

Lucrare nr.3 pentru colocviul de practica informatica an I Calculatoare

Descriere:

Aplicatia descrisa mai jos este una de tip Windows Form, creata in Visual C++ 2008, si scopul ei este de a calcula determinantul unei matrici de 3×3 , folosind principiul aplicat la regula triunghiului.

Fereastra de baza este impartita in 3 zone: Introducerea datelor, Butoanele si date de iesire

Introducerea datelor se face in editarea campului "Text" a 9 TextBox-uri. Fiecare TextBox este numit in asa fel incat reprezinta pozitia intr-o matrice 3×3 .

Ex. Label13: preia valoarea pentru elementul de pe prima linie si a 3-a coloana.

In dreapta avem doua butoane: Calculeaza det (A) si Sterge.

Butonul Calculeaza det (A) are atasata o procedura Button1.OnClick care este lansata odata cu apasarea butonului.

Odata cu apasarea acestuia, algoritmul verifica daca fiecare camp are o valoare, inainte sa inceapa sa calculeze determinantul. Daca cel putin un camp este vid, atunci se va afisa un mesaj de eroare in partea de jos, iar butonul "Calculeaza det (A)" dispare pana cand este apasat butonul "Sterge", care va sterge mesajul de eroare, iar butonul "Calculeaza" poate fi din nou accesat, inasa iar se verifica existenta datelor de intrare.

Daca s-a trecut de verificarea datelor de intrare, ele sunt prelucrate, folosind metoda **Convert**, textul este transformat in tip **Double**, pentru a se putea efectua calcule.

Dupa efectuarea calculelor, rezultatul este transformat intr-un string, apoi el este afisat intr-un **Label**, folosind **Label->Text**.

Pentru a efectua un nou calcul, se apasa butonul Sterge, care va aduce aplicatia la starea in care a fost odata cu pornirea ei.

Codul sursa:

```
#pragma once
```

```
namespace form1 {
```

```
    using namespace System;
    using namespace System::ComponentModel;
    using namespace System::Collections;
    using namespace System::Windows::Forms;
    using namespace System::Data;
    using namespace System::Drawing;
```

```
    public ref class Form1 : public System::Windows::Forms::Form
    {
    public:
        Form1(void)
```

```

    {
        InitializeComponent();
    }

```

protected:

```

~Form1()
{
    if (components)
    {
        delete components;
    }
}

```

protected:

protected:

```

private: System::Windows::Forms::Button^ button1;
private: System::Windows::Forms::Label^ label1;
private: System::Windows::Forms::Label^ label2;
private: System::Windows::Forms::Label^ label3;
private: System::Windows::Forms::Button^ button2;
private: System::Windows::Forms::TextBox^ textBox11;
private: System::Windows::Forms::TextBox^ textBox12;
private: System::Windows::Forms::TextBox^ textBox13;
private: System::Windows::Forms::TextBox^ textBox21;
private: System::Windows::Forms::TextBox^ textBox22;
private: System::Windows::Forms::TextBox^ textBox23;
private: System::Windows::Forms::TextBox^ textBox31;
private: System::Windows::Forms::TextBox^ textBox32;
private: System::Windows::Forms::TextBox^ textBox33;
private: System::Windows::Forms::GroupBox^ groupBox1;
private: System::Windows::Forms::GroupBox^ groupBox2;
private: System::Windows::Forms::Label^ label4;
private: System::ComponentModel::IContainer^ components;
private:
#pragma region Windows Form Designer generated code
    void InitializeComponent(void)
    {
        this->button1 = (gcnew System::Windows::Forms::Button());
        this->label1 = (gcnew System::Windows::Forms::Label());
        this->label2 = (gcnew System::Windows::Forms::Label());
        this->label3 = (gcnew System::Windows::Forms::Label());
        this->button2 = (gcnew System::Windows::Forms::Button());
        this->textBox11 = (gcnew System::Windows::Forms::TextBox());
        this->textBox12 = (gcnew System::Windows::Forms::TextBox());
        this->textBox13 = (gcnew System::Windows::Forms::TextBox());
        this->textBox21 = (gcnew System::Windows::Forms::TextBox());
        this->textBox22 = (gcnew System::Windows::Forms::TextBox());
        this->textBox23 = (gcnew System::Windows::Forms::TextBox());
    }

```

```

this->textBox31 = (gcnew System::Windows::Forms::TextBox());
this->textBox32 = (gcnew System::Windows::Forms::TextBox());
this->textBox33 = (gcnew System::Windows::Forms::TextBox());
this->groupBox1 = (gcnew System::Windows::Forms::GroupBox());
this->groupBox2 = (gcnew System::Windows::Forms::GroupBox());
this->label4 = (gcnew System::Windows::Forms::Label());
this->groupBox1->SuspendLayout();
this->groupBox2->SuspendLayout();
this->SuspendLayout();
// button1
this->button1->Location = System::Drawing::Point(8, 12);
this->button1->Name = L"button1";
this->button1->Size = System::Drawing::Size(61, 40);
this->button1->TabIndex = 9;
this->button1->Text = L"Calculez det (A)";
this->button1->UseVisualStyleBackColor = true;
this->button1->Click += gcnew System::EventHandler(this,
&Form1::button1_Click);
// label1
this->label1->AutoSize = true;
this->label1->Font = (gcnew System::Drawing::Font(L"Microsoft Sans
Serif", 14.25F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,
static_cast<System::Byte>(238)));
this->label1->Location = System::Drawing::Point(33, 135);
this->label1->Name = L"label1";
this->label1->Size = System::Drawing::Size(82, 24);
this->label1->TabIndex = 10;
this->label1->Text = L"det (A) =";
// label2
this->label2->AutoSize = true;
this->label2->Font = (gcnew System::Drawing::Font(L"Microsoft Sans
Serif", 14.25F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,
static_cast<System::Byte>(238)));
this->label2->Location = System::Drawing::Point(128, 135);
this->label2->Name = L"label2";
this->label2->Size = System::Drawing::Size(0, 24);
this->label2->TabIndex = 11;
// label3
this->label3->AutoSize = true;
this->label3->Font = (gcnew System::Drawing::Font(L"Microsoft Sans
Serif", 14.25F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,
static_cast<System::Byte>(238)));
this->label3->Location = System::Drawing::Point(6, 50);
this->label3->Name = L"label3";
this->label3->Size = System::Drawing::Size(39, 24);
this->label3->TabIndex = 12;
this->label3->Text = L"A =";
// button2
this->button2->Location = System::Drawing::Point(8, 72);
this->button2->Name = L"button2";
this->button2->Size = System::Drawing::Size(61, 40);
this->button2->TabIndex = 13;
this->button2->Text = L"Sterge !";

```

```

        this->button2->UseVisualStyleBackColor = true;
        this->button2->Click += gcnew System::EventHandler(this,
&Form1::button2_Click);
        // textBox11
        this->textBox11->Location = System::Drawing::Point(64, 12);
        this->textBox11->Name = L"textBox11";
        this->textBox11->Size = System::Drawing::Size(24, 20);
        this->textBox11->TabIndex = 14;
        // textBox12
        this->textBox12->Location = System::Drawing::Point(105, 12);
        this->textBox12->Name = L"textBox12";
        this->textBox12->Size = System::Drawing::Size(24, 20);
        this->textBox12->TabIndex = 15;
        // textBox13
        this->textBox13->Location = System::Drawing::Point(148, 12);
        this->textBox13->Name = L"textBox13";
        this->textBox13->Size = System::Drawing::Size(24, 20);
        this->textBox13->TabIndex = 16;
        // textBox21
        this->textBox21->Location = System::Drawing::Point(64, 50);
        this->textBox21->Name = L"textBox21";
        this->textBox21->Size = System::Drawing::Size(24, 20);
        this->textBox21->TabIndex = 17;
        // textBox22
        this->textBox22->Location = System::Drawing::Point(105, 50);
        this->textBox22->Name = L"textBox22";
        this->textBox22->Size = System::Drawing::Size(24, 20);
        this->textBox22->TabIndex = 18;
        // textBox23
        this->textBox23->Location = System::Drawing::Point(148, 50);
        this->textBox23->Name = L"textBox23";
        this->textBox23->Size = System::Drawing::Size(24, 20);
        this->textBox23->TabIndex = 19;
        // textBox31
        this->textBox31->Location = System::Drawing::Point(64, 91);
        this->textBox31->Name = L"textBox31";
        this->textBox31->Size = System::Drawing::Size(24, 20);
        this->textBox31->TabIndex = 20;
        // textBox32
        this->textBox32->Location = System::Drawing::Point(105, 91);
        this->textBox32->Name = L"textBox32";
        this->textBox32->Size = System::Drawing::Size(24, 20);
        this->textBox32->TabIndex = 21;
        // textBox33
        this->textBox33->Location = System::Drawing::Point(148, 91);
        this->textBox33->Name = L"textBox33";
        this->textBox33->Size = System::Drawing::Size(24, 20);
        this->textBox33->TabIndex = 22;
        // groupBox1
        this->groupBox1->Controls->Add(this->textBox33);
        this->groupBox1->Controls->Add(this->textBox32);
        this->groupBox1->Controls->Add(this->textBox31);
        this->groupBox1->Controls->Add(this->textBox23);

```

```

this->groupBox1->Controls->Add(this->textBox22);
this->groupBox1->Controls->Add(this->textBox21);
this->groupBox1->Controls->Add(this->textBox13);
this->groupBox1->Controls->Add(this->textBox12);
this->groupBox1->Controls->Add(this->textBox11);
this->groupBox1->Controls->Add(this->label3);
this->groupBox1->Location = System::Drawing::Point(27, 3);
this->groupBox1->Name = L"groupBox1";
this->groupBox1->Size = System::Drawing::Size(179, 118);
this->groupBox1->TabIndex = 23;
this->groupBox1->TabStop = false;
// groupBox2
this->groupBox2->Controls->Add(this->button2);
this->groupBox2->Controls->Add(this->button1);
this->groupBox2->Location = System::Drawing::Point(230, 3);
this->groupBox2->Name = L"groupBox2";
this->groupBox2->Size = System::Drawing::Size(77, 118);
this->groupBox2->TabIndex = 24;
this->groupBox2->TabStop = false;
// label4
this->label4->AutoSize = true;
this->label4->Font = (gcnew System::Drawing::Font(L"Microsoft Sans
Serif", 9.75F, System::Drawing::FontStyle::Regular, System::Drawing::GraphicsUnit::Point,
static_cast<System::Byte>(238)));
this->label4->ForeColor = System::Drawing::Color::Red;
this->label4->Location = System::Drawing::Point(55, 164);
this->label4->Name = L"label4";
this->label4->Size = System::Drawing::Size(0, 16);
this->label4->TabIndex = 25;
// Form1
this->AutoScaleDimensions = System::Drawing::SizeF(6, 13);
this->AutoScaleMode =
System::Windows::Forms::AutoScaleMode::Font;
this->BackColor = System::Drawing::Color::WhiteSmoke;
this->ClientSize = System::Drawing::Size(345, 193);
this->Controls->Add(this->label4);
this->Controls->Add(this->groupBox2);
this->Controls->Add(this->groupBox1);
this->Controls->Add(this->label2);
this->Controls->Add(this->label1);
this->Cursor = System::Windows::Forms::Cursors::Hand;
this->Name = L"Form1";
this->Text = L"Matrix Calc";
this->Load += gcnew System::EventHandler(this,
&Form1::Form1_Load);
this->groupBox1->ResumeLayout(false);
this->groupBox1->PerformLayout();
this->groupBox2->ResumeLayout(false);
this->ResumeLayout(false);
this->PerformLayout();

}
#pragma endregion

```

```

//      private:      System::Void      textBox1_TextChanged(System::Object^      sender,
System::EventArgs^ e) {
//
//      }
//private:      System::Void      textBox7_TextChanged(System::Object^      sender,
System::EventArgs^ e) {
//
//      }
//private:      System::Void      textBox3_TextChanged(System::Object^      sender,
System::EventArgs^ e) {
//
//      }
private: System::Void button1_Click(System::Object^ sender, System::EventArgs^ e)
{
    double det,a1,a2,a3,b1,b2,b3,c1,c2,c3;
    bool ok=false;

    if(this->textBox11->Text != "")
    if(this->textBox12->Text != "")
    if(this->textBox13->Text != "")
    if(this->textBox21->Text != "")
    if(this->textBox22->Text != "")
    if(this->textBox23->Text != "")
    if(this->textBox31->Text != "")
    if(this->textBox32->Text != "")
    if(this->textBox33->Text != "")
    {
        a1= System::Convert::ToDouble(this->textBox11->Text);
        b2= System::Convert::ToDouble(this->textBox12->Text);
        c3= System::Convert::ToDouble(this->textBox13->Text);
        a1= System::Convert::ToDouble(this->textBox21->Text);
        b2= System::Convert::ToDouble(this->textBox22->Text);
        c3= System::Convert::ToDouble(this->textBox23->Text);
        a1= System::Convert::ToDouble(this->textBox31->Text);
        b2= System::Convert::ToDouble(this->textBox32->Text);
        c3= System::Convert::ToDouble(this->textBox33->Text);

        det=(a1*b2*c3)+(a3*b1*c2)+(c1*a2*b3)-(c1*b2*a3)-(a1*c2*b3)-
(c3*a2*b1);

        this->label2->Text = System::Convert::ToString(det);
        this->button1->Visible = false;
        ok=true;
    }
    if (!ok)
        this->label4->Text = "Introduceti valori in toate campurile!";
}
private: System::Void Form1_Load(System::Object^ sender, System::EventArgs^ e) {
}
private: System::Void button2_Click(System::Object^ sender, System::EventArgs^ e)
{
    this->textBox11->Text = "";
    this->textBox12->Text = "";
    this->textBox13->Text = "";
    this->textBox21->Text = "";
    this->textBox22->Text = "";
    this->textBox23->Text = "";
}

```

```

    this->textBox31->Text = "";
    this->textBox32->Text = "";
    this->textBox33->Text = "";
    this->button1->Visible = true;
    this->label2->Text = "";
    this->label4->Text = "";
}
};
}

```

Matrix Calc

A =

Calculez det (A)

Sterge !

det (A) =

Matrix Calc

A =

-3	-5	8
9	6	7
5	6	8

Sterge !

det (A) = 240

Matrix Calc

A =

6		5
	5	
6		5

Calculez det (A)

Sterge !

det (A) =

Introduceti valori in toate campurile!

Matrix Calc

A =

6	7	5
7	g	h
g	h	g

Calculez det (A)

Sterge !

det (A) =

Introduceti valori in toate campurile!