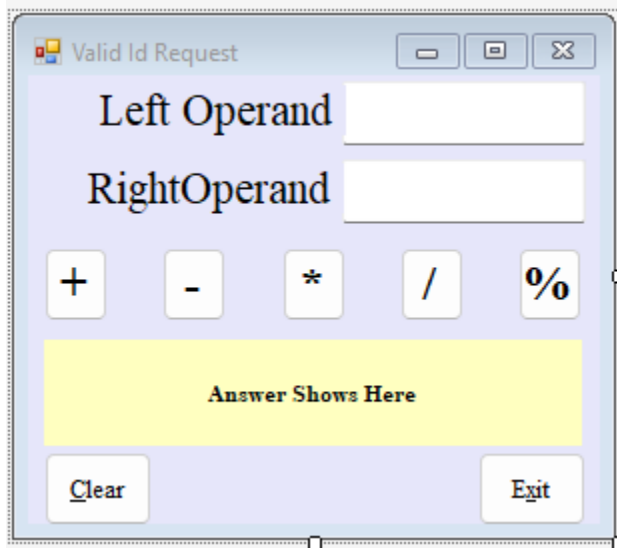


Week 7- Programming Lab Assignment Constructions

- 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.");
    }
}
```

Week 7- Programming Lab Assignment Constructions

```
// 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("/");
}

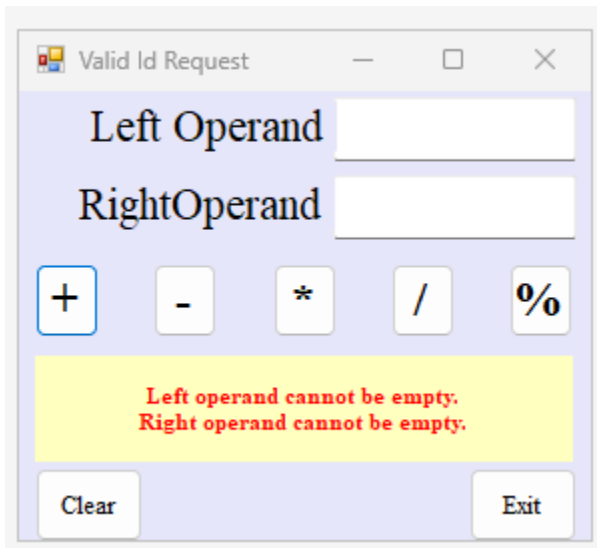
1 reference
private void btnModulus_Click(object sender, EventArgs e)
{
    ExecuteOperation("%");
}

1 reference
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();
}
}
```

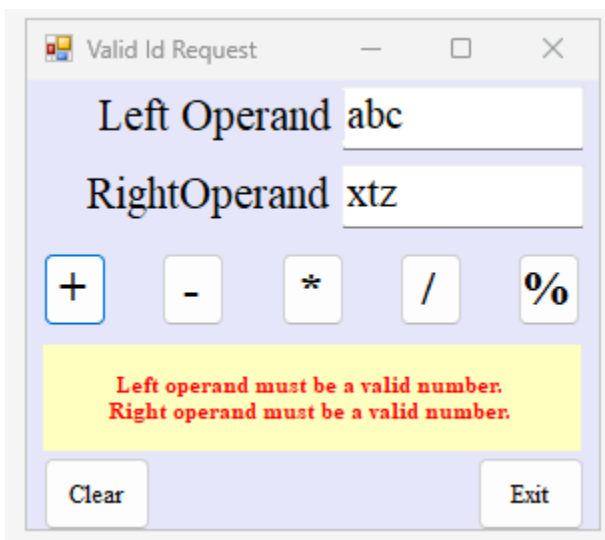
Week 7- Programming Lab Assignment Constructions

- Error message for missing information in the textboxes



A screenshot of a Windows-style application window titled "Valid Id Request". The window has a light blue background. At the top, there are two text labels: "Left Operand" and "RightOperand", each followed by an empty white text box. Below these are five buttons with mathematical operators: "+", "-", "*", "/", and "%". The "+" button is highlighted with a blue border. Below the operator buttons is a yellow rectangular area containing red text that reads: "Left operand cannot be empty. Right operand cannot be empty." At the bottom of the window are two buttons: "Clear" and "Exit".

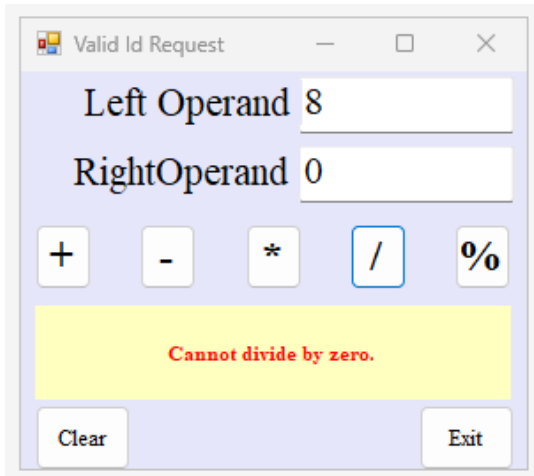
- Error message for non numbers in the textboxes



A screenshot of the same "Valid Id Request" application window. In this state, the "Left Operand" text box contains the text "abc" and the "RightOperand" text box contains the text "xtz". The error message in the yellow box has changed to red text: "Left operand must be a valid number. Right operand must be a valid number." The rest of the interface, including the operator buttons and the "Clear" and "Exit" buttons, remains the same.

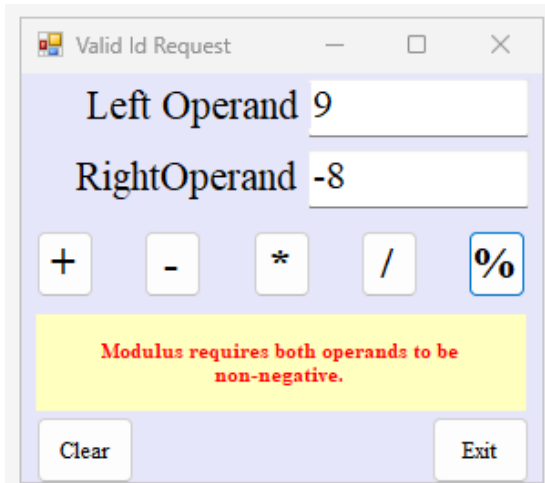
Week 7- Programming Lab Assignment Constructions

- Divide by Zero message



A screenshot of a Windows-style application window titled "Valid Id Request". The window has a light blue background. It contains two input fields: "Left Operand" with the value "8" and "RightOperand" with the value "0". Below these fields is a row of five buttons: "+", "-", "*", "/", and "%". The "/" button is highlighted with a blue border. Below the buttons is a yellow rectangular area containing the red text "Cannot divide by zero." At the bottom of the window are two buttons: "Clear" and "Exit".

- Negative Numbers on Modulus message



A screenshot of a Windows-style application window titled "Valid Id Request". The window has a light blue background. It contains two input fields: "Left Operand" with the value "9" and "RightOperand" with the value "-8". Below these fields is a row of five buttons: "+", "-", "*", "/", and "%". The "%" button is highlighted with a blue border. Below the buttons is a yellow rectangular area containing the red text "Modulus requires both operands to be non-negative." At the bottom of the window are two buttons: "Clear" and "Exit".

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

Week 7- Programming Lab Assignment Constructions

A screenshot of a window titled "Valid Id Request". It contains two input fields: "Left Operand" which is empty, and "RightOperand" which contains the text "abc". Below the fields is a row of five buttons: "+", "-", "*", "/", and "%". The "+" button is highlighted with a blue border. A yellow rectangular area in the center displays the error message: "Left operand cannot be empty. Right operand must be a valid number." in red text. At the bottom are two buttons: "Clear" and "Exit".

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

A screenshot of the "Valid Id Request" window. The "Left Operand" field is empty, and the "RightOperand" field contains the number "10". The "-" button is highlighted with a blue border. A yellow rectangular area displays the error message: "Left operand cannot be empty." in red text. The "Clear" and "Exit" buttons are at the bottom.

A screenshot of the "Valid Id Request" window. The "Left Operand" field contains the number "10", and the "RightOperand" field is empty. The "+" button is highlighted with a blue border. A yellow rectangular area displays the error message: "Right operand cannot be empty." in red text. The "Clear" and "Exit" buttons are at the bottom.