L.head=moi;

}

}

void themcuoi(LIST &L, int x)

{

NODE \*moi;

moi=taophantu(x);

if(L.head==NULL)

L.head=L.tail=moi;

else

{

L.tail->next=moi;

L.tail=moi;

}

}

void xoadau(LIST &L)

{

NODE \*p;

if(L.head!=NULL)

{

p=L.head;

L.head=p->next;

delete p;

if(L.head==NULL)

L.tail=NULL;

}

}

void nhapStack(LIST &L)

{

NODE \*p;

p=L.head;

printf("\nNhap -1 de ket thuc");

int x,i=0;

do

{

printf("\nNhap phan tu thu %d: ",i+1);

scanf("%d",&x);

if(x>=0)

{

themdau(L,x);

i++;

}

}

while(x>=0);

}

void nhapQueue(LIST &L)

{

NODE \*p;

p=L.head;

printf("\nNhap -1 de ket thuc");

int x,i=0;

do

{

printf("\nNhap phan tu thu %d: ",i+1);

scanf("%d",&x);

if(x>=0)

{

themcuoi(L,x);

i++;

}

}

while(x>=0);

}

void xuatds(LIST L)

{

NODE \*p;

p=L.head;

while(p!=NULL)

{

printf("%3d",p->info);

p=p->next;

}

printf("\n");

}

char IsEmpty(LIST &L)

{

if(L.head)

return 0;

else

return 1;

}

void themvaostack(LIST &L, int x)

{

themdau(L,x);

}

void themvaoqueue(LIST &L, int x)

{

themcuoi(L,x);

}

int Ptu\_dau(LIST &L)

{

int x;

if(IsEmpty(L)==0)

{

x=L.head->info;

return x;

}

return NULL;

}

void huy\_ptu\_dau(LIST &L)

{

if(IsEmpty(L)==0)

xoadau(L);

else

printf("Danh sach rong");

}

void menu()

{

printf("\n");

printf("UNG DUNG DSLK DON CAI DAT STACK VA QUEUE");

printf("\n");

printf("\nThao tac voi STACK");

printf("\n 1: Nhap Stack");

printf("\n 2: Xuat Stack");

printf("\n 3: Them Stack");

printf("\n 4: In phan tu dau cua Stack");

printf("\n 5: Huy phan tu dau cua Stack");

printf("\n");

printf("\nThao tac voi QUEUE");

printf("\n 6: Nhap Queue");

printf("\n 7: Xuat Queue");

printf("\n 8: Them Queue");

printf("\n 9: In phan tu dau cua Queue");

printf("\n 10: Huy phan tu dau cua Queue");

printf("\n");

printf("\n\*Nhap 0 de Thoat");

}

void main()

{

int ch;

LIST L;

khoitao(L);

int x;

do

{

menu();

printf("\nChon chuc nang can thuc hien: ");

scanf("%d",&ch);

switch(ch)

{

case 0:

return;

case 1:

{

khoitao(L);

nhapStack(L);

break;

}

case 2:

{

xuatds(L);

break;

}

case 3:

{

printf("\nThem phan tu co gia tri: ");

scanf("%d",&x);

themvaostack(L,x);

break;

}

case 4:

{

int s=Ptu\_dau(L);

printf("\nPhan tu dau cua Strack la %d",s);

printf("\n");

break;

}

case 5:

{

huy\_ptu\_dau(L);

break;

}

case 6:

{

khoitao(L);

nhapQueue(L);

break;

}

case 7:

{

xuatds(L);

break;

}

case 8:

{

printf("\nThem phan tu co gia tri: ");

scanf("%d",&x);

themvaoqueue(L,x);

break;

}

case 9:

{

int q=Ptu\_dau(L);

printf("\nPhan tu dau tien cua Queue la %d",q);

printf("\n");

break;

}

case 10:

{

huy\_ptu\_dau(L);

break;

}

default: printf("\nChon lai !\n");break;

}

}

while(1);

}