

# BankAccountManagerApp – Documentație

## **Descriere:**

BankAccountManagerApp este o aplicație de gestionare a conturilor bancare care permite utilizatorilor să adauge, să depună și să retragă bani din conturi bancare.

## **Structura proiectului :**

Proiectul constă în două fișiere principale:

Form1.cs: Acest fișier conține codul pentru interfața grafică a aplicației și logica asociată.

Form1.Designer.cs: Acest fișier conține codul generat automat pentru designul interfeței grafice.

## **Clase:**

### **1. BankAccountManagerForm**

Această clasă reprezintă formularul principal al aplicației. Ea conține elementele interfeței grafice și gestionează evenimentele asociate acestora.

#### **Metode :**

**BankAccountManagerForm():** Constructorul clasei, inițializează formularul și lista de conturi bancare.

**BankAccountManagerForm\_Load(object sender, EventArgs e):** Metodă apelată la încărcarea formularului, care adaugă un exemplu de cont bancar.

**RefreshDataGridView():** Actualizează datagridview-ul cu informațiile conturilor bancare.

**btnAddAccount\_Click(object sender, EventArgs e):** Metodă apelată la apăsarea butonului "Add Account", care adaugă un cont bancar nou în listă.

**btnDeposit\_Click(object sender, EventArgs e):** Metodă apelată la apăsarea butonului "Deposit", care efectuează un depozit în contul selectat.

**btnWithdraw\_Click(object sender, EventArgs e):** Metodă apelată la apăsarea butonului "Withdraw", care efectuează o retragere din contul selectat.

**dataGridViewAccounts\_CellContentClick(object sender, DataGridViewCellEventArgs e):** Metodă apelată la evenimentul de click pe celulele din datagridview.

## **2. BankAccount**

Această clasă reprezintă un cont bancar și include informații despre titularul contului, numărul contului și soldul.

### **Proprietăți:**

AccountHolder: Numele titularului contului.

AccountNumber: Numărul contului.

Balance: Soldul contului.

### **Metode:**

**BankAccount(string accountHolder, string accountNumber, decimal initialBalance):**

Constructorul clasei, inițializează detaliile contului bancar.

**Deposit(decimal amount):** Efectuează un depozit în contul bancar.

**Withdraw(decimal amount):** Efectuează o retragere din contul bancar.

## **Funcționalități cheie**

Adăugarea de conturi bancare noi.

Depunerea și retragerea de bani din conturi.

Actualizarea automată a datagridview-ului cu informațiile conturilor bancare.

Validarea informațiilor introduse de utilizator pentru crearea unui cont nou.

## **Resurse externe**

Clasa MessageBox din biblioteca standard Windows.Forms pentru afișarea de mesaje de notificare către utilizator.

## Codul sursă:

### Form1.cs:

```
using System;
using System.Collections.Generic;
using System.Windows.Forms;

namespace BankAccountManagerApp
{
    public partial class BankAccountManagerForm : Form
    {
        private List<BankAccount> bankAccounts;

        public BankAccountManagerForm()
        {
            InitializeComponent();

            // Inițializare listă de conturi bancare
            bankAccounts = new List<BankAccount>();
        }

        private void BankAccountManagerForm_Load(object sender, EventArgs e)
        {
            // Adăugare exemplu de cont la încărcarea formularului
            bankAccounts.Add(new BankAccount("Mouad Laamarti", "1234567890", 1000));
            RefreshDataGridView();
        }

        private void RefreshDataGridView()
        {
            dataGridViewAccounts.DataSource = null;
            dataGridViewAccounts.Rows.Clear();

            foreach (BankAccount account in bankAccounts)
            {
                dataGridViewAccounts.Rows.Add(account.AccountHolder,
                account.AccountNumber, account.Balance);
            }
        }

        private void btnAddAccount_Click(object sender, EventArgs e)
        {
            // Adăugare cont bancar nou
            string accountHolder = textBoxAccountHolder.Text;
            string accountNumber = textBoxAccountNumber.Text;
            decimal initialBalance = numericUpDownInitialBalance.Value;

            if (!string.IsNullOrEmpty(accountHolder) &&
            !string.IsNullOrEmpty(accountNumber))
            {
                bankAccounts.Add(new BankAccount(accountHolder, accountNumber,
            initialBalance));
                RefreshDataGridView();

                // Resetare controale
                textBoxAccountHolder.Text = string.Empty;
                textBoxAccountNumber.Text = string.Empty;
            }
        }
    }
}
```

```

        numericUpDownInitialBalance.Value = 0;
    }
    else
    {
        MessageBox.Show("Introduceți toate informațiile necesare pentru a
crea un cont!");
    }
}

private void btnDeposit_Click(object sender, EventArgs e)
{
    // Efectuare depozit în contul selectat
    if (dataGridViewAccounts.SelectedRows.Count > 0)
    {
        int selectedIndex = dataGridViewAccounts.SelectedRows[0].Index;
        decimal amount = numericUpDownAmount.Value;
        bankAccounts[selectedIndex].Deposit(amount);
        RefreshDataGridView();
    }
    else
    {
        MessageBox.Show("Selectați un cont pentru a efectua depozitul!");
    }
}

private void btnWithdraw_Click(object sender, EventArgs e)
{
    // Efectuare retragere din contul selectat
    if (dataGridViewAccounts.SelectedRows.Count > 0)
    {
        int selectedIndex = dataGridViewAccounts.SelectedRows[0].Index;
        decimal amount = numericUpDownAmount.Value;
        if (bankAccounts[selectedIndex].Withdraw(amount))
        {
            RefreshDataGridView();
        }
        else
        {
            MessageBox.Show("Fonduri insuficiente pentru retragere!");
        }
    }
    else
    {
        MessageBox.Show("Selectați un cont pentru a efectua retragerea!");
    }
}

private void dataGridViewAccounts_CellContentClick(object sender,
DataGridViewCellEventArgs e)
{
}

}

public class BankAccount
{
    public string AccountHolder { get; private set; }
    public string AccountNumber { get; private set; }
}

```

```

        public decimal Balance { get; private set; }

        public BankAccount(string accountHolder, string accountNumber, decimal
initialBalance)
        {
            AccountHolder = accountHolder;
            AccountNumber = accountNumber;
            Balance = initialBalance;
        }

        public void Deposit(decimal amount)
        {
            Balance += amount;
        }

        public bool Withdraw(decimal amount)
        {
            if (Balance >= amount)
            {
                Balance -= amount;
                return true;
            }
            return false;
        }
    }
}

```

### **Form1.Designer.cs:**

```

namespace BankAccountManagerApp
{
    partial class BankAccountManagerForm
    {
        private System.ComponentModel.IContainer components = null;

        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }
    }
}

```

```

}

private void InitializeComponent()
{
    this.labelAccountHolder = new System.Windows.Forms.Label();
    this.labelAccountNumber = new System.Windows.Forms.Label();
    this.labelBalance = new System.Windows.Forms.Label();
    this.textBoxAccountHolder = new System.Windows.Forms.TextBox();
    this.textBoxAccountNumber = new System.Windows.Forms.TextBox();
    this.numericUpDownInitialBalance = new System.Windows.Forms.NumericUpDown();
    this.btnAddAccount = new System.Windows.Forms.Button();
    this.dataGridViewAccounts = new System.Windows.Forms.DataGridView();
    this.btnDeposit = new System.Windows.Forms.Button();
    this.btnWithdraw = new System.Windows.Forms.Button();
    this.numericUpDownAmount = new System.Windows.Forms.NumericUpDown();
    this.labelAmount = new System.Windows.Forms.Label();

    this.dataGridViewTextBoxColumn1 = new
System.Windows.Forms.DataGridViewTextBoxColumn();

    this.dataGridViewTextBoxColumn2 = new
System.Windows.Forms.DataGridViewTextBoxColumn();

    this.dataGridViewTextBoxColumn3 = new
System.Windows.Forms.DataGridViewTextBoxColumn();

    ((System.ComponentModel.ISupportInitialize)(this.numericUpDownInitialBalance)).BeginInit(
);

    ((System.ComponentModel.ISupportInitialize)(this.dataGridViewAccounts)).BeginInit();

    ((System.ComponentModel.ISupportInitialize)(this.numericUpDownAmount)).BeginInit();

    this.SuspendLayout();

    //
    // labelAccountHolder
    //

```

```
this.labelAccountHolder.AutoSize = true;
this.labelAccountHolder.Location = new System.Drawing.Point(16, 11);
this.labelAccountHolder.Margin = new System.Windows.Forms.Padding(4, 0, 4, 0);
this.labelAccountHolder.Name = "labelAccountHolder";
this.labelAccountHolder.Size = new System.Drawing.Size(102, 16);
this.labelAccountHolder.TabIndex = 0;
this.labelAccountHolder.Text = "Account Holder:";
//
// labelAccountNumber
//
this.labelAccountNumber.AutoSize = true;
this.labelAccountNumber.Location = new System.Drawing.Point(16, 43);
this.labelAccountNumber.Margin = new System.Windows.Forms.Padding(4, 0, 4, 0);
this.labelAccountNumber.Name = "labelAccountNumber";
this.labelAccountNumber.Size = new System.Drawing.Size(109, 16);
this.labelAccountNumber.TabIndex = 1;
this.labelAccountNumber.Text = "Account Number:";
//
// labelBalance
//
this.labelBalance.AutoSize = true;
this.labelBalance.Location = new System.Drawing.Point(16, 75);
this.labelBalance.Margin = new System.Windows.Forms.Padding(4, 0, 4, 0);
this.labelBalance.Name = "labelBalance";
this.labelBalance.Size = new System.Drawing.Size(60, 16);
this.labelBalance.TabIndex = 2;
this.labelBalance.Text = "Balance:";
//
// textBoxAccountHolder
//
```

```

this.textBoxAccountHolder.Location = new System.Drawing.Point(144, 7);
this.textBoxAccountHolder.Margin = new System.Windows.Forms.Padding(4, 4, 4, 4);
this.textBoxAccountHolder.Name = "textBoxAccountHolder";
this.textBoxAccountHolder.Size = new System.Drawing.Size(159, 22);
this.textBoxAccountHolder.TabIndex = 3;
//
// textBoxAccountNumber
//
this.textBoxAccountNumber.Location = new System.Drawing.Point(144, 39);
this.textBoxAccountNumber.Margin = new System.Windows.Forms.Padding(4, 4, 4, 4);
this.textBoxAccountNumber.Name = "textBoxAccountNumber";
this.textBoxAccountNumber.Size = new System.Drawing.Size(159, 22);
this.textBoxAccountNumber.TabIndex = 4;
//
// numericUpDownInitialBalance
//
this.numericUpDownInitialBalance.DecimalPlaces = 2;
this.numericUpDownInitialBalance.Location = new System.Drawing.Point(144, 73);
this.numericUpDownInitialBalance.Margin = new System.Windows.Forms.Padding(4, 4,
4, 4);
this.numericUpDownInitialBalance.Maximum = new decimal(new int[] {
1000000,
0,
0,
0});
this.numericUpDownInitialBalance.Name = "numericUpDownInitialBalance";
this.numericUpDownInitialBalance.Size = new System.Drawing.Size(160, 22);
this.numericUpDownInitialBalance.TabIndex = 5;
//
// btnAddAccount

```



```

//
this.btnAddAccount.Location = new System.Drawing.Point(312, 9);
this.btnAddAccount.Margin = new System.Windows.Forms.Padding(4, 4, 4, 4);
this.btnAddAccount.Name = "btnAddAccount";
this.btnAddAccount.Size = new System.Drawing.Size(100, 28);
this.btnAddAccount.TabIndex = 6;
this.btnAddAccount.Text = "Add Account";
this.btnAddAccount.UseVisualStyleBackColor = true;
this.btnAddAccount.Click += new System.EventHandler(this.btnAddAccount_Click);
//
// dataGridViewAccounts
//
this.dataGridViewAccounts.ColumnHeadersHeightSizeMode =
System.Windows.Forms.DataGridViewColumnHeadersHeightSizeMode.AutoSize;

this.dataGridViewAccounts.Columns.AddRange(new
System.Windows.Forms.DataGridColumn[] {
    this.dataGridViewTextBoxColumn1,
    this.dataGridViewTextBoxColumn2,
    this.dataGridViewTextBoxColumn3});
this.dataGridViewAccounts.Location = new System.Drawing.Point(20, 137);
this.dataGridViewAccounts.Margin = new System.Windows.Forms.Padding(4, 4, 4, 4);
this.dataGridViewAccounts.Name = "dataGridViewAccounts";
this.dataGridViewAccounts.RowHeadersWidth = 51;
this.dataGridViewAccounts.Size = new System.Drawing.Size(500, 176);
this.dataGridViewAccounts.TabIndex = 7;

this.dataGridViewAccounts.CellContentClick += new
System.Windows.Forms.DataGridViewCellEventHandler(this.dataGridViewAccounts_CellCo
ntentClick);
//
// btnDeposit
//
this.btnDeposit.Location = new System.Drawing.Point(528, 252);

```

```
this.btnDeposit.Margin = new System.Windows.Forms.Padding(4, 4, 4, 4);
this.btnDeposit.Name = "btnDeposit";
this.btnDeposit.Size = new System.Drawing.Size(100, 28);
this.btnDeposit.TabIndex = 8;
this.btnDeposit.Text = "Deposit";
this.btnDeposit.UseVisualStyleBackColor = true;
this.btnDeposit.Click += new System.EventHandler(this.btnDeposit_Click);
//
// btnWithdraw
//
this.btnWithdraw.Location = new System.Drawing.Point(528, 137);
this.btnWithdraw.Margin = new System.Windows.Forms.Padding(4, 4, 4, 4);
this.btnWithdraw.Name = "btnWithdraw";
this.btnWithdraw.Size = new System.Drawing.Size(100, 28);
this.btnWithdraw.TabIndex = 9;
this.btnWithdraw.Text = "Withdraw";
this.btnWithdraw.UseVisualStyleBackColor = true;
this.btnWithdraw.Click += new System.EventHandler(this.btnWithdraw_Click);
//
// numericUpDownAmount
//
this.numericUpDownAmount.DecimalPlaces = 2;
this.numericUpDownAmount.Location = new System.Drawing.Point(528, 203);
this.numericUpDownAmount.Margin = new System.Windows.Forms.Padding(4, 4, 4, 4);
this.numericUpDownAmount.Maximum = new decimal(new int[] {
1000000,
0,
0,
0});
this.numericUpDownAmount.Name = "numericUpDownAmount";
```

```
this.numericUpDownAmount.Size = new System.Drawing.Size(160, 22);
this.numericUpDownAmount.TabIndex = 10;
//
// labelAmount
//
this.labelAmount.AutoSize = true;
this.labelAmount.Location = new System.Drawing.Point(525, 183);
this.labelAmount.Margin = new System.Windows.Forms.Padding(4, 0, 4, 0);
this.labelAmount.Name = "labelAmount";
this.labelAmount.Size = new System.Drawing.Size(58, 16);
this.labelAmount.TabIndex = 11;
this.labelAmount.Text = "Amount :";
//
// dataGridViewTextBoxColumn1
//
this.dataGridViewTextBoxColumn1.MinimumWidth = 6;
this.dataGridViewTextBoxColumn1.Name = "Account Holder";
this.dataGridViewTextBoxColumn1.Width = 125;
//
// dataGridViewTextBoxColumn2
//
this.dataGridViewTextBoxColumn2.MinimumWidth = 6;
this.dataGridViewTextBoxColumn2.Name = "Account Number";
this.dataGridViewTextBoxColumn2.Width = 125;
//
// dataGridViewTextBoxColumn3
//
this.dataGridViewTextBoxColumn3.MinimumWidth = 6;
this.dataGridViewTextBoxColumn3.Name = "Amount";
this.dataGridViewTextBoxColumn3.Width = 125;
```

```

//
// BankAccountManagerForm
//
this.AutoScaleDimensions = new System.Drawing.SizeF(8F, 16F);
this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
this.ClientSize = new System.Drawing.Size(701, 411);
this.Controls.Add(this.labelAmount);
this.Controls.Add(this.numericUpDownAmount);
this.Controls.Add(this.btnWithdraw);
this.Controls.Add(this.btnDeposit);
this.Controls.Add(this.dataGridViewAccounts);
this.Controls.Add(this.btnAddAccount);
this.Controls.Add(this.numericUpDownInitialBalance);
this.Controls.Add(this.textBoxAccountNumber);
this.Controls.Add(this.textBoxAccountHolder);
this.Controls.Add(this.labelBalance);
this.Controls.Add(this.labelAccountNumber);
this.Controls.Add(this.labelAccountHolder);
this.Margin = new System.Windows.Forms.Padding(4, 4, 4, 4);
this.Name = "BankAccountManagerForm";
this.Text = "Bank Account Manager";
this.Load += new System.EventHandler(this.BankAccountManagerForm_Load);

((System.ComponentModel.ISupportInitialize)(this.numericUpDownInitialBalance)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.dataGridViewAccounts)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.numericUpDownAmount)).EndInit();
this.ResumeLayout(false);
this.PerformLayout();

}

```

```
private System.Windows.Forms.Label labelAccountHolder;
private System.Windows.Forms.Label labelAccountNumber;
private System.Windows.Forms.Label labelBalance;
private System.Windows.Forms.TextBox textBoxAccountHolder;
private System.Windows.Forms.TextBox textBoxAccountNumber;
private System.Windows.Forms.NumericUpDown numericUpDownInitialBalance;
private System.Windows.Forms.Button btnAddAccount;
private System.Windows.Forms.DataGridView dataGridViewAccounts;
private System.Windows.Forms.Button btnDeposit;
private System.Windows.Forms.Button btnWithdraw;
private System.Windows.Forms.NumericUpDown numericUpDownAmount;
private System.Windows.Forms.Label labelAmount;

private System.Windows.Forms.DataGridViewTextBoxColumn
dataGridViewTextBoxColumn1;

private System.Windows.Forms.DataGridViewTextBoxColumn
dataGridViewTextBoxColumn2;

private System.Windows.Forms.DataGridViewTextBoxColumn
dataGridViewTextBoxColumn3;

}
}
```

## Capturi de Ecran(Output):

Bank Account Manager

Account Holder:  Add

Account Number:

Balance:

	Account Holder	Account Number	Amount
▶	Mouad Laamarti	1234567890	1000
	Claudiu Barbu	2431657980	99200
*			

Withdraw

Amount :

Deposit

Bank Account Manager

Account Holder:  Add

Account Number:

Balance:

	Account Holder	Account Number	Amount
	Mouad Laamarti	1234567890	1000
	Claudiu Barbu	2431657980	99200
▶	Anton Sergiu	0987654321	0
*			

Withdraw

Amount :

Deposit

Bank Account Manager

Account Holder:  Add

Account Number:

Balance:

	Account Holder	Account Number	Amount
	Mouad Laamarti	1234567890	1000
	Claudiu Barbu	2431657980	99200
▶	Anton Sergiu	0987654321	800
*			

Withdraw

Amount :

Deposit