

Tema – Lucrarea 3: Baze de date

1. Să se extindă aplicația precedentă, astfel încat să se poată efectua operații de inserare, ștergere și update pentru tabela Universitați. Infomațiile să poată fi introduse de la tastatură.
2. Să se adauge in proiect un dataGridView cu ajutorul căruia să se introducă date în tabela Facultății, iar la selectarea unui rând acesta să poată fi șters.

i) Interfata aplicatiei si rezultatele obtinute:

The application interface consists of two main sections: 'Universitati' and 'Facultati'.

Universitati Section: A list box containing the following universities: UTCN, UBB, UPB, UMF, and FSEGA.

Facultati Section: A form with the following fields:

- ID: []
- NumeUniv: []
- Oras: []
- CodUniv: []

Buttons: Introducere, Actualizare, Stergere, Exit.

DataGridView: A table with the following columns: NumeFac, NumeUniv, NumeFac.

NumeFac	NumeUniv	NumeFac
▶	UTCN	Automatica si Calculato...
	UBB	Mate-Info
	UPB	ETI
	UMF	Medicina Generala
	FSEGA	Info-Economic

The second screenshot shows the application after data entry. The 'Universitati' list box is now empty. The 'Facultati' form fields are populated with the following data:

- ID: 1
- NumeUniv: UTCN
- Oras: Cluj
- CodUniv: 1

The 'DataGridView' table is also updated with the following data:

NumeFac	NumeUniv	NumeFac
▶	UTCN	Automatica si Calculato...
	UBB	Mate-Info
	UPB	ETI
	UMF	Medicina Generala
	FSEGA	Info-Economic

1) Operatia de actualizare:

Form1

Universitati
UTCN
UBB
UPB
UMF
FSEGA

Facultati
Automatica si Calculatoare

ID
100
NumeUniv
UTCN
Oras
Cluj-Napoca
CodUniv
1

NumeFac	NumeUniv	NumeFac
▶	UTCN	Automatica si Calculato...
	UBB	Mate-Info
	UPB	ETTI
	UMF	Medicina Generala
	FSEGA	Info-Economic

Introducere**Actualizare****Stergere****Exit**

Cu ajutorul operatiei de actualizare putem actualiza informatiile legate de fiecare facultate. In exemplu am actualizat ID-ul facultatii UTCN.

2) Operatia de introducere:

Cu ajutorul operatiei de introducere putem introduce de la tastatura noi universitati.

Form1

Universitati
UTCN
UBB
UPB
UMF
FSEGA
Facultate Fictiva

Facultati

ID
105
NumeUniv
Facultate Fictiva
Oras
Dej
CodUniv
10

NumeFac	NumeUniv	NumeFac
▶	UTCN	Automatica si Calculato...
	UBB	Mate-Info
	UPB	ETTI
	UMF	Medicina Generala
	FSEGA	Info-Economic

Introducere**Actualizare****Stergere****Exit**

Form1

Universitati

UTCN
UBB
UPB
UMF
FSEGA
Facultate Fictiva
FEA

Facultati

ID
120

NumeUniv
FEA

Oras
Iasi

CodUniv
11

NumeFac	NumeUniv	NumeFac
▶	UTCN	Automatica si Calculato...
	UBB	Mate-Info
	UPB	ETI
	UMF	Medicina Generala
	FSEGA	Info-Economic

Introducere

Actualizare

Stergere

Exit

3) Operatia de stergere:

Cu ajutorul operatiei de sterge putem sterge doar universitatiile introduse de noi de la tastatura. Daca se incearca stergerea unei universitati deja existenta in baza de date vom afisa un mesaj de eroare deoarece 'Code' e cheie primara.

Form1

Universitati

UTCN
UBB
UPB
UMF
FSEGA
FEA

Facultati

ID

NumeUniv

Oras

CodUniv

NumeFac	NumeUniv	NumeFac
▶	UTCN	Automatica si Calculato...
	UBB	Mate-Info
	UPB	ETI
	UMF	Medicina Generala
	FSEGA	Info-Economic

Introducere

Actualizare

Stergere

Exit

Form1

Universitati

- UTCN
- UBB
- UPB
- UMF
- FSEGA
- FEA

Universitatea are facultati

OK

Facultati

Automatica si Calculatoare

ID

100

NumeUniv

UTCN

Oras

Cluj-Napoca

CodUniv

1

NumeFac	NumeUniv	NumeFac
▶	UTCN	Automatica si Calculato...
	UBB	Mate-Info
	UPB	ETI
	UMF	Medicina Generala
	FSEGA	Info-Economic

Introducere

Actualizare

Stergere

Exit

ii) Codul sursa aferent aplicatiei:

```

1 using System.Data;
2 using System.Data.SqlClient;
3
4 namespace WinFormsAppl
5 {
6     public partial class Form1 : Form
7     {
8         SqlConnection myCon = new SqlConnection();
9         DataSet dsUniv = new DataSet();
10        DataSet dsFac = new DataSet();
11
12        public Form1()
13        {
14            InitializeComponent();
15            myCon.ConnectionString = @"Data Source=(LocalDB)\MSSQLLocalDB;AttachDbFilename=""D:\WinFormsAppl\WinFormsAppl\Database1.mdf"";Integrated Security=True";
16            myCon.Open();
17            ListBox_Fill();
18            PopulateComboBox();
19            PopulateDataGridView();
20            myCon.Close();
21        }
22
23        private void ListBox_Fill()
24        {
25            dsUniv.Clear();
26            dsFac.Clear();
27            listBox_Univ.Items.Clear();
28
29            SqlDataAdapter daUniv = new SqlDataAdapter("SELECT * FROM Universitati", myCon);
30            daUniv.Fill(dsUniv, "Universitati");
31
32            SqlDataAdapter daFac = new SqlDataAdapter("SELECT * FROM Facultati", myCon);
33            daFac.Fill(dsFac, "Facultati");
34
35            foreach (DataRow dr in dsUniv.Tables["Universitati"].Rows)
36            {
37                String name = dr.ItemArray.GetValue(1).ToString();
38                listBox_Univ.Items.Add(name);
39            }
40        }
41    }
42 }

```

```

1 reference
private void PopulateComboBox()
{
    SqlDataAdapter daUniv1 = new SqlDataAdapter("SELECT * FROM Universitati", myCon);
    DataTable dtUniv = new DataTable();
    daUniv1.Fill(dtUniv);
    Column2.ValueMember = "Code";
    Column2.DisplayMember = "NameUniv";
    DataRow topItem = dtUniv.NewRow();
    topItem[0] = 0;
    topItem[1] = "-Select-";
    dtUniv.Rows.InsertAt(topItem, 0);
    Column2.DataSource = dtUniv;
}

2 reference
private void PopulateDataGridView()
{
    SqlDataAdapter daFac1 = new SqlDataAdapter("SELECT * FROM Facultati", myCon);
    DataTable dtFac = new DataTable();
    daFac1.Fill(dtFac);
    dataGridView1.DataSource = dtFac;
}

```

```

1 reference
private void Form1_Load(object sender, EventArgs e)
{
}

1 reference
private void listBox_Univ_SelectedIndexChanged(object sender, EventArgs e)
{
    if (listBox_Univ.SelectedIndex >= 0)
    {
        listBox_Fac.Items.Clear();
        int id = 0, code = 0;
        String UnivSelected = listBox_Univ.SelectedItem.ToString();
        foreach (DataRow dr in dsUniv.Tables["Universitati"].Rows)
        {
            if (UnivSelected == dr.ItemArray.GetValue(1).ToString())
            {
                id = Convert.ToInt32(dr.ItemArray.GetValue(0));
                textBox_IdUniv.Text = id.ToString();
                textBox_NameUniv.Text = dr.ItemArray.GetValue(1).ToString();
                textBox_City.Text = dr.ItemArray.GetValue(2).ToString();
                code = Convert.ToInt32(dr.ItemArray.GetValue(3));
                textBox_CodUniv.Text = code.ToString();
            }
        }
    }
}

```

```

        foreach (DataRow dr in dsFac.Tables["Facultati"].Rows)
        {
            if (code == Convert.ToInt32(dr.ItemArray.GetValue(1)))
            {
                String nameFac = dr.ItemArray.GetValue(2).ToString();
                listBox_Fac.Items.Add(nameFac);
            }
        }
    }
}

```

```

1 reference
private void button_InsertUniv_Click(object sender, EventArgs e)
{
    myCon.Open();
    try
    {
        SqlCommand command = new SqlCommand("INSERT INTO Universitati (Id, NameUniv, City) VALUES (@Id, @Name, @City)", myCon);
        command.Parameters.Add("@Id", SqlDbType.Int).Value = int.Parse(textBox_IdUniv.Text);
        command.Parameters.Add("@Name", SqlDbType.Text).Value = textBox_NameUniv.Text;
        command.Parameters.Add("@City", SqlDbType.Text).Value = textBox_City.Text;
        command.ExecuteNonQuery();

        ListBox_Fill();
        textBox_IdUniv.Clear();
        textBox_NameUniv.Clear();
        textBox_City.Clear();
        textBox_CodUniv.Clear();
    }
    catch (Exception ex)
    {
        MessageBox.Show(ex.ToString());
    }
    myCon.Close();
}

```

```

1 reference
private void button_UpdateUniv_Click(object sender, EventArgs e)
{
    myCon.Open();
    try
    {
        SqlCommand command = new SqlCommand("UPDATE Universitati SET NameUniv = @Name, City = @City, Id=@Id WHERE Code=@Code", myCon);
        command.Parameters.Add("@Name", SqlDbType.Text).Value = textBox_NameUniv.Text;
        command.Parameters.Add("@City", SqlDbType.Text).Value = textBox_City.Text;
        command.Parameters.Add("@Id", SqlDbType.Int).Value = int.Parse(textBox_IdUniv.Text);
        command.Parameters.Add("@Code", SqlDbType.Int).Value = int.Parse(textBox_CodUniv.Text);
        command.ExecuteNonQuery();

        ListBox_Fill();
        textBox_IdUniv.Clear();
        textBox_NameUniv.Clear();
        textBox_City.Clear();
        textBox_CodUniv.Clear();
    }
    catch (Exception ex)
    {
        MessageBox.Show(ex.ToString());
    }
    myCon.Close();
}

```

```

private void button_DeleteUniv_Click(object sender, EventArgs e)
{
    myCon.Open();
    try
    {
        SqlCommand command1 = new SqlCommand("SELECT COUNT(*) FROM Facultati WHERE Code = @Code", myCon);
        command1.Parameters.Add("@Code", SqlDbType.Int).Value = Convert.ToInt32(textBox_CodUniv.Text);
        int n = Convert.ToInt32(command1.ExecuteScalar());
        if (n == 0)
        {
            SqlCommand command = new SqlCommand("DELETE FROM Universitati WHERE Code=@Code", myCon);
            command.Parameters.Add("@Code", SqlDbType.Int).Value = Convert.ToInt32(textBox_CodUniv.Text);
            command.ExecuteNonQuery();

            ListBox_Fill();
            textBox_IdUniv.Clear();
            textBox_NameUniv.Clear();
            textBox_City.Clear();
            textBox_CodUniv.Clear();
        }
        else
        {
            MessageBox.Show("Universitatea are facultati");
        }
    }
    catch (Exception ex)
    {
        MessageBox.Show(ex.ToString());
    }
    myCon.Close();
}

1 reference
private void dataGridView1_CellValueChanged(object sender, DataGridViewCellEventArgs e)
{
    if (dataGridView1.CurrentRow != null)
    {
        myCon.Open();
        DataGridViewRow row = dataGridView1.CurrentRow;
        if (row.Cells["Column1"].Value == DBNull.Value)
        {
            SqlCommand sqlcom1 = new SqlCommand("InsertFac", myCon);
            sqlcom1.CommandType = CommandType.StoredProcedure;
            sqlcom1.Parameters.AddWithValue("@Code", Convert.ToInt32(row.Cells["Column2"].Value == DBNull.Value ?
                "1" : row.Cells["Column2"].Value.ToString()));
            sqlcom1.Parameters.AddWithValue("@NameFac", row.Cells["Column3"].Value == DBNull.Value ?
                "" : row.Cells["Column3"].Value.ToString());
            sqlcom1.ExecuteNonQuery();
            PopulateDataGridView();
        }
    }
}

```

```

    else
    {
        SqlCommand sqlcom2 = new SqlCommand("UpdateFac", myCon);
        sqlcom2.CommandType = CommandType.StoredProcedure;
        sqlcom2.Parameters.AddWithValue("@Id", Convert.ToInt32(row.Cells["Column1"].Value == DBNull.Value ?
            "0" : row.Cells["Column1"].Value.ToString()));
        sqlcom2.Parameters.AddWithValue("@Code", Convert.ToInt32(row.Cells["Column2"].Value == DBNull.Value ?
            "0" : row.Cells["Column2"].Value.ToString()));
        sqlcom2.Parameters.AddWithValue("@NameFac", row.Cells["Column3"].Value == DBNull.Value ?
            "" : row.Cells["Column3"].Value.ToString());
        sqlcom2.ExecuteNonQuery();
    }
    myCon.Close();
}
}

```

```

1 reference
private void dataGridView1_UserDeletingRow(object sender, DataGridViewRowCancelEventArgs e)
{
    if (dataGridView1.CurrentRow.Cells["Column1"].Value != DBNull.Value)
    {
        if (MessageBox.Show("Doriti sa stergeti linia?", "Stergere", MessageBoxButtons.YesNo) == DialogResult.Yes)
        {
            myCon.Open();
            SqlCommand sqlcom = new SqlCommand("DeleteFac", myCon);
            sqlcom.CommandType = CommandType.StoredProcedure;
            sqlcom.Parameters.AddWithValue("@Id", Convert.ToInt32(dataGridView1.CurrentRow.Cells["Column1"].Value));
            sqlcom.ExecuteNonQuery();
            myCon.Close();
        }
        else e.Cancel = true;
    }
    else e.Cancel = true;
}

1 reference
private void button1_Click(object sender, EventArgs e)
{
    Application.Exit();
}
}

```

iii) Tabelele bazei de date:

	Id	Code	NumeFac
▶	1	1	Automatica si C...
	2	4	Mate-Info
	3	5	ETTI
	4	8	Medicina Gener...
	5	9	Info-Economic
✱	NULL	NULL	NULL

	Id	NameUniv	City	Code
▶	100	UTCN	Cluj-Napoca	1
	2	UBB	Cluj	4
	3	UPB	Bucuresti	5
	4	UMF	Cluj	8
	5	FSEGA	Cluj	9
	120	FEA	Iasi	11
✱	NULL	NULL	NULL	NULL