#include<iostream>

#include<malloc.h>

#include<string>

using namespace std;

#define M 50

typedef struct

{

char name[10];

char num[10];

double grade;

}student;

//直接插入排序

void insert\_sort(student stus[],int n)

{

int i,j;

for(i=2;i <= n;i++)

{

j = i-1;

stus[0].grade = stus[i].grade;

while(stus[0].grade < stus[i].grade)

{

stus[j+1] = stus[j];

j = j-1;

}

stus[j+1] = stus[0];

}

}

//直接选择排序

void select\_sort(student stus[],int n)

{

int i,j,k;

for(i = 1;i <= n-1;i++)

{

k = i;

for(j = i+1;j <= n;j++)

{

if(stus[i].grade > stus[j].grade)

{

k = j;

}

if(k != i)

{

stus[0] = stus[k];

stus[k] = stus[i];

stus[i] = stus[0];

}

}

}

}

//快速排序

void quick\_sort(student stus[],int left,int right)

{

int i,j;

if(left < right)

{

i = left;

j = right;

stus[0] = stus[i];//准备以本次最左边的元素为标准进行划分，先保存其值

do

{

while(stus[j].grade > stus[0].grade && i < j)

{

j--;

}

if(i < j)

{

stus[i] = stus[j];

i++;

}

while(stus[i].grade < stus[0].grade &&i <j)

{

i++;

}

if(i < j)

{

stus[j]= stus[i];

j--;

}

}while(i!=j);

stus[i] = stus[0];

quick\_sort(stus,left,i-1);

quick\_sort(stus,i+1,right);

}

}

int main()

{

int i,n;

student \*stus,\*s;

cout<<"\n请输入学生人数:"<<endl;

cin>>n;

stus = (student\*)malloc((n+1)\*sizeof(student));

for(i = 1;i <= n;i++)

{

cout<<"\n请输入第"<<i<<"个学生的姓名:";

cin>>stus[i].name;

cout<<"\n请输入第"<<i<<"个学生的学号:";

cin>>stus[i].num;

cout<<"\n请输入第"<<i<<"个学生的成绩:";

cin>>stus[i].grade;

}

cout<<"\n排序后:"<<endl;

// insert\_sort(stus,n);

// select\_sort(stus,n);

quick\_sort(stus,1,n);

for(i = 1;i <= n;i++)

{

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

cout<<"姓名:"<<stus[i].name<<endl;

cout<<"学号:"<<stus[i].num<<endl;

cout<<"成绩:"<<stus[i].grade<<endl;

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

}

}