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#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 xuatDSSVTL(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);

}

```

```

D:\CauTrucDuLieu\sort\KTGK.exe
Le Huu Nhat Khoa - 2252 - CS316E
Nhap so luong sinh vien > 0: 2
Nhap sinh vien thu 1
Nhap STT: 001
Nhap ma: SV01
Nhap ho ten: Nguyen Van Anh
Nhap diem: 8.5
Nhap sinh vien thu 2
Nhap STT: 002
Nhap ma: SV02
Nhap ho ten: Bui Thi Thanh Loan
Nhap diem: 6.5

Danh sach sinh vien:
  STT      MSV  Ho va ten      Diem TB
  001      SV01 Nguyen Van Anh      8.5
  002      SV02 Bui Thi Thanh Loan    6.5
Sap xep giam dan diem trung binh:
  STT      MSV  Ho va ten      Diem TB
  001      SV01 Nguyen Van Anh      8.5
  002      SV02 Bui Thi Thanh Loan    6.5
Xep loai danh sach sinh vien:
  STT      MSV  Ho va ten      Diem TB      Xep Loai
  001      SV01 Nguyen Van Anh      8.5      Gioi
  002      SV02 Bui Thi Thanh Loan    6.5      Kha
Xoa sinh vien co xep loai yeu:
  STT      MSV  Ho va ten      Diem TB      Xep Loai
  001      SV01 Nguyen Van Anh      8.5      Gioi
  002      SV02 Bui Thi Thanh Loan    6.5      Kha
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```

Nếu DTB>=8 xếp loại Giỏi