#include <iostream>

#include <stdlib.h>

using namespace std;

struct SV{

char ma[30], hoten[30], stt[10];

float diem;

};

struct Node{

SV info;

Node \*next;

};

void insertDQ(Node \*&L,SV x, Node \*p){

if(L==p){

L = new Node;

L->info = x;

L->next = p;

}else insertDQ(L->next,x,p);

}

SV nhap1SV(){

SV x;

cout<<"\nNhap STT: ";fflush(stdin);gets(x.stt);

cout<<"Nhap ma: ";fflush(stdin);gets(x.ma);

cout<<"Nhap ho ten: ";fflush(stdin);gets(x.hoten);

cout<<"Nhap diem: ";cin>>x.diem;

return x;

}

void taoDS(Node \*&L){

L=NULL;

SV x;

int n;

cout<<"Nhap so luong sinh vien > 0: ";cin>>n;

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

cout<<"Nhap sinh vien thu "<<i;

x = nhap1SV();

insertDQ(L,x,NULL);

}

}

void xuat1SV(SV x){

printf("\n%10s %10s %10s %10.1f",x.stt,x.ma,x.hoten,x.diem);

}

void xuatDSSV(Node \*L){

printf("\n%10s %10s %10s %10s","STT","MSV","Ho va ten","Diem TB");

while(L!=NULL){

xuat1SV(L->info);

L = L->next;

}

}

float tinhdiemTB(Node \*L){

float sum =0;

int dem=0;

for (Node \*q=L;q!=NULL;q=q->next){

SV x = q->info;

sum += x.diem;

dem++;

}

return sum/dem;

}

void sapXepChon(Node \*L){

for(Node \*p=L;p->next!=NULL;p=p->next){

Node \*min = p;

for(Node \*q=p->next;q!=NULL;q=q->next){

if(q->info.diem > min->info.diem){

min = q;

}

}

if(min!=p){

SV temp = min->info;

min->info = p->info;

p->info = temp;

}

}

}

void xoa(Node \*&L){

if(L!=NULL)

if(L->info.diem<5){

Node \*p = L;

L=L->next;

delete(p);

xoa(L);

}else xoa(L->next);

}

void xuatSVTXL(SV x,int i){

char \*hl;

if(x.diem<0||x.diem>10){

hl="Sai dinh dang";

}else{

if(x.diem<5) hl = "Yeu";

else if(x.diem<6.5) hl = "Trung binh";

else if(x.diem<8) hl = "Kha";

else hl = "Gioi";

}

printf("\n%10s %10s %10s %10.1f %10s",x.stt,x.ma,x.hoten,x.diem,hl);

}

void xuatDSSVTXL(Node \*L){

printf("\n%10s %10s %10s %10s %10s","STT","MSV","Ho va ten","Diem TB","Xep Loai");

int count =1;

while(L != NULL){

xuatSVTXL(L->info, count);

L = L->next;

count++;

}

}

main(){

cout<<"Le Huu Nhat Khoa - 2252 - CS316E\n";

Node \*L;

taoDS(L);

cout<<"\nDanh sach sinh vien: ";xuatDSSV(L);

cout<<"\nSap xep giam dan diem trung binh: ";sapXepChon(L);xuatDSSV(L);

cout<<"\nXep loai danh sach sinh vien: ";xuatDSSVTXL(L);

cout<<"\nXoa sinh vien co xep loai yeu: ";xoa(L);xuatDSSVTXL(L);

}

