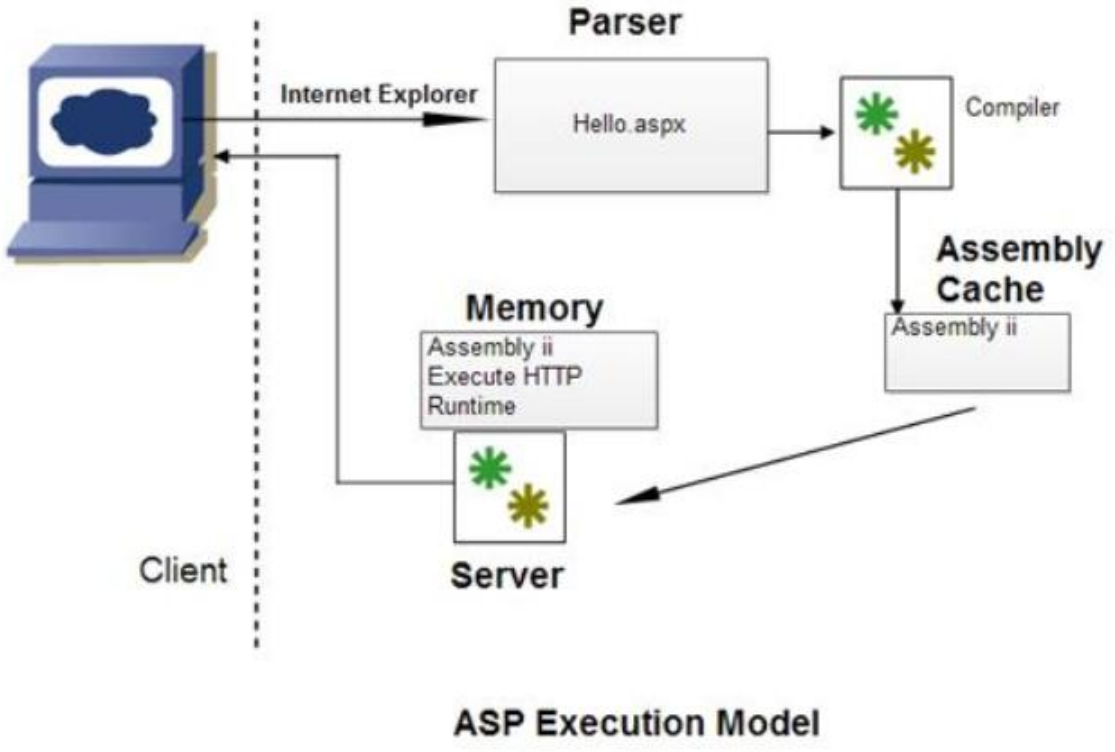
Question-1: Draw web services execution model?

Solution:



ASP Execution Model

Question-2: Create an ASP.NET Web Service with the following four methods:

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

  Each method should:
- Accept two input parameters (e.g., numbers to operate on)
- Return the result as a string

Solution:

WebService.asmx:

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

WebService.vb:

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

<WebService(Namespace:="http://tempuri.org/")>
```

```vb
<WebServiceBinding(ConformsTo:=WsiProfiles.BasicProfile1_1)>
<Global.Microsoft.VisualBasic.CompilerServices.DesignerGenerated()>
Public Class WebService
    Inherits System.Web.Services.WebService

    <WebMethod()>
    Public Function Add(ByVal a As Double, ByVal b As Double) As String
        Return (a + b).ToString()
    End Function

    <WebMethod()>
    Public Function Subtract(ByVal a As Double, ByVal b As Double) As String
        Return (a - b).ToString()
    End Function

    <WebMethod()>
    Public Function Multiply(ByVal a As Double, ByVal b As Double) As String
        Return (a * b).ToString()
    End Function

    <WebMethod()>
    Public Function Divide(ByVal a As Double, ByVal b As Double) As String
        If b = 0 Then
            Return "Cannot divide by zero"
        Else
            Return (a / b).ToString()
        End If
    End Function
End Class
```

Question-3: Test the web service using browser on local pc.

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

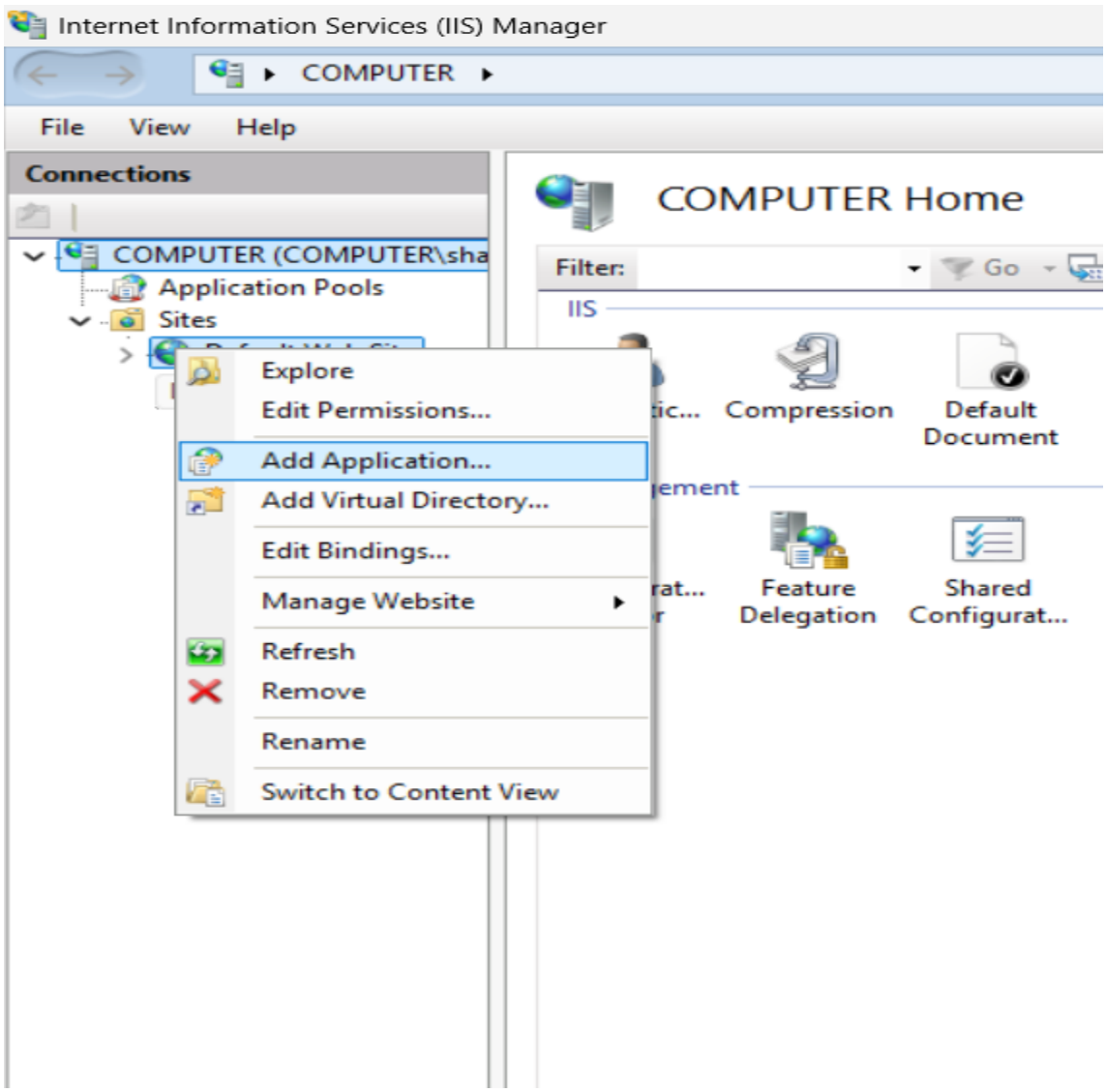
Using IIS manager create two separate applications as follows:

(a) MathLibService

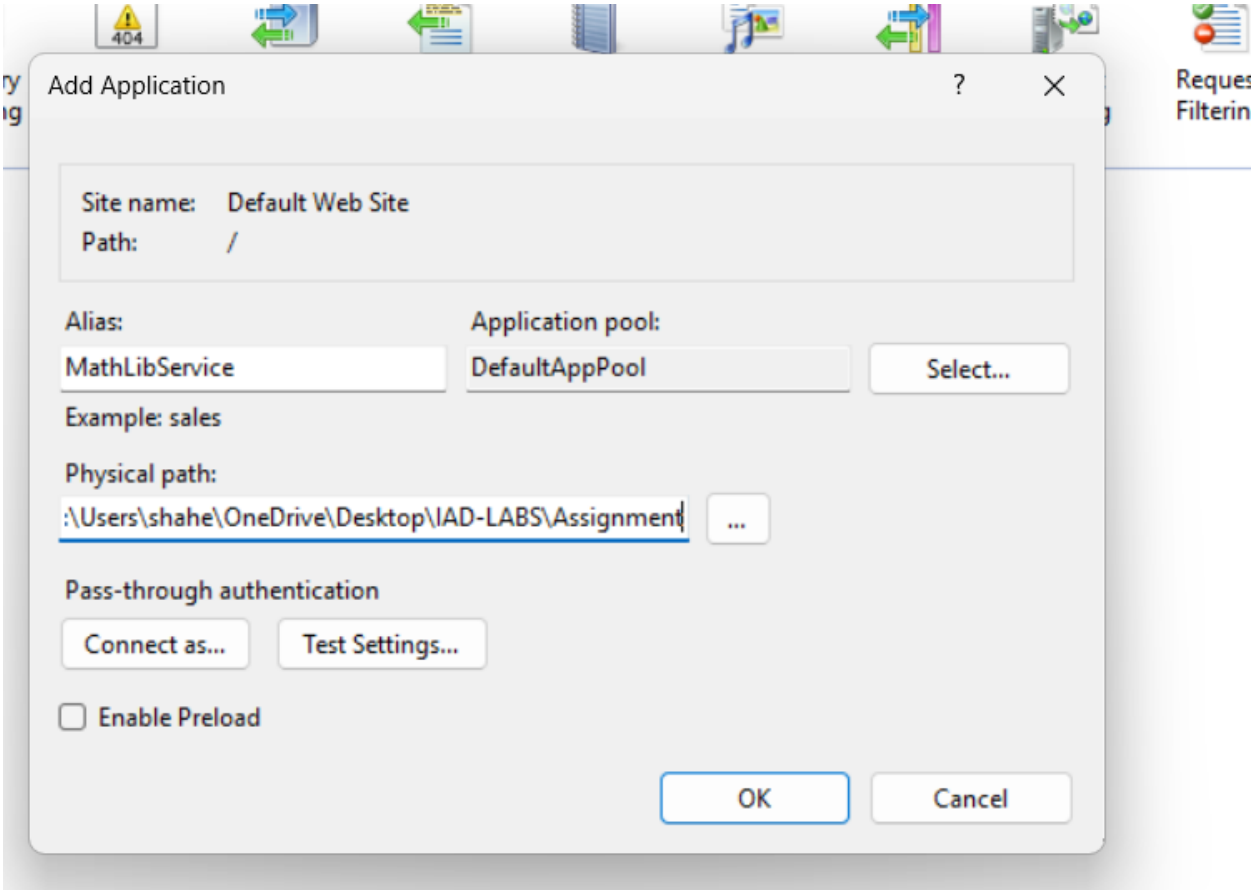
(b) ServiceClient

Solution:

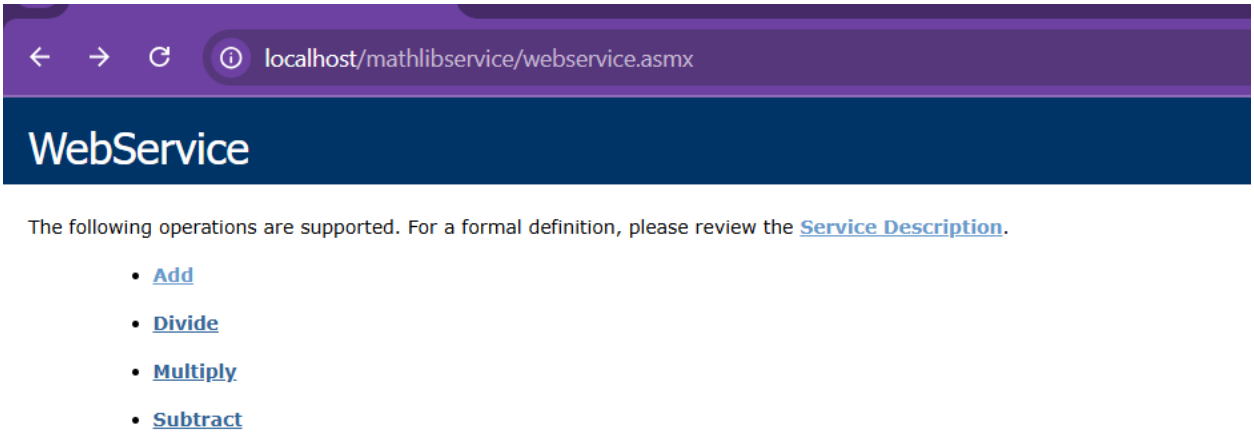
Step 1:


Internet Information Services (IIS) Manager
COMPUTER
File
View
Help
Connections
COMPUTER (COMPUTER\sha
Application Pools
Sites
COMPUTER Home
Filter:
Go
IIS
Compression
Default Document
Feature Delegation
Shared Configurat...
Explore
Edit Permissions...
Add Application...
Add Virtual Directory...
Edit Bindings...
Manage Website
Refresh
Remove
Rename
Switch to Content View

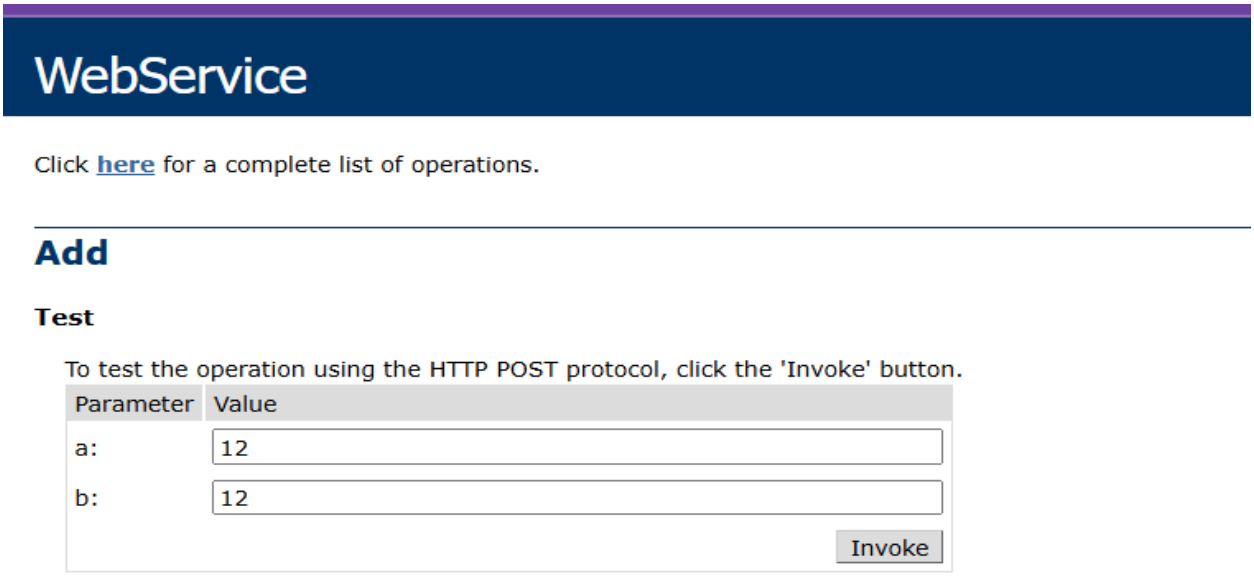
Step 2:


Add Application
Site name: Default Web Site
Path: /
Alias:
MathLibService
Application pool:
DefaultAppPool
Select...
Example: sales
Physical path:
:\Users\shahe\OneDrive\Desktop\IAD-LABS\Assignment
...
Pass-through authentication
Connect as...
Test Settings...
Enable Preload
OK
Cancel

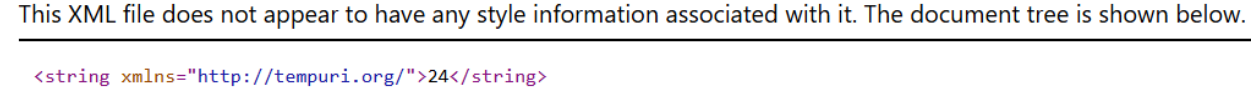
OutPut:


localhost/mathlibservice/webservice.asmx
WebService
The following operations are supported. For a formal definition, please review the Service Description.
Add
Divide
Multiply
Subtract

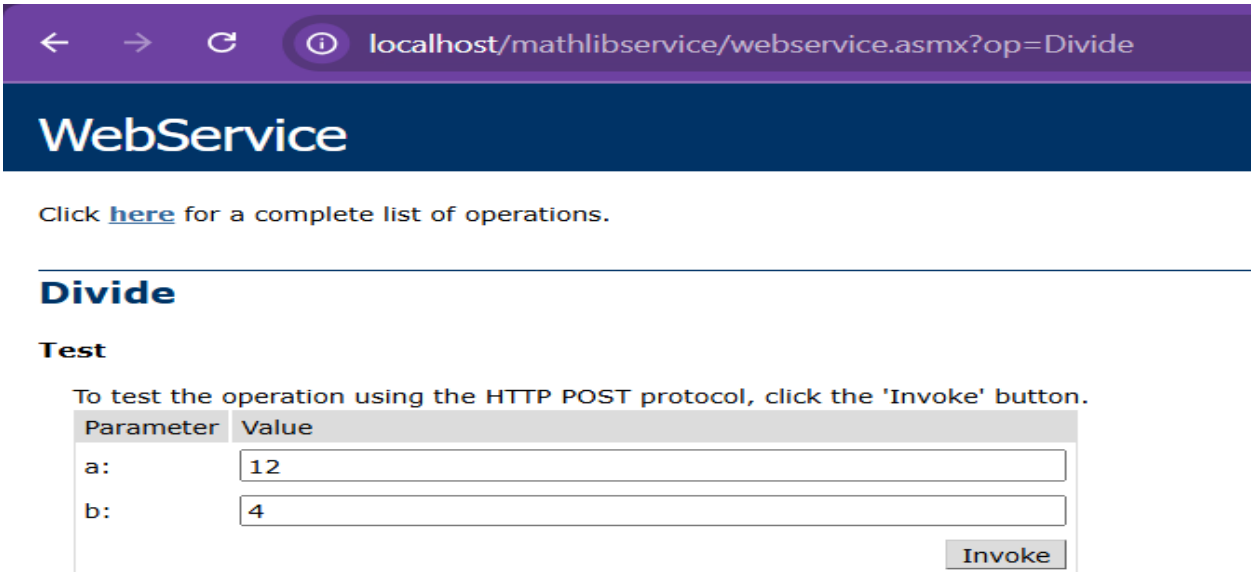
ADD:



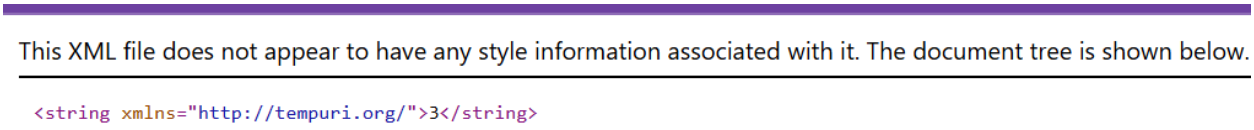
Output:



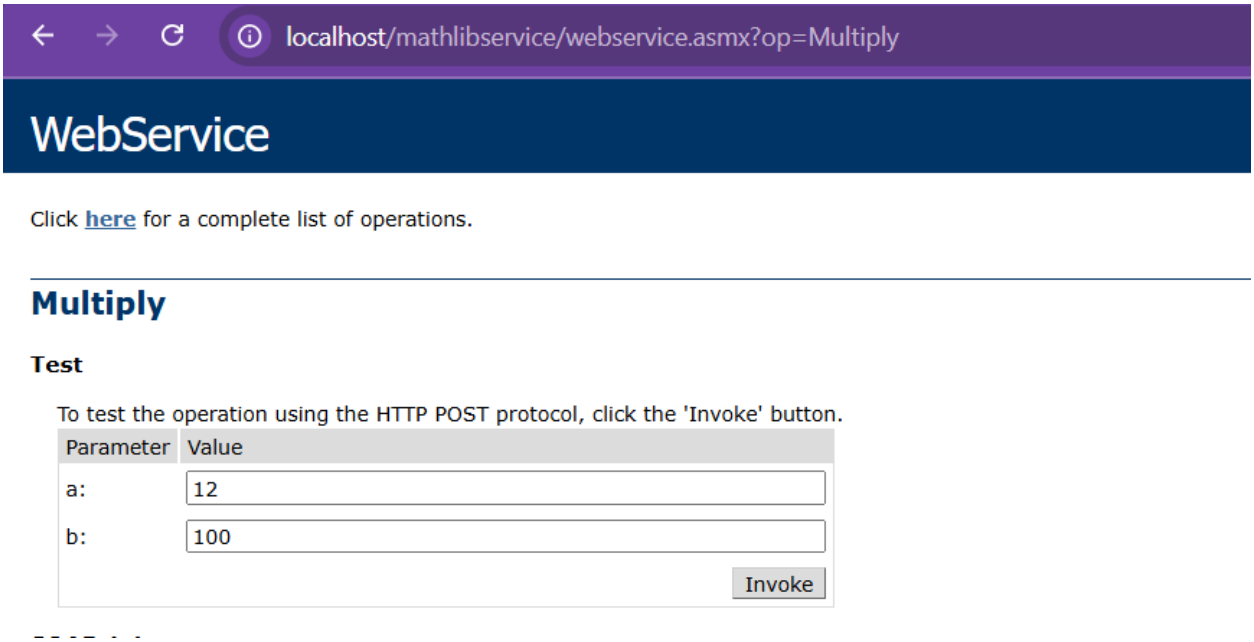
DIVIDE:



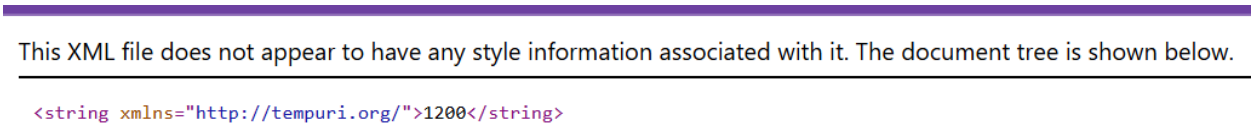
Output:



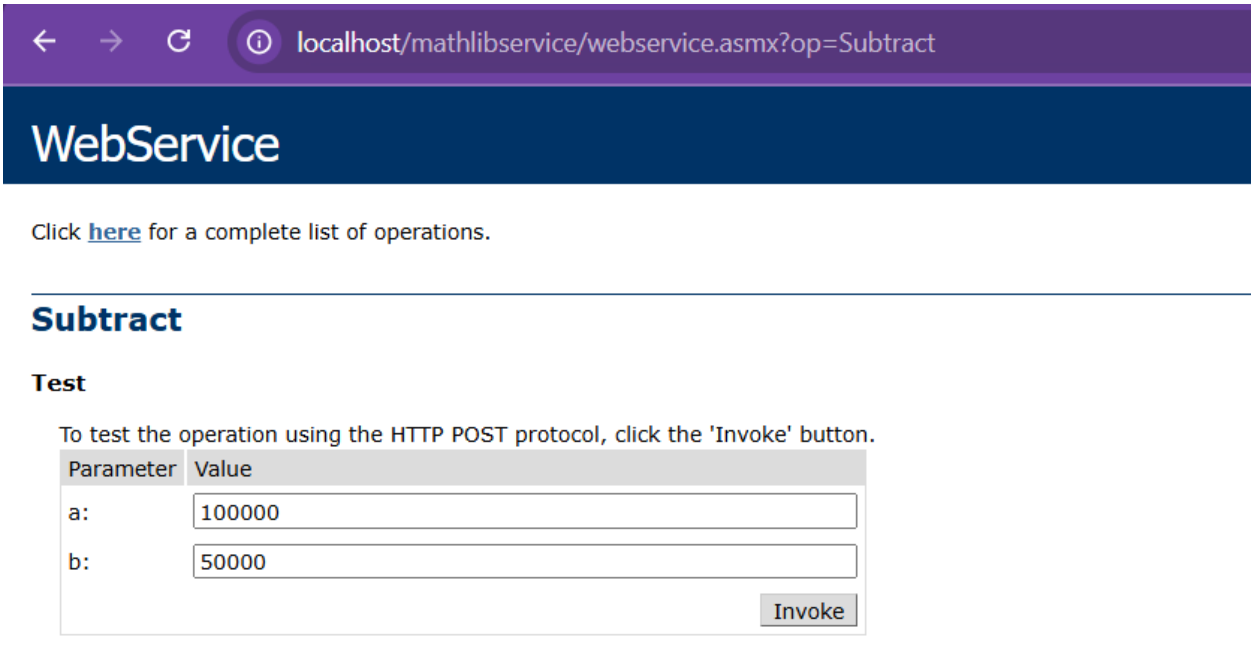
MULTIPLY:



Output:



SUBTRACT:



Output:

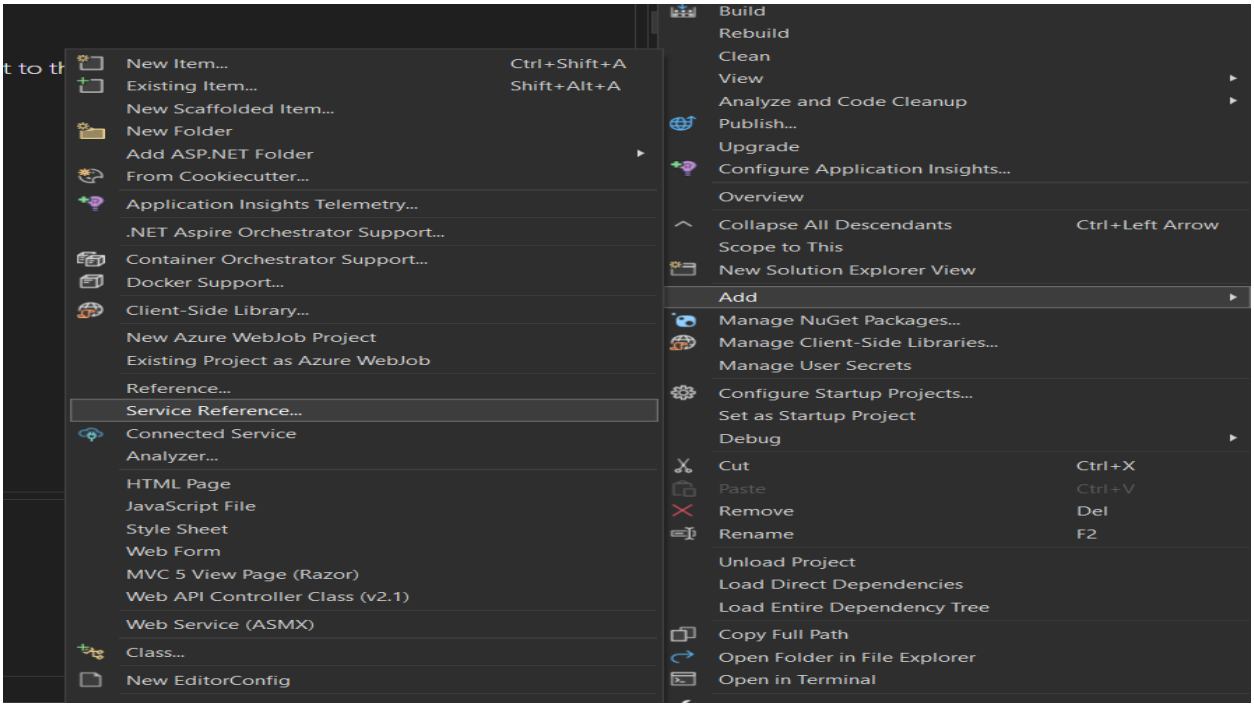
This XML file does not appear to have any style information associated with it. The document tree is shown below.

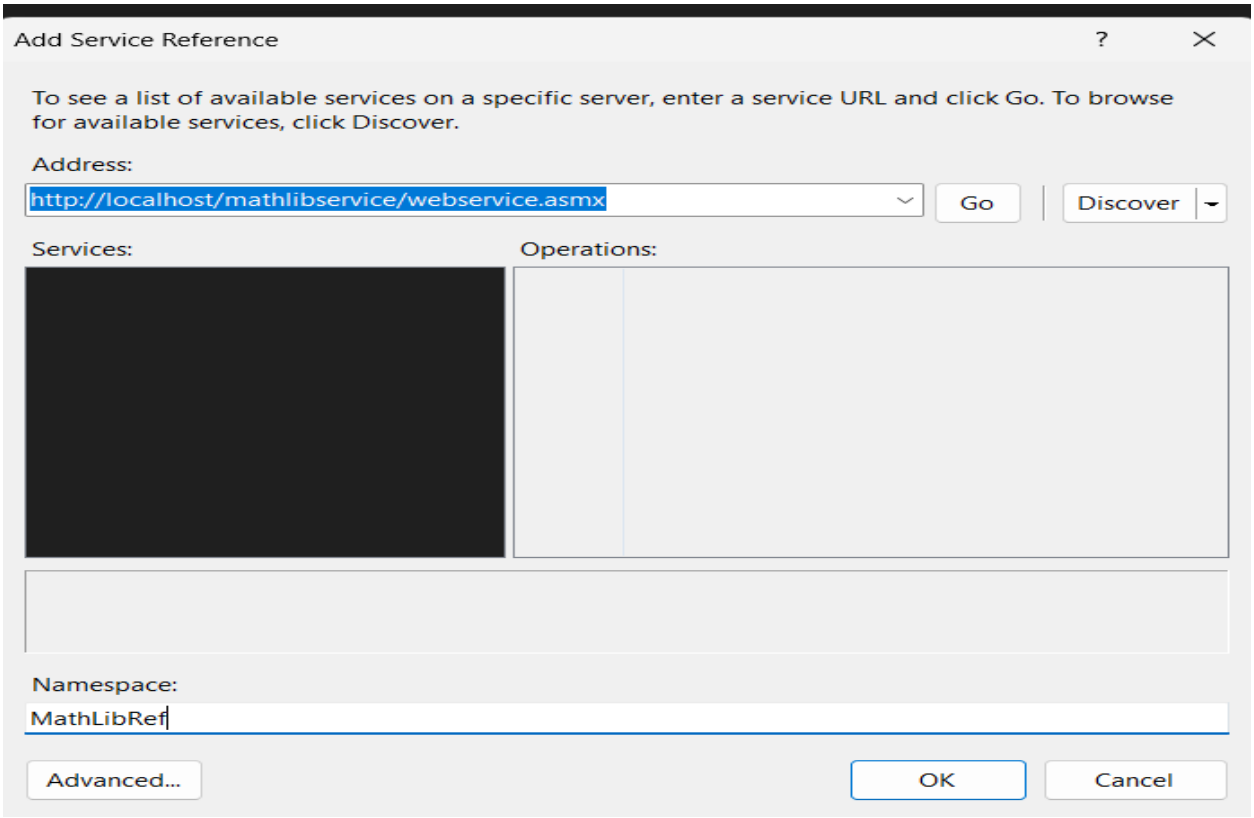
```
<string xmlns="http://tempuri.org/">50000</string>
```

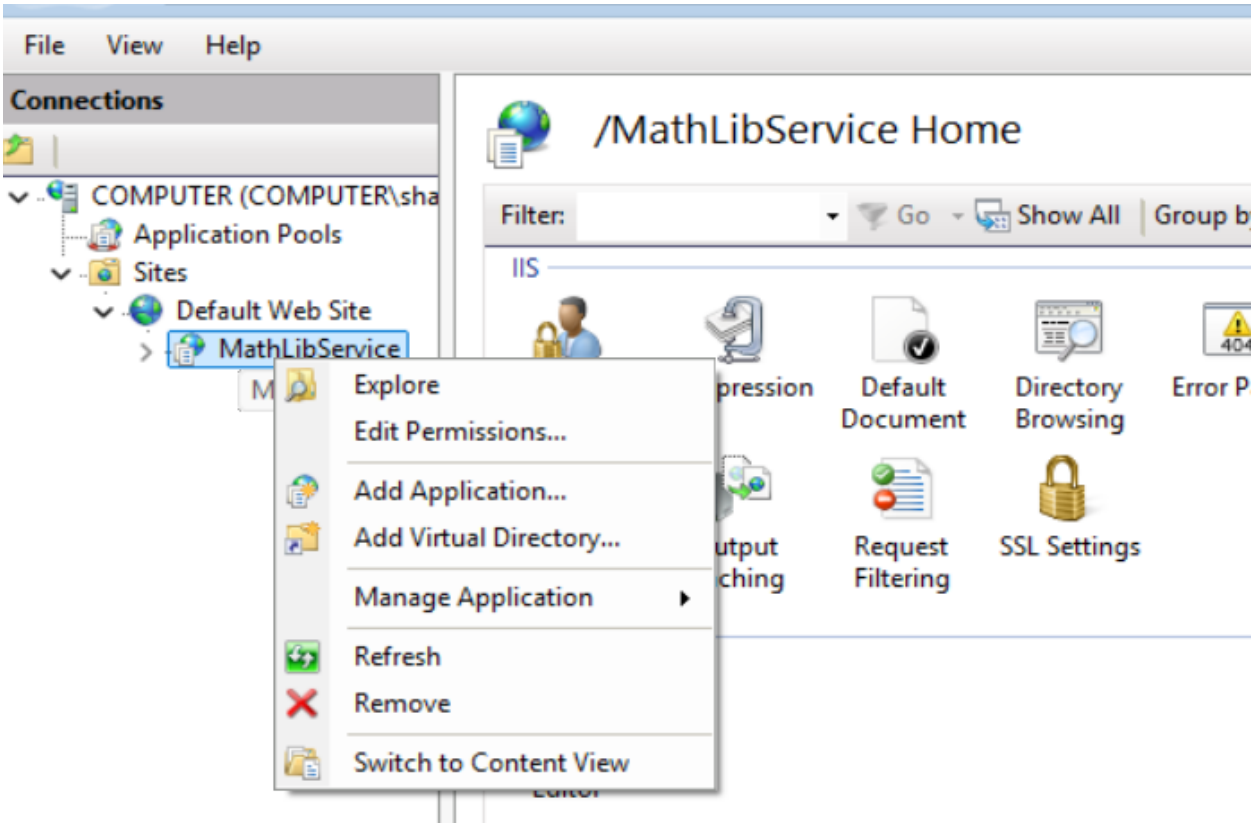
Question-4: Implement a web application “ServiceClient” which will use the MathLibService as a web service. Develop a suitable web page for its demonstration. Use some text boxes to take input from user. Use proxy class to get answer (response from web service) and display it on page to user.

Solution:

1. Create a New Web Application Project named ClientService.
2. Add a Service Reference to consume the existing web service:
   - Right-click on the project in Solution Explorer.
   - Select Add > Service Reference.
3. In the dialog box, enter the URL of the previously created web service.
4. Once added, the web service will be available for use within the ClientService application.




Add Service Reference
To see a list of available services on a specific server, enter a service URL and click Go. To browse for available services, click Discover.
Address:
http://localhost/mathlibservice/webservice.asmx
Go
Discover
Services:
Operations:
Namespace:
MathLibRef
Advanced...
OK
Cancel


File
View
Help
Connections
COMPUTER (COMPUTER\sha
Application Pools
Sites
Default Web Site
MathLibService
/MathLibService Home
Filter:
Go
Show All
Group b
IIS
Default Document
Directory Browsing
Request Filtering
SSL Settings
Explore
Edit Permissions...
Add Application...
Add Virtual Directory...
Manage Application
Refresh
Remove
Switch to Content View

Default.aspx:

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

<!DOCTYPE html>
<html>
<head><title>Math Web Service Client</title></head>
<body>
    <form id="form1" runat="server">
        <h2>Math Operations</h2>
        <asp:TextBox ID="txtNum1" runat="server" />
        <asp:TextBox ID="txtNum2" runat="server" />
        <asp:DropDownList ID="ddlOperation" runat="server">
            <asp:ListItem Text="Add" />
            <asp:ListItem Text="Subtract" />
            <asp:ListItem Text="Multiply" />
            <asp:ListItem Text="Divide" />
        </asp:DropDownList>
        <asp:Button ID="btnCalculate" runat="server" Text="Calculate"
OnClick="btnCalculate_Click" />
        <br /><br />
        <asp:Label ID="lblResult" runat="server" />
    </form>
</body>
</html>
```

Default.aspx.vb:

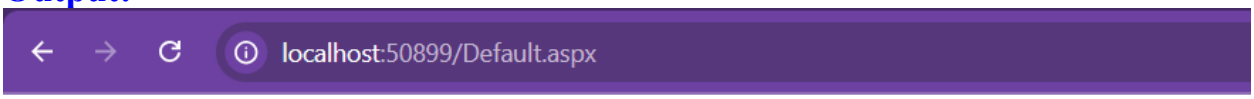
```
Partial Class _Default
    Inherits System.Web.UI.Page

    Protected Sub btnCalculate_Click(sender As Object, e As EventArgs)
        Dim num1 As Double = Convert.ToDouble(txtNum1.Text)
        Dim num2 As Double = Convert.ToDouble(txtNum2.Text)
        Dim result As String = ""

        Select Case ddlOperation.SelectedValue
            Case "Add"
                result = (num1 + num2).ToString()
            Case "Subtract"
                result = (num1 - num2).ToString()
            Case "Multiply"
                result = (num1 * num2).ToString()
            Case "Divide"
                If num2 <> 0 Then
                    result = (num1 / num2).ToString()
                Else
                    result = "Error: Division by zero"
                End If
        End Select

        lblResult.Text = "Result: " & result
    End Sub
End Class
```

Output:

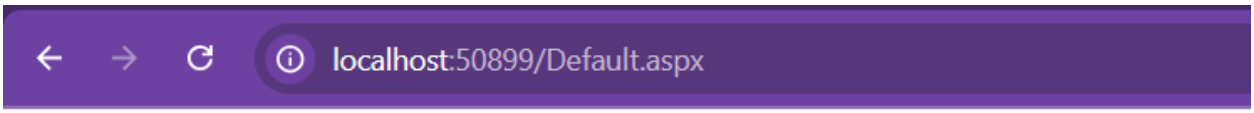


Math Operations

12 | 13 | Add | Calculate

Result: 25

SUBTRACT:

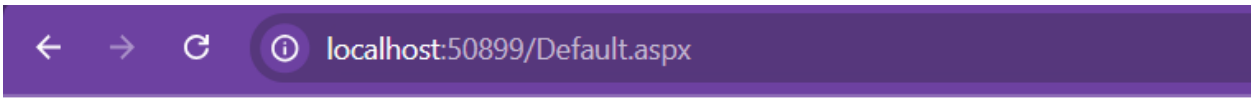


Math Operations

100 | 13 | Subtract | Calculate

Result: 87

MULTIPLY:

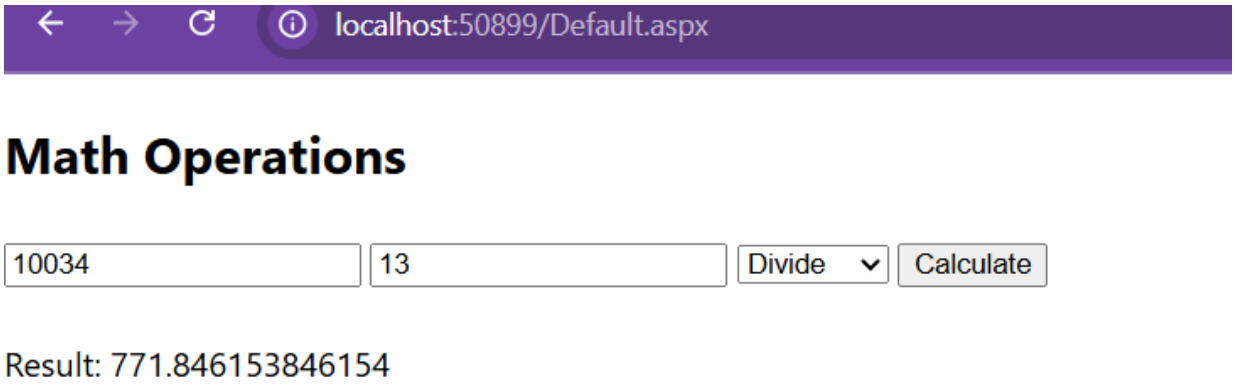


Math Operations

10034 | 13 | Multiply | Calculate

Result: 130442

DIVIDE:


localhost:50899/Default.aspx
Math Operations
10034
13
Divide
Calculate
Result: 771.846153846154