

# DI-A1.6: Prueba matemática con WinForms

Iris Pérez Aparicio

2º DAM

Campus FP Emprende Humanes

URL de GitHub:

[https://github.com/IrisCampusFP/desarrollo\\_de\\_interfaces/tree/main/Actividades/DI-A1.6-PruebaMatematicaWinForms-IrisPerez/MathQuizy](https://github.com/IrisCampusFP/desarrollo_de_interfaces/tree/main/Actividades/DI-A1.6-PruebaMatematicaWinForms-IrisPerez/MathQuizy)

Código **Form1.cs**:

```
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();
        }
    }
}
```

```

    }

    /// <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)
    {

```

```

        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 5secs, 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

Prueba matemática

Time Left

?	+	?	=	<input type="text" value="0"/>
?	-	?	=	<input type="text" value="0"/>
?	×	?	=	<input type="text" value="0"/>
?	÷	?	=	<input type="text" value="0"/>

## EJECUCIÓN

Pulso el botón ‘Iniciar la prueba’:

(Se inicia el contador, se apaga el botón y aparecen operaciones aleatorias)

The screenshot shows a window titled 'Prueba matemática'. At the top, there is a 'Time Left' label followed by a text box containing '29 seconds'. Below this, there are four rows of math problems, each with an equals sign followed by a text box for the answer. The first row is  $31 + 39 =$  with '0' in the box. The second row is  $92 - 73 =$  with '0' in the box. The third row is  $4 \times 2 =$  with '0' in the box. The fourth row is  $6 \div 2 =$  with '0' in the box. At the bottom, there is a button labeled 'Iniciar la prueba'.

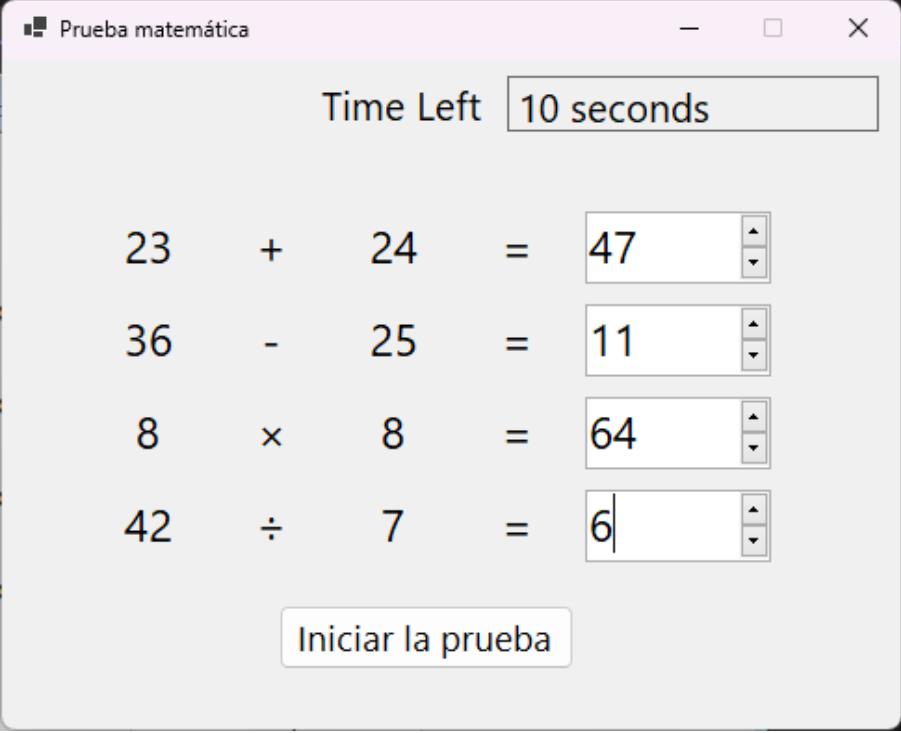
Problem	Answer
$31 + 39$	0
$92 - 73$	0
$4 \times 2$	0
$6 \div 2$	0

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

The screenshot shows the 'Prueba matemática' window with the 'Time Left' now at '10 seconds'. The four math problems are now solved:  $23 + 24 = 47$ ,  $36 - 25 = 11$ ,  $8 \times 8 = 64$ , and  $42 \div 7 = 6$ . The 'Iniciar la prueba' button is still visible. To the right of the window, a small dialog box titled 'Congratulations!' is displayed, containing the text 'You got all the answers right!' and a button labeled 'Aceptar'.

Problem	Answer
$23 + 24$	47
$36 - 25$	11
$8 \times 8$	64
$42 \div 7$	6

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

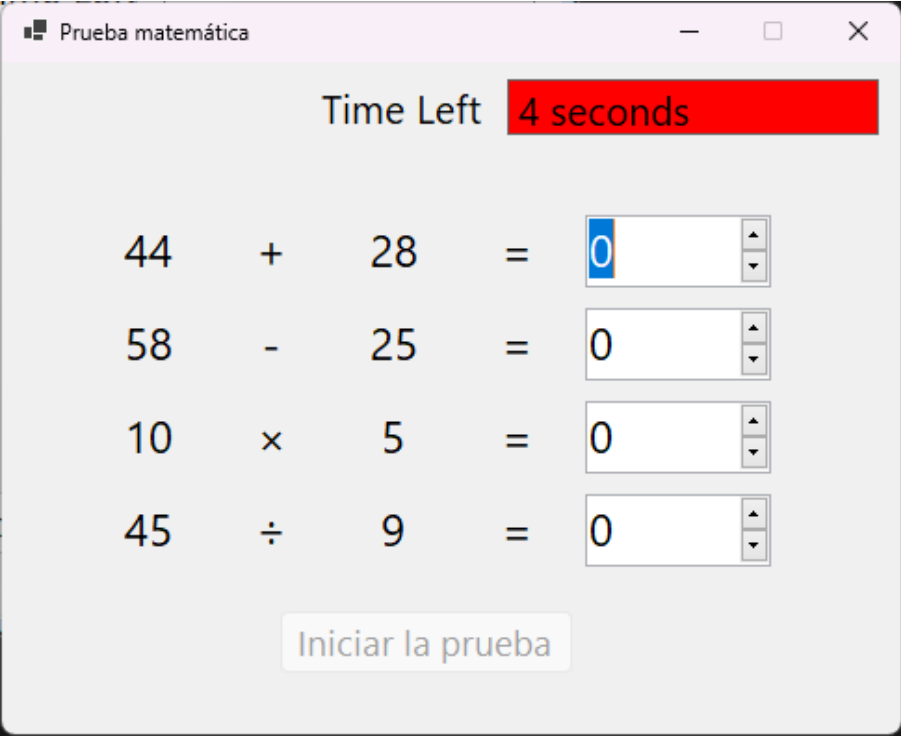


The screenshot shows a window titled "Prueba matemática" with a "Time Left" label and a text box containing "10 seconds". Below this are four math problems, each with its answer in a text box:

- $23 + 24 = 47$
- $36 - 25 = 11$
- $8 \times 8 = 64$
- $42 \div 7 = 6$

At the bottom is a button labeled "Iniciar la prueba".

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



The screenshot shows the same window "Prueba matemática" but with a "Time Left" label and a text box containing "4 seconds". The background of the "Time Left" label is red. Below this are four new math problems, each with its answer in a text box:

- $44 + 28 = 0$
- $58 - 25 = 0$
- $10 \times 5 = 0$
- $45 \div 9 = 0$

The button "Iniciar la prueba" is still present at the bottom.

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

