**ЗВІТ**

**до лабораторної роботи № < 9.1.1 >**

**« Послідовний пошук в масиві структур »**

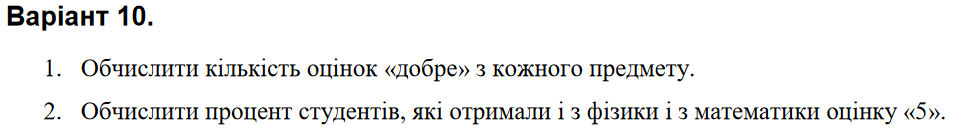
**з дисципліни**

**«Алгоритмізація та програмування»**

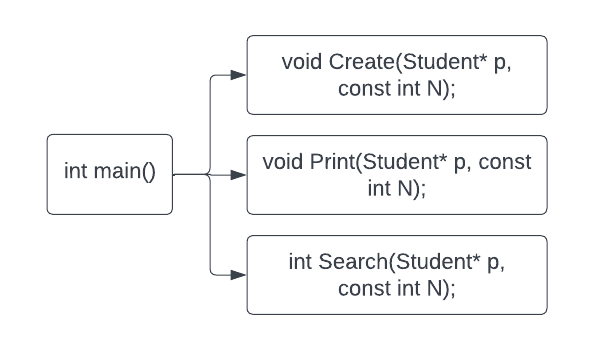
**студента групи ІН-105Б**

**Горанова Анастаса**

**Умова завдання:**



**Структурна схема:**



**Текст програми:**

// 9.1.1.cpp

// < Горанов Анастас >

// Лабораторна робота № 9.1.1

// Послідовний пошук в масиві структур

// Варіант 10

#include <iostream>

#include <iomanip>

#include <string>

using namespace std;

enum Specialnist { KN, ME, IN, FI, TN };

string specialnistList[] = { "KN", "ME", "IN", "FI", "TN" };

struct Student

{

string surname;

int course;

Specialnist spec;

int fiz;

int mat;

union

{

int prog;

int chis\_metod;

int pedagog;

};

};

void Create(Student\* p, const int N);

void Print(Student\* p, const int N);

int Search(Student\* p, const int N);

int main()

{

int N;

cout << "Type the number of students: "; cin >> N;

Student\* p = new Student[N];

Create(p, N);

Print(p, N);

cout << "The total number of marks good: " << Search(p, N) << endl;

return 0;

}

void Create(Student\* p, const int N)

{

int spec;

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

{

cout << "Student # " << i + 1 << ":" << endl;

cin.get();

cin.sync();

cout << "Surname: "; getline(cin, p[i].surname);

cout << "Course: "; cin >> p[i].course;

cout << "Grades in physics: "; cin >> p[i].fiz;

cout << "Grades in math: "; cin >> p[i].mat;

cout << "A specialty (0 - KN, 1 - ME, 2 - IN, 3 - FI, 4 - TN): "; cin >> spec;

if (spec > 4) {

cout << "Wrong value, selected 2 (IN)" << endl;

spec = 2;

}

p[i].spec = (Specialnist)spec;

switch (p[i].spec)

{

case KN:

cout << "Grades in programming: "; cin >> p[i].prog;

break;

case ME:

cout << "Grades in pedagogy: "; cin >> p[i].pedagog;

break;

case IN:

cout << "Grades in num.methods: "; cin >> p[i].chis\_metod;

break;

case FI:

cout << "Grades in pedagogy: "; cin >> p[i].pedagog;

break;

case TN:

cout << "Grades in pedagogy: "; cin >> p[i].pedagog;

break;

}

cout << endl;

}

}

void Print(Student\* p, const int N)

{

cout << "==========================================================================================================="

<< endl;

cout << "| # | Surname | Course | Specilization | Physic | Mathematic | Programming | Numerical Methods | Pedagogy |"

<< endl;

cout << "-----------------------------------------------------------------------------------------------------------"

<< endl;

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

{

cout << "|" << setw(2) << right << i + 1 << " ";

cout << "| " << setw(8) << left << p[i].surname

<< "| " << setw(4) << right << p[i].course << " "

<< " | " << setw(14) << left << specialnistList[p[i].spec]

<< setw(4) << "| " << setw(3) << left << p[i].fiz << " "

<< setw(6) << "| " << setw(6) << left << p[i].mat << " ";

switch (p[i].spec)

{

case KN:

cout << setw(8) << "| " << setw(5) << left << p[i].prog << setw(21)

<< " | " << setw(10) << left

<< "| " << left << " |" << endl;

break;

case ME:

cout << "" << setw(13) << "| " << " "

<< "" << setw(20) << "| "

<< setw(6) << "| " << setw(4) << left << p[i].pedagog << " |" << endl;

break;

case IN:

cout << "" << setw(13) << "| " << setw(10) << " |" << " "

<< setw(9) << p[i].chis\_metod << " |" << " "

<< setw(8) << "" << " |" << endl;

break;

case FI:

cout << "" << setw(13) << "| " << " "

<< "" << setw(20) << "| "

<< setw(6) << "| " << setw(4) << left << p[i].pedagog << " |" << endl;

break;

case TN:

cout << "" << setw(13) << "| " << " "

<< "" << setw(20) << "| "

<< setw(6) << "| " << setw(4) << left << p[i].pedagog << " |" << endl;

break;

}

}

cout << "==========================================================================================================="

<< endl;

cout << endl;

}

int Search(Student\* p, const int N)

{

int k = 0, n = 0;

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

{

if (p[i].mat == 4) {

k++, n++;

}

if (p[i].fiz == 4) {

k++, n++;

}

switch (p[i].spec) {

case KN:

if (p[i].prog == 4) {

k++, n++;

}

break;

case ME:

if (p[i].pedagog == 4) {

k++, n++;

}

break;

case IN:

if (p[i].chis\_metod == 4) {

k++, n++;

}

break;

case TN:

if (p[i].pedagog == 4) {

k++, n++;

}

break;

case FI:

if (p[i].pedagog == 4) {

k++, n++;

}

break;

}

cout << "A student " << p[i].surname << " has " << k << " good grades." << endl;

k = 0;

}

cout << endl;

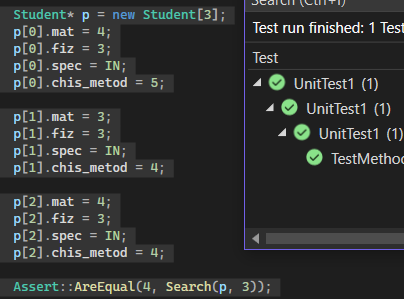
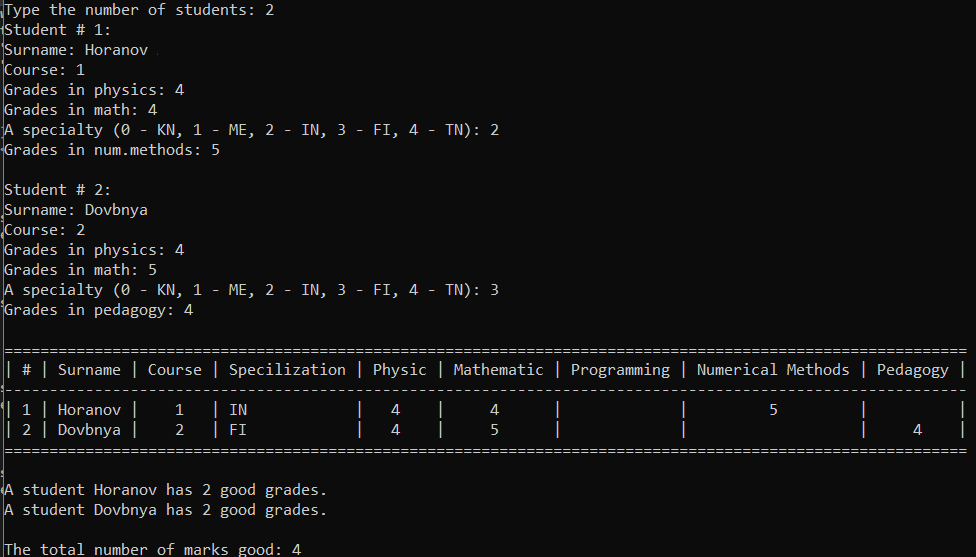
return n;

}

**Посилання на git-репозиторій з проектом:**

*https://github.com/StassNG/9.1.1*

**Результати програми та unit-тесту:**

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**Висновок:** я навчився опрацьовувати масиви структур.