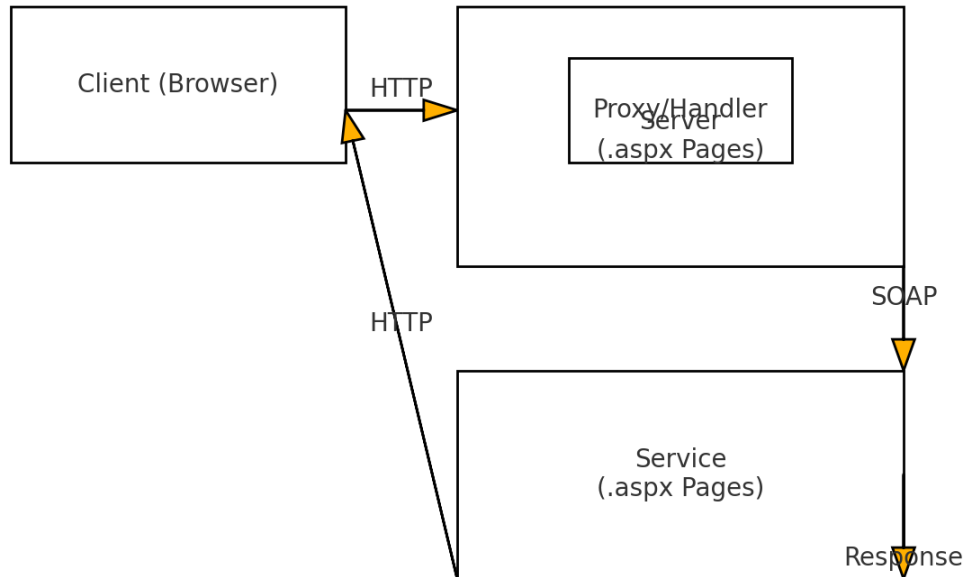


DEPARTMENT OF COMPUTER & INFORMATION SCIENCES

INTERNET APPLICATION DEVELOPMENT WEB SERVICES

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QUESTION 01



QUESTION 02

MathLibService.asmx

```
<%@ WebService Language="VB" CodeBehind="MathLibService.asmx.vb"
Class="MathLibService" %>
```

MathLibService.vb

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

<WebService(Namespace:="http://tempuri.org/")>
<WebServiceBinding(ConformsTo:=WsiProfiles.BasicProfile1_1)>
<Global.Microsoft.VisualBasic.CompilerServices.DesignerGenerated()>
Public Class MathLibService
    Inherits WebService

    <WebMethod(Description:="Adds two numbers and returns result as String")>
    Public Function Add(a As Double, b As Double) As String
```

```
        Return (a + b).ToString()
    End Function

    <WebMethod(Description:="Subtracts second number from first and returns result
as String")>
    Public Function Subtract(a As Double, b As Double) As String
        Return (a - b).ToString()
    End Function

    <WebMethod(Description:="Multiplies two numbers and returns result as String")>
    Public Function Multiply(a As Double, b As Double) As String
        Return (a * b).ToString()
    End Function

    <WebMethod(Description:="Divides first number by second and returns result as
String")>
    Public Function Divide(a As Double, b As Double) As String
        If b = 0 Then
            Return "Error: Division by zero"
        End If
        Return (a / b).ToString()
    End Function
End Class
```

QUESTION 03

Prerequisites

- 1) Windows with IIS installed (see Control Panel → Programs → Turn Windows features on/off → enable “Internet Information Services” and under World Wide Web Services → Application Development Features enable ASP.NET 4.6 or later).
- 2) Your two project folders already exist on disks, for example:
 - C:\Projects\MathLibService
 - C:\Projects\ServiceClient

A) Create the MathLibService Application

- 1) **Launch IIS Manager**
 - Press Windows Key, type IIS, and open Internet Information Services (IIS) Manager.
- 2) **Expand the Default Web Site**
 - In the left “Connections” tree, expand Sites → Default Web Site.
- 3) **Add Application**
 - Right-click Default Web Site → Add Application.
- 4) **Set Alias and Physical Path**
 - Alias: MathLibService
 - Physical path: browse to C:\Projects\MathLibService (the folder containing your .asmx and web.config).
- 5) **Select Application Pool**
 - Click Select... if needed, choose an Application Pool that targets .NET CLR v4.0 (or later).
 - Ensure the pipeline mode is Integrated.
- 6) **OK**
 - Click OK to create the application.

7) Verify

- In a browser, navigate to:
- <http://localhost/MathLibService/MathLibService.asmx>
- You should see the ASMX help page listing your four methods.

B) Create the ServiceClient Application

1) Back in IIS Manager, still under **Default Web Site**:

2) Add Application

- Right-click Default Web Site → Add Application.

3) Set Alias and Physical Path

- Alias: ServiceClient
- Physical path: browse to C:\Projects\ServiceClient (where your ServiceClient.aspx and web.config live).

4) Select Application Pool

- Use the same .NET CLR v4.0 pool (or create a new one, also targeting .NET 4.x).

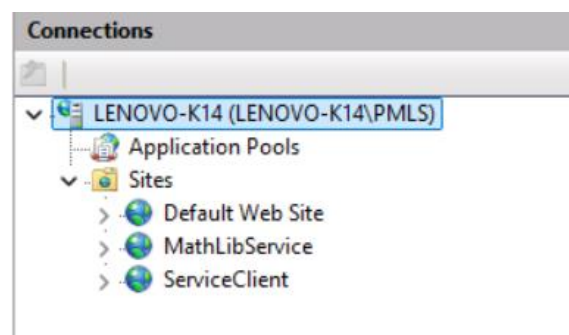
5) OK

- Click OK.

6) Verify

- In a browser, navigate to:
- <http://localhost/ServiceClient/ServiceClient.aspx>
- You should see your web form load (blank inputs and a Calculate button).

Results



QUESTION 04

ServiceClient.aspx

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

<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title>Math Service Client</title>
</head>
<body>
    <form id="form1" runat="server">
        <div style="max-width: 400px; margin: 40px auto; font-family: Arial, sans-
serif;">
            <h2>Cal Service Provider</h2>

            <asp:Label ID="lblA" runat="server" Text="Value A:"
AssociatedControlID="txtA" /><br />
            <asp:TextBox ID="txtA" runat="server" Width="100%" /><br /><br />

            <asp:Label ID="lblB" runat="server" Text="Value B:"
AssociatedControlID="txtB" /><br />
            <asp:TextBox ID="txtB" runat="server" Width="100%" /><br /><br />

            <asp:Label ID="lblOp" runat="server" Text="Operation:"
AssociatedControlID="ddlOperation" /><br />
            <asp:DropDownList ID="ddlOperation" runat="server" Width="100%">
                <asp:ListItem Text="Add" Value="Add" />
                <asp:ListItem Text="Subtract" Value="Subtract" />
                <asp:ListItem Text="Multiply" Value="Multiply" />
                <asp:ListItem Text="Divide" Value="Divide" />
            </asp:DropDownList><br /><br />

            <asp:Button ID="btnCalculate"
                runat="server"
                Text="Calculate"
                Width="100%"
                OnClick="btnCalculate_Click" /><br /><br />

            <asp:Label ID="lblResult"
                runat="server"
                Font-Bold="True"
                Font-Size="Large"
                ForeColor="DarkBlue" />

        </div>
    </form>
</body>
</html>
```

ServiceClient.aspx.vb

```
Imports MathServiceRef

Partial Class ServiceClient
    Inherits System.Web.UI.Page
    Protected Sub btnCalculate_Click(sender As Object, e As EventArgs)
        ' 1) Create the proxy to call your ASMX
        Dim svc As New MathLibService()

        ' 2) Parse user inputs
        Dim a As Double
        Dim b As Double
        If Not Double.TryParse(txtA.Text.Trim(), a) OrElse Not
Double.TryParse(txtB.Text.Trim(), b) Then
            lblResult.Text = "Please enter valid numeric values for A and B."
            Return
        End If

        ' 3) Determine the operation
        Dim op As String = ddlOperation.SelectedValue
        Dim result As String

        Select Case op
            Case "Add"
                result = svc.Add(a, b)
            Case "Subtract"
                result = svc.Subtract(a, b)
            Case "Multiply"
                result = svc.Multiply(a, b)
            Case "Divide"
                result = svc.Divide(a, b)
            Case Else
                result = "Unknown operation."
        End Select

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