МІНІСТЕРТСВО ОСВІТИ І НАУКИ УКРАЇНИ

ХАРКІВСЬКИЙ НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ РАДІОЕЛЕКТРОНІКИ

Кафедра АПОТ

Звіт

з практичного заняття № 5

з дисципліни «Об’єктно-орієнтоване програмування»

# на тему: «СТВОРЕННЯ ДОДАТКІВ З ГРАФІЧНИМ ІНТЕРФЕЙСОМ»

Варіант №14/3

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МЕТА РОБОТИ: Вивчити можливості та особливості створення додатків Windows Forms Application в середовищі Visual Studio 2019.

ЗАВДАННЯ:

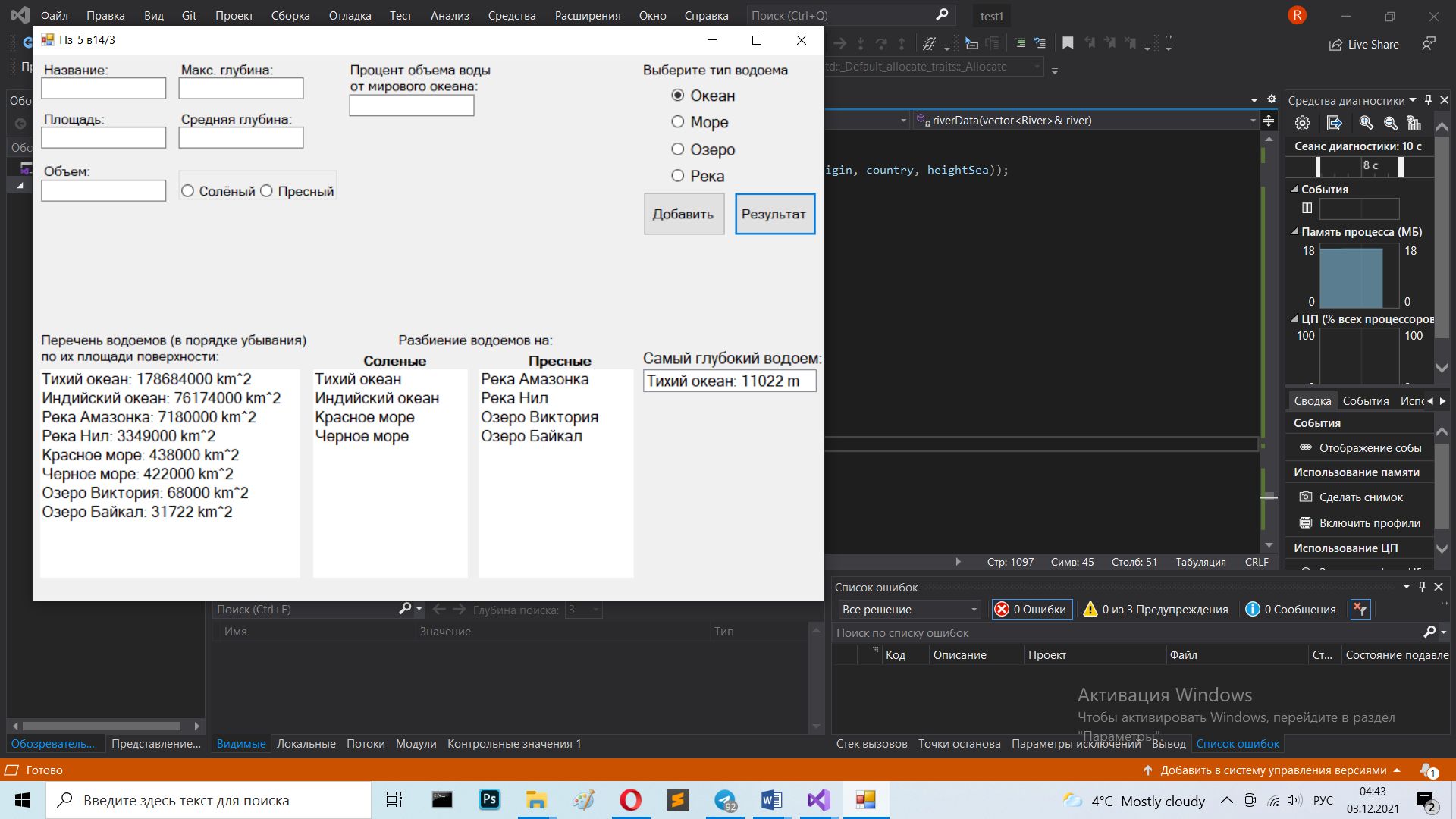
У відповідності зі своїм варіантом (варіанти завдання 14/3), що обраний при виконанні практичного заняття №3, розробити додаток з графічним інтерфейсом типу Windows Forms Application з елементами графіки та анімації:

1. Адаптувати архітектуру класів, що розроблені при виконанні практичного заняття №3, для використання в додатках з графічним інтерфейсом.

2. Ретельно продумати можливості інтерфейсу реалізації виконання завдання (з елементами графіки та анімації) та визначити відповідні елементи управління.

3. Передбачити обробку неправильного введення даних.

ІНТЕРФЕЙС:



КОД:

Файл Function.h

/\*#include <iostream>

#include <string>

#include <vector>

\*/

using namespace System;

using namespace System::Windows::Forms;

// Базовый класс "Водоемы"

class Water {

public:

Water() {

name = "None";

square = 0;

volume = 0;

maxDepth = 0;

midDepth = 0;

salty = false;

}

Water(string name, int s, int v, int max, int mid, bool sal) {

this->name = name;

this->square = s;

this->volume = v;

this->maxDepth = max;

this->midDepth = mid;

this->salty = sal;

}

// ~Water();

string name; // Название

int square; // Площадь поверхности

int volume; // Объем воды

int maxDepth; // Максимальная глубина

int midDepth; // Средняя глубина

bool salty; // Соленый или престный

virtual void sq() = 0;

};

// Производный класс "Океаны"

class Ocean : public Water {

public:

double worldVolume; // Процент объема воды из Мирового океана

Ocean() {

worldVolume = 0;

}

Ocean(string name, int s, int v, int max, int mid, bool sal, double w) : Water(name, s, v, max, mid, sal) {

if (w > 100 || w < 0) {

// cout << "\*ОШИБКА\*\nЗначение должно иметь параметр от 0% до 100%" << endl;

this->worldVolume = 0;

}

else {

this->worldVolume = w;

}

}

// ~Ocean();

void sq() override {

cout << this->name << ". Площадь поверхности равна " << this->square << endl;

}

};

// Производный класс "Моря"

class Sea : public Water {

public:

Sea() {

oceanClass = "None";

borderCountry = "None";

flowingRivers = "None";

coastline = 0;

}

Sea(string name, int s, int v, int max, int mid, bool sal, string oc, string bo, string fl, int co) : Water(name, s, v, max, mid, sal) {

this->oceanClass = oc;

this->borderCountry = bo;

this->flowingRivers = fl;

this->coastline = co;

}

// ~Sea();

string oceanClass; // Пренадлежность к океану

string borderCountry; // Страны, которые омывает

string flowingRivers; // Впадающие реки

int coastline; // Длина береговой линии

void sq() override {

cout << this->name << ". Площадь поверхности равна " << this->square << endl;

}

};

// Производный класс "Озера"

class Lake : public Water {

public:

Lake() {

origin = "None";

country = "None";

heightSea = 0;

}

Lake(string name, int s, int v, int max, int mid, bool sal, string ori, string co, int he) :

Water(name, s, v, max, mid, sal) {

this->origin = ori;

this->country = co;

this->heightSea = he;

}

// ~Lake();

string origin; // Происхождение

string country; // Страна, где находится

int heightSea; // Высота над уровнем моря

void sq() override {

cout << this->name << ". Площадь поверхности равна " << this->square << endl;

}

};

// Производный класс "Реки"

class River : public Water {

public:

River() {

supply = "None";

source = "None";

mouth = "None";

heightSource = 0;

lenght = 0;

}

River(string name, int s, int v, int max, int mid, bool sal, string su, string so, string mo, int he, int le) :

Water(name, s, v, max, mid, sal) {

this->supply = su;

this->source = so;

this->mouth = mo;

this->heightSource = he;

this->lenght = le;

}

// ~River();

string supply; // Питание

string source; // Исток

string mouth; // Устье

int heightSource; // Высота истока

int lenght; // Длина

void sq() override {

cout << this->name << ". Площадь бассейна равна " << this->square << endl;

}

};

class Containers {

public:

Water\*\* arrayWater;

int waterCounter;

Containers() {

arrayWater = new Water \* [0];

waterCounter = 0;

}

// Нахождения самого глубокого водоема

void maxDepthWater(string& maxDep) {

Water\* max = arrayWater[0];

for (int i = 0; i < waterCounter - 1; i++) {

if (max->maxDepth < arrayWater[i + 1]->maxDepth) {

max = arrayWater[i + 1];

}

}

maxDep = max->name + ": " + to\_string(max->maxDepth) + " m";

}

// Сортирорвка водоемов по площади поверхности

void sortWaterSquare() {

int max;

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

max = i; // макс. эл. - первый

for (int j = i + 1; j < waterCounter; j++) {

if (arrayWater[max]->square < arrayWater[j]->square) { // Нахождние макс. эл

max = j;

}

}

if (max != i) { // Если элемент поменялся, делаем замену

swap(arrayWater[i], arrayWater[max]);

}

}

}

// Сортировка водоемов на "соленые" и "престные"

void sortSalinity(vector <string>& allsa, vector <string>& allfr) {

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

if (arrayWater[i]->salty == true) {

allsa.push\_back(arrayWater[i]->name);

}

else {

allfr.push\_back(arrayWater[i]->name);

}

}

}

// Метод добавления нового водоема

void addWater(Water\* newWater) {

waterCounter++;

Water\*\* allWater = new Water \* [waterCounter];

for (int i = 0; i < waterCounter - 1; i++) {

allWater[i] = arrayWater[i];

}

allWater[waterCounter - 1] = newWater;

delete[]arrayWater;

arrayWater = allWater;

}

};

Файл Function.h

#pragma once

#include <iostream>

#include <string>

#include <vector>

#include <msclr\marshal\_cppstd.h>

#include <sstream>

// Проверка на числа

/\*bool checkInt(string s) {

string chInt = "0123456789";

for (int i = 0; i < s.size(); i++) {

if (chInt.find(s[i]) == -1) return true;

}

return false;

}\*/

namespace test1 {

using namespace System;

using namespace System::ComponentModel;

using namespace System::Collections;

using namespace System::Windows::Forms;

using namespace System::Data;

using namespace System::Drawing;

using namespace std;

#include "Function.h";

bool check = true;

vector <Ocean> ocean(10);

vector <Sea> sea(100);

vector <Lake> lake(100);

vector <River> river(100);

Containers con;

Ocean tihiy = Ocean("Тихий океан", 178684000, 710360000, 11022, 3984, true, 53);

Ocean indian = Ocean("Индийский океан", 76174000, 282650000, 7729, 3711, true, 20);

Sea black = Sea("Черное море", 422000, 555000, 2210, 1240, true, "Атлантический океан",

"Россия, Украина, Румыния, Болгария, Турция, Грузия, Абхазия",

"Дунай, Днепр, Днестр", 3400);

Sea red = Sea("Красное море", 438000, 233000, 2211, 490, true, "Индийский океан",

"Египет, Судан, Джибути, Эритрей, Йемен, Израиль, Иордания",

"None", 4600);

Lake baikal = Lake("Озеро Байкал", 31722, 23615, 1642, 744, false, "Тектоническое",

"Россия", 456);

Lake vika = Lake("Озеро Виктория", 68000, 2760, 80, 40, false, "Тектоническое",

"Танзания, Кения, Уганда", 1134);

River nil = River("Река Нил", 3349000, NULL, 11, 7, false, "Дождевое питание", "Озеро Виктория",

"Средиземное море", 1134, 6854);

River amazon = River("Река Амазонка", 7180000, 7280, 100, 50, false, "Дождевое питание",

"Реки Укаяли и Мараньон", "Атлантический океан", 110, 6500);

/// <summary>

/// Сводка для MyForm

/// </summary>

public ref class MyForm : public System::Windows::Forms::Form

{

public:

MyForm(void)

{

InitializeComponent();

}

protected:

/// <summary>

/// Освободить все используемые ресурсы.

/// </summary>

~MyForm()

{

if (components)

{

delete components;

}

}

private: System::Windows::Forms::RadioButton^ radioButton1;

protected:

private: System::Windows::Forms::RadioButton^ radioButton2;

private: System::Windows::Forms::RadioButton^ radioButton3;

private: System::Windows::Forms::RadioButton^ radioButton4;

private: System::Windows::Forms::Label^ label1;

private: System::Windows::Forms::Label^ label2;

private: System::Windows::Forms::ListBox^ listBox1;

private: System::Windows::Forms::Label^ label3;

private: System::Windows::Forms::Label^ label4;

private: System::Windows::Forms::Label^ label5;

private: System::Windows::Forms::ListBox^ listBox2;

private: System::Windows::Forms::ListBox^ listBox3;

private: System::Windows::Forms::Label^ label6;

private: System::Windows::Forms::ListBox^ listBox4;

private: System::Windows::Forms::Button^ button1;

private: System::Windows::Forms::Button^ button2;

protected:

private:

System::ComponentModel::Container ^cont;

private: System::Windows::Forms::TextBox^ textBox1;

private: System::Windows::Forms::Label^ label7;

private: System::Windows::Forms::Label^ label8;

private: System::Windows::Forms::TextBox^ textBox2;

private: System::Windows::Forms::Label^ label9;

private: System::Windows::Forms::TextBox^ textBox3;

private: System::Windows::Forms::Label^ label11;

private: System::Windows::Forms::TextBox^ textBox5;

private: System::Windows::Forms::Label^ label12;

private: System::Windows::Forms::TextBox^ textBox6;

private: System::Windows::Forms::Label^ label10;

private: System::Windows::Forms::GroupBox^ groupBox1;

private: System::Windows::Forms::RadioButton^ radioButton6;

private: System::Windows::Forms::RadioButton^ radioButton5;

private: System::Windows::Forms::Label^ label13;

private: System::Windows::Forms::TextBox^ textBox4;

private: System::Windows::Forms::Label^ label14;

private: System::Windows::Forms::TextBox^ textBox7;

private: System::Windows::Forms::Label^ label15;

private: System::Windows::Forms::TextBox^ textBox8;

private: System::Windows::Forms::Label^ label16;

private: System::Windows::Forms::TextBox^ textBox9;

private: System::Windows::Forms::Label^ label17;

private: System::Windows::Forms::TextBox^ textBox10;

private: System::Windows::Forms::Label^ label18;

private: System::Windows::Forms::TextBox^ textBox11;

private: System::Windows::Forms::Label^ label19;

private: System::Windows::Forms::TextBox^ textBox12;

private: System::Windows::Forms::Label^ label20;

private: System::Windows::Forms::TextBox^ textBox13;

private: System::Windows::Forms::Label^ label21;

private: System::Windows::Forms::TextBox^ textBox14;

private: System::Windows::Forms::Label^ label22;

private: System::Windows::Forms::TextBox^ textBox15;

private: System::Windows::Forms::Label^ label23;

private: System::Windows::Forms::TextBox^ textBox16;

private: System::Windows::Forms::Label^ label24;

private: System::Windows::Forms::TextBox^ textBox17;

private: System::Windows::Forms::Label^ label25;

private: System::Windows::Forms::TextBox^ textBox18;

private:

/// <summary>

/// Обязательная переменная конструктора.

/// </summary>

System::ComponentModel::Container ^components;

#pragma region Windows Form Designer generated code

/// <summary>

/// Требуемый метод для поддержки конструктора — не изменяйте

/// содержимое этого метода с помощью редактора кода.

/// </summary>

void InitializeComponent(void)

{

this->radioButton1 = (gcnew System::Windows::Forms::RadioButton());

this->radioButton2 = (gcnew System::Windows::Forms::RadioButton());

this->radioButton3 = (gcnew System::Windows::Forms::RadioButton());

this->radioButton4 = (gcnew System::Windows::Forms::RadioButton());

this->label1 = (gcnew System::Windows::Forms::Label());

this->label2 = (gcnew System::Windows::Forms::Label());

this->listBox1 = (gcnew System::Windows::Forms::ListBox());

this->label3 = (gcnew System::Windows::Forms::Label());

this->label4 = (gcnew System::Windows::Forms::Label());

this->label5 = (gcnew System::Windows::Forms::Label());

this->listBox2 = (gcnew System::Windows::Forms::ListBox());

this->listBox3 = (gcnew System::Windows::Forms::ListBox());

this->label6 = (gcnew System::Windows::Forms::Label());

this->listBox4 = (gcnew System::Windows::Forms::ListBox());

this->button1 = (gcnew System::Windows::Forms::Button());

this->button2 = (gcnew System::Windows::Forms::Button());

this->textBox1 = (gcnew System::Windows::Forms::TextBox());

this->label7 = (gcnew System::Windows::Forms::Label());

this->label8 = (gcnew System::Windows::Forms::Label());

this->textBox2 = (gcnew System::Windows::Forms::TextBox());

this->label9 = (gcnew System::Windows::Forms::Label());

this->textBox3 = (gcnew System::Windows::Forms::TextBox());

this->label11 = (gcnew System::Windows::Forms::Label());

this->textBox5 = (gcnew System::Windows::Forms::TextBox());

this->label12 = (gcnew System::Windows::Forms::Label());

this->textBox6 = (gcnew System::Windows::Forms::TextBox());

this->label10 = (gcnew System::Windows::Forms::Label());

this->groupBox1 = (gcnew System::Windows::Forms::GroupBox());

this->radioButton6 = (gcnew System::Windows::Forms::RadioButton());

this->radioButton5 = (gcnew System::Windows::Forms::RadioButton());

this->label13 = (gcnew System::Windows::Forms::Label());

this->textBox4 = (gcnew System::Windows::Forms::TextBox());

this->label14 = (gcnew System::Windows::Forms::Label());

this->textBox7 = (gcnew System::Windows::Forms::TextBox());

this->label15 = (gcnew System::Windows::Forms::Label());

this->textBox8 = (gcnew System::Windows::Forms::TextBox());

this->label16 = (gcnew System::Windows::Forms::Label());

this->textBox9 = (gcnew System::Windows::Forms::TextBox());

this->label17 = (gcnew System::Windows::Forms::Label());

this->textBox10 = (gcnew System::Windows::Forms::TextBox());

this->label18 = (gcnew System::Windows::Forms::Label());

this->textBox11 = (gcnew System::Windows::Forms::TextBox());

this->label19 = (gcnew System::Windows::Forms::Label());

this->textBox12 = (gcnew System::Windows::Forms::TextBox());

this->label20 = (gcnew System::Windows::Forms::Label());

this->textBox13 = (gcnew System::Windows::Forms::TextBox());

this->label21 = (gcnew System::Windows::Forms::Label());

this->textBox14 = (gcnew System::Windows::Forms::TextBox());

this->label22 = (gcnew System::Windows::Forms::Label());

this->textBox15 = (gcnew System::Windows::Forms::TextBox());

this->label23 = (gcnew System::Windows::Forms::Label());

this->textBox16 = (gcnew System::Windows::Forms::TextBox());

this->label24 = (gcnew System::Windows::Forms::Label());

this->textBox17 = (gcnew System::Windows::Forms::TextBox());

this->label25 = (gcnew System::Windows::Forms::Label());

this->textBox18 = (gcnew System::Windows::Forms::TextBox());

this->groupBox1->SuspendLayout();

this->SuspendLayout();

//

// radioButton1

//

this->radioButton1->AutoSize = true;

this->radioButton1->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 12, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->radioButton1->Location = System::Drawing::Point(899, 38);

this->radioButton1->Name = L"radioButton1";

this->radioButton1->Size = System::Drawing::Size(90, 29);

this->radioButton1->TabIndex = 0;

this->radioButton1->TabStop = true;

this->radioButton1->Text = L"Океан";

this->radioButton1->UseVisualStyleBackColor = true;

this->radioButton1->CheckedChanged += gcnew System::EventHandler(this, &MyForm::radioButton1\_CheckedChanged);

//

// radioButton2

//

this->radioButton2->AutoSize = true;

this->radioButton2->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 12, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->radioButton2->Location = System::Drawing::Point(899, 73);

this->radioButton2->Name = L"radioButton2";

this->radioButton2->Size = System::Drawing::Size(82, 29);

this->radioButton2->TabIndex = 1;

this->radioButton2->TabStop = true;

this->radioButton2->Text = L"Море";

this->radioButton2->UseVisualStyleBackColor = true;

this->radioButton2->CheckedChanged += gcnew System::EventHandler(this, &MyForm::radioButton2\_CheckedChanged);

//

// radioButton3

//

this->radioButton3->AutoSize = true;

this->radioButton3->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 12, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->radioButton3->Location = System::Drawing::Point(899, 108);

this->radioButton3->Name = L"radioButton3";

this->radioButton3->Size = System::Drawing::Size(92, 29);

this->radioButton3->TabIndex = 2;

this->radioButton3->TabStop = true;

this->radioButton3->Text = L"Озеро";

this->radioButton3->UseVisualStyleBackColor = true;

this->radioButton3->CheckedChanged += gcnew System::EventHandler(this, &MyForm::radioButton3\_CheckedChanged);

//

// radioButton4

//

this->radioButton4->AutoSize = true;

this->radioButton4->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 12, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->radioButton4->Location = System::Drawing::Point(899, 143);

this->radioButton4->Name = L"radioButton4";

this->radioButton4->Size = System::Drawing::Size(76, 29);

this->radioButton4->TabIndex = 3;

this->radioButton4->TabStop = true;

this->radioButton4->Text = L"Река";

this->radioButton4->UseVisualStyleBackColor = true;

this->radioButton4->CheckedChanged += gcnew System::EventHandler(this, &MyForm::radioButton4\_CheckedChanged);

//

// label1

//

this->label1->AutoSize = true;

this->label1->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label1->Location = System::Drawing::Point(855, 9);

this->label1->Name = L"label1";

this->label1->Size = System::Drawing::Size(207, 20);

this->label1->TabIndex = 4;

this->label1->Text = L"Выберите тип водоема";

//

// label2

//

this->label2->AutoSize = true;

this->label2->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label2->Location = System::Drawing::Point(8, 360);

this->label2->Name = L"label2";

this->label2->Size = System::Drawing::Size(369, 40);

this->label2->TabIndex = 5;

this->label2->Text = L"Перечень водоемов (в порядке убывания)\nпо их площади поверхности:";

//

// listBox1

//

this->listBox1->BorderStyle = System::Windows::Forms::BorderStyle::None;

this->listBox1->Cursor = System::Windows::Forms::Cursors::Default;

this->listBox1->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 12, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->listBox1->FormattingEnabled = true;

this->listBox1->ItemHeight = 25;

this->listBox1->Location = System::Drawing::Point(11, 409);

this->listBox1->Name = L"listBox1";

this->listBox1->Size = System::Drawing::Size(366, 275);

this->listBox1->TabIndex = 6;

//

// label3

//

this->label3->AutoSize = true;

this->label3->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label3->Location = System::Drawing::Point(511, 360);

this->label3->Name = L"label3";

this->label3->Size = System::Drawing::Size(218, 20);

this->label3->TabIndex = 7;

this->label3->Text = L"Разбиение водоемов на:";

//

// label4

//

this->label4->AutoSize = true;

this->label4->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Bold, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label4->Location = System::Drawing::Point(461, 386);

this->label4->Name = L"label4";

this->label4->Size = System::Drawing::Size(90, 20);

this->label4->TabIndex = 8;

this->label4->Text = L"Соленые";

//

// label5

//

this->label5->AutoSize = true;

this->label5->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Bold, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label5->Location = System::Drawing::Point(693, 386);

this->label5->Name = L"label5";

this->label5->Size = System::Drawing::Size(90, 20);

this->label5->TabIndex = 9;

this->label5->Text = L"Пресные";

//

// listBox2

//

this->listBox2->BorderStyle = System::Windows::Forms::BorderStyle::None;

this->listBox2->Cursor = System::Windows::Forms::Cursors::Default;

this->listBox2->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 12, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->listBox2->FormattingEnabled = true;

this->listBox2->ItemHeight = 25;

this->listBox2->Location = System::Drawing::Point(395, 409);

this->listBox2->Name = L"listBox2";

this->listBox2->Size = System::Drawing::Size(217, 275);

this->listBox2->TabIndex = 10;

//

// listBox3

//

this->listBox3->BorderStyle = System::Windows::Forms::BorderStyle::None;

this->listBox3->Cursor = System::Windows::Forms::Cursors::Default;

this->listBox3->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 12, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->listBox3->FormattingEnabled = true;

this->listBox3->ItemHeight = 25;

this->listBox3->Location = System::Drawing::Point(628, 409);

this->listBox3->Name = L"listBox3";

this->listBox3->Size = System::Drawing::Size(217, 275);

this->listBox3->TabIndex = 11;

//

// label6

//

this->label6->AutoSize = true;

this->label6->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 12, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label6->Location = System::Drawing::Point(854, 381);

this->label6->Name = L"label6";

this->label6->Size = System::Drawing::Size(248, 25);

this->label6->TabIndex = 12;

this->label6->Text = L"Самый глубокий водоем:";

//

// listBox4

//

this->listBox4->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 12, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->listBox4->FormattingEnabled = true;

this->listBox4->ItemHeight = 25;

this->listBox4->Location = System::Drawing::Point(859, 409);

this->listBox4->Name = L"listBox4";

this->listBox4->Size = System::Drawing::Size(243, 29);

this->listBox4->TabIndex = 13;

//

// button1

//

this->button1->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->button1->Location = System::Drawing::Point(859, 178);

this->button1->Name = L"button1";

this->button1->Size = System::Drawing::Size(116, 57);

this->button1->TabIndex = 14;

this->button1->Text = L"Добавить";

this->button1->UseVisualStyleBackColor = true;

this->button1->Click += gcnew System::EventHandler(this, &MyForm::button1\_Click);

//

// button2

//

this->button2->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->button2->Location = System::Drawing::Point(986, 178);

this->button2->Name = L"button2";

this->button2->Size = System::Drawing::Size(116, 57);

this->button2->TabIndex = 15;

this->button2->Text = L"Результат";

this->button2->UseVisualStyleBackColor = true;

this->button2->Click += gcnew System::EventHandler(this, &MyForm::button2\_Click);

//

// textBox1

//

this->textBox1->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox1->Location = System::Drawing::Point(12, 29);

this->textBox1->Name = L"textBox1";

this->textBox1->Size = System::Drawing::Size(174, 27);

this->textBox1->TabIndex = 16;

//

// label7

//

this->label7->AutoSize = true;

this->label7->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label7->Location = System::Drawing::Point(12, 9);

this->label7->Name = L"label7";

this->label7->Size = System::Drawing::Size(96, 20);

this->label7->TabIndex = 18;

this->label7->Text = L"Название:";

//

// label8

//

this->label8->AutoSize = true;

this->label8->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label8->Location = System::Drawing::Point(12, 73);

this->label8->Name = L"label8";

this->label8->Size = System::Drawing::Size(93, 20);

this->label8->TabIndex = 20;

this->label8->Text = L"Площадь:";

//

// textBox2

//

this->textBox2->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox2->Location = System::Drawing::Point(12, 93);

this->textBox2->Name = L"textBox2";

this->textBox2->Size = System::Drawing::Size(174, 27);

this->textBox2->TabIndex = 19;

this->textBox2->KeyPress += gcnew System::Windows::Forms::KeyPressEventHandler(this, &MyForm::textBox2\_KeyPress\_1);

//

// label9

//

this->label9->AutoSize = true;

this->label9->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label9->Location = System::Drawing::Point(12, 140);

this->label9->Name = L"label9";

this->label9->Size = System::Drawing::Size(70, 20);

this->label9->TabIndex = 22;

this->label9->Text = L"Объем:";

//

// textBox3

//

this->textBox3->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox3->Location = System::Drawing::Point(12, 163);

this->textBox3->Name = L"textBox3";

this->textBox3->Size = System::Drawing::Size(174, 27);

this->textBox3->TabIndex = 21;

this->textBox3->KeyPress += gcnew System::Windows::Forms::KeyPressEventHandler(this, &MyForm::textBox3\_KeyPress);

//

// label11

//

this->label11->AutoSize = true;

this->label11->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label11->Location = System::Drawing::Point(206, 73);

this->label11->Name = L"label11";

this->label11->Size = System::Drawing::Size(159, 20);

this->label11->TabIndex = 26;

this->label11->Text = L"Средняя глубина:";

//

// textBox5

//

this->textBox5->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox5->Location = System::Drawing::Point(206, 93);

this->textBox5->Name = L"textBox5";

this->textBox5->Size = System::Drawing::Size(174, 27);

this->textBox5->TabIndex = 25;

this->textBox5->KeyPress += gcnew System::Windows::Forms::KeyPressEventHandler(this, &MyForm::textBox5\_KeyPress);

//

// label12

//

this->label12->AutoSize = true;

this->label12->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label12->Location = System::Drawing::Point(206, 9);

this->label12->Name = L"label12";

this->label12->Size = System::Drawing::Size(131, 20);

this->label12->TabIndex = 24;

this->label12->Text = L"Макс. глубина:";

//

// textBox6

//

this->textBox6->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox6->Location = System::Drawing::Point(206, 29);

this->textBox6->Name = L"textBox6";

this->textBox6->Size = System::Drawing::Size(174, 27);

this->textBox6->TabIndex = 23;

this->textBox6->KeyPress += gcnew System::Windows::Forms::KeyPressEventHandler(this, &MyForm::textBox6\_KeyPress);

//

// label10

//

this->label10->AutoSize = true;

this->label10->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label10->Location = System::Drawing::Point(206, 143);

this->label10->Name = L"label10";

this->label10->Size = System::Drawing::Size(0, 20);

this->label10->TabIndex = 27;

//

// groupBox1

//

this->groupBox1->BackColor = System::Drawing::Color::Transparent;

this->groupBox1->Controls->Add(this->radioButton6);

this->groupBox1->Controls->Add(this->radioButton5);

this->groupBox1->ForeColor = System::Drawing::Color::Black;

this->groupBox1->Location = System::Drawing::Point(206, 143);

this->groupBox1->Name = L"groupBox1";

this->groupBox1->Size = System::Drawing::Size(223, 47);

this->groupBox1->TabIndex = 28;

this->groupBox1->TabStop = false;

//

// radioButton6

//

this->radioButton6->AutoSize = true;

this->radioButton6->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->radioButton6->Location = System::Drawing::Point(114, 21);

this->radioButton6->Name = L"radioButton6";

this->radioButton6->Size = System::Drawing::Size(104, 24);

this->radioButton6->TabIndex = 1;

this->radioButton6->TabStop = true;

this->radioButton6->Text = L"Пресный";

this->radioButton6->UseVisualStyleBackColor = true;

//

// radioButton5

//

this->radioButton5->AutoSize = true;

this->radioButton5->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->radioButton5->Location = System::Drawing::Point(4, 21);

this->radioButton5->Name = L"radioButton5";

this->radioButton5->Size = System::Drawing::Size(104, 24);

this->radioButton5->TabIndex = 0;

this->radioButton5->TabStop = true;

this->radioButton5->Text = L"Солёный";

this->radioButton5->UseVisualStyleBackColor = true;

//

// label13

//

this->label13->AutoSize = true;

this->label13->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label13->Location = System::Drawing::Point(442, 9);

this->label13->Name = L"label13";

this->label13->Size = System::Drawing::Size(199, 40);

this->label13->TabIndex = 30;

this->label13->Text = L"Процент объема воды\nот мирового океана:";

this->label13->Visible = false;

//

// textBox4

//

this->textBox4->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox4->Location = System::Drawing::Point(446, 52);

this->textBox4->Name = L"textBox4";

this->textBox4->Size = System::Drawing::Size(174, 27);

this->textBox4->TabIndex = 29;

this->textBox4->Visible = false;

this->textBox4->KeyPress += gcnew System::Windows::Forms::KeyPressEventHandler(this, &MyForm::textBox4\_KeyPress);

//

// label14

//

this->label14->AutoSize = true;

this->label14->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label14->Location = System::Drawing::Point(442, 73);

this->label14->Name = L"label14";

this->label14->Size = System::Drawing::Size(155, 40);

this->label14->TabIndex = 32;

this->label14->Text = L"Пренадлежность\nк океану:";

this->label14->Visible = false;

//

// textBox7

//

this->textBox7->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox7->Location = System::Drawing::Point(446, 116);

this->textBox7->Name = L"textBox7";

this->textBox7->Size = System::Drawing::Size(174, 27);

this->textBox7->TabIndex = 31;

this->textBox7->Visible = false;

//

// label15

//

this->label15->AutoSize = true;

this->label15->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label15->Location = System::Drawing::Point(12, 214);

this->label15->Name = L"label15";

this->label15->Size = System::Drawing::Size(237, 20);

this->label15->TabIndex = 34;

this->label15->Text = L"Страны, которые омывает:";

this->label15->Visible = false;

//

// textBox8

//

this->textBox8->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox8->Location = System::Drawing::Point(16, 237);

this->textBox8->Name = L"textBox8";

this->textBox8->Size = System::Drawing::Size(407, 27);

this->textBox8->TabIndex = 33;

this->textBox8->Visible = false;

//

// label16

//

this->label16->AutoSize = true;

this->label16->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label16->Location = System::Drawing::Point(12, 278);

this->label16->Name = L"label16";

this->label16->Size = System::Drawing::Size(159, 20);

this->label16->TabIndex = 36;

this->label16->Text = L"Впадающие реки:";

this->label16->Visible = false;

//

// textBox9

//

this->textBox9->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox9->Location = System::Drawing::Point(16, 301);

this->textBox9->Name = L"textBox9";

this->textBox9->Size = System::Drawing::Size(407, 27);

this->textBox9->TabIndex = 35;

this->textBox9->Visible = false;

//

// label17

//

this->label17->AutoSize = true;

this->label17->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label17->Location = System::Drawing::Point(442, 9);

this->label17->Name = L"label17";

this->label17->Size = System::Drawing::Size(215, 20);

this->label17->TabIndex = 38;

this->label17->Text = L"Длина береговой линии:";

this->label17->Visible = false;

//

// textBox10

//

this->textBox10->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox10->Location = System::Drawing::Point(442, 29);

this->textBox10->Name = L"textBox10";

this->textBox10->Size = System::Drawing::Size(174, 27);

this->textBox10->TabIndex = 37;

this->textBox10->Visible = false;

this->textBox10->KeyPress += gcnew System::Windows::Forms::KeyPressEventHandler(this, &MyForm::textBox10\_KeyPress);

//

// label18

//

this->label18->AutoSize = true;

this->label18->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label18->Location = System::Drawing::Point(442, 9);

this->label18->Name = L"label18";

this->label18->Size = System::Drawing::Size(148, 20);

this->label18->TabIndex = 40;

this->label18->Text = L"Происхождение:";

this->label18->Visible = false;

//

// textBox11

//

this->textBox11->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox11->Location = System::Drawing::Point(446, 32);

this->textBox11->Name = L"textBox11";

this->textBox11->Size = System::Drawing::Size(163, 27);

this->textBox11->TabIndex = 39;

this->textBox11->Visible = false;

//

// label19

//

this->label19->AutoSize = true;

this->label19->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label19->Location = System::Drawing::Point(442, 72);

this->label19->Name = L"label19";

this->label19->Size = System::Drawing::Size(76, 20);

this->label19->TabIndex = 42;

this->label19->Text = L"Страна:";

this->label19->Visible = false;

//

// textBox12

//

this->textBox12->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox12->Location = System::Drawing::Point(446, 93);

this->textBox12->Name = L"textBox12";

this->textBox12->Size = System::Drawing::Size(163, 27);

this->textBox12->TabIndex = 41;

this->textBox12->Visible = false;

//

// label20

//

this->label20->AutoSize = true;

this->label20->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label20->Location = System::Drawing::Point(442, 140);

this->label20->Name = L"label20";

this->label20->Size = System::Drawing::Size(131, 40);

this->label20->TabIndex = 44;

this->label20->Text = L"Высота над\nуровнем моря:";

this->label20->Visible = false;

//

// textBox13

//

this->textBox13->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox13->Location = System::Drawing::Point(446, 183);

this->textBox13->Name = L"textBox13";

this->textBox13->Size = System::Drawing::Size(163, 27);

this->textBox13->TabIndex = 43;

this->textBox13->Visible = false;

this->textBox13->KeyPress += gcnew System::Windows::Forms::KeyPressEventHandler(this, &MyForm::textBox13\_KeyPress);

//

// label21

//

this->label21->AutoSize = true;

this->label21->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label21->Location = System::Drawing::Point(12, 214);

this->label21->Name = L"label21";

this->label21->Size = System::Drawing::Size(63, 20);

this->label21->TabIndex = 46;

this->label21->Text = L"Исток:";

this->label21->Visible = false;

//

// textBox14

//

this->textBox14->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox14->Location = System::Drawing::Point(16, 237);

this->textBox14->Name = L"textBox14";

this->textBox14->Size = System::Drawing::Size(170, 27);

this->textBox14->TabIndex = 45;

this->textBox14->Visible = false;

//

// label22

//

this->label22->AutoSize = true;

this->label22->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label22->Location = System::Drawing::Point(12, 278);

this->label22->Name = L"label22";

this->label22->Size = System::Drawing::Size(64, 20);

this->label22->TabIndex = 48;

this->label22->Text = L"Устье:";

this->label22->Visible = false;

//

// textBox15

//

this->textBox15->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox15->Location = System::Drawing::Point(16, 301);

this->textBox15->Name = L"textBox15";

this->textBox15->Size = System::Drawing::Size(170, 27);

this->textBox15->TabIndex = 47;

this->textBox15->Visible = false;

//

// label23

//

this->label23->AutoSize = true;

this->label23->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label23->Location = System::Drawing::Point(206, 214);

this->label23->Name = L"label23";

this->label23->Size = System::Drawing::Size(140, 20);

this->label23->TabIndex = 50;

this->label23->Text = L"Высота истока:";

this->label23->Visible = false;

//

// textBox16

//

this->textBox16->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox16->Location = System::Drawing::Point(210, 237);

this->textBox16->Name = L"textBox16";

this->textBox16->Size = System::Drawing::Size(170, 27);

this->textBox16->TabIndex = 49;

this->textBox16->Visible = false;

this->textBox16->KeyPress += gcnew System::Windows::Forms::KeyPressEventHandler(this, &MyForm::textBox16\_KeyPress);

//

// label24

//

this->label24->AutoSize = true;

this->label24->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label24->Location = System::Drawing::Point(206, 278);

this->label24->Name = L"label24";

this->label24->Size = System::Drawing::Size(111, 20);

this->label24->TabIndex = 52;

this->label24->Text = L"Длина реки:";

this->label24->Visible = false;

//

// textBox17

//

this->textBox17->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox17->Location = System::Drawing::Point(210, 301);

this->textBox17->Name = L"textBox17";

this->textBox17->Size = System::Drawing::Size(170, 27);

this->textBox17->TabIndex = 51;

this->textBox17->Visible = false;

this->textBox17->KeyPress += gcnew System::Windows::Forms::KeyPressEventHandler(this, &MyForm::textBox17\_KeyPress);

//

// label25

//

this->label25->AutoSize = true;

this->label25->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->label25->Location = System::Drawing::Point(442, 9);

this->label25->Name = L"label25";

this->label25->Size = System::Drawing::Size(87, 20);

this->label25->TabIndex = 54;

this->label25->Text = L"Питание:";

this->label25->Visible = false;

//

// textBox18

//

this->textBox18->Font = (gcnew System::Drawing::Font(L"Microsoft Sans Serif", 10.2F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,

static\_cast<System::Byte>(204)));

this->textBox18->Location = System::Drawing::Point(442, 29);

this->textBox18->Name = L"textBox18";

this->textBox18->Size = System::Drawing::Size(174, 27);

this->textBox18->TabIndex = 53;

this->textBox18->Visible = false;

//

// MyForm

//

this->AutoScaleDimensions = System::Drawing::SizeF(8, 16);

this->AutoScaleMode = System::Windows::Forms::AutoScaleMode::Font;

this->ClientSize = System::Drawing::Size(1113, 709);

this->Controls->Add(this->label25);

this->Controls->Add(this->textBox18);

this->Controls->Add(this->label24);

this->Controls->Add(this->textBox17);

this->Controls->Add(this->label23);

this->Controls->Add(this->textBox16);

this->Controls->Add(this->label22);

this->Controls->Add(this->textBox15);

this->Controls->Add(this->label21);

this->Controls->Add(this->textBox14);

this->Controls->Add(this->label20);

this->Controls->Add(this->textBox13);

this->Controls->Add(this->label19);

this->Controls->Add(this->textBox12);

this->Controls->Add(this->label18);

this->Controls->Add(this->textBox11);

this->Controls->Add(this->label17);

this->Controls->Add(this->textBox10);

this->Controls->Add(this->label16);

this->Controls->Add(this->textBox9);

this->Controls->Add(this->label15);

this->Controls->Add(this->textBox8);

this->Controls->Add(this->label14);

this->Controls->Add(this->textBox7);

this->Controls->Add(this->groupBox1);

this->Controls->Add(this->label10);

this->Controls->Add(this->label11);

this->Controls->Add(this->textBox5);

this->Controls->Add(this->label12);

this->Controls->Add(this->textBox6);

this->Controls->Add(this->label9);

this->Controls->Add(this->textBox3);

this->Controls->Add(this->label8);

this->Controls->Add(this->textBox2);

this->Controls->Add(this->label7);

this->Controls->Add(this->textBox1);

this->Controls->Add(this->button2);

this->Controls->Add(this->button1);

this->Controls->Add(this->listBox4);

this->Controls->Add(this->label6);

this->Controls->Add(this->listBox3);

this->Controls->Add(this->listBox2);

this->Controls->Add(this->label5);

this->Controls->Add(this->label4);

this->Controls->Add(this->label3);

this->Controls->Add(this->listBox1);

this->Controls->Add(this->label2);

this->Controls->Add(this->label1);

this->Controls->Add(this->radioButton4);

this->Controls->Add(this->radioButton3);

this->Controls->Add(this->radioButton2);

this->Controls->Add(this->radioButton1);

this->Controls->Add(this->label13);

this->Controls->Add(this->textBox4);

this->Name = L"MyForm";

this->Text = L"Пз\_5 в14/3";

this->groupBox1->ResumeLayout(false);

this->groupBox1->PerformLayout();

this->ResumeLayout(false);

this->PerformLayout();

}

#pragma endregion

// Очиста заполненных строк при смене типа водоема

private: void deleteAll() {

textBox1->Clear();

textBox2->Clear();

textBox3->Clear();

textBox4->Clear();

textBox5->Clear();

textBox6->Clear();

textBox7->Clear();

textBox8->Clear();

textBox9->Clear();

textBox10->Clear();

textBox11->Clear();

textBox12->Clear();

textBox13->Clear();

textBox14->Clear();

textBox15->Clear();

textBox16->Clear();

textBox17->Clear();

textBox18->Clear();

radioButton5->Checked = false;

radioButton6->Checked = false;

}

// Функции radioButton

private: System::Void radioButton1\_CheckedChanged(System::Object^ sender, System::EventArgs^ e) {

if (radioButton1->Checked) {

deleteAll();

label13->Visible = true;

textBox4->Visible = true;

}

else {

label13->Visible = false;

textBox4->Visible = false;

}

}

private: System::Void radioButton2\_CheckedChanged(System::Object^ sender, System::EventArgs^ e) {

if (radioButton2->Checked) {

deleteAll();

label17->Visible = true;

label14->Visible = true;

label15->Visible = true;

label16->Visible = true;

textBox10->Visible = true;

textBox7->Visible = true;

textBox8->Visible = true;

textBox9->Visible = true;

}

else {

label17->Visible = false;

label14->Visible = false;

label15->Visible = false;

label16->Visible = false;

textBox10->Visible = false;

textBox7->Visible = false;

textBox8->Visible = false;

textBox9->Visible = false;

}

}

private: System::Void radioButton3\_CheckedChanged(System::Object^ sender, System::EventArgs^ e) {

if (radioButton3->Checked) {

deleteAll();

label18->Visible = true;

label19->Visible = true;

label20->Visible = true;

textBox11->Visible = true;

textBox12->Visible = true;

textBox13->Visible = true;

}

else {

label18->Visible = false;

label19->Visible = false;

label20->Visible = false;

textBox11->Visible = false;

textBox12->Visible = false;

textBox13->Visible = false;

}

}

private: System::Void radioButton4\_CheckedChanged(System::Object^ sender, System::EventArgs^ e) {

if (radioButton4->Checked) {

deleteAll();

label21->Visible = true;

label22->Visible = true;

label23->Visible = true;

label24->Visible = true;

label25->Visible = true;

textBox14->Visible = true;

textBox15->Visible = true;

textBox16->Visible = true;

textBox17->Visible = true;

textBox18->Visible = true;

}

else {

label21->Visible = false;

label22->Visible = false;

label23->Visible = false;

label24->Visible = false;

label25->Visible = false;

textBox14->Visible = false;

textBox15->Visible = false;

textBox16->Visible = false;

textBox17->Visible = false;

textBox18->Visible = false;

}

}

// Функция для создания объекта океана

private: void oceanData(vector <Ocean> &ocean) {

bool sal;

if (radioButton5->Checked) {

sal = true;

}

if (radioButton6->Checked) {

sal = false;

}

msclr::interop::marshal\_context context;

string name = context.marshal\_as<string>(textBox1->Text);

int square = Int32::Parse(textBox2->Text);

int volume = Int32::Parse(textBox3->Text);

int maxDepth = Int32::Parse(textBox6->Text);

int midDepth = Int32::Parse(textBox5->Text);

double worldVolume = static\_cast<IConvertible^>(textBox4->Text)->ToDouble(System::Globalization::CultureInfo::CurrentCulture);

ocean.push\_back(Ocean(name, square, volume, maxDepth, midDepth, sal, worldVolume));

con.addWater(&ocean[ocean.size() - 1]);

deleteAll();

}

// Функция для создания объекта моря

private: void seaData(vector <Sea>& sea) {

bool sal;

if (radioButton5->Checked) {

sal = true;

}

if (radioButton6->Checked) {

sal = false;

}

msclr::interop::marshal\_context context;

string name = context.marshal\_as<string>(textBox1->Text);

int square = Int32::Parse(textBox2->Text);

int volume = Int32::Parse(textBox3->Text);

int maxDepth = Int32::Parse(textBox6->Text);

int midDepth = Int32::Parse(textBox5->Text);

string oceanClass = context.marshal\_as<string>(textBox7->Text);

string borderCountry = context.marshal\_as<string>(textBox8->Text);

string flowingRivers = context.marshal\_as<string>(textBox9->Text);

int coastline = Int32::Parse(textBox10->Text);

sea.push\_back(Sea(name, square, volume, maxDepth, midDepth, sal, oceanClass, borderCountry, flowingRivers, coastline));

con.addWater(&sea[sea.size() - 1]);

deleteAll();

}

// Функция для создания объекта озеро

private: void lakeData(vector <Lake>& lake) {

bool sal;

if (radioButton5->Checked) {

sal = true;

}

if (radioButton6->Checked) {

sal = false;

}

msclr::interop::marshal\_context context;

string name = context.marshal\_as<string>(textBox1->Text);

int square = Int32::Parse(textBox2->Text);

int volume = Int32::Parse(textBox3->Text);

int maxDepth = Int32::Parse(textBox6->Text);

int midDepth = Int32::Parse(textBox5->Text);

string origin = context.marshal\_as<string>(textBox11->Text);

string country = context.marshal\_as<string>(textBox12->Text);

int heightSea = Int32::Parse(textBox13->Text);

lake.push\_back(Lake(name, square, volume, maxDepth, midDepth, sal, origin, country, heightSea));

con.addWater(&lake[lake.size() - 1]);

deleteAll();

}

// Функция для создания объекта река

private: void riverData(vector <River>& river) {

bool sal;

if (radioButton5->Checked) {

sal = true;

}

if (radioButton6->Checked) {

sal = false;

}

msclr::interop::marshal\_context context;

string name = context.marshal\_as<string>(textBox1->Text);

int square = Int32::Parse(textBox2->Text);

int volume = Int32::Parse(textBox3->Text);

int maxDepth = Int32::Parse(textBox6->Text);

int midDepth = Int32::Parse(textBox5->Text);

string supply = context.marshal\_as<string>(textBox18->Text);

string source = context.marshal\_as<string>(textBox14->Text);

string mouth = context.marshal\_as<string>(textBox15->Text);

int heightSource = Int32::Parse(textBox16->Text);

int lenght = Int32::Parse(textBox17->Text);

river.push\_back(River(name, square, volume, maxDepth, midDepth, sal, supply, source, mouth, heightSource, lenght));

con.addWater(&river[river.size() - 1]);

deleteAll();

}

// Функции Button (Кнопок)

private: System::Void button1\_Click(System::Object^ sender, System::EventArgs^ e) {

if (radioButton1->Checked) {

if (textBox1->Text == "" || textBox2->Text == "" || textBox3->Text == "" || textBox4->Text == "" ||

textBox5->Text == "" || textBox6->Text == "" || (radioButton5->Checked == false && radioButton6->Checked == false)) {

MessageBox::Show("Пожалуйста, заполните все поля!",

"ERROR",

MessageBoxButtons::OK,

MessageBoxIcon::Warning);

}

else {

oceanData(ocean);

MessageBox::Show("Водоем добавлен успешно!",

"TRUE",

MessageBoxButtons::OK,

MessageBoxIcon::Information);

}

}

if (radioButton2->Checked) {

if (textBox1->Text == "" || textBox2->Text == "" || textBox3->Text == "" || textBox7->Text == "" ||

textBox5->Text == "" || textBox6->Text == "" || textBox8->Text == "" || textBox9->Text == "" ||

textBox10->Text == "" || (radioButton5->Checked == false && radioButton6->Checked == false)) {

MessageBox::Show("Пожалуйста, заполните все поля!",

"ERROR",

MessageBoxButtons::OK,

MessageBoxIcon::Warning);

}

else {

seaData(sea);

MessageBox::Show("Водоем добавлен успешно!",

"TRUE",

MessageBoxButtons::OK,

MessageBoxIcon::Information);

}

}

if (radioButton3->Checked) {

if (textBox1->Text == "" || textBox2->Text == "" || textBox3->Text == "" || textBox11->Text == "" ||

textBox12->Text == "" || textBox13->Text == "" || textBox5->Text == "" || textBox6->Text == "" ||

(radioButton5->Checked == false && radioButton6->Checked == false)) {

MessageBox::Show("Пожалуйста, заполните все поля!",

"ERROR",

MessageBoxButtons::OK,

MessageBoxIcon::Warning);

}

else {

lakeData(lake);

MessageBox::Show("Водоем добавлен успешно!",

"TRUE",

MessageBoxButtons::OK,

MessageBoxIcon::Information);

}

}

if (radioButton4->Checked) {

if (textBox1->Text == "" || textBox2->Text == "" || textBox3->Text == "" || textBox14->Text == "" ||

textBox15->Text == "" || textBox16->Text == "" || textBox17->Text == "" || textBox18->Text == "" ||

textBox5->Text == "" || textBox6->Text == "" || (radioButton5->Checked == false && radioButton6->Checked == false)) {

MessageBox::Show("Пожалуйста, заполните все поля!",

"ERROR",

MessageBoxButtons::OK,

MessageBoxIcon::Warning);

}

else {

riverData(river);

MessageBox::Show("Водоем добавлен успешно!",

"TRUE",

MessageBoxButtons::OK,

MessageBoxIcon::Information);

}

}

}

private: System::Void button2\_Click(System::Object^ sender, System::EventArgs^ e) {

listBox1->Items->Clear();

listBox2->Items->Clear();

listBox3->Items->Clear();

listBox4->Items->Clear();

// Тест водоемы

if(check == true) {

con.addWater(&tihiy);

con.addWater(&indian);

con.addWater(&black);

con.addWater(&red);

con.addWater(&baikal);

con.addWater(&vika);

con.addWater(&nil);

con.addWater(&amazon);

}

check = false;

vector <string> allsa;

vector <string> allfr;

string maxDep;

con.sortWaterSquare();

con.sortSalinity(allsa, allfr);

con.maxDepthWater(maxDep);

listBox4->Items->Add(gcnew String(maxDep.c\_str()));

for (int i = 0; i < con.waterCounter; i++) {

listBox1->Items->Add(gcnew String((con.arrayWater[i]->name + ": " + to\_string(con.arrayWater[i]->square) + " km^2").c\_str()));

}

for (int k = 0; k < allsa.size(); k++) {

listBox2->Items->Add(gcnew String(allsa[k].c\_str()));

}

for (int k = 0; k < allfr.size(); k++) {

listBox3->Items->Add(gcnew String(allfr[k].c\_str()));

}

}

private: System::Void textBox2\_KeyPress\_1(System::Object^ sender, System::Windows::Forms::KeyPressEventArgs^ e) {

if (e->KeyChar < '0' || e->KeyChar > '9') e->Handled = true;

}

private: System::Void textBox3\_KeyPress(System::Object^ sender, System::Windows::Forms::KeyPressEventArgs^ e) {

if (e->KeyChar < '0' || e->KeyChar > '9') e->Handled = true;

}

private: System::Void textBox6\_KeyPress(System::Object^ sender, System::Windows::Forms::KeyPressEventArgs^ e) {

if (e->KeyChar < '0' || e->KeyChar > '9') e->Handled = true;

}

private: System::Void textBox5\_KeyPress(System::Object^ sender, System::Windows::Forms::KeyPressEventArgs^ e) {

if (e->KeyChar < '0' || e->KeyChar > '9') e->Handled = true;

}

private: System::Void textBox10\_KeyPress(System::Object^ sender, System::Windows::Forms::KeyPressEventArgs^ e) {

if (e->KeyChar < '0' || e->KeyChar > '9') e->Handled = true;

}

private: System::Void textBox13\_KeyPress(System::Object^ sender, System::Windows::Forms::KeyPressEventArgs^ e) {

if (e->KeyChar < '0' || e->KeyChar > '9') e->Handled = true;

}

private: System::Void textBox16\_KeyPress(System::Object^ sender, System::Windows::Forms::KeyPressEventArgs^ e) {

if (e->KeyChar < '0' || e->KeyChar > '9') e->Handled = true;

}

private: System::Void textBox17\_KeyPress(System::Object^ sender, System::Windows::Forms::KeyPressEventArgs^ e) {

if (e->KeyChar < '0' || e->KeyChar > '9') e->Handled = true;

}

private: System::Void textBox4\_KeyPress(System::Object^ sender, System::Windows::Forms::KeyPressEventArgs^ e) {

if (e->KeyChar < '0' || e->KeyChar > '9') e->Handled = true;

}

};

ВИСНОВКИ: Було розроблено програму для порівняння та аналізу водоймів у графічному інтерфейсі за допомогою МП С++. Програма грунтується на лабораторній роботі №3.