#include <iostream>

using namespace std;

#include <stdlib.h>

double avg=0;//统计总分和加平均分权

const int mathp=4;//数学学分

const int cppp=5;//C++学分

const sum=70;//设置总学分

class Student

{

private:

int num;

char \*name;

char \*sex;

char \*phone;

char \*rphone;

double math;

double cpp;

Student\* next;

public:

Student()

{next=NULL;}

~Student();

void Push(Student \*\*refhead,int num,char \*name,char \*sex,char \*phone,char \*rphone,double math,double cpp);

void Delete(Student \*head,int data);

Student\* Find(Student\* head,int data);

void Display(Student\* head);

int Length(Student\* head);

void Math(Student\* head,int data);

void Update(Student\* head,int data);

void Insert();

}; Student\* head=new Student;//带头结点的头指针

void Student::Push(Student \*\*refhead,int num,char \*name,char \*sex,char \*phone,char \*rphone,double math,double cpp)

{

Student\* newnode=new Student;//新增加结点

newnode->num=num;

newnode->name=name;

newnode->sex=sex;

newnode->phone=phone;

newnode->rphone=rphone;

newnode->math=math;

newnode->cpp=cpp;

newnode->next=\*refhead;

\*refhead=newnode;//重置表头

}

//遍历

void Student::Display(Student\* head)

{

Student\* temp;

temp=head;

if(temp->next==NULL)//判断空表

cout<<"没有学生！";

else {while(temp!=NULL)//

{

cout<<"学号："<<temp->num<<"姓名："<<temp->name<<"性别："<<temp->sex<<"手机："<<temp->phone<<"宿舍电话："<<temp->rphone<<"数学成绩："<<temp->math<<"C++成绩:"<<temp->cpp<<endl;

temp=temp->next;

}

}

return;

}

//人数

int Student::Length(Student\* head)

{

Student\* cur;

cur=head;

int count=0;

while(cur!=NULL)

{

count++;//通过累加统计人数 cur=cur->next;

}

return count;

}

//查找

Student\* Student::Find(Student\* head,int data)

{

Student\* cur=head;

bool bo=false;

while(cur!=NULL)

{

if(cur->num=data)

{

bo=true;//如果找到则改变bo的值

cout<<"学号："<<cur->num<<"姓名："<<cur->name<<"性别："<<cur->sex<<"手机："<<cur->phone<<"宿舍电话："<<cur->rphone<<"数学成绩："<<cur->math<<"C++成绩:"<<cur->cpp<<endl; break;

}

cur=cur->next;

}

if(bo==false)//通过判断bo的值判断找到与否

cout<<"没有这个人！

"<<endl; return cur;

}

//删除

void Student::Delete(Student\* head,int data)

{

Student \*bef,\*cur;

bef=cur=head;

while(cur!=NULL)

{

if(cur->num==data)

break;

else

{bef=cur;cur=cur->next;}

}

if(cur==head)//如果是头结点则删除头结点

{

head=cur->next;

delete cur;

}

else

{

bef->next=cur->next; delete cur;

}

}

//修改

void Student::Update(Student\* head,int data)

{

Student\* cur=head;

bool bo=false;

while(cur!=NULL)

{

if(cur->num==data)

{

bo=true;

int a,b;

char \*c;

double d;

for(;;) //找到后提供各字段的修改

{ cout<<"1修改学号|2修改姓名|3修改性别|4修改手机号|5修改宿舍电话号|6修改数学成绩|7修改C++成绩|8退出\n";

cin>>a;

switch(a)

{

case 1:cout<<"输入新学号："; cin>>b; cur->num=a; break; case 2:cout<<"输入新姓名："; cin>>c; cur->name=c; break; case 3:cout<<"输入新性别："; cin>>c; cur->sex=c; break; case 4:cout<<"输入新手机号：";

cin>>c;

cur->phone=c;

break;

case 5:cout<<"输入新宿舍电话号：";

cin>>c;

cur->rphone=c;

break;

case 6:cout<<"输入新数学成绩："; cin>>d; cur->math=d; break; case 7:cout<<"输入C++成绩："; cin>>d; cur->cpp=d; break; case 8:exit(1); break; default:cout<<"操作错误"; break;

}

}

break;

}

}

if(bo==false) cout<<"没有这个人！"<<endl; return;

}

//统计

void Student::Math(Student\* head,int data)

{

Student\* cur=head;

bool bo=false;

while(cur!=NULL)

{

if(cur->num=data)

{

bo=true;

avg=cur->math\*(mathp/sum)+cur->cpp\*(cppp/sum);//计算总分和加平均分权的公式

break;

}

cur=cur->next;

}

if(bo==false){ cout<<"没有这个人！"<<endl; return;

}

cout<<"该生的总分和加平均分权="<<avg<<endl;

return;

}

//录入

void Student::Insert()

{

head=NULL;

int num;

char name[8];

char sex[4];

char phone[11];

char rphone[7];

double math;

double cpp;

cout<<"请输入基本信息：\n"; cout<<"学号：";

cin>>num; cout<<"姓名：";

cin>>name; cout<<"性别：";

cin>>sex; cout<<"手机号：";

cin>>phone; cout<<"宿舍电话：";

cin>>rphone; cout<<"数学成绩：";

cin>>math;

cout<<"C++成绩：";

cin>>cpp;

Push(&head,num,name,sex,phone,rphone,math,cpp);//调用函数Push建立有序链表

}

//用释构函数逐个释放空间

Student::~Student()

{

while(head!=NULL)

{

delete head;

head=head->next;

}

}

//程序主入口

void main()

{

for(;;)

{

head=NULL;

Student s;

int x;

int data;

cout<<"|1录入|2查找|3删除|4修改|5统计|6退出|\n";

cout<<"请作选择：\n";

cin>>x;

switch(x)

{

case 1: start: s.Insert(); cout<<"继续吗？[Y/N]";

char ch; cin>>ch; if(ch=='y' || ch=='Y')

goto start;

s.Display(head)

; int l;

l=s.Length(head);

cout<<"一共有"<<l<<"个学生。"<<endl; break;

case 2: cout<<"请输入你要查找的学生的学号：";

cin>>data; s.Find(head,data); break; case 3:

cout<<"请输入你要删除的学生的学号：";

cin>>data; s.Delete(head,data);

break;

case 4: cout<<"请输入你要修改的学生的学号：";

cin>>data; s.Update(head,data);

break;

case 5: cout<<"请输入你要统计的学生的学号：";

cin>>data;

s.Math(head,data);

break;

case 6: exit(1);

break;

default:cout<<"操作错误！"<<endl;

break;

}

}}