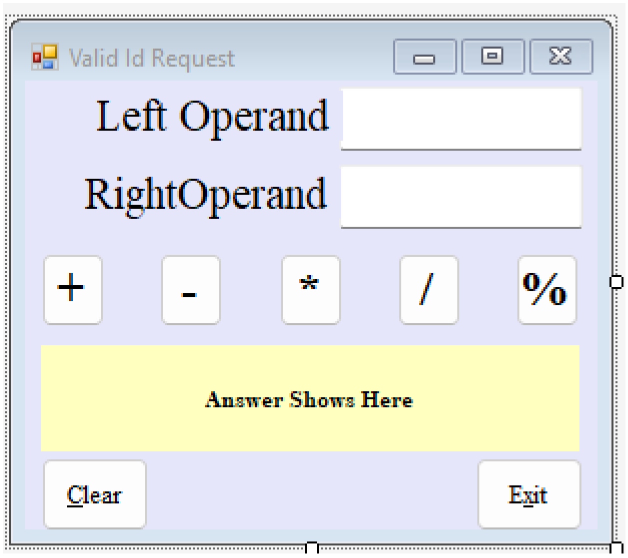
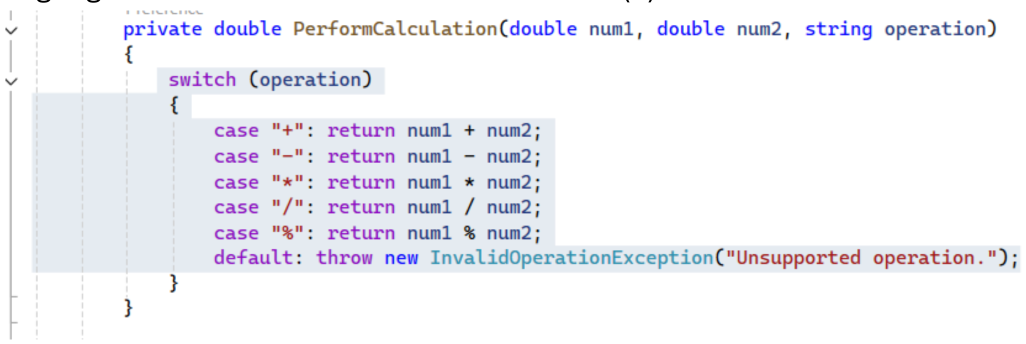
Week 7- Programming Lab Assignment Constructions

- The form after you have completed all the visual changes specified in the UI design



- Highlight the method code in the screen shot(s)



```
private double PerformCalculation(double num1, double num2, string operation)
{
    switch (operation)
    {
        case "+": return num1 + num2;
        case "-": return num1 - num2;
        case "*": return num1 * num2;
        case "/": return num1 / num2;
        case "%": return num1 % num2;
        default: throw new InvalidOperationException("Unsupported operation.");
    }
}
```

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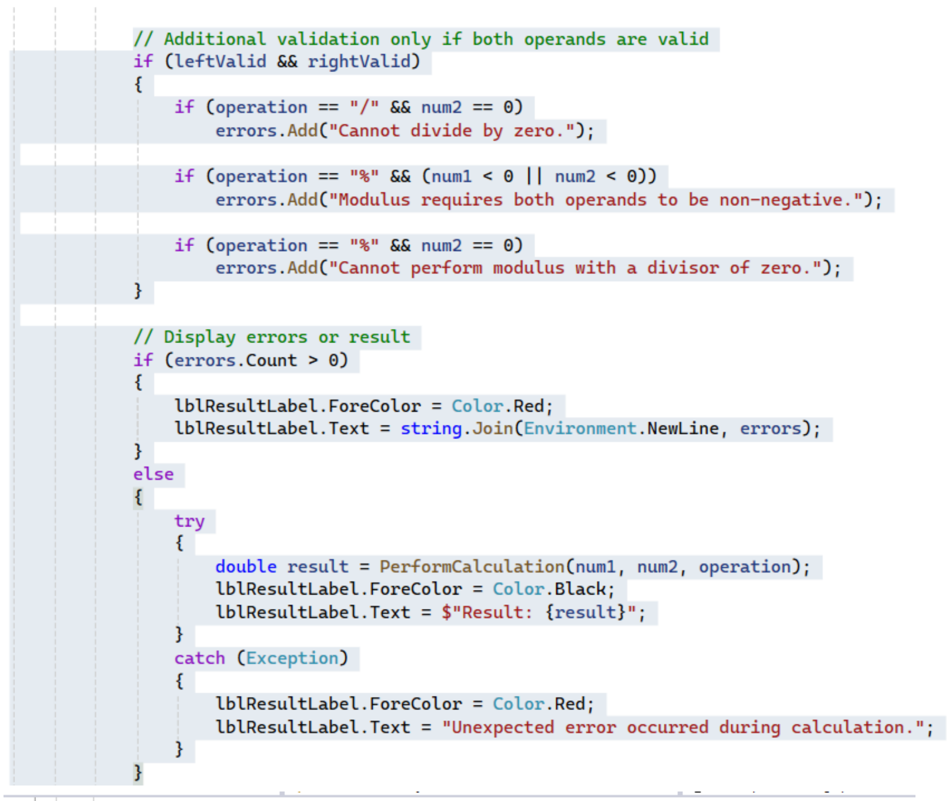
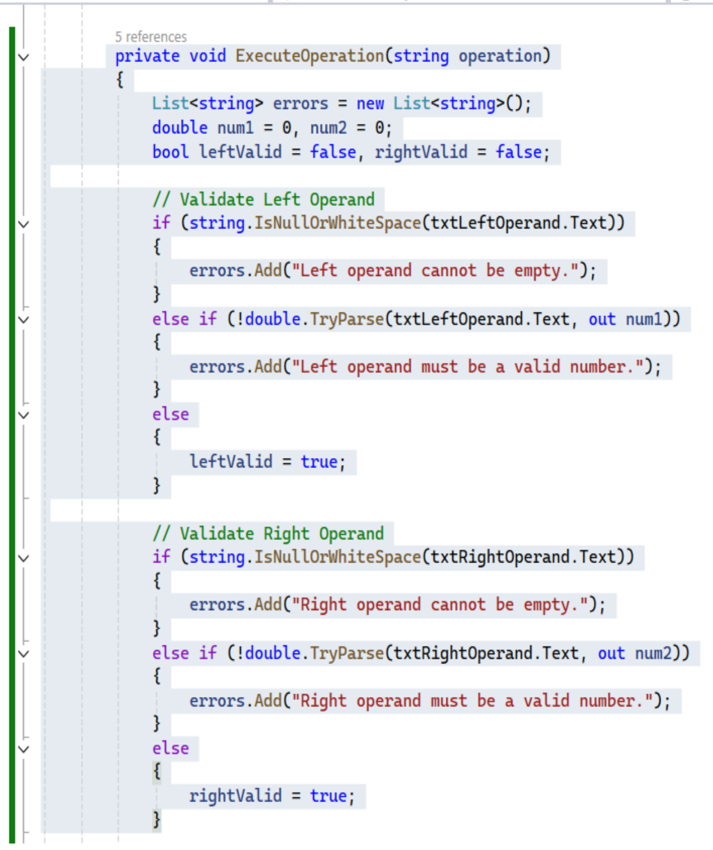
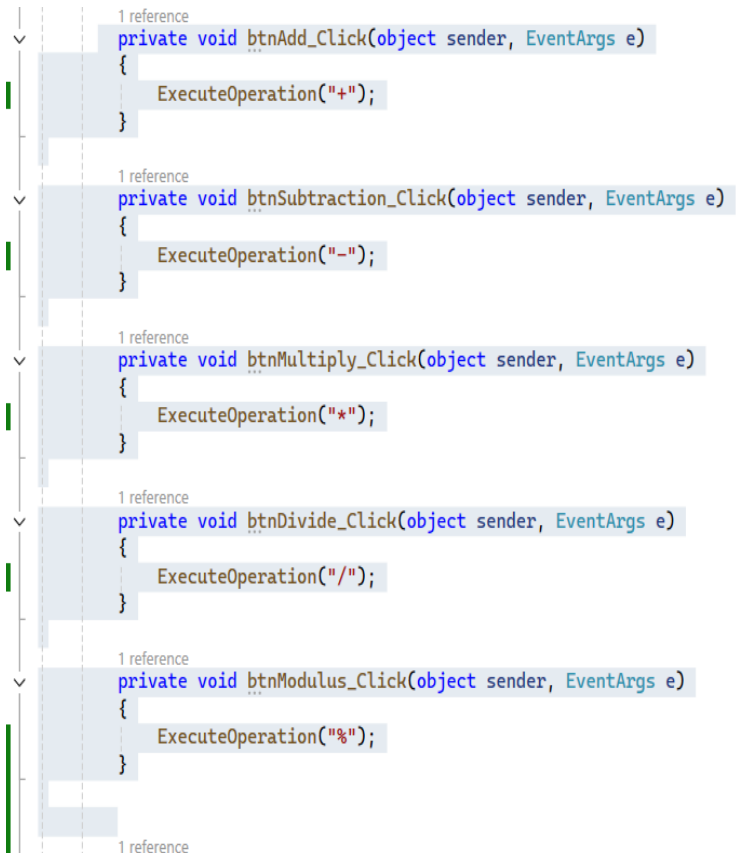


```
// Additional validation only if both operands are valid
if (leftValid && rightValid)
{
    if (operation == "/" && num2 == 0)
        errors.Add("Cannot divide by zero.");

    if (operation == "%" && (num1 < 0 || num2 < 0))
        errors.Add("Modulus requires both operands to be non-negative.");

    if (operation == "%" && num2 == 0)
        errors.Add("Cannot perform modulus with a divisor of zero.");
}

// Display errors or result
if (errors.Count > 0)
{
    lblResultLabel.ForeColor = Color.Red;
    lblResultLabel.Text = string.Join(Environment.NewLine, errors);
}
else
{
    try
    {
        double result = PerformCalculation(num1, num2, operation);
        lblResultLabel.ForeColor = Color.Black;
        lblResultLabel.Text = $"Result: {result}";
    }
    catch (Exception)
    {
        lblResultLabel.ForeColor = Color.Red;
        lblResultLabel.Text = "Unexpected error occurred during calculation.";
    }
}
```

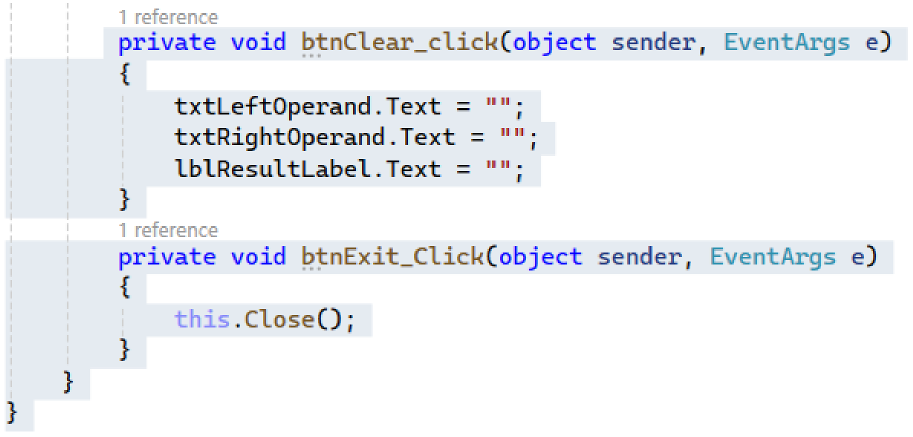


```
5 references
private void ExecuteOperation(string operation)
{
    List<string> errors = new List<string>();
    double num1 = 0, num2 = 0;
    bool leftValid = false, rightValid = false;

    // Validate Left Operand
    if (string.IsNullOrWhiteSpace(txtLeftOperand.Text))
    {
        errors.Add("Left operand cannot be empty.");
    }
    else if (!double.TryParse(txtLeftOperand.Text, out num1))
    {
        errors.Add("Left operand must be a valid number.");
    }
    else
    {
        leftValid = true;
    }

    // Validate Right Operand
    if (string.IsNullOrWhiteSpace(txtRightOperand.Text))
    {
        errors.Add("Right operand cannot be empty.");
    }
    else if (!double.TryParse(txtRightOperand.Text, out num2))
    {
        errors.Add("Right operand must be a valid number.");
    }
    else
    {
        rightValid = true;
    }
```

Week 7- Programming Lab Assignment Constructions



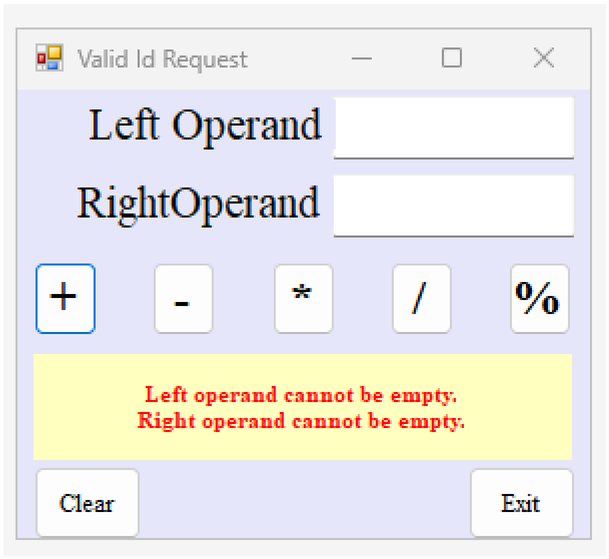
```
1 reference
private void btnAdd_Click(object sender, EventArgs e)
{
    ExecuteOperation("+");
}

1 reference
private void btnSubtraction_Click(object sender, EventArgs e)
{
    ExecuteOperation("-");
}

1 reference
private void btnMultiply_Click(object sender, EventArgs e)
{
    ExecuteOperation("*");
}

1 reference
private void btnDivide_Click(object sender, EventArgs e)
{
    ExecuteOperation("/");
}

1 reference
private void btnModulus_Click(object sender, EventArgs e)
{
    ExecuteOperation("%");
}


1 reference
```



```
        1 reference
        private void btnClear_click(object sender, EventArgs e)
        {
            txtLeftOperand.Text = "";
            txtRightOperand.Text = "";
            lblResultLabel.Text = "";
        }
        1 reference
        private void btnExit_Click(object sender, EventArgs e)
        {
            this.Close();
        }
    }
}
```

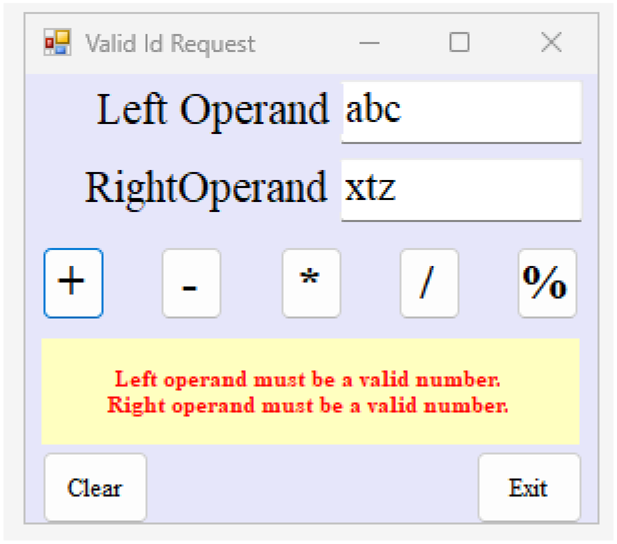
Week 7- Programming Lab Assignment Constructions

- Error message for missing information in the textboxes



Left operand cannot be empty.
Right operand cannot be empty.

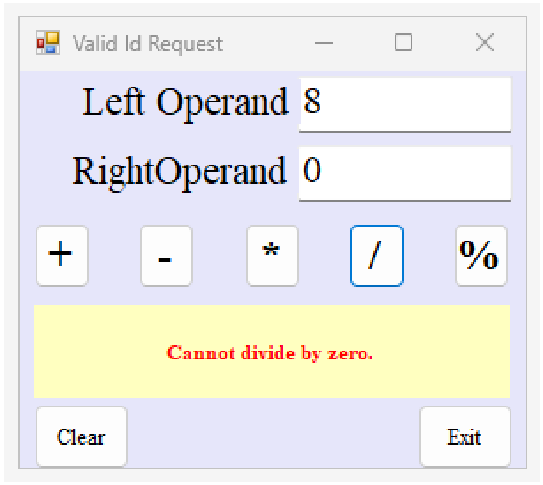
- Error message for non numbers in the textboxes



Left operand must be a valid number.
Right operand must be a valid number.

Week 7- Programming Lab Assignment Constructions

- Divide by Zero message

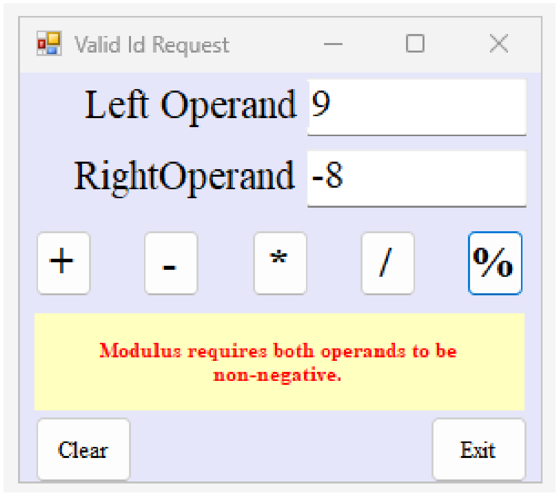


8

0

Cannot divide by zero.

- Negative Numbers on Modulus message



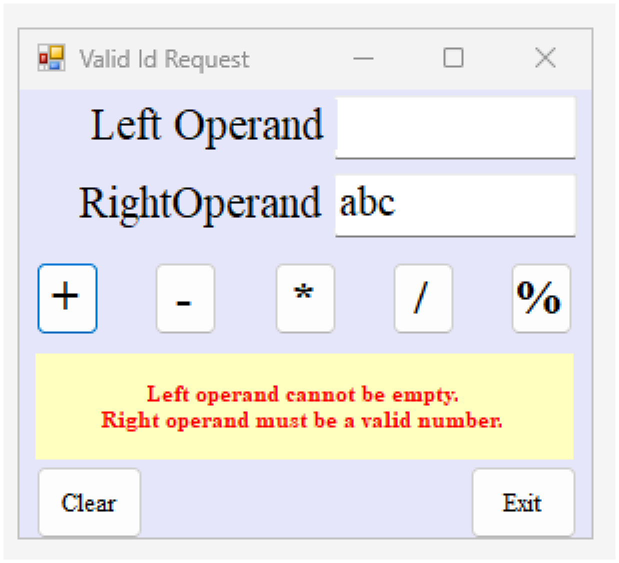
9

-8

Modulus requires both operands to be non-negative.

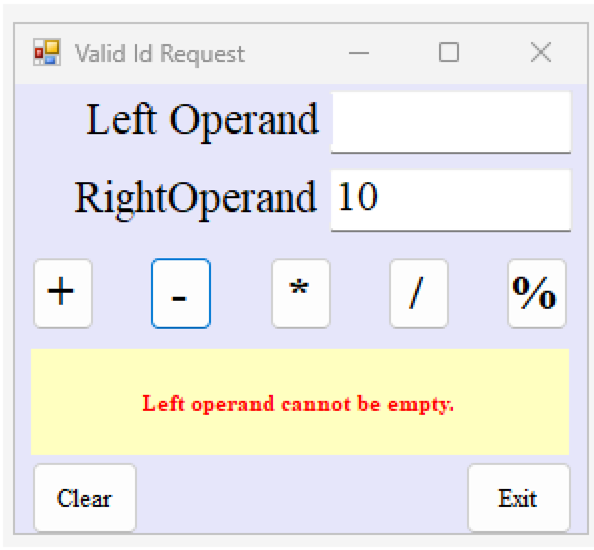
- Show multiple errors happening together and the resulting messages all displayed together

Week 7- Programming Lab Assignment Constructions

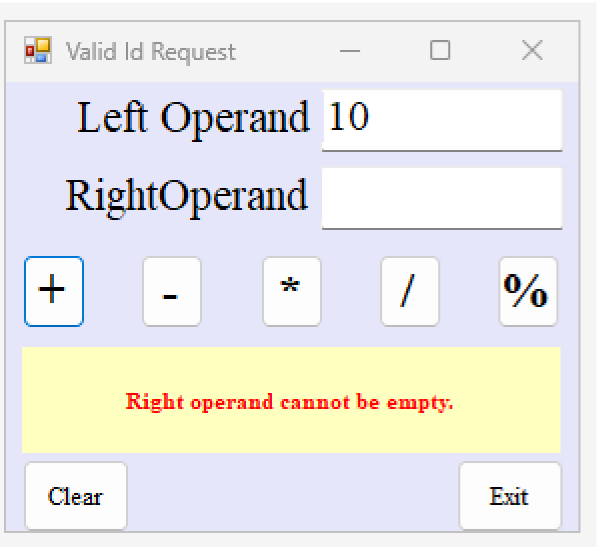


Left operand cannot be empty.
Right operand must be a valid number.

- Show each error message that you can produce (multiple screenshots required)



Left operand cannot be empty.



Right operand cannot be empty.