**Лаб 4**

**Задание 1**

#include <iostream>

using namespace std;

template <typename T>

void swa(T &x, T &y)

{

T tmp = x;

x = y;

y = tmp;

cout << "x=" << x<<endl;

cout << "y=" << y << endl;

}

int main()

{

int i = 10, j = 20;

double x = 10.1, y = 20.2;

char c = 'x', d = 'z';

swa(i, j);

swa(x, y);

swa(c, d);

cin.get();

return 0;

}

**Задание 2**

#include<iostream>

using namespace std;

const int n = 4;

const int m = 5;

template <typename T>

double Average(const T arr[], int count) {

double sum = 0;

double av;

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

sum += arr[i];

av = sum / count;

return av;

}

void main()

{

int Iarr[n] = { 1,5,2,7 };

double Darr[m] = { 11.2,5.3,23.7,7.8,1.3 };

cout << "Average of integer numbers: " << Average(Iarr, n) << endl;

cout << "Average of double numbers: " << Average(Darr, m) << endl;

cin.get();

cin.get();

}

**ЗАДАНИЕ 3**

#include<iostream>

using namespace std;

const int a = 2;

const int b = 3;

template <typename T>

void swa(T &x, int y)

{

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

{

if (i == y)

{

for(int j = 0; j < b; j++)

{

if (x[y][j]>x[y][0])

x[y][0] = x[y][j];

}

}

}

cout << x[y][0];

}

void main()

{

int A[a][b];

int y;

double B[a][b];

cout << "Enter A - ";

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

{

for(int j = 0; j < b; j++)

cin >> A[i][j];

}

cout << "Enter B - ";

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

{

for(int j = 0; j < b; j++)

cin >> B[i][j];

}

cout << "Enter i - ";

cin >> y;

swa(A, y-1);

cout << endl;

swa(B, y-1);

cin.get();

cin.get();

}

**Лаб 5**

**Задание1**

#include <iostream>

using namespace std;

class sum

{

int a, b;

public:

void vvod\_ab()

{

cout << "Enter a: ";

cin >> a;

cout << "Enter b: ";

cin >> b;

}

int summa\_ab()

{

return a + b;

}

};

void main()

{

sum Proba;

Proba.vvod\_ab();

cout<< "Sum is: " << Proba.summa\_ab();

cin.get();

cin.get();

}

**Задание 2**

**(Student.h)**

#pragma once

#include<string>

class Student

{

private:

int scores[5];

double average;

std::string name;

public:

Student();

void set\_name(std::string);

std::string get\_name();

void set\_scores(int[]);

void set\_average(double);

double get\_average();

~Student();

};

**(Student.cpp)**

#include <string>

#include "Student.h"

Student::Student()

{

}

Student::~Student()

{

}

void Student::set\_name(std::string student\_name)

{

Student::name = student\_name;

}

std::string Student::get\_name()

{

return Student::name;

}

void Student::set\_scores(int scores[])

{

for (int i = 0; i < 5; ++i) {

Student::scores[i] = scores[i];

}

}

void Student::set\_average(double ball)

{

Student::average = ball;

}

double Student::get\_average()

{

return Student::average;

}

**(main.cpp)**

#include<iostream>

#include<conio.h>

#include<string>

#include "Student.h"

using namespace std;

int main()

{

Student obj;

string name;

cout << "Name is : ";

getline(cin, name);

obj.set\_name(name);

int scores[5];

int sum = 0;

for (int i = 0; i < 5; i++)

{

cout << "Score " << i + 1 << ":";

cin >> scores[i];

sum = sum + scores[i];

}

obj.set\_scores(scores);

double average = sum/5.0;

obj.set\_average(average);

cout << "Average for " << obj.get\_name() << " is " << obj.get\_average() << endl;

\_getch();

return 0;

}

**Лаб 6**

**Задание 1**

#include<iostream>

#include<conio.h>

using namespace std;

const int n = 15;

int main()

{

int A[n];

cout << "Enter elements of array:"<< endl;

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

cin >> A[i];

int k;

cout << "Enter element which you want to find: ";

cin >> k;

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

{

if (k == (i+1))

cout<< "Element [" << k << "]" << " is " << A[i];

}

\_getch();

return 0;

}

**Задание 2**

#include<iostream>

#include<conio.h>

using namespace std;

const int n = 10;

int main()

{

int A[n];

cout << "Enter elements of array:"<< endl;

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

cin >> A[i];

int average\_index = 0, first\_index = 0, last\_index = n-1;

int k;

cout << "Enter element which you want to find : ";

cin >> k;

bool flag = 1;

int l = 0;

while (flag)

{

flag = 0;

for (int i = 0; i < n - 1 - l; i++)

if (A[i] > A[i + 1])

{

int tmp = A[i];

A[i] = A[i + 1];

A[i + 1] = tmp;

flag = true;

}

}

l++;

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

cout << A[i] << endl;

if (last\_index == -1)

cout << "Array is empty!";

while (first\_index < last\_index)

{

average\_index = first\_index + (last\_index - first\_index) / 2;

if (k <= A[average\_index])

last\_index = average\_index;

else

first\_index = average\_index + 1;

}

if (A[last\_index] == k)

cout << "Value is found " << endl << "index = " << last\_index << endl;

else

cout << "Value is not found! " << endl;

\_getch();

return 0;

}