Question 8

Q 8.1, 8.2, 8.3

Source code:

#include <iostream>

#include <stdio.h>

#include <stdlib.h>

#include <conio.h>

#include <string.h>

#include <ctime>

using namespace std;

void checkDaysOfWeek(int);

enum DaysOfWeek

{

SUNDAY,

MONDAY,

TUESDAY,

WEDNESDAY,

THURSDAY,

FRIDAY,

SATURDAY

};

void checkDaysOfWeek(int season)

{

switch (season)

{

case 0:

cout << "Sun";

break;

case 1:

cout << "Mon";

break;

case 2:

cout << "Tue";

break;

case 3:

cout << "Wed";

break;

case 4:

cout << "Thu";

break;

case 5:

cout << "Fri";

break;

case 6:

cout << "Sat";

break;

}

}

struct date

{

int dayofweek; //0 for Sunday and 6 for Saturday

int day; //0 ... 31

int month; //0 ... 12

int year; //xxxx

// Default constructor:

date() {

time\_t baygio = time(0);

tm \*ltm = localtime(&baygio);

dayofweek = ltm->tm\_wday;

day = ltm->tm\_mday;

month = 1 + ltm->tm\_mon;

year = 1900 + ltm->tm\_year;

cout << "System date: ";

checkDaysOfWeek(dayofweek);

cout << ", " << day << " - " << month << " - " << year << endl;

};

// Constructor:

date(int dd, int mm, int yy) {

int LeapYears = (int)yy / 4;

long a = (yy - LeapYears) \* 365 + LeapYears \* 366;

if (mm >= 1 && mm <= 12)

this->month = mm;

else {

cout << "Nhap sai thang. Moi nhap lai. month = " << endl;

cin >> mm;

this->month == mm;

}

if (yy >= 1900 && yy <= 2100)

this->year = yy;

// test for a leap year

if (mm == 1 || mm == 3 || mm == 5 || mm == 7 || mm == 8 || mm == 10 || mm == 12) {

if (dd >= 1 || dd <= 31)

this->day = dd;

else

cout << "Nhap sai ngay. Moi nhap lai." << endl;

}

else if ((mm == 4) || (mm == 6) || (mm == 9) || (mm == 11)) {

if ((dd >= 1) || (dd <= 30))

this->day = dd;

else

cout << "Nhap sai ngay. Moi nhap lai." << endl;

}

else if (mm == 2)

if (yy % 4 == 0) {

if (dd >= 1 || dd <= 29)

this->day = dd;

}

else if (yy % 4 != 0) {

if (dd >= 1 || dd <= 28)

this->day = dd;

}

else {

cout << "Nhap sai ngay. Moi nhap lai." << endl;

}

if (mm >= 2) a += 31;

if (mm >= 3 && (int)yy / 4 == yy / 4) a += 29;

else if (mm >= 3) a += 28;

if (mm >= 4) a += 31;

if (mm >= 5) a += 30;

if (mm >= 6) a += 31;

if (mm >= 7) a += 30;

if (mm >= 8) a += 31;

if (mm >= 9) a += 31;

if (mm >= 10) a += 30;

if (mm >= 11) a += 31;

if (mm == 12) a += 30;

a += dd;

this->dayofweek = (a - 2) % 7 - 1;

}

}my\_time;

int main()

{

string wday;

struct date thoigian(21, 14, 2018);

// thoigian.day = NULL;

cout << "Cau truc duoi dang: dow, dd - mm - yyyy: ";

checkDaysOfWeek(thoigian.dayofweek);

cout << ", " << thoigian.day << " - " << thoigian.month << " - " << thoigian.year << endl;

cout << "Cau truc duoi dang: dd / mm / yyyy: ";

cout << thoigian.day << " / " << thoigian.month << " / " << thoigian.year << endl;

cout << "Cau truc duoi dang: mm / dd / yyyy: ";

cout << thoigian.month << " - " << thoigian.day << " - " << thoigian.year << endl;

cout << "Cau truc duoi dang: dow dd.mm.yy: ";

checkDaysOfWeek(thoigian.dayofweek);

cout << " " << thoigian.day << "." << thoigian.month << "." << thoigian.year << endl;

int size\_my\_time;

struct date a;

size\_my\_time = sizeof(a);

cout << "Kich thuoc cua struc my\_time : size = " << size\_my\_time << endl;

system("pause");

}

Q 8.4

Source code :

#include <iostream>

#include <stdio.h>

#include <conio.h>

#include <cstdlib>

#include <iomanip>

#include <string.h>

using namespace std;

typedef struct sinhvien

{

int idsv;

char tensv[30]; // ten viet lien

float diem;

};

int search(struct sinhvien st[], int id, int biendem);

void clean(struct sinhvien st[], int deleteitem);

//ham de hien thi menu tuy chon

void displaymenu() {

cout << "==========================================" << "\n";

cout << " MENU " << "\n";

cout << "==========================================" << "\n";

cout << " 1. Them ban ghi sinh vien" << "\n";

cout << " 2. Xoa ban ghi sinh vien" << "\n";

cout << " 3. Cap nhat ban ghi sinh vien" << "\n";

cout << " 4. Quan sat tat ca ban ghi sinh vien" << "\n";

cout << " 5. Hien thi sinh vien co tong diem cao nhat" << "\n";

cout << " 6. Hien thi sinh vien co tong diem thap nhat" << "\n";

cout << " 7. Tim sinh vien boi ID" << "\n";

cout << " 8. Sap xep cac ban ghi boi diem" << "\n";

}

void them\_banghi(struct sinhvien st[], int& biendem) {

again:

cout << "\nNhap ID cua sinh vien: ";

cin >> st[biendem].idsv;

if (search(st, st[biendem].idsv, biendem) != -1) {

cout << "ID nay da ton tai\n"; goto again;

}

cout << "Nhap ten sinh vien: ";

cin >> st[biendem].tensv;

do {

cout << "\nNhap vao diem: ";

cin >> st[biendem].diem;

if (st[biendem].diem < 0 || st[biendem].diem > 10)

{

printf("\nDiem ly khong hop le. Xin kiem tra lai !");

}

} while (st[biendem].diem < 0 || st[biendem].diem > 10);

++biendem;

}

//ham de tim vi tri ban ghi

int search(struct sinhvien st[], int id, int biendem) {

int found = -1;

for (int i = 0; i < biendem && found == -1; i++)

{

if (st[i].idsv == id) found = i;

else found = -1;

}

return found;

}

//ham de xoa ban ghi

void xoa\_banghi(struct sinhvien st[], int& biendem) {

int id;

int index;

if (biendem > 0)

{

cout << "Nhap ID cua sinh vien: ";

cin >> id;

index = search(st, id, biendem);

if ((index != -1) && (biendem != 0))

{

if (index == (biendem - 1)) //Xoa ban ghi cuoi cung

{

clean(st, index);

--biendem;

cout << "Ban ghi da duoc xoa.\n";

}

else //xoa ban ghi dau tien hoac o giua

{

for (int i = index; i < biendem - 1; i++)

{

st[i] = st[i + 1];

clean(st, biendem);

--biendem;

}

}

}

else cout << "Ban ghi khong ton tai. Kiem tra ID va thu lai.\n";

}

else cout << "Khong co ban ghi nao duoc xoa\n";

}

//ham de xoa sach ban ghi da bi xoa

void clean(struct sinhvien st[], int index)

{

st[index].idsv = NULL;

strcpy(st[index].tensv, "");

st[index].diem = NULL;

}

//ham de cap nhat ban ghi

void capnhat\_banghi(struct sinhvien st[], int biendem) {

int id;

int column\_index;

cout << "Nhap ID cua sinh vien: ";

cin >> id;

cout << "Ban muon cap nhat truong nao (1-2) ?: ";

cin >> column\_index;

int index = search(st, id, biendem);

if (index != -1)

{

if (column\_index == 1)

{

cout << "Nhap ten sinh vien: ";

cin >> st[index].tensv;

}

else if (column\_index == 2)

{

cout << "Nhap diem: ";

cin >> st[index].diem;

}

else cout << "Gia tri chi muc khong hop le";

}

else cout << "Ban ghi khong ton tai. Kiem tra ID va thu lai.";

}

//ham de quan sat tat ca ban ghi

void viewall(struct sinhvien st[], int biendem) {

int i = 0;

cout << left << setw(5) << "ID" << setw(20) << "TEN" << setw(5) << "DIEM" << endl;

cout << "==============================================\n";

while (i <= biendem) {

if (st[i].idsv != NULL) {

cout << left << setw(5) << st[i].idsv << setw(20) << st[i].tensv << setw(5) << st[i].diem << endl;

}

i = i + 1;

}

}

//Ham de hien thi tong diem lon nhat

void showmax(struct sinhvien st[], int biendem)

{

float max = st[0].diem;

int index = 0;

if (biendem >= 2)

{

for (int j = 0; j < biendem - 1; ++j)

if (max < st[j + 1].diem) {

max = st[j + 1].diem;

index = j + 1;

}

}

else if (biendem == 1)

{

index = 0;

max = st[0].diem;

}

else cout << "Khong tim thay ban ghi nao!\n";

if (index != -1) cout << "Sinh vien co ID la " << st[index].idsv

<< " dat tong diem cao nhat la " << max << endl;

}

//ham de hien thi tong diem nho nhat

void showmin(struct sinhvien st[], int biendem)

{

float min = st[0].diem;

int index = 0;

if (biendem >= 2)

{

for (int j = 0; j < biendem - 1; ++j)

if (min > st[j + 1].diem)

{

min = st[j + 1].diem;

index = j + 1;

}

}

else if (biendem == 1)

{

index = 0;

min = st[0].diem;

}

else cout << "Khong tim thay ban ghi nao!\n";

if (index != -1) cout << "Sinh vien co ID la " << st[index].idsv

<< " co tong diem thap nhat la " << min << endl;

}

//ham de tim ban ghi

void find(struct sinhvien st[], int biendem)

{

int id;

cout << "Nhap ID cua sinh vien: ";

cin >> id;

int index = search(st, id, biendem);

if (index != -1)

{ //hien thi ban ghi da tim thay

cout << left << setw(5) << st[index].idsv << setw(20) << st[index].tensv << setw(5) << st[index].diem << endl;

}

else cout << "Ban ghi khong ton tai.";

}

//ham de sap xep cac ban ghi theo tong diem

void bubblesort(struct sinhvien dataset[], int n)

{

int i, j;

for (i = 0; i < n; i++)

for (j = n - 1; j > i; j--)

if (dataset[j].diem < dataset[j - 1].diem)

{

sinhvien temp = dataset[j];

dataset[j] = dataset[j - 1];

dataset[j - 1] = temp;

}

}

int main(int argc, char \*argv[])

{

sinhvien st[80];

int biendem = 0;

//hien thi menu

displaymenu();

int luachon;

char confirm;

do

{

cout << "\nNhap lua chon cua ban (1-8): ";

cin >> luachon;

switch (luachon) {

case 1:them\_banghi(st, biendem); break;

case 2:xoa\_banghi(st, biendem); break;

case 3:capnhat\_banghi(st, biendem); break;

case 4:viewall(st, biendem); break;

case 5:showmax(st, biendem); break;

case 6:showmin(st, biendem); break;

case 7:find(st, biendem); break;

case 8:bubblesort(st, biendem); break;

default:cout << "Khong hop le";

}

cout << "Nhan y hoac Y de tiep tuc: ";

cin >> confirm;

} while (confirm == 'y' || confirm == 'Y');

return 0;

}

Q 8.5

Source code

#include<stdio.h>

#include<conio.h>

#include<windows.h>

#include <string.h>

#include<iomanip>

#include <iostream>

#include<fstream>

#define File\_Name "sinhvien.dat"

using namespace std;

struct date

{

int ngay, thang, nam;

};

struct sinhvien

{

char malop[20];

int masv;

char hoten[30];

struct date date;

float diemTB;

};

//Khai bao cau truc du lieu dslk

struct Node {

sinhvien data;

Node \*next;

};

struct List {

Node \*pFirst;

Node \*pLast;

};

//Khoi tao danh sach lk

void Init(List L)

{

L.pFirst = L.pLast = NULL;

}

//Tao Node sinh vien trong danh sach

Node\* createNode(sinhvien sv)

{

//Cap phat 1 Node

Node \*p = new Node;

if (p == NULL)

{

return NULL;

}

p->data = sv; //Luu sv vao data

p->next = NULL;

return p;

}

//Kiểm tra danh sách rỗng hay không

int Isempty(List &L)

{

return (L.pFirst == NULL);

}

//Them Node vao dau danh sach

void addFirst(List &L, sinhvien sv)

{

Node\* p = createNode(sv);

if (L.pFirst = NULL) //Ds rong

{

L.pFirst = L.pLast = p;

}

else

{

p->next = L.pFirst; //p tro toi node dau ds

L.pFirst = p; //p nam tai vt node dau

}

}

//Them Node vao cuoi danh sach

void addLast(List &L, sinhvien sv)

{

Node\* p = createNode(sv);

if (L.pFirst = NULL) //Ds rong

{

L.pFirst = L.pLast = p;

}

else

{

L.pLast->next = p; //pLast tro toi p

L.pLast = p; //p tro thanh node cuoi

}

}

void addAfter(List &L, Node \*p, Node\* newNode)

{

if (p != NULL)

{

newNode->next = p->next;

p->next = newNode;

if (p == L.pLast) L.pLast = newNode;

}

}

void deleteFirst(List &L)

{

Node \*pDel = L.pFirst;

L.pFirst = L.pFirst->next;

delete pDel;

}

void deleteLast(List &L)

{

Node \*pDel = L.pLast;

Node \*pPrev;

pPrev->next = NULL;

delete pDel;

}

void delete\_k(List &L, sinhvien sv)

{

Node \*p = L.pFirst;

Node \*q = NULL;

// while(p)

// {

// if(p->data==sv.)

// break;

// q=p;

// p=p->next; //p luon duyet truoc q 1 node

// }

// if(p==NULL)

// cout<<"sv tim thay";

if (q != NULL)

{

if (p != NULL)

{

q->next = p->next;

delete (p);

if (p == L.pLast) L.pLast = q;

delete(p);

}

}

else

{

L.pFirst = p->next;

delete(p);

if (L.pFirst == NULL) L.pLast = NULL;

}

}

void CapNhat(List &L)

{

int chon;

sinhvien sv;

Node \*p;

Node\* newNode;

system("COLOR 1B");

cout << "1.Them vao dau danh sach.\n";

cout << "2.Them vao cuoi danh sach.\n";

cout << "3.Them vao vi tri k cua danh sach.\n";

cout << "4.Xoa dau danh sach.\n";

cout << "5.Xoa cuoi danh sach.\n";

cout << "6.Xoa tai vi tri k cua danh sach.\n";

switch (chon)

{

case 1: addFirst(L, sv);

case 2: addLast(L, sv);

case 3: addAfter(L, p, newNode);

case 4: deleteFirst(L);

case 5: deleteLast(L);

case 6: delete\_k(L, sv);

}

}

void writeFile(List L, int n)

{

Node \*temp; temp = L.pFirst;

if (temp == NULL) return;

fstream fileout("danhsach.bin", ios::binary | ios::out);

// int n = 0;

while (temp != NULL) {

n++;

fileout.write((char\*)&(temp->next), sizeof(sinhvien)); //temp->info

temp = temp->next;

}

fileout.close();

}

void readFile(List &L)

{

sinhvien sv;

fstream infile("danhsach.txt", ios::binary | ios::in);

// if (infile == NULL) return;

while (!infile.eof()) {

infile.read((char\*)&sv, sizeof(sinhvien));

if (Isempty(L))

{

addFirst(L, sv);

}

else addLast(L, sv);

}

infile.close();

}

void Nhap()

{

sinhvien sv;

system("cls");

printf("-------------------------------");

cout << "\nHo ten sv: ";

fflush(stdin);

cin.getline(sv.hoten, 30);

cout << "Ma lop: ";

cin.getline(sv.malop, 5);

cout << "Ma sv: ";

cin >> sv.masv;

cout << "Nhap vao ngay thang nam sinh\n";

do

{

cout << "\*Ngay sinh: ";

cin >> sv.date.ngay;

fflush(stdin);

} while (sv.date.ngay > 31 || sv.date.ngay < 1);

do

{

fflush(stdin);

cout << "\*Thang sinh: ";

cin >> sv.date.thang;

} while (sv.date.thang > 12 || sv.date.thang < 1);

do

{

fflush(stdin);

cout << "\*Nam sinh: ";

cin >> sv.date.nam;

} while (sv.date.nam > 2016 || sv.date.nam < 1000);

do

{

cout << "Nhap vao diem trung binh: ";

cin >> sv.diemTB;

} while (sv.diemTB <= 0 || sv.diemTB >= 10);

}

void NhapSV(List &L)

{

sinhvien sv;

system("cls");

int n;

cout << "Nhap so luong ho so: ";

cin >> n;

for (int i = 0; i < n; i++)

{

cout << "Thong tin ho so sinh vien thu: " << i + 1 << " \n";

Nhap();

addLast(L, sv);

system("cls");

}

cout << "Hoan thanh nhap ho so" << endl;

}

void InDS(List &L)

{

int i = 1;

system("cls");

sinhvien sv;

if (L.pFirst == NULL)

cout << endl << "Khong co sinh vien nao trong danh sach!!!\n";

Node \*p = L.pFirst;

cout << " \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_" << endl;

cout << "| STT | Ho va ten | Ngay sinh | Ma sinh vien | Ma lop | Diem TB |" << endl;

cout << "|\_\_\_\_\_\_\_|\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_|\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_|\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_|\_\_\_\_\_\_\_\_\_\_\_\_\_\_|\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_|" << endl;

while (p != NULL)

{

cout << "|" << setw(4) << i << " |" << setw(20) << p->data.hoten << setw(5) << p->data.date.ngay << " /" << p->data.date.thang << " /" << p->data.date.nam

<< " |" << setw(12) << p->data.masv << " |" << setw(10) << p->data.malop << " |" << setw(12) << p->data.diemTB;

p = p->next;

i++;

}

cout << "\n|\_\_\_\_\_\_\_|\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_|\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_|\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_|\_\_\_\_\_\_\_\_\_\_\_\_\_\_|\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_|\n";

}

void gotoxy(int x, int y)

{

static HANDLE h = NULL;

if (!h)

{

h = GetStdHandle(STD\_OUTPUT\_HANDLE);

COORD c = { x,y };

SetConsoleCursorPosition(h, c);

}

}

int Drawtext(int line, int cot, int focus, char Text[])

{

HANDLE hConsoleColor;

hConsoleColor = GetStdHandle(STD\_OUTPUT\_HANDLE);

SetConsoleTextAttribute(hConsoleColor, focus);

printf("%s\n", Text);

}

int Menu(int &chon)

{

sinhvien \*sv;

int n = 0;

system("cls");

char TextMenu[][100] = { " |\*\*\*\*\*\*\*\*\*\*\*\*\* Quan ly sinh vien \*\*\*\*\*\*\*\*\*\*\*\*\*|",

" | 1. Them moi ho so. |",

" | 2. Cap nhat danh sach. |",

" | 3. IN danh sach. |",

" | 4. Sap xep danh sach. |",

" | 5. Tim kiem ho so. |",

" | 6. Thong ke ho so. |",

" | 7. Thoat. |",

" \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*",

};

int i = 2; //dong chon bat dau tu vi tri dong 2

char ch;

do {

system("cls");

for (int t = 1; t <= 9; t++)

{

if (t == i) Drawtext(7 + t, 2, 3, TextMenu[t - 1]);

else Drawtext(7 + t, 2, 14, TextMenu[t - 1]);

}

do {

ch = \_getch();

if (ch == 224) ch = \_getch();

} while (!(ch == 224 || ch == 13 || ch == 27 || ch == 80 || ch == 72));

if (ch == 80) { //ky tu xuong

i++;

if (i > 8) i = 2; //neu dong chon het dong 8 quay lai dong 2

}

if (ch == 72) //ky tu len

{

i--;

if (i < 1) i = 7;

}

} while (!(ch == 13 || ch == 27));

List L;

switch (i)

{

case 2:

{

NhapSV(L);

writeFile(sv, n);

break;

}

case 3:

{

CapNhat(L);

break;

}

case 4:

{

readFile(L);

InDS(L);

system("pause");

break;

case 5:

{

break;

}

case 6:

{

break;

}

case 7: return 1;

}

}

}

int main() {

List L; int n = 0, chon;

sinhvien sv;

Init(L);

readFile(L);

writeFile(, n);

system("cls");

while (1)

{

Menu(chon);

}

system("PAUSE");

}