DI-A1.6: Prueba matemática con WinForms

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URL de GitHub:

https://github.com/IrisCampusFP/desarrollo_de_interfaces/tree/main/Actividades/DI-A1.6-PruebaMatematicaWinForms-IrisPerez/MathQuizy

Código **Form1.cs**:

```csharp
namespace MathQuizy
{
    public partial class Form1 : Form
    {
        // Create a Random object called randomizer
        // to generate random numbers.
        Random randomizer = new Random();

        // These integer variables store the numbers
        // for the addition problem.
        int addend1;
        int addend2;

        // These integer variables store the numbers
        // for the subtraction problem.
        int minuend;
        int subtrahend;

        // These integer variables store the numbers
        // for the multiplication problem.
        int multiplicand;
        int multiplier;

        // These integer variables store the numbers
        // for the division problem.
        int dividend;
        int divisor;

        // This integer variable keeps track of the
        // remaining time.
        int timeLeft;

        public Form1()
        {
            InitializeComponent();
```
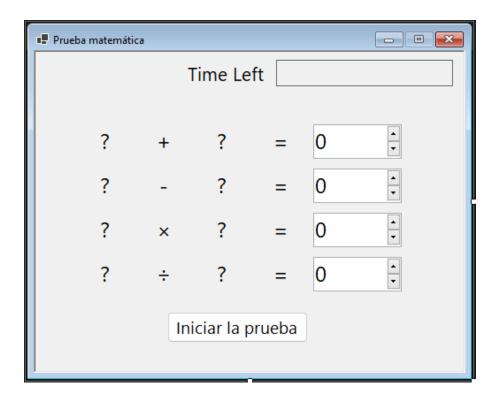
```csharp
        }

        /// <summary>
        /// Start the quiz by filling in all of the problems
        /// and starting the timer.
        /// </summary>
        public void StartTheQuiz()
        {
            // Fill in the addition problem.
            // Generate two random numbers to add.
            // Store the values in the variables 'addend1' and
'addend2'.
            addend1 = randomizer.Next(51);
            addend2 = randomizer.Next(51);

            // Convert the two randomly generated numbers
            // into strings so that they can be displayed
            // in the label controls.
            plusLeftLabel.Text = addend1.ToString();
            plusRightLabel.Text = addend2.ToString();

            // 'sum' is the name of the NumericUpDown control.
            // This step makes sure its value is zero before
            // adding any values to it.
            sumar.Value = 0;

            // Fill in the subtraction problem.
            minuend = randomizer.Next(1, 101);
            subtrahend = randomizer.Next(1, minuend);
            minusLeftLabel.Text = minuend.ToString();
            minusRightLabel.Text = subtrahend.ToString();
            difference.Value = 0;

            // Fill in the multiplication problem.
            multiplicand = randomizer.Next(2, 11);
            multiplier = randomizer.Next(2, 11);
            timesLeftLabel.Text = multiplicand.ToString();
            timesRightLabel.Text = multiplier.ToString();
            product.Value = 0;

            // Fill in the division problem.
            divisor = randomizer.Next(2, 11);
            int temporaryQuotient = randomizer.Next(2, 11);
            dividend = divisor * temporaryQuotient;
            dividedLeftLabel.Text = dividend.ToString();
            dividedRightLabel.Text = divisor.ToString();
            quotient.Value = 0;

            // Start the timer.
            timeLeft = 30;
            timeLabel.Text = "30 seconds";
            timer1.Start();
        }

        private void startButton_Click(object sender, EventArgs e)
        {
```

```csharp
            StartTheQuiz();
            startButton.Enabled = false;
        }


        /// <summary>
        /// Check the answers to see if the user got everything right.
        /// </summary>
        /// <returns>True if the answer's correct, false
otherwise.</returns>
        private bool CheckTheAnswer()
        {
            if ((addend1 + addend2 == sumar.Value)
                && (minuend - subtrahend == difference.Value)
                && (multiplicand * multiplier == product.Value)
                && (dividend / divisor == quotient.Value))
                return true;
            else
                return false;
        }

        private void timer1_Tick(object sender, EventArgs e)
        {
            if (CheckTheAnswer())
            {
                // If CheckTheAnswer() returns true, then the user
                // got the answer right. Stop the timer
                // and show a MessageBox.
                timer1.Stop();
                MessageBox.Show("You got all the answers right!",
                                "Congratulations!");
                startButton.Enabled = true;
            }
            else if (timeLeft > 0)
            {
                // If CheckTheAnswer() returns false, keep counting
                // down. Decrease the time left by one second and
                // display the new time left by updating the
                // Time Left label.
                timeLeft = timeLeft - 1;
                timeLabel.Text = timeLeft + " seconds";

                // Cambiar a rojo si solo quedan 5 segundos
                if (timeLeft <= 5)
                {
                    timeLabel.BackColor = Color.Red;
                }
                else
                {
                    timeLabel.BackColor = DefaultBackColor; // Si no
quedan 5segs, color original
                }
            }
            else
            {
                // If the user ran out of time, stop the timer, show
```
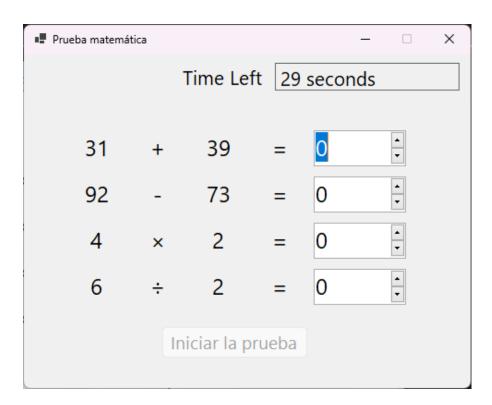
```
            // a MessageBox, and fill in the answers.
            timer1.Stop();
            timeLabel.Text = "Time's up!";
            MessageBox.Show("You didn't finish in time.", "Sorry!");
            sumar.Value = addend1 + addend2;
            difference.Value = minuend - subtrahend;
            product.Value = multiplicand * multiplier;
            quotient.Value = dividend / divisor;

            timeLabel.BackColor = DefaultBackColor; // Restablecer
color
            startButton.Enabled = true;
        }
    }

    private void answer_Enter(object sender, EventArgs e)
    {
        // Select the whole answer in the NumericUpDown control.
        NumericUpDown answerBox = sender as NumericUpDown;

        if (answerBox != null)
        {
            int lengthOfAnswer = answerBox.Value.ToString().Length;
            answerBox.Select(0, lengthOfAnswer);
        }
    }
  }
}
```

DISEÑO FINAL
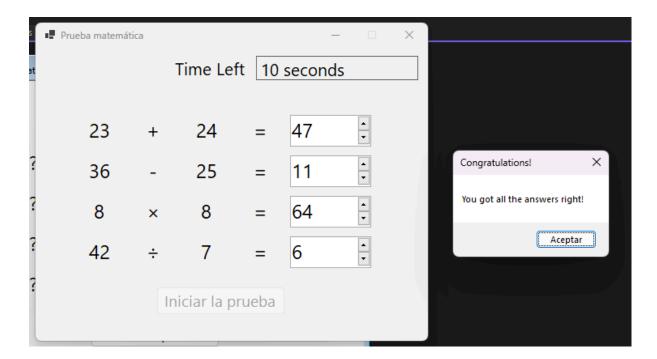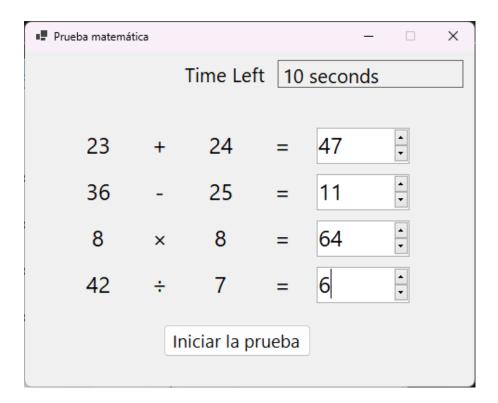
EJECUCIÓN

Pulso el botón 'Iniciar la prueba':
(Se inica el contador, se apaga el botón y aparecen operaciones aleatorias)
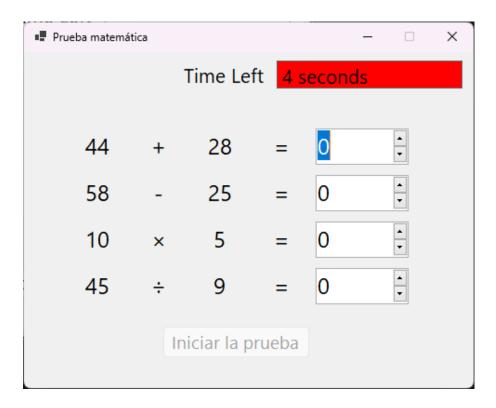

Introduzco correctamente los resultados de todas las operaciones antes de que se acabe el tiempo:

Se termina la prueba, pulso 'Aceptar' y me permite volver a iniciarla.

Inicio de nuevo la prueba, cuando quedan 5 segundos el fondo del label del contador se pone de color rojo:

Si se termina el tiempo se muestra 'Times's up!' y se acaba la prueba: