МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РФ

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ

ВЫСШЕГО ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ

«ОРЛОВСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ ИМ. И. С. ТУРГЕНЕВА»

Кафедра «Программная инженерия»

**ОТЧЁТ**

по лабораторной работе № 7

по дисциплине: «Объектно-ориентированное программирование

на С++»

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**Задание**

**Вариант 25**

Реализовать задание из 3 лабораторной работы в графическом приложении.

**Код:**

**Main.h**

#ifndef MainH #define MainH #include <System.Classes.hpp>

#include <Vcl.Controls.hpp> #include <Vcl.StdCtrls.hpp>

#include <Vcl.Forms.hpp> #include "Product.h" #include <Vcl.Grids.hpp>

#include <vector>class TForm1 : public TForm{

\_\_published: // IDE-managed Components

TButton \*Button1; TLabel \*Label1; TLabel \*Label2; TLabel \*Label3;

TStringGrid \*StringGrid1; TButton \*Button2; TButton \*Button3; TButton \*Button4;

void \_\_fastcall Button1Click(TObject \*Sender); void \_\_fastcall FormShow(TObject \*Sender);

void \_\_fastcall Button2Click(TObject \*Sender); void \_\_fastcall Button3Click(TObject \*Sender);

void \_\_fastcall Button4Click(TObject \*Sender);public: vector <Product> prodVect;

\_\_fastcall TForm1(TComponent\* Owner);};extern PACKAGE TForm1 \*Form1;#endif

**Main.cpp**

#include <vcl.h>#pragma hdrstop#include "Main.h"//#include "Product.h"

#include <vector>#include "Add.h"#include "FindWord.h"#include "FindCost.h"

#include <string>#pragma package(smart\_init)#pragma resource "\*.dfm"

TForm1 \*Form1;using namespace std;

\_\_fastcall TForm1::TForm1(TComponent\* Owner) : TForm(Owner){}

void \_\_fastcall TForm1::Button1Click(TObject \*Sender){

Application->CreateForm(\_\_classid(TForm2), &Form2); Form2->ShowModal(); Form2->Free();}

void \_\_fastcall TForm1::FormShow(TObject \*Sender){

StringGrid1->ColWidths[0] = 50; for(int i = 1; i < 4; i++){StringGrid1->ColWidths[i] = 100;}

StringGrid1->ColWidths[4] = 265; StringGrid1->Cells[0][0] = "Код";

StringGrid1->Cells[1][0] = "Название"; StringGrid1->Cells[2][0] = "Отдел"; StringGrid1->Cells[3][0] = "Цена"; StringGrid1->Cells[4][0] = "Информация";}

void \_\_fastcall TForm1::Button2Click(TObject \*Sender){

char symb; int countOfNames = 0; for(int i = 0; i < prodVect.size(); i++) {

symb = prodVect[i].FirstSymbolOfName();if (symb == 'к' || symb == 'К' || symb == 'k' || symb == 'K')

countOfNames++; }

Label2->Caption = "Количество товаров на букву \"K\": " + IntToStr(countOfNames);

int countOfProducts = 0;

for (int i = 0; i < prodVect.size(); i++){if (prodVect[i].getCost() > 1000){countOfProducts++;}}

Label3->Caption = "Количество товаров стоимостью больше 1000: " + IntToStr(countOfProducts);

StringGrid1->RowCount = prodVect.size() + 1;if(prodVect.size() != 0){

for(int i = 0; i < prodVect.size(); i++){StringGrid1->Cells[0][i + 1] = prodVect[i].getId();

StringGrid1->Cells[1][i + 1] = prodVect[i].getName().c\_str();

StringGrid1->Cells[2][i + 1] = prodVect[i].getDep().c\_str();

StringGrid1->Cells[3][i + 1] = prodVect[i].getCost();

StringGrid1->Cells[4][i + 1] = prodVect[i].getInfo().c\_str();

} }else {ShowMessage("Вектор пуст!");}}

void \_\_fastcall TForm1::Button3Click(TObject \*Sender){

Application->CreateForm(\_\_classid(TForm3), &Form3);Form3->ShowModal();Form3->Free();}

void \_\_fastcall TForm1::Button4Click(TObject \*Sender){

Application->CreateForm(\_\_classid(TForm4), &Form4); Form4->ShowModal(); Form4->Free();}

**Product.h**

#include <iostream>#include <string>using namespace std;class Product{private:int id;string name;string department; int cost; string information;

public: Product(int i, string n, string d, int c, string inf); string getDep(); string getName(); string getInfo(); char FirstSymbolOfName(); int getCost(); int getId();};

**Product.cpp**

#include <iostream>#include <string>#include "Product.h"Product::Product(int i, string n, string d, int c, string inf)

{ id = i; name = n; department = d; cost = c; information = inf; }

string Product::getDep(){return department;} string Product::getName(){return name;}

string Product::getInfo(){return information;}char Product::FirstSymbolOfName(){return name[0];} int Product::getCost(){return cost;} int Product::getId(){return id;}

**FindWord.h**

#ifndef FindWordH#define FindWordH#include <System.Classes.hpp>#include <Vcl.Controls.hpp>

#include <Vcl.StdCtrls.hpp>#include <Vcl.Forms.hpp>#include <Vcl.Grids.hpp>class TForm3 : public TForm{

\_\_published:TLabel \*Label1; TEdit \*Edit1; TButton \*Button1; TStringGrid \*StringGrid1;

TButton \*Button2; void \_\_fastcall FormShow(TObject \*Sender);

void \_\_fastcall Button1Click(TObject \*Sender); void \_\_fastcall Button2Click(TObject \*Sender);

public:\_\_fastcall TForm3(TComponent\* Owner);};extern PACKAGE TForm3 \*Form3;#endif

**FindWord.cpp**

#include <vcl.h>#pragma hdrstop#include "FindWord.h"#include "Main.h"#include <string>

#pragma package(smart\_init)#pragma resource "\*.dfm"TForm3 \*Form3;using namespace std;

\_\_fastcall TForm3::TForm3(TComponent\* Owner) : TForm(Owner){}

void \_\_fastcall TForm3::FormShow(TObject \*Sender){ StringGrid1->ColWidths[0] = 50;

for(int i = 1; i < 4; i++){StringGrid1->ColWidths[i] = 100;} StringGrid1->ColWidths[4] = 245;

StringGrid1->Cells[0][0] = "Код"; StringGrid1->Cells[1][0] = "Название";

StringGrid1->Cells[2][0] = "Отдел"; StringGrid1->Cells[3][0] = "Цена";

StringGrid1->Cells[4][0] = "Информация";}

void \_\_fastcall TForm3::Button1Click(TObject \*Sender){

AnsiString ansiString = Edit1->Text; string curName = ansiString.c\_str();

string cmpCurName; bool rez = false; bool rez2 = false; for (int i = 0; i < Form1->prodVect.size(); i++) {

cmpCurName = Form1->prodVect[i].getName();if (cmpCurName.length() == curName.length()){

for(int i = 0; i < cmpCurName.length(); i++){

if((char)tolower(cmpCurName[i]) == (char)tolower(curName[i])){rez = true;}

else{rez = false;} } }

else{for(int i = 0; i < cmpCurName.length(); i++){if (cmpCurName.find(curName) != string::npos){rez2 = true;}}}

if (rez == true || rez2 == true){StringGrid1->RowCount = Form1->prodVect.size() + 1;

if(Form1->prodVect.size() != 0){ for(int i = 0; i < Form1->prodVect.size(); i++){

StringGrid1->Cells[0][i + 1] = Form1->prodVect[i].getId();

StringGrid1->Cells[1][i + 1] = Form1->prodVect[i].getName().c\_str();

StringGrid1->Cells[2][i + 1] = Form1->prodVect[i].getDep().c\_str();

StringGrid1->Cells[3][i + 1] = Form1->prodVect[i].getCost();

StringGrid1->Cells[4][i + 1] = Form1->prodVect[i].getInfo().c\_str(); }}

else {ShowMessage("Вектор пуст!");}i = Form1->prodVect.size() + 1;}

else if (rez == false || rez2 == false){ShowMessage("Совпадений не найдено!");}}}

void \_\_fastcall TForm3::Button2Click(TObject \*Sender){

for(int i = 0; i < StringGrid1->ColCount; i++) {for(int j = 1; j < StringGrid1->RowCount; j++) {

StringGrid1->Cells[i][j] = ""; } }}

**FindCost.h**

#ifndef FindCostH#define FindCostH#include <System.Classes.hpp>#include <Vcl.Controls.hpp>

#include <Vcl.StdCtrls.hpp>#include <Vcl.Forms.hpp>#include <Vcl.Grids.hpp>class TForm4 : public TForm{

\_\_published:TLabel \*Label1;TEdit \*Edit1;TButton \*Button1;TButton \*Button2;TStringGrid \*StringGrid1;

void \_\_fastcall Button2Click(TObject \*Sender);void \_\_fastcall FormShow(TObject \*Sender);

void \_\_fastcall Button1Click(TObject \*Sender);public:\_\_fastcall TForm4(TComponent\* Owner);};

extern PACKAGE TForm4 \*Form4;#endif

**FindCost.cpp**

#include <vcl.h>#pragma hdrstop#include "FindCost.h"#include "Main.h"#include <string>using namespace std;

#pragma package(smart\_init)#pragma resource "\*.dfm"TForm4 \*Form4;\_\_fastcall TForm4::TForm4(TComponent\* Owner) : TForm(Owner){}void \_\_fastcall TForm4::Button2Click(TObject \*Sender){

for(int i = 0; i < StringGrid1->ColCount; i++) { for(int j = 1; j < StringGrid1->RowCount; j++) {

StringGrid1->Cells[i][j] = ""; } }}

void \_\_fastcall TForm4::FormShow(TObject \*Sender){

StringGrid1->ColWidths[0] = 50; for(int i = 1; i < 4; i++){StringGrid1->ColWidths[i] = 150;}

StringGrid1->ColWidths[4] = 170; StringGrid1->Cells[0][0] = "Код";

StringGrid1->Cells[1][0] = "Название"; StringGrid1->Cells[2][0] = "Отдел";

StringGrid1->Cells[3][0] = "Цена"; StringGrid1->Cells[4][0] = "Информация";}

void \_\_fastcall TForm4::Button1Click(TObject \*Sender){

AnsiString ansiString = Edit1->Text; string curDepartment = ansiString.c\_str();

string cmpDep; bool rez = false; for(int i = 0; i < Form1->prodVect.size(); i++){

cmpDep = Form1->prodVect[i].getDep(); for(int i = 0; i < cmpDep.length(); i++) {

if((char)tolower(cmpDep[i]) == (char)tolower(curDepartment[i])){rez = true;}

else{rez = false;} }

if (rez == true && Form1->prodVect[i].getCost() >= 200 && Form1->prodVect[i].getCost() <= 300){ StringGrid1->RowCount = Form1->prodVect.size() + 1; if(Form1->prodVect.size() != 0){

for(int i = 0; i < Form1->prodVect.size(); i++){

StringGrid1->Cells[0][i + 1] = Form1->prodVect[i].getId();

StringGrid1->Cells[1][i + 1] = Form1->prodVect[i].getName().c\_str();

StringGrid1->Cells[2][i + 1] = Form1->prodVect[i].getDep().c\_str();

StringGrid1->Cells[3][i + 1] = Form1->prodVect[i].getCost();

StringGrid1->Cells[4][i + 1] = Form1->prodVect[i].getInfo().c\_str(); } }

else {ShowMessage("Вектор пуст!");} } }}

**Add.h**

#ifndef AddH#define AddH#include <System.Classes.hpp>#include <Vcl.Controls.hpp>#include <Vcl.StdCtrls.hpp>#include <Vcl.Forms.hpp>class TForm2 : public TForm{\_\_published: // IDE-managed Components TEdit \*Edit1; TEdit \*Edit2; TEdit \*Edit3; TEdit \*Edit4; TEdit \*Edit5;

TButton \*Button1; TLabel \*Label1; void \_\_fastcall Edit1Change(TObject \*Sender);

void \_\_fastcall FormShow(TObject \*Sender); void \_\_fastcall Button1Click(TObject \*Sender);

void \_\_fastcall Edit4KeyDown(TObject \*Sender, WORD &Key, TShiftState Shift);

void \_\_fastcall Edit1KeyPress(TObject \*Sender, System::WideChar &Key);

public: // User declarations \_\_fastcall TForm2(TComponent\* Owner);};

extern PACKAGE TForm2 \*Form2;#endif

**Add.cpp**

#include <vcl.h>#pragma hdrstop#include "Add.h"#include "Main.h"#include <string>#pragma package(smart\_init)

#pragma resource "\*.dfm"TForm2 \*Form2;using namespace std;int CurId;string CurName;string CurDepartment;

int CurCost;string CurInformation;\_\_fastcall TForm2::TForm2(TComponent\* Owner) : TForm(Owner){}

void \_\_fastcall TForm2::Edit1Change(TObject \*Sender){ CurId = StrToInt(Edit1->Text);}

void \_\_fastcall TForm2::FormShow(TObject \*Sender){Label1->Caption = CurName.c\_str();}

void \_\_fastcall TForm2::Button1Click(TObject \*Sender){AnsiString ansiString = Edit2->Text; CurId = StrToInt(Edit1->Text); CurName = ansiString.c\_str(); ansiString = Edit3->Text;

CurDepartment = ansiString.c\_str(); CurCost = StrToInt(Edit4->Text);

ansiString = Edit5->Text; CurInformation = ansiString.c\_str(); Form2->Close();

Form1->prodVect.push\_back(Product(CurId, CurName, CurDepartment, CurCost, CurInformation));}

void \_\_fastcall TForm2::Edit4KeyDown(TObject \*Sender, WORD &Key, TShiftState Shift){

if (Key == VK\_RETURN){Edit1Change(Sender);} if ( (( Key <= '0') && ( Key >= '9')) || Key == '-' || Key == '+'|| Key == '\*' || Key == '/' || Key == '=' || Key == '.' || Key == ',' || Key == '?' ) {

ShowMessage("В цене допускаются только числа"); Key='\0';

Edit1->Clear(); Edit1->SetFocus(); return; }}

void \_\_fastcall TForm2::Edit1KeyPress(TObject \*Sender, System::WideChar &Key){ if (Key == VK\_RETURN)

{Edit1Change(Sender);} if ( (( Key <= '0') && ( Key >= '9'))|| Key == '-' || Key == '+' || Key == '\*' || Key == '/' || Key == '=' || Key == '.' || Key == ',' || Key == '?' ) {

ShowMessage("В номере допускаются только числа"); Key = 0;

Edit1->Clear(); Edit1->SetFocus(); return; }}