```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace Calculator
{
    internal class CalculateView : Form1
    {
        public TextBox numInput = new TextBox();
        public Button plus = new Button();
        public Button minus = new Button();
        public Button multiply = new Button();
        public Button divide = new Button();
        public Button undo = new Button();
        public Button clear = new Button();
        public Button returnResult = new Button();
        public Button quit = new Button();

        public CalculateView()
        {
            this.Text = "Calculator";
            this.Size = new System.Drawing.Size(310, 200);

            Label inputLabel = new Label
            {
                Text = "Input",
                Location = new System.Drawing.Point(20,20),
                AutoSize = true
            };

            numInput.Location = new System.Drawing.Point(20,40);
            numInput.Width = 255;

            plus.Text = "+";
            plus.Location = new System.Drawing.Point(20, 70);
            plus.Width = 45;

            minus.Text = "-";
            minus.Location = new System.Drawing.Point(90, 70);
            minus.Width = 45;

            multiply.Text = "*";
            multiply.Location = new System.Drawing.Point(160, 70);
            multiply.Width = 45;

            divide.Text = "/";
            divide.Location = new System.Drawing.Point(230, 70);
            divide.Width = 45;

            clear.Text = "Clear";
            clear.Location = new System.Drawing.Point(20, 100);
            clear.Width = 45;

            returnResult.Text = "=";
            returnResult.Location = new System.Drawing.Point(90, 100);
```

```
            returnResult.Width = 45;

            undo.Text = "Undo";
            undo.Location = new System.Drawing.Point(160, 100);
            undo.Width = 45;

            quit.Text = "Quit";
            quit.Location = new System.Drawing.Point(230, 100);
            quit.Width = 45;

            Controls.Add(inputLabel);
            Controls.Add(numInput);
            Controls.Add(plus);
            Controls.Add(minus);
            Controls.Add(multiply);
            Controls.Add(divide);
            Controls.Add(clear);
            Controls.Add(returnResult);
            Controls.Add(undo);
            Controls.Add(quit);
        }

        public double GetNumInput()
        {
            if(double.TryParse(numInput.Text, out double num))
            {
                return num;
            }
            else
            {
                throw new FormatException("Invalid input. Please enter a numeric
value.");
            }
        }
        public void Display(double num)
        {
            numInput.Text = $"{num}";
        }

        public void ShowErrorMessage(string message)
        {
            MessageBox.Show(message, "Error", MessageBoxButtons.OK,
MessageBoxIcon.Error);
        }
    }
}




using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace Calculator
```

```
{
    internal class CalculatorController
    {
        private CalculatorModel model;
        private CalculateView view;
        private bool isStorage = false;
        private string currentOperation = null;
        public CalculatorController(CalculatorModel model, CalculateView view)
        {
            this.model = model;
            this.view = view;
            view.plus.Click += OnPlusButtonClick;
            view.minus.Click += OnMinusButtonClick;
            view.multiply.Click += OnMultiplyButtonClick;
            view.divide.Click += OnDivideButtonClick;
            view.clear.Click += OnClearButtonClick;
            view.returnResult.Click += OnreturnResultClick;
            view.quit.Click += OnQuitResultClick;
        }

        private void OnPlusButtonClick(object sender, EventArgs e)
        {
            try
            {
                ModifiedOperation();
                currentOperation = "+";
            }
            catch (FormatException ex)
            {
                view.ShowErrorMessage(ex.Message);
            }
        }
        private void OnMinusButtonClick(object sender, EventArgs e)
        {
            try
            {
                ModifiedOperation();
                currentOperation = "-";
            }
            catch (FormatException ex)
            {
                view.ShowErrorMessage(ex.Message);
            }
        }
        private void OnMultiplyButtonClick(object sender, EventArgs e)
        {
            try
            {
                ModifiedOperation();
                currentOperation = "*";
            }
            catch (FormatException ex)
            {
                view.ShowErrorMessage(ex.Message);
            }
        }
        private void OnDivideButtonClick(object sender, EventArgs e)
        {
```

```
    try
    {
        ModifiedOperation();
        currentOperation = "/";

    }
    catch (FormatException ex)
    {
        view.ShowErrorMessage(ex.Message);
    }
}

private void OnClearButtonClick(object sender, EventArgs e)
{
    try
    {
        model.num1 = 0;
        model.num2 = 0;
        isStorage = false;
        currentOperation = null;
        view.Display(0);
    }
    catch (FormatException ex)
    {
        view.ShowErrorMessage(ex.Message);
    }
}
private void OnreturnResultClick(object sender, EventArgs e)
{
    try
    {
        ModifiedOperation();
        isStorage = false;

    }
    catch(FormatException ex)
    {
        view.ShowErrorMessage(ex.Message);
    }
}

private void OnQuitResultClick(object sender, EventArgs e)
{
    try
    {
        System.Windows.Forms.Application.Exit();
    }
    catch(FormatException ex)
    {
        view.ShowErrorMessage(ex.Message);
    }
}

//ham xu ly chuyen dau
private void ModifiedOperation()
{
    if(isStorage == true)
    {
```

```
                model.num2 = view.GetNumInput();
                switch (currentOperation)
                {
                    case "+":
                        CalculatePlus();
                        model.num1 = model.GetPlus();
                        break;

                    case "-":
                        CalculateMinus();
                        model.num1 = model.GetMinus();
                        break;

                    case "*":
                        CalculateMultiply();
                        model.num1 = model.GetMultiply();
                        break;

                    case "/":
                        CalculateDivide();
                        model.num1 = model.GetDivide();
                        break;
                }
            }
            else
            {
                model.num1 = view.GetNumInput();
                isStorage = true;
            }
        }

        // ham tinh toan rieng
        private void CalculatePlus()
        {
            double result = model.GetPlus();
            view.Display(result);
        }
        private void CalculateMinus()
        {
            double result = model.GetMinus();
            view.Display(result);
        }
        private void CalculateMultiply()
        {
            double result = model.GetMultiply();
            view.Display(result);
        }
        private void CalculateDivide()
        {
            double result = model.GetDivide();
            view.Display(result);
        }

    }
}
```

```cs
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Calculator
{

    internal class CalculatorModel
    {
        public double num1 { get; set; }
        public double num2 { get; set; }
        public double GetPlus() {return num1 + num2;}
        public double GetMinus() { return num1 - num2; }
        public double GetMultiply() {  return num1 * num2; }
        public double GetDivide() { return num1 / num2; }

    }
}
```

```cs
using System;
using System.Collections.Generic;
using System.Linq;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace Calculator
{
    internal static class Program
    {
        /// <summary>
        /// The main entry point for the application.
        /// </summary>
        [STAThread]
        static void Main()
        {
            Application.EnableVisualStyles();
            Application.SetCompatibleTextRenderingDefault(false);

            CalculateView view = new CalculateView();
            CalculatorModel model = new CalculatorModel();
            CalculatorController controller = new CalculatorController(model,view);

            Application.Run(view);
        }
    }
}
```