#define \_CRT\_SECURE\_NO\_WARNINGS

#include<iostream>

using namespace std;

#include<string.h>

#include<fstream>

class student

{

private:

student\* next;

public:

char stu\_num[15]; //学号

char stu\_name[30]; //姓名

float stu\_score; //成绩

void afterInsert(student \*p);//在该节点后插入一个节点

void afterDelete();//在该节点后删除一个节点

student \*getNext()//获得下一个节点的指针

{

return next;

}

/\*\*\*\*\*\*\*\*\*\*\*查询学生信息\*\*\*\*\*\*\*\*\*\*\*\*/

void getMage();

/\*\*\*\*\*\*学生信息修改\*\*\*\*\*\*/

void changeMage(int n, char \*ptr);

void changegrade(float p);

/\*\*\*\*\*\*构造\*\*\*\*\*/

student(char \*num, char \*name, float score);

student();

};

void student::changegrade(float p)

{

stu\_score = p;

}

student::student() //构造

{

strcpy(stu\_num, "\0");

strcpy(stu\_name, "\0");

stu\_score = 0;

next = '\0';

}

student::student(char \*num, char \*name, float score)

{

strcpy(stu\_num, num);

strcpy(stu\_name, name);

stu\_score = score;

next = '\0';

}

void student::afterInsert(student \*p)//插入节点

{

p->next = next;

next = p;

}

void student::afterDelete() //删除节点

{

student \*p = next;

next = p->next;

delete p;

}

void student::getMage() //获得信息

{

cout << "学号：" << stu\_num << " 姓名：" << stu\_name;

cout << " c++成绩：" << stu\_score << endl;

}

void student::changeMage(int n, char \*ptr)

{

switch (n)

{

case 1: strcpy(stu\_num, ptr);

break;

case 2: strcpy(stu\_name, ptr);

}

}

//建立链表函数

void construct\_list(student \*tail)

{

student \*p = new student;

char very[20];

float achieve;

cout << "请输入学号:" << endl;

cin >> very;

p->changeMage(1, very);

cout << "请输入姓名：" << endl;

cin >> very;

p->changeMage(2, very);

cout << "请输入c++成绩：" << endl;

cin >> achieve;

p->changegrade(achieve);

system("cls");

cout << "信息输入完毕" << endl;

for (; tail->getNext() != '\0';)

{

tail = tail->getNext();

}

tail->afterInsert(p);

}

/\*\*\*\*\*\*\*\*\*查询信息\*\*\*\*\*\*\*\*\*/

student \*findmege(student \*head)

{

loop:

cout << "1--按姓名查询 2--按学号查询 q--返回上一级菜单" << endl;

char p[5], ptr[20];

student \*mid = head;

cin >> p;

if (p[0] != '1'&&p[0] != '2'&&p[0] != 'q' || strlen(p)>1)

{

system("cls");

cout << "对不起，你的输入有误，请重新输入！" << endl;

goto loop;

}

switch (p[0])

{

case '1':

{

system("cls");

cout << "请输入要查找的姓名：" << endl;

cin >> ptr;

for (; strcmp(ptr, mid->stu\_name) != 0; mid = mid->getNext())

{

if (mid->getNext() == '\0')

{

cout << "对不起，你要查找的人不存在，请确认你的输入是否正确！" << endl;

goto loop;

}

}

return mid;

}

case '2':

{

system("cls");

cout << "请输入您要查找的学号：" << endl;

cin >> ptr;

for (; strcmp(ptr, mid->stu\_num) != 0; mid = mid->getNext())

{

if (mid->getNext() == '\0')

{

cout << "对不起，您要查找的内容不存在，请确认您的输入是否正确！" << endl;

goto loop;

}

}

return mid;

}

case 'q':

{

return '\0';

}

default:

{

system("cls");

cout << "对不起，您的输入有误，请重新输入！" << endl;

goto loop;

}

}

}

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*删除链表 节点\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

void delete\_list(student \*head)

{

student \*p = '\0';

char selet[4];

system("cls");

cout << "在删除前，系统会根据您的提示找到您要删除的学生信息！" << endl;

p = findmege(head);

if (p != '\0')

{

cout << "确认要删除吗（yes/任意键返回）" << endl;

cin >> selet;

if (strcmp(selet, "yes") == 0)

{

for (; head->getNext() != p; head = head->getNext());

head->afterDelete();

system("cls");

cout << "该信息删除成功！" << endl;

}

}

}

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*修改节点信息\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

void change\_info(student \*head)

{

system("cls");

cout << "在您修改前，系统会根据您提供的信息找的您要修改的信息：" << endl;

student \*p = '\0';

float achieve;

p = findmege(head);

if (p != '\0')

{

cout << "请输入c++成绩:" << endl;

cin >> achieve;

p->changegrade(achieve);

system("cls");

cout << "修改成功!" << endl;

}

}

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*输出学生成绩信息\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

void output(student \*head)

{

system("cls");

cout << "1-查看指定学生信息；2-查看所有学生信息；3-分段输出学生信息" << endl;

char ch;

int n = 0;

head = head->getNext();

cin >> ch;

switch (ch)

{

case '1':

head = findmege(head);

if (head == '\0')

{

break;

}

head->getMage();

break;

case '2':

while (head)

{

head->getMage();

head = head->getNext();

}

break;

case '3':

cout << "a-60分以下；b-60~70分之间；c-70~80分之间；d-80~90分之间；e-90~100分之间：" << endl;

cin >> ch;

switch (ch)

{

case 'a':

while (head)

{

if (head->stu\_score <= 60)

{

head->getMage();

n++;

}

head = head->getNext();

}

break;

case 'b':

while (head)

{

if (head->stu\_score>60 && head->stu\_score <= 70)

{

head->getMage();

n++;

}

head = head->getNext();

}

break;

case 'c':

while (head)

{

if (head->stu\_score>70 && head->stu\_score <= 80)

{

head->getMage();

n++;

}

head = head->getNext();

}

break;

case 'd':

while (head)

{

if (head->stu\_score>80 && head->stu\_score <= 90)

{

head->getMage();

n++;

}

head = head->getNext();

}

break;

case 'e':

while (head)

{

if (head->stu\_score>90 && head->stu\_score <= 100)

{

head->getMage();

n++;

}

head = head->getNext();

}

}

if (n == 0)

{

cout << "该分段内没有您要找的学生信息" << endl;

}

}

}

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*主菜单\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

void mainmenu(student \*head)

{

char selet[10];

int n = 1;

ofstream outfile;

ifstream infile;

student \*p, \*ptr;

student \*test = head, \*mid;

cout << "\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*欢迎进入学生信息管理系统\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*" << endl;

do {

cout << "\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*" << endl;

cout << "1.插入信息； 2.删除信息； 3.修改信息； 4.查看信息； 5.保存 " << endl;

cout << "按'q'键退出 " << endl;

cout << "\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*" << endl;

cin >> selet;

if (((selet[0]<'1' || selet[0]>'6') && selet[0] != 'q') || strlen(selet)>1)

{

system("cls");

cout << "您的输入有误，请重新输入！" << endl;

break;

}

switch (selet[0])

{

case '1':

construct\_list(head);

break;

case '2':

delete\_list(head);

break;

case '3':

change\_info(head);

break;

case '4':

output(head);

break;

case '5':

outfile.open("students.txt", ios::out | ios::app);

for (p = head->getNext(); p != '\0'; p = p->getNext())

{

outfile << p->stu\_name << ' ';

outfile << p->stu\_num << ' ';

outfile << p->stu\_score << ' ';

outfile << endl;

}

outfile.close();

system("cls");

cout << "保存成功！" << endl;

break;

case 'q':

break;

}

} while (selet[0] != 'q');

}

void main()

{

student head;

mainmenu(&head);

}