

NAME: INAYAT ARSHAD

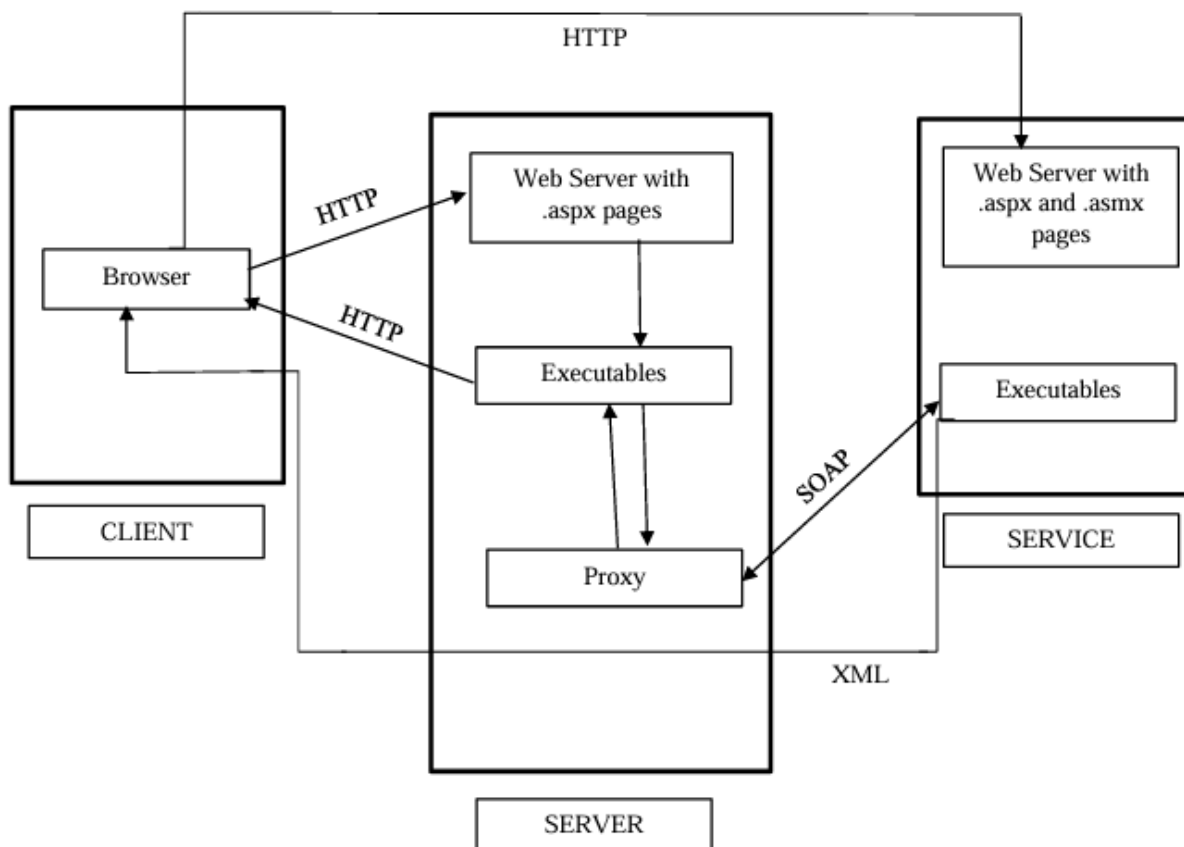
ASSIGNMENT: WEB SERVICES

SUBMITTED TO: DR IRFAN HAMEED

DATED:5/18/2025



QUESTION 1:



QUESTION 2,3,4:

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.

Using guidelines provided in class write code for above web service.

References (Previous version of book): PART 5 ■ ■ ■ Web Services

CHAPTER 21 Web Services Architecture 785

CHAPTER 22 Creating Web Services . . . 797

CHAPTER 23 Enhancing Web Services . . . 835

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

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.

Turn Windows features on or off



To turn a feature on, select its check box. To turn a feature off, clear its check box. A filled box means that only part of the feature is turned on.

- ☒ .NET Framework 3.5 (includes .NET 2.0 and 3.0)
- ☒ .NET Framework 4.8 Advanced Services
- ☐ Active Directory Lightweight Directory Services
- ☐ Container Server
- ☐ This installs Active Directory Lightweight Directory Services (AD LDS).
- ☐ Data Center Bridging
- ☐ Device Lockdown
- ☐ Guarded Host
- ☐ Hyper-V
- ☒ Internet Information Services
 - ☐ FTP Server
 - ☒ Web Management Tools
 - ☐ IIS 6 Management Compatibility

OK

Cancel

Turn Windows features on or off



To turn a feature on, select its check box. To turn a feature off, clear its check box. A filled box means that only part of the feature is turned on.

- ☒ IIS Management Console
- ☐ IIS Management Scripts and Tools
- ☐ IIS Management Service
- ☐ World Wide Web Services
 - ☒ Application Development Features
 - ☐ .NET Extensibility 3.5
 - ☒ .NET Extensibility 4.8
 - ☐ Application Initialization
 - ☐ ASP
 - ☐ ASP.NET 3.5
 - ☒ ASP.NET 4.8
 - ☐ CGI
 - ☒ ISAPI Extensions

OK

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Turn Windows features on or off



To turn a feature on, select its check box. To turn a feature off, clear its check box. A filled box means that only part of the feature is turned on.

- ☒  ISAPI Filters
 - ☐  Server-Side Includes
 - ☐  Websocket Protocol
- ☒  Common HTTP Features
- ☒  Health and Diagnostics
 - ☐  Custom Logging
 - ☒  HTTP Logging
 - ☐  Logging Tools
 - ☐  ODBC Logging
 - ☐  Request Monitor
 - ☐  Tracing
- ☒  Performance Features
- ☒  Security

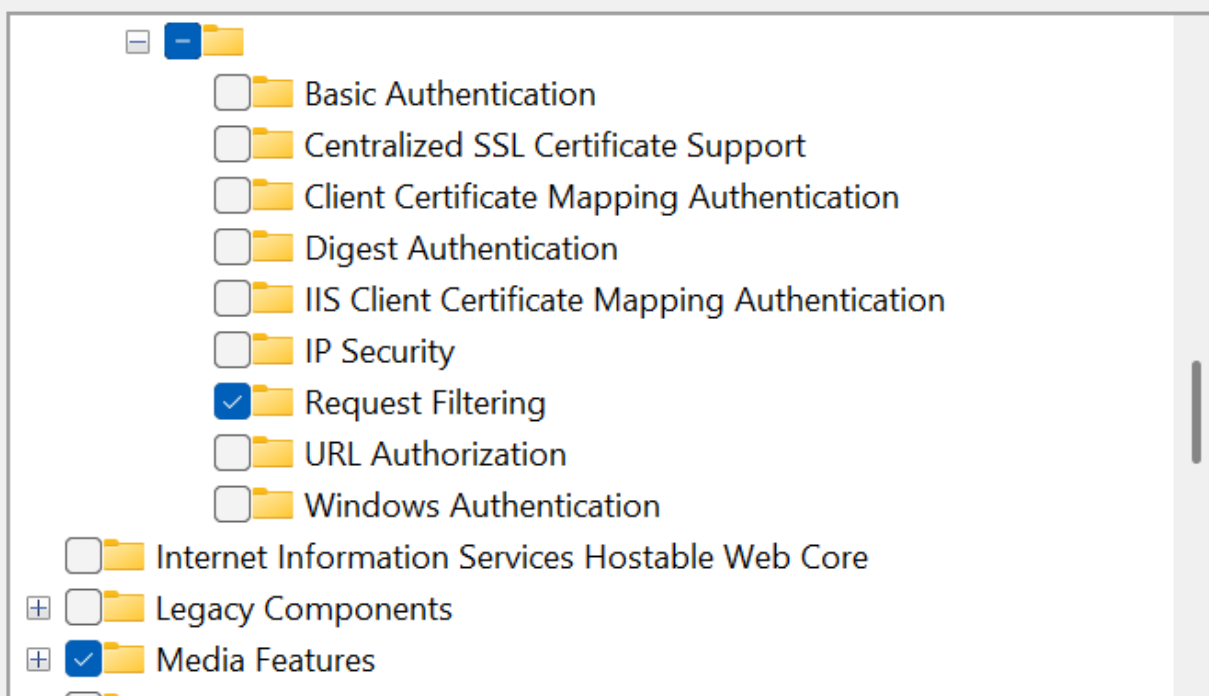
OK

Cancel

Turn Windows features on or off



To turn a feature on, select its check box. To turn a feature off, clear its check box. A filled box means that only part of the feature is turned on.



A tree view showing the hierarchy of Windows features. The 'Internet Information Services' folder is expanded, showing a sub-folder 'Request Filtering' which is checked. Other features like 'Basic Authentication', 'Centralized SSL Certificate Support', etc., are listed under it. 'Media Features' is also checked at the top level.

- ☒ Internet Information Services
 - ☒ Request Filtering
 - ☐ Basic Authentication
 - ☐ Centralized SSL Certificate Support
 - ☐ Client Certificate Mapping Authentication
 - ☐ Digest Authentication
 - ☐ IIS Client Certificate Mapping Authentication
 - ☐ IP Security
 - ☐ URL Authorization
 - ☐ Windows Authentication
- ☐ Internet Information Services Hostable Web Core
- ☐ Legacy Components
- ☒ Media Features

OK

Cancel



Windows Features



Turn Windows features on or off



To turn a feature on, select its check box. To turn a feature off, clear its check box. A filled box means that only part of the feature is turned on.

- ☒ Microsoft Print to PDF
- ☒ Microsoft XPS Document Writer
- ☐ MultiPoint Connector
- ☐ Print and Document Services
- ☒ Remote Differential Compression API Support
- ☐ Services for NFS
- ☐ Simple TCP/IP services (i.e. echo, daytime etc)
- ☐ SMB 1.0/CIFS File Sharing Support
- ☒ SMB Direct
- ☐ Telnet Client
- ☐ TFTP Client
- ☐ Virtual Machine Platform
- ☒ Windows Hypervisor Platform

OK

Cancel



Windows Features



Turn Windows features on or off

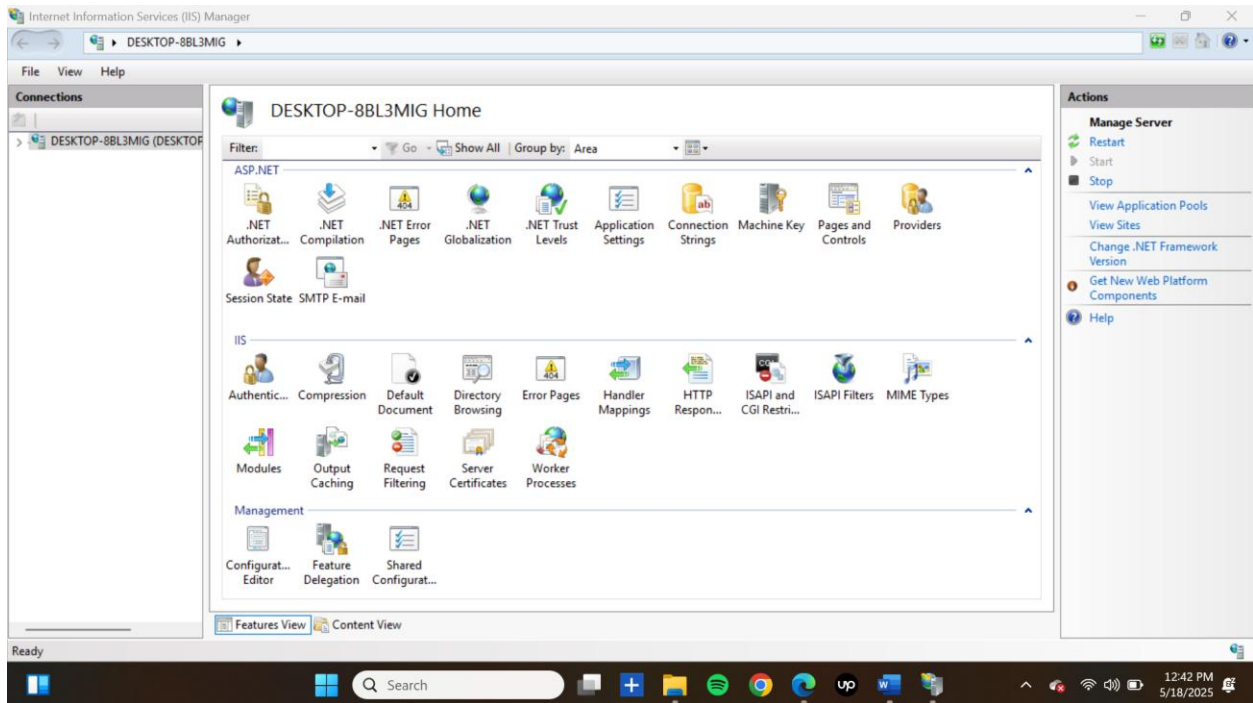


To turn a feature on, select its check box. To turn a feature off, clear its check box. A filled box means that only part of the feature is turned on.

- ☒  SMB Direct
- ☐  Telnet Client
- ☐  TFTP Client
- ☐  Virtual Machine Platform
- ☒  Windows Hypervisor Platform
- ☐  Windows Identity Foundation 3.5
- ☒  Windows PowerShell 2.0
- ☒  Windows Process Activation Service
- ☐  Windows Projected File System
- ☐  Windows Sandbox
- ☐  Windows Subsystem for Linux
- ☐  Windows TIFF IFilter
- ☒  Work Folders Client

OK

Cancel



Add Website

Site name: Application pool:

Content Directory

Physical path:

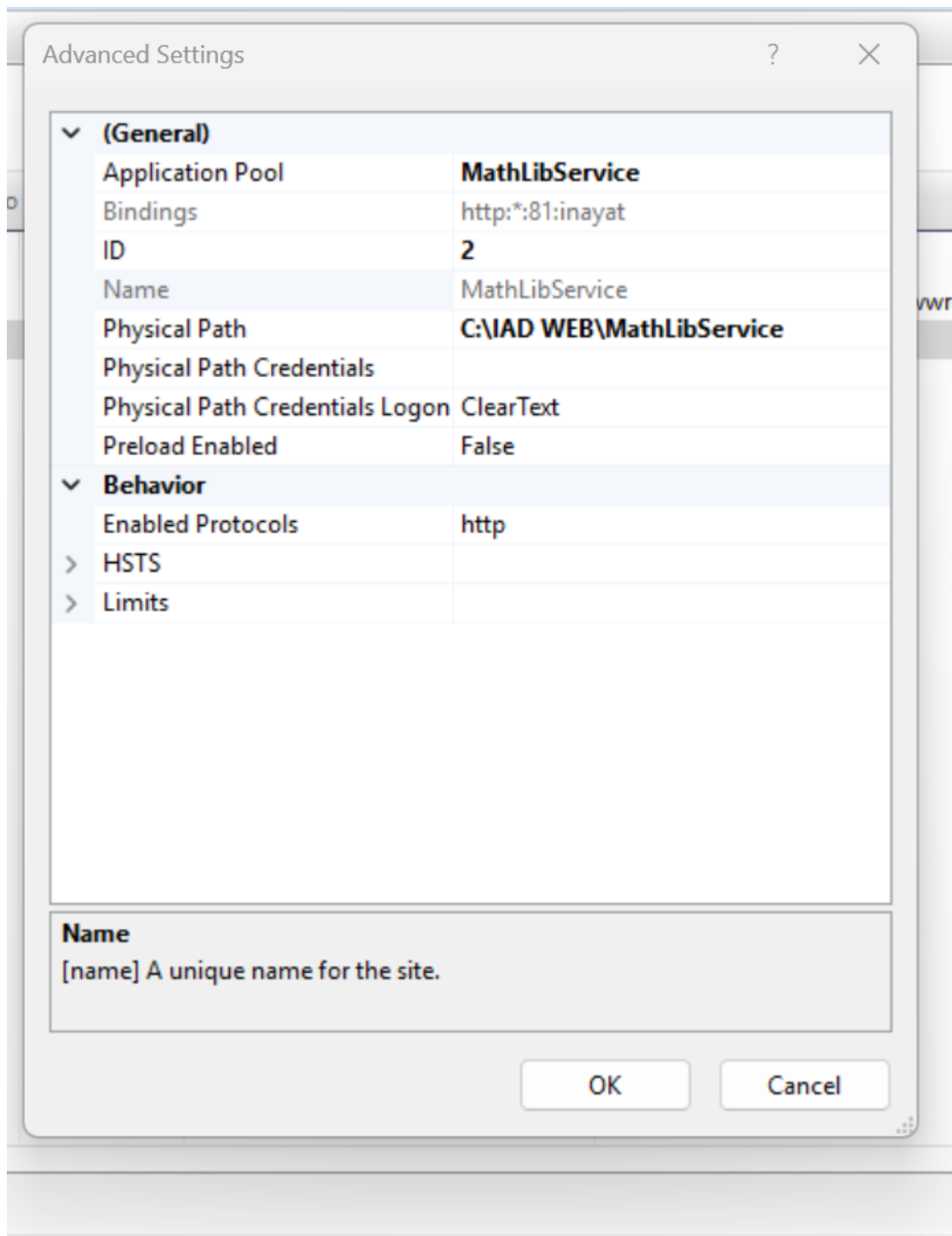
Pass-through authentication

Binding

Type: IP address: Port:

Host name:

Example: www.contoso.com or marketing.contoso.com



CODE:

WebService.asmx

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

WebService.vb

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

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

```
Imports System.ComponentModel
```

```
<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 Add(ByVal a As Integer, ByVal b As Integer) As String
```

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

```
End Function
```

```
<WebMethod(>
```

```
Public Function Subtract(ByVal a As Integer, ByVal b As Integer) As String
```

```
    Return (a - b).ToString()
```

```
End Function
```

<WebMethod(>

Public Function Multiply(ByVal a As Integer, ByVal b As Integer) As String

Return (a * b).ToString()

End Function

<WebMethod(>

Public Function Divide(ByVal a As Integer, ByVal b As Integer) As String

If b = 0 Then

Return "Cannot divide by zero"

End If

Return (a / b).ToString()

End Function

End Class

MathLibService

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

- [Add](#)
- [Divide](#)
- [Multiply](#)
- [Subtract](#)

This web service is using <http://tempuri.org/> as its default namespace.

Recommendation: Change the default namespace before the XML Web service is made public.

Each XML Web service needs a unique namespace in order for client applications to distinguish it from other services on the Web. <http://tempuri.org/> is available for XML Web services that are under development, but published XML Web services should use permanent namespace.

Your XML Web service should be identified by a namespace that you control. For example, you can use your company's Internet domain name as part of the namespace. Although many XML Web service namespaces look like URLs, they need not point to act resources on the Web. (XML Web service namespaces are URIs.)

For XML Web services creating using ASP.NET, the default namespace can be changed using the WebService attribute's Namespace property. The WebService attribute is an attribute applied to the class that contains the XML Web service methods. Below is a example that sets the namespace to "http://microsoft.com/webservices/":

```
C#
[WebService(Namespace="http://microsoft.com/webservices/")]
public class MyWebService {
    // Implementation
}
```

Visual Basic

```
<WebService(Namespace="http://microsoft.com/webservices/")> Public Class MyWebService
    ' Implementation
End Class
```

C++

```
[WebService(Namespace="http://microsoft.com/webservices/")]
public ref class MyWebService {
    // Implementation
};
```

For more details on XML namespaces, see the W3C recommendation on [Namespaces in XML](#).

For more details on WSDL, see the [WSDL Specification](#).

For more details on URIs, see [RFC 2396](#).

Activate Windows

Go to Settings to activate Windows

MathLibService

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

Add

Test

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

Parameter	Value
a:	21
b:	71
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.

```
POST /WebService.aspx HTTP/1.1
Host: math.servicetempuri.org
Content-Type: text/xml; charset=utf-8
Content-Length: length
SOAPAction: "http://tempuri.org/Add"

<?xml version="1.0" encoding="utf-8">
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <Add xmlns="http://tempuri.org/">
      <int><a>
        </int></a>
      </int></b>
    </Add>
  </soap:Body>
</soap:Envelope>

HTTP/1.1 200 OK
Content-Type: text/xml; charset=utf-8
Content-Length: length

<?xml version="1.0" encoding="utf-8">
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <AddResponse xmlns="http://tempuri.org/">
      <AddResult>string</AddResult>
    </AddResponse>
  </soap:Body>
</soap:Envelope>
```

Using the Web Service (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></title>

    <style>

        body{

            margin: 30px;

        }

    </style>

</head>


<body>

<form id="form1" runat="server">

    <div >

        <h1>CALCULATOR</h1>

        Enter First Number:
        &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<asp:TextBox
ID="txtNum1" runat="server" height="20px" Width="100px"/><br /><br />

        Enter Second Number:
        &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<asp:TextBox
ID="txtNum2" runat="server" height="20px" Width="100px"/><br /><br />

        <asp:Button ID="btnAdd" runat="server" Text="Add" Height="30px"/><br /><br />

        <asp:Button ID="btnSub" runat="server" Text="Subtract" Height="30px"/><br /><br />

        <asp:Button ID="btnMul" runat="server" Text="Multiply" Height="30px"/><br /><br />

        <asp:Button ID="btnDiv" runat="server" Text="Divide" Height="30px"/>

        <br /><br />

        Result: <asp:Label ID="lblResult" runat="server" />

    </div>

</form>

</body>

</html>
```

```
</div>
</form>

</body>
</html>
```

Calculator.aspx.vb

```
Imports System.Web.Services
Imports MathServiceByIqra
Imports System.Web.UI

Partial Class Calculator
    Inherits Page

    Dim proxy As New MathLibServiceSoapClient()

    Protected Sub btnAdd_Click(sender As Object, e As EventArgs) Handles btnAdd.Click
        Dim a As Integer = Integer.Parse(txtNum1.Text)
        Dim b As Integer = Integer.Parse(txtNum2.Text)
        lblResult.Text = "Result: " & proxy.Add(a, b)
    End Sub

    Protected Sub btnSub_Click(sender As Object, e As EventArgs) Handles btnSub.Click
        Dim a As Integer = Integer.Parse(txtNum1.Text)
        Dim b As Integer = Integer.Parse(txtNum2.Text)
        lblResult.Text = "Result: " & proxy.Subtract(a, b)
    End Sub

    Protected Sub btnMul_Click(sender As Object, e As EventArgs) Handles btnMul.Click
        Dim a As Integer = Integer.Parse(txtNum1.Text)
        Dim b As Integer = Integer.Parse(txtNum2.Text)
```



```

        lblResult.Text = "Result: " & proxy.Multiply(a, b)
    End Sub

    Protected Sub btnDiv_Click(sender As Object, e As EventArgs) Handles btnDiv.Click

        Dim a As Integer = Integer.Parse(txtNum1.Text)

        Dim b As Integer = Integer.Parse(txtNum2.Text)

        lblResult.Text = "Result: " & proxy.Divide(a, b)

    End Sub
End Class

```

Web.Config

```
<?xml version="1.0"?>
```

```
<configuration>
```

```
<!--
```

For a description of web.config changes see
<http://go.microsoft.com/fwlink/?LinkId=235367>.

The following attributes can be set on the <httpRuntime> tag.

```

<system.Web>
    <httpRuntime targetFramework="4.8.1" />
</system.Web>
-->

<system.web>
    <compilation debug="false" targetFramework="4.8.1"/>
    <pages controlRenderingCompatibilityVersion="4.0"/>
    <customErrors mode="Off"/>

```

```

</system.web>

<system.serviceModel>

  <bindings>

    <basicHttpBinding>

      <binding name="MathLibServiceSoap"/>

    </basicHttpBinding>

  </bindings>

  <client>

    <endpoint address="http://math.servicebyiqra:81/WebService.asmx"
binding="basicHttpBinding" bindingConfiguration="MathLibServiceSoap"
contract="MathServiceByIqra.MathLibServiceSoap" name="MathLibServiceSoap"/>

  </client>

</system.serviceModel>

</configuration>

```



-----end-----