C++ II. Darbas su formomis. Pavyzdys BIBLIOTEKA

Failas *Biblioteka.cpp*

```cpp
#include "Biblioteka.h"
#include "Skaitytojai.h"
#include "Knyga.h"
#include "klase_kn.h"
#include "Redag_knyga.h"


using namespace System;
using namespace System::Windows::Forms;

[STAThread]

int main(array<System::String ^> ^args)
{
        Application::EnableVisualStyles();
        Application::SetCompatibleTextRenderingDefault(false);
        Project1::Biblioteka form;
        Application::Run(%form);
}
```

Failas *Biblioteka.h*

```cpp
#pragma once
#include "Skaitytojai.h"
#include "Knyga.h"
#include "Redag_knyga.h"


namespace Project1 {

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

        /// <summary>
        /// Summary for Biblioteka
        /// </summary>
public ref class Biblioteka : public System::Windows::Forms::Form
        {
        public:
```

```cpp
                    Biblioteka(void)
                    {
                            InitializeComponent();
                            //
                            //TODO: Add the constructor code here
                            //
                    }

        protected:
                    /// <summary>
                    /// Clean up any resources being used.
                    /// </summary>
                    ~Biblioteka()
                    {
                            if (components)
                            {
                                    delete components;
                            }
                    }
        private: System::Windows::Forms::Button^  button1;
        protected:
        private: System::Windows::Forms::Button^  button2;
        private: System::Windows::Forms::Button^  button3;

        private:
                    /// <summary>
                    /// Required designer variable.
                    /// </summary>
                    System::ComponentModel::Container ^components;

#pragma region Windows Form Designer generated code
                    /// <summary>
                    /// Required method for Designer support - do not
modify
                    /// the contents of this method with the code editor.
                    /// </summary>
                    void InitializeComponent(void)
                    {

            System::ComponentModel::ComponentResourceManager^  resources =
(gcnew
System::ComponentModel::ComponentResourceManager(Biblioteka::typeid));
                            this->button1 = (gcnew
System::Windows::Forms::Button());
                            this->button2 = (gcnew
System::Windows::Forms::Button());
                            this->button3 = (gcnew
System::Windows::Forms::Button());
                            this->SuspendLayout();
                            //
                            // button1
```

```cpp
                                                    //
                                                    this->button1->Font = (gcnew
System::Drawing::Font(L"Microsoft Sans Serif", 12,
System::Drawing::FontStyle::Bold, System::Drawing::GraphicsUnit::Point,
                                                    static_cast<System::Byte>(186)));
                                                    this->button1->Location =
System::Drawing::Point(81, 29);
                                                    this->button1->Name = L"button1";
                                                    this->button1->Size =
System::Drawing::Size(163, 40);
                                                    this->button1->TabIndex = 0;
                                                    this->button1->Text = L"SKAITYTOJAI";
                                                    this->button1->UseVisualStyleBackColor =
true;
                                                    this->button1->Click += gcnew
System::EventHandler(this, &Biblioteka::button1_Click);
                                                    //
                                                    // button2
                                                    //
                                                    this->button2->Font = (gcnew
System::Drawing::Font(L"Microsoft Sans Serif", 12,
System::Drawing::FontStyle::Bold, System::Drawing::GraphicsUnit::Point,
                                                    static_cast<System::Byte>(186)));
                                                    this->button2->Location =
System::Drawing::Point(325, 30);
                                                    this->button2->Name = L"button2";
                                                    this->button2->Size =
System::Drawing::Size(165, 39);
                                                    this->button2->TabIndex = 1;
                                                    this->button2->Text = L"KNYGOS";
                                                    this->button2->UseVisualStyleBackColor =
true;
                                                    this->button2->Click += gcnew
System::EventHandler(this, &Biblioteka::button2_Click);
                                                    //
                                                    // button3
                                                    //
                                                    this->button3->Font = (gcnew
System::Drawing::Font(L"Microsoft Sans Serif", 12,
System::Drawing::FontStyle::Bold, System::Drawing::GraphicsUnit::Point,
                                                    static_cast<System::Byte>(186)));
                                                    this->button3->Location =
System::Drawing::Point(561, 29);
                                                    this->button3->Name = L"button3";
                                                    this->button3->Size =
System::Drawing::Size(186, 39);
                                                    this->button3->TabIndex = 2;
                                                    this->button3->Text = L"PAIMTOS KNYGOS";
                                                    this->button3->UseVisualStyleBackColor =
true;
```

```
                                    this->button3->Click += gcnew
System::EventHandler(this, &Biblioteka::button3_Click);
                                    //
                                    // Biblioteka
                                    //
                                    this->AutoScaleDimensions =
System::Drawing::SizeF(6, 13);
                                    this->AutoScaleMode =
System::Windows::Forms::AutoScaleMode::Font;
                                    this->BackgroundImage =
(cli::safe_cast<System::Drawing::Image^  >(resources-
>GetObject(L"$this.BackgroundImage")));
                                    this->BackgroundImageLayout =
System::Windows::Forms::ImageLayout::Center;
                                    this->ClientSize =
System::Drawing::Size(833, 691);
                                    this->Controls->Add(this->button3);
                                    this->Controls->Add(this->button2);
                                    this->Controls->Add(this->button1);
                                    this->Name = L"Biblioteka";
                                    this->Text = L"Biblioteka";
                                    this->Load += gcnew
System::EventHandler(this, &Biblioteka::Biblioteka_Load);
                                    this->ResumeLayout(false);
                    }
#pragma endregion
        private: System::Void Biblioteka_Load(System::Object^  sender,
System::EventArgs^  e) {
                            }
        private: System::Void button1_Click(System::Object^  sender,
System::EventArgs^  e) {
```

```
Skaitytojai^ input = gcnew Skaitytojai();
input->ShowDialog();
}
```

```
        private: System::Void button2_Click(System::Object^  sender,
System::EventArgs^  e)



{
```

```
  Knyga^ input = gcnew Knyga();
  input->ShowDialog();
```

Naujos formos iškvietimas

```
}
private: System::Void button3_Click(System::Object^  sender,
System::EventArgs^  e) {
                        }
};
}
```

Failas *Knyga.cpp*

```
#include "Knyga.h"
#include "klase_kn.h"
#include "Redag_knyga.h"
```

Failas *Knyga.h*

```
#pragma once
#include <string>
#include "klase_kn.h"
#include "Redag_knyga.h"


namespace Project1 {

        using namespace System;
        using namespace System::IO;
        using namespace System::Collections::Generic;
        using namespace System::ComponentModel;
        using namespace System::Collections;
        using namespace System::Windows::Forms;
    using namespace System::Text;
    using namespace System::Threading::Tasks;
        using namespace System::Data;
        using namespace System::Drawing;



        namespace
        {
                knyga A;            ⟵    Klasės tipo kintamasis
        };



        /// <summary>
        /// Summary for Knyga
        /// </summary>
        public ref class Knyga : public System::Windows::Forms::Form
        {

private: System::Windows::Forms::DataGridView^  dataGridView1;
private: System::Windows::Forms::DataGridViewTextBoxColumn^  Knygos_ID;
private: System::Windows::Forms::DataGridViewTextBoxColumn^
Knygos_autorius;
private: System::Windows::Forms::DataGridViewTextBoxColumn^  Knygos_pav;
private: System::Windows::Forms::DataGridViewTextBoxColumn^
Leidimo_metai;
```

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```
          private: System::Windows::Forms::Button^  button2;
          public:
                    Knyga(void)
                    {
                            InitializeComponent();
                            knyga();
                            knygusar();
                            //Rodyti_kn_sar

                    }
          protected:

                    ~Knyga()
                    {
                            if (components)
                            {
                                    delete components;
                            }
                    }
          private: System::Windows::Forms::Label^  label1;
          protected:
          private: System::Windows::Forms::Label^  label2;
          private: System::Windows::Forms::Label^  label3;
          private: System::Windows::Forms::TextBox^  textBox1;
          private: System::Windows::Forms::TextBox^  textBox2;
          private: System::Windows::Forms::TextBox^  textBox3;
          private: System::Windows::Forms::TextBox^  textBox4;
          private: System::Windows::Forms::Label^  label4;

          private:
                    /// <summary>
                    /// Required designer variable.
                    /// </summary>
                    System::ComponentModel::Container ^components;

#pragma region Windows Form Designer generated code
/// <summary>
/// Required method for Designer support - do not modify
/// the contents of this method with the code editor.
/// </summary>
void InitializeComponent(void)
{
this->label1 = (gcnew System::Windows::Forms::Label());
this->label2 = (gcnew System::Windows::Forms::Label());
this->label3 = (gcnew System::Windows::Forms::Label());
this->textBox1 = (gcnew System::Windows::Forms::TextBox());
this->textBox2 = (gcnew System::Windows::Forms::TextBox());
this->textBox3 = (gcnew System::Windows::Forms::TextBox());
this->textBox4 = (gcnew System::Windows::Forms::TextBox());
this->label4 = (gcnew System::Windows::Forms::Label());
this->dataGridView1 = (gcnew System::Windows::Forms::DataGridView());
```

Pradiniai duomenys

```cpp
this->Knygos_ID = (gcnew
System::Windows::Forms::DataGridViewTextBoxColumn());
this->Knygos_autorius = (gcnew
System::Windows::Forms::DataGridViewTextBoxColumn());
this->Knygos_pav = (gcnew
System::Windows::Forms::DataGridViewTextBoxColumn());
this->Leidimo_metai = (gcnew
System::Windows::Forms::DataGridViewTextBoxColumn());
this->button2 = (gcnew System::Windows::Forms::Button());
(cli::safe_cast<System::ComponentModel::ISupportInitialize^  >(this-
>dataGridView1))->BeginInit();
this->SuspendLayout();
//
// label1
//
this->label1->AutoSize = true;
this->label1->Location = System::Drawing::Point(33, 36);
this->label1->Name = L"label1";
this->label1->Size = System::Drawing::Size(56, 13);
this->label1->TabIndex = 0;
this->label1->Text = L"Knygos ID";
//
// label2
//
this->label2->AutoSize = true;
this->label2->Location = System::Drawing::Point(33, 81);
this->label2->Name = L"label2";
this->label2->Size = System::Drawing::Size(45, 13);
this->label2->TabIndex = 1;
this->label2->Text = L"Autorius";
//
// label3
//
this->label3->AutoSize = true;
this->label3->Location = System::Drawing::Point(33, 130);
this->label3->Name = L"label3";
this->label3->Size = System::Drawing::Size(67, 13);
this->label3->TabIndex = 2;
this->label3->Text = L"Pavadinimas";
//
// textBox1
//
this->textBox1->Location = System::Drawing::Point(114, 33);
this->textBox1->Name = L"textBox1";
this->textBox1->Size = System::Drawing::Size(222, 20);
this->textBox1->TabIndex = 3;
//
// textBox2
this->textBox2->Location = System::Drawing::Point(111, 78);
this->textBox2->Name = L"textBox2";
this->textBox2->Size = System::Drawing::Size(224, 20);
```

```cpp
this->textBox2->TabIndex = 4;
//
// textBox3
//
this->textBox3->Location = System::Drawing::Point(114, 136);
this->textBox3->Name = L"textBox3";
this->textBox3->Size = System::Drawing::Size(221, 20);
this->textBox3->TabIndex = 5;
//
// textBox4
//
this->textBox4->Location = System::Drawing::Point(117, 191);
this->textBox4->Name = L"textBox4";
this->textBox4->Size = System::Drawing::Size(218, 20);
this->textBox4->TabIndex = 6;
this->textBox4->TextChanged += gcnew System::EventHandler(this,
&Knyga::textBox4_TextChanged);
//
// label4
//
this->label4->AutoSize = true;
this->label4->Location = System::Drawing::Point(33, 191);
this->label4->Name = L"label4";
this->label4->Size = System::Drawing::Size(71, 13);
this->label4->TabIndex = 7;
this->label4->Text = L"Leidimo metai";
//
// dataGridView1
//
this->dataGridView1->ColumnHeadersHeightSizeMode =
System::Windows::Forms::DataGridViewColumnHeadersHeightSizeMode::AutoSize
;
this->dataGridView1->Columns->AddRange(gcnew cli::array<
System::Windows::Forms::DataGridViewColumn^  >(4) {this->Knygos_ID,
this->Knygos_autorius, this->Knygos_pav, this->Leidimo_metai});
this->dataGridView1->Location = System::Drawing::Point(52, 312);
this->dataGridView1->Name = L"dataGridView1";
this->dataGridView1->Size = System::Drawing::Size(515, 222);
this->dataGridView1->TabIndex = 8;
this->dataGridView1->CellContentClick += gcnew
System::Windows::Forms::DataGridViewCellEventHandler(this,
&Knyga::dataGridView1_CellContentClick);
//
// Knygos_ID
//
this->Knygos_ID->HeaderText = L"Knygos ID";
this->Knygos_ID->Name = L"Knygos_ID";
//
// Knygos_autorius
//
this->Knygos_autorius->HeaderText = L"Knygos autorius";
```

```
this->Knygos_autorius->Name = L"Knygos_autorius";
this->Knygos_autorius->Width = 120;
//
// Knygos_pav
//
this->Knygos_pav->HeaderText = L"Knygos pavadinimas";
this->Knygos_pav->Name = L"Knygos_pav";
this->Knygos_pav->Width = 150;
//
// Leidimo_metai
//
this->Leidimo_metai->HeaderText = L"Leidimo metai";
this->Leidimo_metai->Name = L"Leidimo_metai";
//
// button2
//
this->button2->Location = System::Drawing::Point(171, 602);
this->button2->Name = L"button2";
this->button2->Size = System::Drawing::Size(163, 56);
this->button2->TabIndex = 10;
this->button2->Text = L"IVESTI";
this->button2->UseVisualStyleBackColor = true;
this->button2->Click += gcnew System::EventHandler(this,
&Knyga::button2_Click);
//
// Knyga
//
this->AutoScaleDimensions = System::Drawing::SizeF(6, 13);
this->AutoScaleMode = System::Windows::Forms::AutoScaleMode::Font;
this->ClientSize = System::Drawing::Size(910, 750);
this->Controls->Add(this->button2);
this->Controls->Add(this->dataGridView1);
this->Controls->Add(this->label4);
this->Controls->Add(this->textBox4);
this->Controls->Add(this->textBox3);
this->Controls->Add(this->textBox2);
this->Controls->Add(this->textBox1);
this->Controls->Add(this->label3);
this->Controls->Add(this->label2);
this->Controls->Add(this->label1);
this->Name = L"Knyga";
this->Text = L"Knyga";
(cli::safe_cast<System::ComponentModel::ISupportInitialize^  >(this-
>dataGridView1))->EndInit();
this->ResumeLayout(false);
this->PerformLayout();
}
```

```
#pragma endregion
```

SĄRAŠO SPAUSDINIMAS Į DATAGRIDVIEW

```cpp
void knygusar()
{
 String^ spausd;

 for (int i=0; i<A.n; i++)
  {
    dataGridView1->Rows->Add();
    spausd = gcnew String(A.biblknygos[i].kn_ID.c_str());
    dataGridView1[0, i]->Value = spausd;
    spausd = gcnew String(A.biblknygos[i].aut_pav.c_str());
    dataGridView1[1, i]->Value = spausd;
    spausd = gcnew String(A.biblknygos[i].kn_pav.c_str());
    dataGridView1[2, i]->Value = spausd;
    dataGridView1[3, i]->Value = A.biblknygos[i].leid_m;
  }
}
```

```cpp
private: System::Void button2_Click(System::Object^  sender,
System::EventArgs^  e)
{
 String ^ ID, ^ autorius, ^ pavadinimas;
 std::string id, aut, pavad;
 int metai;
```

Mygtuko IVESTI nuspaudimas

```cpp
ID = textBox1->Text;
autorius = textBox2->Text;
pavadinimas = textBox3->Text;
metai = int::Parse(textBox4->Text);
id = A.convert(ID);
aut = A.convert(autorius);
pavad = A.convert(pavadinimas);
```

Duomenų paėmimas iš įvedimo laukų

```cpp
 A.naujaknyga (id, aut, pavad, metai);
```

Sąrašo papildymas

```cpp
textBox1->Text = "";
textBox2->Text = "";
textBox3->Text = "";
textBox4->Text = "";
```

Įvedimo laukų išvalymas

```cpp
 dataGridView1->Rows->Clear();
```

Spausdinimo laukų išvalymas

```cpp
 knygusar();
```

Atnaujinto po papildymo sąrašo spausdinimas

```cpp
 A.duomenufailas();
}
```

Duomenų failo perrašymas po įvedimo

```
private: System::Void dataGridView1_CellContentClick(System::Object^
sender, System::Windows::Forms::DataGridViewCellEventArgs^  e) {
                      }
private: System::Void textBox4_TextChanged(System::Object^  sender,
System::EventArgs^  e) {
                      }

private: System::Void button1_Click(System::Object^  sender,
System::EventArgs^  e) {

         int id;
         id = dataGridView1->CurrentRow->Index;
         eilute=id;
         Redag_knyga^ frm = gcnew Redag_knyga();
         frm->ID(eilute, A); // Einama eilutė
         frm->ShowDialog();
                             }
```

Redagavimo formos iškvietimas

```
private: System::Void button3_Click(System::Object^  sender,
System::EventArgs^  e) {
         A.is_failo();
         dataGridView1->Rows->Clear();
         knygusar();
                      }
};
}
```

Sąrašo atnaujinimas po redagavimo

Failas *Radag_knyga.cpp*

```
#include "Knyga.h"
#include "klase_kn.h"
#include "Redag_knyga.h"
```

Failas *Radag_knyga.h*

```
#pragma once
#include "Knyga.h"
namespace Project1 {

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

```
using namespace System::Drawing;

namespace
{
        int k;
        knyga klase;

}
```

**Einama eilutė
iš sąrašo redagavimui**

```
/// <summary>
/// Summary for Redag_knyga
/// </summary>
public ref class Redag_knyga : public
System::Windows::Forms::Form
{
public:
        Redag_knyga(void)
        {
                InitializeComponent();

                //
                //TODO: Add the constructor code here
                //
        }

protected:
        /// <summary>
        /// Clean up any resources being used.
        /// </summary>
        ~Redag_knyga()
        {
                if (components)
                {
                        delete components;
                }
        }
private: System::Windows::Forms::Label^  label1;
protected:
private: System::Windows::Forms::Label^  label2;
private: System::Windows::Forms::Label^  label3;
private: System::Windows::Forms::Label^  label4;
private: System::Windows::Forms::Button^  button1;
private: System::Windows::Forms::TextBox^  textBox1;
private: System::Windows::Forms::TextBox^  textBox2;
private: System::Windows::Forms::TextBox^  textBox3;
private: System::Windows::Forms::TextBox^  textBox4;

private:
        /// <summary>
        /// Required designer variable.
        /// </summary>
```

```cpp
                    System::ComponentModel::Container ^components;

#pragma region Windows Form Designer generated code
                    /// <summary>
                    /// Required method for Designer support - do not
modify
                    /// the contents of this method with the code editor.
                    /// </summary>
                    void InitializeComponent(void)
                    {
this->label1 = (gcnew System::Windows::Forms::Label());
this->label2 = (gcnew System::Windows::Forms::Label());
this->label3 = (gcnew System::Windows::Forms::Label());
this->label4 = (gcnew System::Windows::Forms::Label());
this->button1 = (gcnew System::Windows::Forms::Button());
this->textBox1 = (gcnew System::Windows::Forms::TextBox());
this->textBox2 = (gcnew System::Windows::Forms::TextBox());
this->textBox3 = (gcnew System::Windows::Forms::TextBox());
this->textBox4 = (gcnew System::Windows::Forms::TextBox());
this->SuspendLayout();
//
// label1
//
this->label1->AutoSize = true;
this->label1->Location = System::Drawing::Point(44, 45);
this->label1->Name = L"label1";
this->label1->Size = System::Drawing::Size(56, 13);
this->label1->TabIndex = 0;
this->label1->Text = L"Knygos ID";
//
// label2
//
this->label2->AutoSize = true;
this->label2->Location = System::Drawing::Point(314, 45);
this->label2->Name = L"label2";
this->label2->Size = System::Drawing::Size(71, 13);
this->label2->TabIndex = 1;
this->label2->Text = L"Leidimo metai";
//
// label3
//
this->label3->AutoSize = true;
this->label3->Location = System::Drawing::Point(44, 149);
this->label3->Name = L"label3";
this->label3->Size = System::Drawing::Size(45, 13);
this->label3->TabIndex = 2;
this->label3->Text = L"Autorius";
//
// label4
//
this->label4->AutoSize = true;
```

```cpp
this->label4->Location = System::Drawing::Point(314, 149);
this->label4->Name = L"label4";
this->label4->Size = System::Drawing::Size(67, 13);
this->label4->TabIndex = 3;
this->label4->Text = L"Pavadinimas";
//
// button1
//
this->button1->Location = System::Drawing::Point(210, 274);
this->button1->Name = L"button1";
this->button1->Size = System::Drawing::Size(312, 51);
this->button1->TabIndex = 4;
this->button1->Text = L"ATNAUJINTI KNYGA";
this->button1->UseVisualStyleBackColor = true;
this->button1->Click += gcnew System::EventHandler(this,
&Redag_knyga::button1_Click);
//
// textBox1
//
this->textBox1->Location = System::Drawing::Point(43, 82);
this->textBox1->Name = L"textBox1";
this->textBox1->Size = System::Drawing::Size(234, 20);
this->textBox1->TabIndex = 5;
//
// textBox2
//
this->textBox2->Location = System::Drawing::Point(43, 190);
this->textBox2->Name = L"textBox2";
this->textBox2->Size = System::Drawing::Size(234, 20);
this->textBox2->TabIndex = 6;
//
// textBox3
//
this->textBox3->Location = System::Drawing::Point(317, 81);
this->textBox3->Name = L"textBox3";
this->textBox3->Size = System::Drawing::Size(273, 20);
this->textBox3->TabIndex = 7;
//
// textBox4
//
this->textBox4->Location = System::Drawing::Point(317, 190);
this->textBox4->Name = L"textBox4";
this->textBox4->Size = System::Drawing::Size(273, 20);
this->textBox4->TabIndex = 8;
//
// Redag_knyga
//
this->AutoScaleDimensions = System::Drawing::SizeF(6, 13);
this->AutoScaleMode = System::Windows::Forms::AutoScaleMode::Font;
this->ClientSize = System::Drawing::Size(622, 362);
this->Controls->Add(this->textBox4);
```

```
this->Controls->Add(this->textBox3);
this->Controls->Add(this->textBox2);
this->Controls->Add(this->textBox1);
this->Controls->Add(this->button1);
this->Controls->Add(this->label4);
this->Controls->Add(this->label3);
this->Controls->Add(this->label2);
this->Controls->Add(this->label1);
this->Name = L"Redag_knyga";
this->Text = L"Redag_knyga";
this->Load += gcnew System::EventHandler(this,
&Redag_knyga::Redag_knyga_Load);
this->ResumeLayout(false);
this->PerformLayout();

}


#pragma endregion
```

```
        public:
        void ID(int id, knyga C)
        {
                k = id;
                klase = C;
        }
```

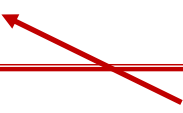**Vidinė funkcija perduoti duomenis**

```
private: System::Void Redag_knyga_Load(System::Object^  sender,
System::EventArgs^  e) {
    String ^ temp;
    temp = gcnew String(klase.biblknygos[k].kn_ID.c_str());
    textBox1->Text = temp;
    textBox2->Text = klase.biblknygos[k].leid_m.ToString();
    temp = gcnew String(klase.biblknygos[k].aut_pav.c_str());
    textBox3->Text = temp;
    temp = gcnew String(klase.biblknygos[k].kn_pav.c_str());
    textBox4->Text = temp;
 }
```

Redaguojamos knygos duomenų pateikimas į formą

```
private: System::Void button1_Click(System::Object^  sender,
System::EventArgs^  e) {
        String ^ ID, ^ autorius, ^ pavadinimas;
        ID = textBox1->Text;
        autorius = textBox3->Text;
        pavadinimas = textBox4->Text;
        klase.biblknygos[k].leid_m = int::Parse(textBox2->Text);
        klase.biblknygos[k].kn_ID = klase.convert(ID);
        klase.biblknygos[k].aut_pav = klase.convert(autorius);
        klase.biblknygos[k].kn_pav = klase.convert(pavadinimas);
        klase.duomenufailas();
        this->Close();
                        }
```

Duomenų apie paredaguotą knygą atnaujinimas

```
};
}
```

Failas *klase_kn.h*

```
#pragma once
#include <string>
#include "knyga.h"
```

```
struct apieknyg {

std::string kn_ID,
            aut_pav,
            kn_pav;
int leid_m;
};
```

Duomenų struktūros aprašymas

```
public class knyga
{
```

Klasės aprašymas

```
public:

        int n;
        apieknyg biblknygos [500];

public:
  knyga();
  void naujaknyga (std::string knID, std::string autpav, std::string
knpav, int leidm);
  void knyga::duomenufailas();
  std::string convert(System::String ^ text);
};
```

Klasės funkcijų „kūnai" faile klase_kn.cpp:

Failas *klase_kn.cpp*

```cpp
#include "Knyga.h"
#include "klase_kn.h"
#include <fstream>
#include <string>
#include <msclr\marshal_cppstd.h>
```

→ **String tipo duomenų įvedimui**

```cpp
knyga::knyga()
{
  std::ifstream fd("knygusar.txt");
  n=0;
  std::string eilute;
  while (!fd.eof())
        {
          getline (fd, biblknygos[n].kn_ID, '#');
          getline (fd, biblknygos[n].aut_pav, '*');
          getline (fd, biblknygos[n].kn_pav, '@');
          fd >> biblknygos[n].leid_m;
          fd.ignore(80, '\n');
          n++;
        }
  n--;
  fd.close();
}
std::string knyga::convert(System::String ^ text)
{
        msclr::interop::marshal_context context;
        std::string standard = context.marshal_as<std::string>(text);
        return standard;
}
void knyga::naujaknyga (std::string knID, std::string autpav, std::string
knpav, int leidm)
{
        biblknygos[n].kn_ID=knID;
        biblknygos[n].aut_pav=autpav;
        biblknygos[n].kn_pav=knpav;
        biblknygos[n].leid_m=leidm;
        n++;
}
void knyga::duomenufailas()
{
 std::ofstream fr("knygusar.txt");
  for (int i = 0; i < n; i++)
    {
    fr << biblknygos[i].kn_ID << "#" << biblknygos[i].aut_pav << "*" <<
    biblknygos[i].kn_pav << "@" << biblknygos[i].leid_m <<'\n';
    }
fr.close();     }
```