Laboratory Practical Report

of

**Visual Programming with C#**

**(ICT ED 465)**

Submitted To

**TRIBHUVAN UNIVERSITY**

In Partial Fulfillment of the Requirements of the course

**B.Ed. ICTE 6th Semester**

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**SUKUNA MULTIPLE CAMPUS**

Sundarharaincha-12, Morang, Nepal

2080

**CERTIFICATE**

This is to certify that the Laboratory Practical Report

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is a bonafide record of experiments carried out by him/her under by guidance.

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# **Program.cs File**

﻿using System;

using System.Collections.Generic;

using System.Linq;

using System.Threading.Tasks;

using System.Windows.Forms;

namespace calculator

{

static class Program

{

/// <summary>

/// Point d'entrée principal de l'application.

/// </summary>

[STAThread]

static void Main()

{

Application.EnableVisualStyles();

Application.SetCompatibleTextRenderingDefault(false);

Application.Run(new Form1());

}

}

## **Explanation of program.cs Main file**

1. using System;: This line includes the System namespace, which provides fundamental types and basic functionality. It’s essential for many C# programs.
2. using System.Collections.Generic;: This line imports the System.Collections.Generic namespace. It contains classes and interfaces for working with generic collections, such as lists, dictionaries, and queues.
3. using System.Linq;: This line imports the System.Linq namespace. It provides extension methods for querying collections using LINQ (Language-Integrated Query).
4. using System.Threading.Tasks;: This line imports the System.Threading.Tasks namespace. It’s used for asynchronous programming and managing tasks.
5. using System.Windows.Forms;: This line imports the System.Windows.Forms namespace. It provides classes for creating Windows Forms applications, including UI controls and event handling.
6. namespace calculator: This defines a namespace named “calculator.” Namespaces help organize code and prevent naming conflicts.
7. static class Program: This declares a static class named “Program.” The Main method will be the entry point for our application.
8. [STAThread]: This attribute specifies that the application uses a single-threaded apartment model for COM interop. It’s required for Windows Forms applications.
9. static void Main(): The Main method is the entry point of the application. It initializes the UI, enables visual styles, and runs the main form (Form1 in this case).
10. Application.EnableVisualStyles();: This line enables visual styles for the application, making it look consistent with the operating system.
11. Application.SetCompatibleTextRenderingDefault(false);: This sets text rendering compatibility to false, ensuring better text rendering in controls.
12. Application.Run(new Form1());: This starts the application by running an instance of Form1, which represents the main form of the calculator application.

# **Form1.cs**

﻿using System;

using System.Collections.Generic;

using System.ComponentModel;

using System.Data;

using System.Drawing;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

using System.Windows.Forms;

namespace calculator

{

public partial class Form1 : Form

{

double resultat, a, b, elements = 0;

char type\_operation =' ';

public void chiffre(object sender)

{

if (elements == 2)

{

textBox1.Text = "";

elements = 0;

}

Button btn = (Button)sender;

textBox1.Text = textBox1.Text + btn.Text;

}

public void operateur(object sender)

{

if (elements == 0)

{

double.TryParse(textBox1.Text, out a);

Button btn = (Button)sender;

textBox1.Text = textBox1.Text + btn.Text;

type\_operation = btn.Text[0];

elements++;

}else if (elements == 2)

{

double.TryParse(textBox1.Text, out a);

Button btn = (Button)sender;

textBox1.Text = textBox1.Text + btn.Text;

type\_operation = btn.Text[0];

elements = 1;

}

}

public void egale(object sender)

{

if (elements > 0 && type\_operation!= ' ')

{

elements++;

try

{

b = double.Parse(textBox1.Text.Split(type\_operation)[1]);

switch (type\_operation)

{

case '+':

resultat = a + b;

textBox1.Text = "" + resultat;

break;

case '-':

resultat = a - b;

textBox1.Text = "" + resultat;

break;

case '\*':

resultat = a \* b;

textBox1.Text = "" + resultat;

break;

case '/':

resultat = a / b;

textBox1.Text = "" + resultat;

break;

default:

// squall

break;

}

}catch(Exception e)

{

textBox1.Text = "0";

}

type\_operation = ' ';

}

}

public Form1()

{

InitializeComponent();

}

private void button3\_Click(object sender, EventArgs e)

{

chiffre(sender);

}

private void button6\_Click(object sender, EventArgs e)

{

chiffre(sender);

}

private void button13\_Click(object sender, EventArgs e)

{

operateur(sender);

}

private void button12\_Click(object sender, EventArgs e)

{

operateur(sender);

}

private void button1\_Click(object sender, EventArgs e)

{

chiffre(sender);

}

private void button10\_Click(object sender, EventArgs e)

{

chiffre(sender);

}

private void button15\_Click(object sender, EventArgs e)

{

operateur(sender);

}

private void button2\_Click(object sender, EventArgs e)

{

chiffre(sender);

}

private void button9\_Click(object sender, EventArgs e)

{

chiffre(sender);

}

private void button8\_Click(object sender, EventArgs e)

{

chiffre(sender);

}

private void button7\_Click(object sender, EventArgs e)

{

chiffre(sender);

}

private void button14\_Click(object sender, EventArgs e)

{

operateur(sender);

}

private void button4\_Click(object sender, EventArgs e)

{

chiffre(sender);

}

private void textBox1\_TextChanged(object sender, EventArgs e)

{

}

private void Form1\_Load(object sender, EventArgs e)

{

}

private void button5\_Click(object sender, EventArgs e)

{

chiffre(sender);

}

private void button16\_Click(object sender, EventArgs e)

{

egale(sender);

}

private void button11\_Click(object sender, EventArgs e)

{

textBox1.Text = "";

elements = 0;

}

}

}

## **Line-by-line explanation of form1.cs:**

**Namespaces:**

* using System;: This line imports the base .NET framework namespace, which provides access to fundamental classes and functionalities.
* Other using statements import namespaces for collections, components, data, drawing, text, and Windows Forms, which are used throughout the code.

**Class and variables:**

* public partial class Form1 : Form: This line defines a public class called Form1 that inherits from the Form class in Windows Forms. This class represents the main window of the calculator application.
* The following lines declare variables:
  + resultat: Stores the final calculation result.
  + a and b: Hold the first and second operands, respectively.
  + elements: Tracks the number of operands entered (0, 1, or 2).
  + type\_operation: Stores the chosen operation symbol (+, -, \*, /).

**Functions:**

* chiffre(object sender): This function handles clicking a number button.
  + elements == 2: If two operands are already entered, the textbox is cleared and elements resets to 0.
  + Button btn = (Button)sender: Casts the sender object to a Button.
  + textBox1.Text = textBox1.Text + btn.Text: Appends the button's text (the number) to the textbox.
* operateur(object sender): This function handles clicking an operation button.
  + elements == 0: If no operands are entered yet, it:
    - Extracts the first operand from the textbox using double.TryParse and stores it in a.
    - Gets the operation symbol from the button text and stores it in type\_operation.
    - Increments elements to 1.
  + elements == 2: If two operands and an operation were already entered, it:
    - Extracts the second operand from the textbox and stores it in b.
    - Resets elements to 1 (since a new operation is starting).
  + Other cases are not implemented yet.
* egale(object sender): This function handles clicking the equal (=) button.
  + elements > 0 && type\_operation != ' ': Checks if at least one operand and an operation were entered.
  + Increments elements to indicate the calculation is complete.
  + Tries to:
    - Extract the second operand after the operation symbol using Split.
    - Perform the chosen operation based on type\_operation using a switch statement.
    - Update the textbox with the result.
  + Catches any exception and resets the textbox to 0 if an error occurs.
  + Resets type\_operation to ' ' (no pending operation).
* Form1() constructor: Initializes the form components.
* Button click event handlers: These functions call the appropriate function (chiffre or operateur) based on the clicked button.
* textBox1\_TextChanged and Form1\_Load: These functions are currently empty and may be used for future functionality.
* button11\_Click: This function clears the textbox and resets elements.

**Overall:**

This code defines a basic calculator application in Windows Forms. It handles user input for numbers and operations, performs calculations, and displays the result.

# **Calculators Output:**

