

Pakistan Institute of Engineering and Applied Sciences



Report

Web Services - Assignment

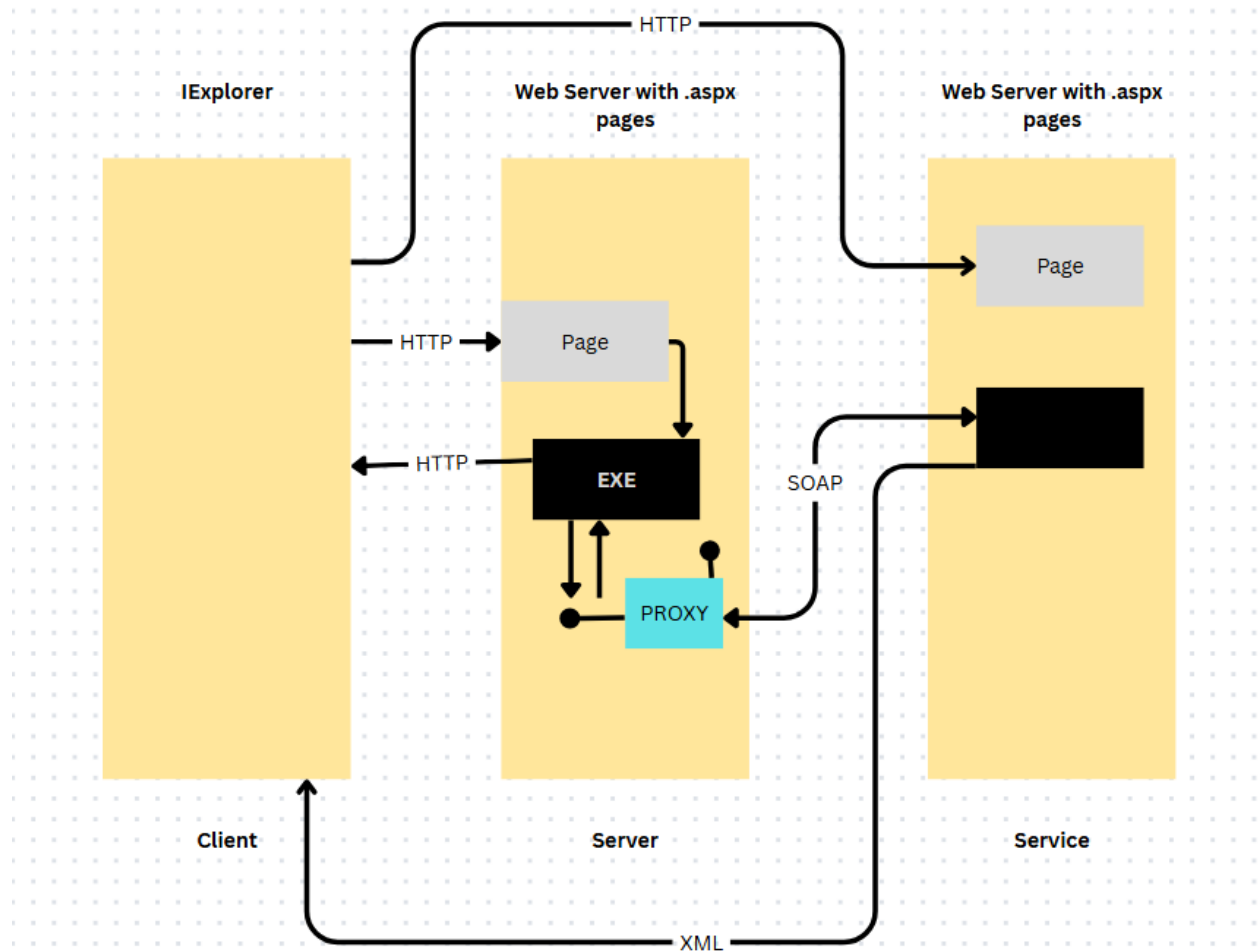
Submitted By: M. Hammad Tahir

Registration No: 03-3-1-033-2022

Course Name: Internet application development

Instructor: Dr. Irfan Hameed

Q1) Draw web services execution model?



Q2) Develop a web service with four web methods as follows

- | | |
|--------------|--------------|
| (a) Add | (b) Subtract |
| (c) Multiply | (d) Divide |

Assume all above methods need two parameters and return a single value as string value.

Code for MathLibService

MathLibService.vb:

```
Imports System.Web
Imports System.Web.Services
Imports System.Web.Services.Protocols
```

' To allow this Web Service to be called from script, using ASP.NET AJAX, uncomment the following line.

```
<System.Web.Script.Services.ScriptService()>
<WebService(Namespace:="http://tempuri.org/")> _
<WebServiceBinding(ConformsTo:=WsiProfiles.BasicProfile1_1)> _
```

```
<Global.Microsoft.VisualBasic.CompilerServices.DesignerGenerated()> _
Public Class MathLibService
    Inherits System.Web.Services.WebService

    <WebMethod()>
    Public Function AddNumbers(ByVal num1 As Double, ByVal num2 As Double) As Double
        Return num1 + num2
    End Function

    <WebMethod()>
    Public Function SubtractNumbers(ByVal num1 As Double, ByVal num2 As Double) As
Double
        Return num1 - num2
    End Function

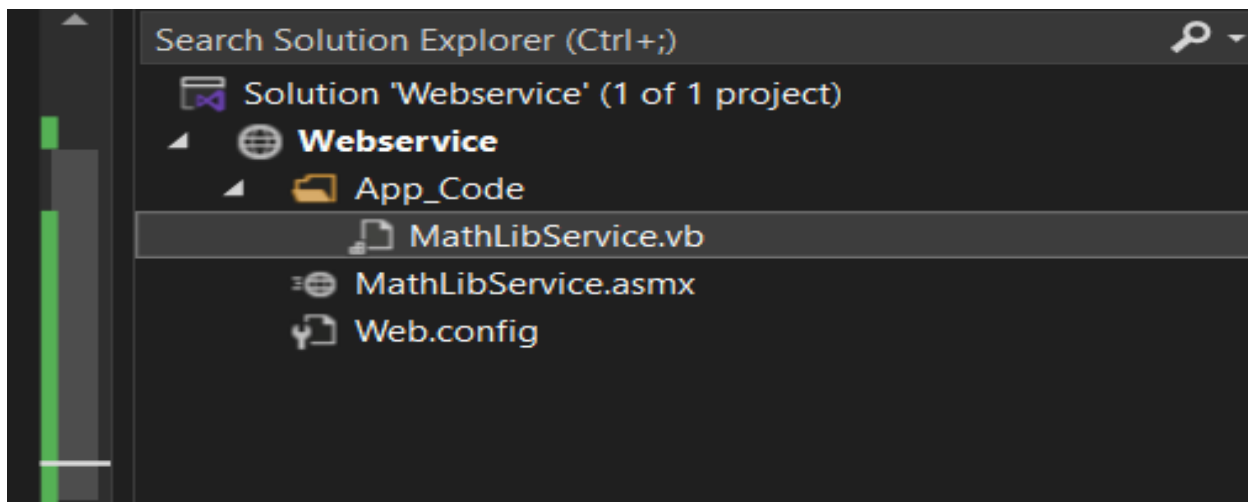
    <WebMethod()>
    Public Function MultiplyNumbers(ByVal num1 As Double, ByVal num2 As Double) As
Double
        Return num1 * num2
    End Function

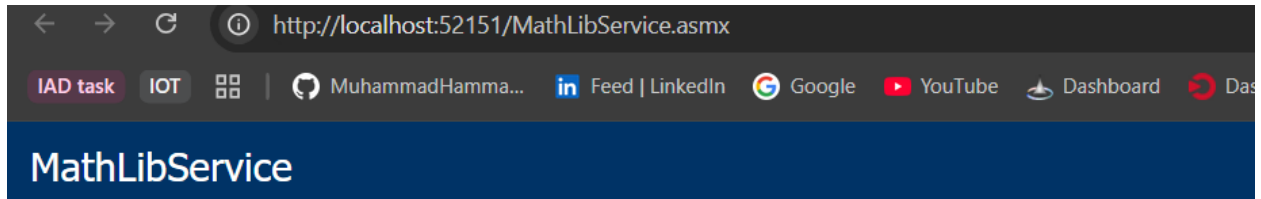
    <WebMethod()>
    Public Function DivideNumbers(ByVal num1 As Double, ByVal num2 As Double) As
Double
        If num2 = 0 Then
            Throw New ArgumentException("Division by zero is not allowed.")
        End If
        Return num1 / num2
    End Function
End Class
```

MathLibService.asmx

```
<%@ WebService Language="VB" CodeBehind="~/App_Code/MathLibService.vb"
Class="MathLibService" %>
```

Folder structure:



Output:

The following operations are supported. For a formal definition, please review the [Service Description](#).

- [AddNumbers](#)
- [DivideNumbers](#)
- [MultiplyNumbers](#)
- [SubtractNumbers](#)



Click [here](#) for a complete list of operations.

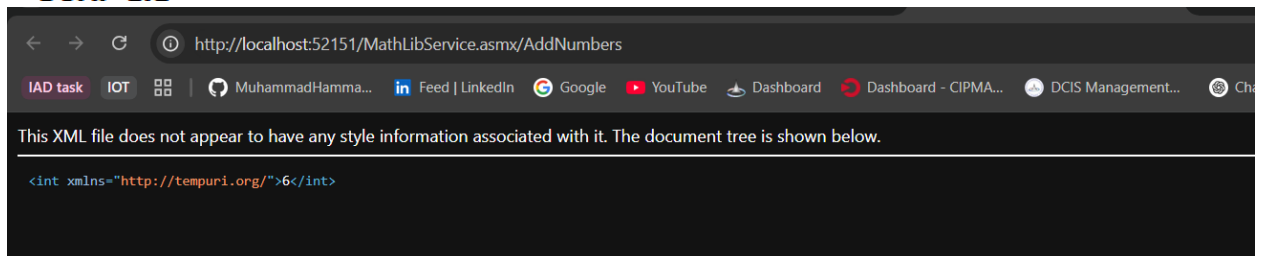
AddNumbers

Test

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
num1:	2
num2:	4

SOAP 1.1



MathLibService

Click [here](#) for a complete list of operations.

DivideNumbers

Test

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
num1:	5
num2:	2
Invoke	

SOAP 1.1

The following is a sample SOAP 1.1 request and response. The [placeholders](#) shown need to be replaced with actual values.

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
<double xmlns="http://tempuri.org/">2.5</double>
```

MathLibService

Click [here](#) for a complete list of operations.

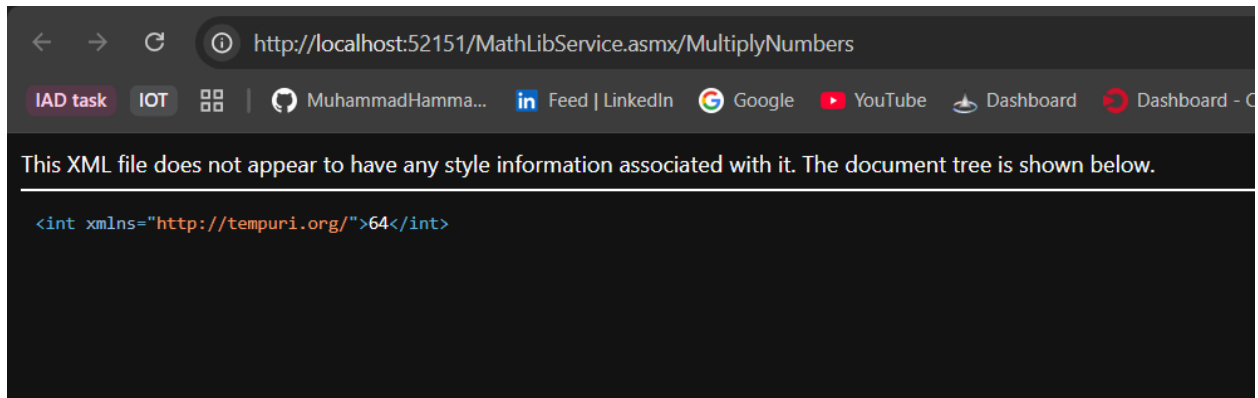
MultiplyNumbers

Test

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
num1:	32
num2:	2
Invoke	

SOAP 1.1



MathLibService

Click [here](#) for a complete list of operations.

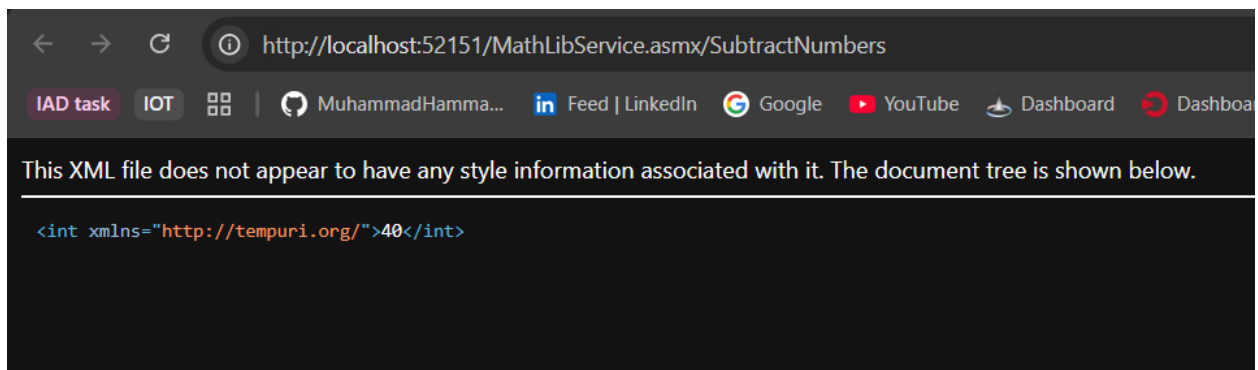
SubtractNumbers

Test

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
num1:	45
num2:	5

SOAP 1.1



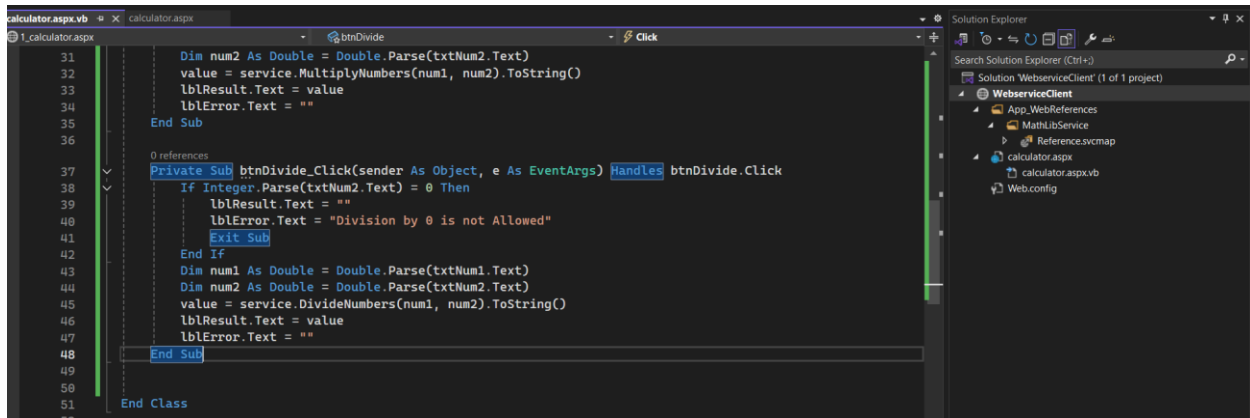
Q3) Test the web service using browser on local pc.

Install Internet Information Services on your laptop/pc (if not installed)

Using IIS manager create two separate applications as follows:

- (a) MathLibService
- (b) ServiceClient

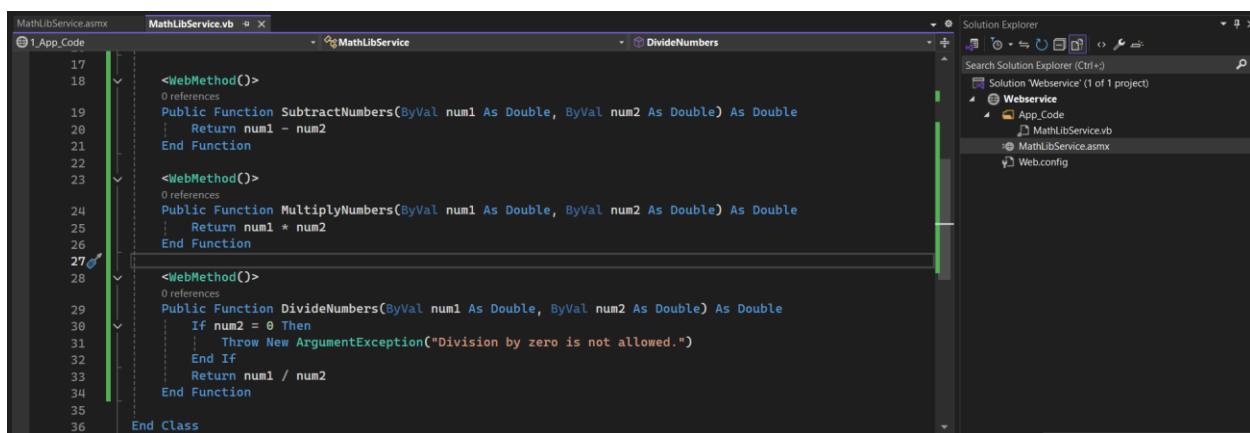
Websevice	✓	5/17/2025 12:17 PM	File folder
WebseviceClient	↻	5/17/2025 3:34 PM	File folder



```
calculator.aspx.vb
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31 Dim num2 As Double = Double.Parse(txtNum2.Text)
32 value = service.MultiplyNumbers(num1, num2).ToString()
33 lblResult.Text = value
34 lblError.Text = ""
35 End Sub
36
37 0 references
38 Private Sub btnDivide_Click(sender As Object, e As EventArgs) Handles btnDivide.Click
39 If Integer.Parse(txtNum2.Text) = 0 Then
40 lblResult.Text = ""
41 lblError.Text = "Division by 0 is not Allowed"
42 Exit Sub
43 End If
44 Dim num1 As Double = Double.Parse(txtNum1.Text)
45 Dim num2 As Double = Double.Parse(txtNum2.Text)
46 value = service.DivideNumbers(num1, num2).ToString()
47 lblResult.Text = value
48 lblError.Text = ""
49 End Sub
50
51 End Class
52
```

Solution Explorer: WebseviceClient (1 of 1 project)

- App_WebReferences
- MathLibService
- Reference.svcmap
- calculator.aspx
- calculator.aspx.vb
- Web.config

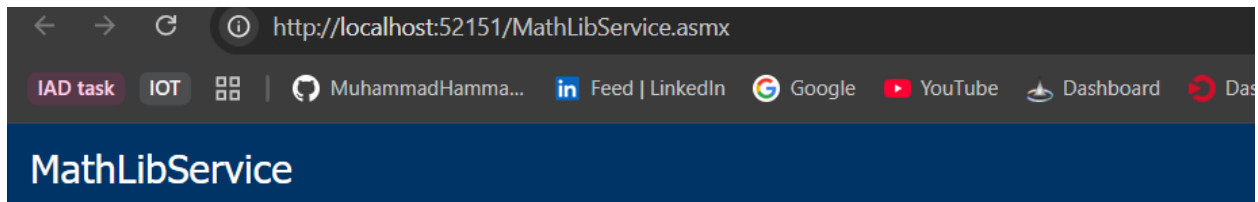


```
MathLibService.vb
1
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17
18 <WebMethod()>
19 Public Function SubtractNumbers(ByVal num1 As Double, ByVal num2 As Double) As Double
20 Return num1 - num2
21 End Function
22
23 <WebMethod()>
24 0 references
25 Public Function MultiplyNumbers(ByVal num1 As Double, ByVal num2 As Double) As Double
26 Return num1 * num2
27 End Function
28
29 <WebMethod()>
30 0 references
31 Public Function DivideNumbers(ByVal num1 As Double, ByVal num2 As Double) As Double
32 If num2 = 0 Then
33 Throw New ArgumentException("Division by zero is not allowed.")
34 End If
35 Return num1 / num2
36 End Function
37
38 End Class
39
```

Solution Explorer: Websevice (1 of 1 project)

- App_Code
- MathLibService.vb
- MathLibService.asmx
- Web.config

Testing:



The following operations are supported. For a formal definition, please review the [Service Description](#).

- [AddNumbers](#)
- [DivideNumbers](#)
- [MultiplyNumbers](#)
- [SubtractNumbers](#)



Click [here](#) for a complete list of operations.

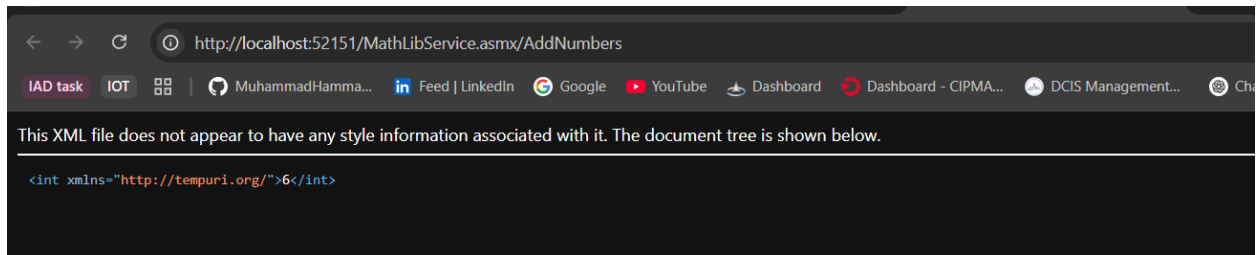
AddNumbers

Test

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
num1:	2
num2:	4

SOAP 1.1



MathLibService

Click [here](#) for a complete list of operations.

DivideNumbers

Test

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
num1:	5
num2:	2
Invoke	

SOAP 1.1

The following is a sample SOAP 1.1 request and response. The [placeholders](#) shown need to be replaced with actual values.

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
<double xmlns="http://tempuri.org/">2.5</double>
```

MathLibService

Click [here](#) for a complete list of operations.

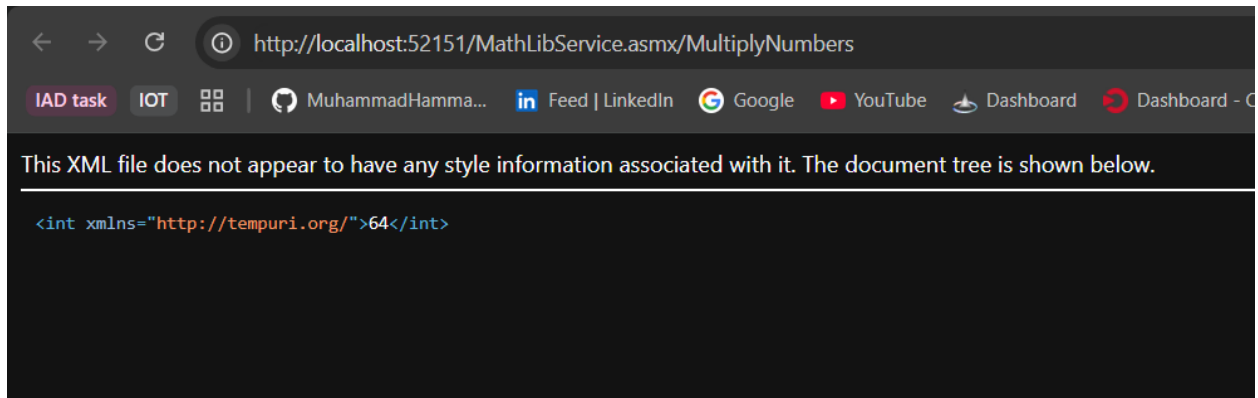
MultiplyNumbers

Test

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
num1:	32
num2:	2
Invoke	

SOAP 1.1



MathLibService

Click [here](#) for a complete list of operations.

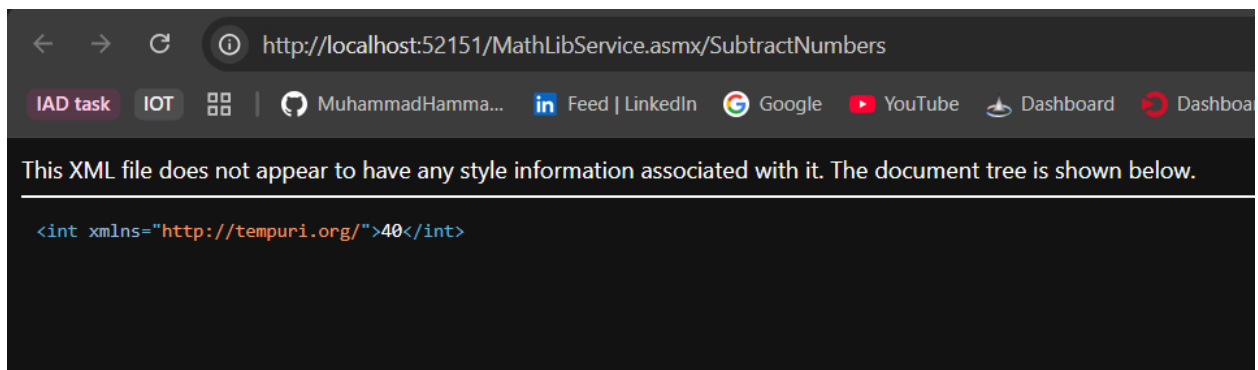
SubtractNumbers

Test

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
num1:	45
num2:	5

SOAP 1.1



Q4) Implement a web application “ServiceClient” which will use the MathLibService as a web service. Develop a suitable web page for its demonstration. Use some text boxes to take input from user. Use proxy class to get answer (response from web service) and display it on page to user.

Code for ServiceClient

Calculator.aspx:

```
<%@ Page Language="VB" AutoEventWireup="false" CodeFile="calculator.aspx.vb"
Inherits="calculator" %>

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title>Math Service Client</title>
    <style>
        body {
            font-family: Arial;
            margin: 20px;
        }

        .calculator {
            width: 300px;
            margin: 0 auto;
            padding: 20px;
            border: 1px solid #ccc;
            border-radius: 5px;
        }

        .input-group {
            margin-bottom: 15px;
        }

        label {
            display: inline-block;
            width: 80px;
        }

        input[type="text"] {
            width: 150px;
            padding: 5px;
        }

        .btn {
            padding: 8px 15px;
            background: #4CAF50;
            color: white;
            border: none;
            border-radius: 4px;
            cursor: pointer;
        }
    </style>
</head>
<body>
    <div class="calculator">
        <div class="input-group">
            <label>Number 1:</label>
            <input type="text" value="0" />
        </div>
        <div class="input-group">
            <label>Number 2:</label>
            <input type="text" value="0" />
        </div>
        <div class="input-group">
            <label>Operator:</label>
            <input type="text" value="+" />
        </div>
        <div class="input-group">
            <label>Result:</label>
            <input type="text" value="" />
        </div>
        <div class="btn">Calculate</div>
    </div>
</body>
</html>
```

```

        .btn:hover {
            background: #45a049;
        }

        .result {
            margin-top: 20px;
            font-weight: bold;
            background-color: aqua;
        }

        .error {
            color: red;
        }
    </style>
</head>
<body>
    <div class="calculator">
        <h2>Math Service Client</h2>
        <form id="form1" runat="server">
            <div class="input-group">
                <label for="txtNum1">Number 1:</label>
                <asp:TextBox ID="txtNum1" runat="server"></asp:TextBox>
            </div>
            <div class="input-group">
                <label for="txtNum2">Number 2:</label>
                <asp:TextBox ID="txtNum2" runat="server"></asp:TextBox>
            </div>

            <div>
                <asp:Button ID="btnAdd" runat="server" Text="Add" CssClass="btn" />
                <asp:Button ID="btnSubtract" runat="server" Text="Subtract"
                CssClass="btn" />
                <asp:Button ID="btnMultiply" runat="server" Text="Multiply"
                CssClass="btn" />
                <asp:Button ID="btnDivide" runat="server" Text="Divide"
                CssClass="btn" />
            </div>

            <div class="result">
                <asp:Label ID="lblResult" runat="server" Text=""></asp:Label>
                <asp:Label ID="lblError" runat="server" Text=""
                CssClass="error"></asp:Label>
            </div>
        </form>
    </div>
</body>
</html>

```

Calculator.aspx.vb:

```

Imports System.Web.Services.Description
Imports MathLibService

```

```

Partial Class calculator
    Inherits System.Web.UI.Page

```

```
Dim service As New MathLibServiceSoapClient
Dim value As String

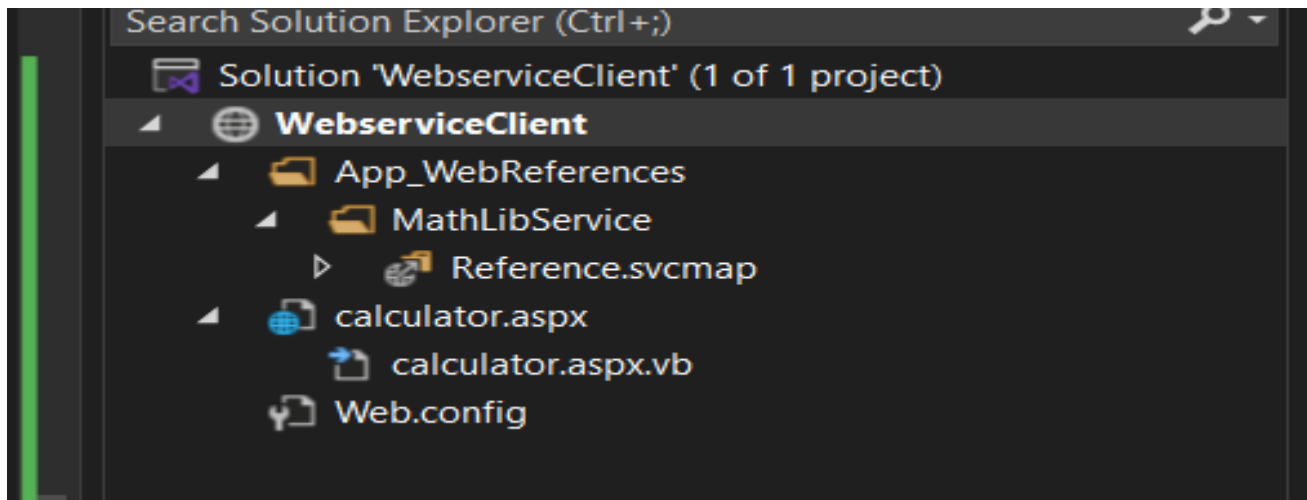
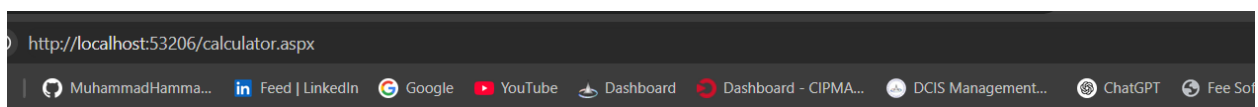
Private Sub btnAdd_Click(sender As Object, e As EventArgs) Handles btnAdd.Click
    Dim num1 As Double = Double.Parse(txtNum1.Text)
    Dim num2 As Double = Double.Parse(txtNum2.Text)
    value = service.AddNumbers(num1, num2).ToString()
    lblResult.Text = value
    lblError.Text = ""
End Sub

Private Sub btnSubtract_Click(sender As Object, e As EventArgs) Handles
btnSubtract.Click
    Dim num1 As Double = Double.Parse(txtNum1.Text)
    Dim num2 As Double = Double.Parse(txtNum2.Text)
    value = service.SubtractNumbers(num1, num2).ToString()
    lblResult.Text = value
    lblError.Text = ""
End Sub

Private Sub btnMultiply_Click(sender As Object, e As EventArgs) Handles
btnMultiply.Click
    Dim num1 As Double = Double.Parse(txtNum1.Text)
    Dim num2 As Double = Double.Parse(txtNum2.Text)
    value = service.MultiplyNumbers(num1, num2).ToString()
    lblResult.Text = value
    lblError.Text = ""
End Sub

Private Sub btnDivide_Click(sender As Object, e As EventArgs) Handles
btnDivide.Click
    If Integer.Parse(txtNum2.Text) = 0 Then
        lblResult.Text = ""
        lblError.Text = "Division by 0 is not Allowed"
        Exit Sub
    End If
    Dim num1 As Double = Double.Parse(txtNum1.Text)
    Dim num2 As Double = Double.Parse(txtNum2.Text)
    value = service.DivideNumbers(num1, num2).ToString()
    lblResult.Text = value
    lblError.Text = ""
End Sub

End Class
```

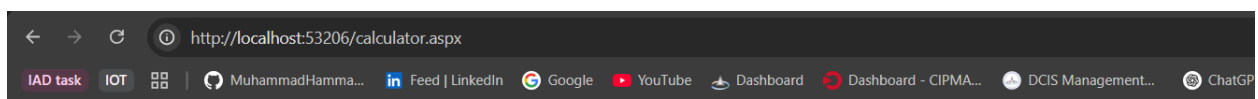
Folder structure:**Output:**

Math Service Client

Number 1:

Number 2:

5.5

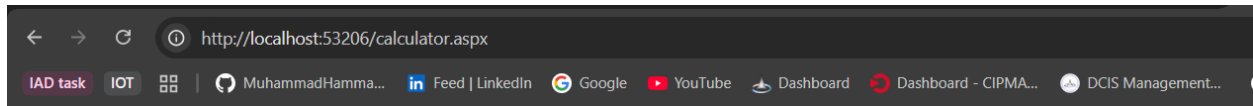


Math Service Client

Number 1:

Number 2:

-0.5

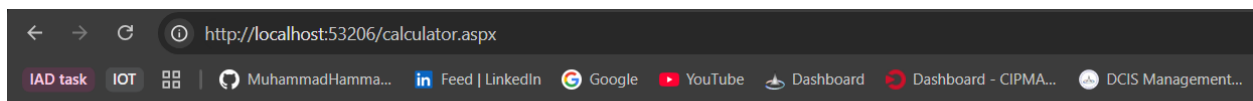


Math Service Client

Number 1:

Number 2:

7.5



Math Service Client

Number 1:

Number 2:

0.8333333333333333