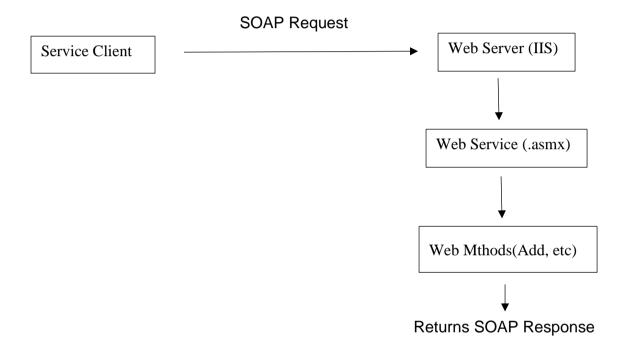
# Internet Application Development Web Services - Assignment

Dated: Thursday, 15th May 2025

Registration No: 03 -3-1-20-2022

Full Name: \_\_\_\_\_HAJRA\_\_\_\_\_

Q1) Draw web services execution model?



### **Explanation:**

- 1. The client sends a request using SOAP protocol.
- 2. IIS routes the request to the appropriate .asmx file.
- 3. The web service processes it and invokes the desired web method.
- 4. Response is returned back to the client via SOAP.
- Q2) Develop a web service with four web methods as follows:

(a) Add

(c) Multiply

(b) Subtract

(d) Divide

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

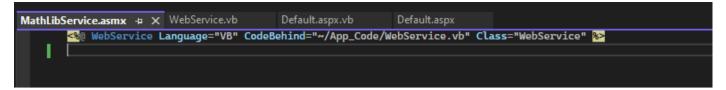
### Default.aspx

```
MathLibService.asmx
                                                             Default.aspx → X
                                          Default.aspx.vb
       😘 Page Language="VB" AutoEventWireup="false" CodeFile="Default.aspx.vb" Inherits="_Default" 🤛
       <!DOCTYPE html>
     < <html xmlns="http://www.w3.org/1999/xhtml">
     < <head runat="server"</pre>
           <title>Math Web Service Client</title>
            <form id="form1" runat="server">
                   <h2>Math Web Service Client</h2>
                   Number 1: <asp:TextBox ID="txtNum1" runat="server"></asp:TextBox><br /><br />
                    Number 2: <asp:TextBox ID="txtNum2" runat="server"></asp:TextBox><br /><br />
                    <asp:DropDownList ID="ddlOperation" runat="server">
                        <asp:ListItem Text="Add" Value="Add" /</pre>
                       <asp:ListItem Text="Subtract" Value="Subtract" />
                        <asp:ListItem Text="Multiply" Value="Multiply" />
                        <asp:ListItem Text="Divide" Value="Divide" /</pre>
                    <asp:Button ID="btnCalculate" runat="server" Text="Calculate" OnClick="btnCalculate_Click" /><br />
                    Result: <asp:Label ID="lblResult" runat="server" Text=""></asp:Label>
           </form>
```

### Default.aspx.vb

```
MathLibService.asmx
                        WebService.vb
                                          Default.aspx.vb* → X Default.aspx
                                                 2 Default.aspx
         Imports MathServiceRef
  {ढ़ॗ॓ॗॗॗ
          2 references
          Partial Class Default
  計
              Inherits System.Web.UI.Page
              Protected Sub btnCalculate_Click(sender As Object, e As EventArgs)
                  Dim service As New WebService()
                  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 = service.Add(num1, num2).ToString()
                      Case "Subtract"
                          result = service.Subtract(num1, num2).ToString()
                      Case "Multiply"
                          result = service.Multiply(num1, num2).ToString()
                      Case "Divide"
                          If num2 <> 0 Then
                              result = service.Divide(num1, num2).ToString()
                          Else
                              result = "Cannot divide by zero!"
                          End If
                  End Select
                  lblResult.Text = result
              End Sub
          End Class
```

MathLibService.asmx



### WebService.vb

```
MathLibService.asmx
                        WebService.vb → X Default.aspx.vb
                                                               Default.aspx

→ MathLibService

                                                                                                       → 😭 Subtract
3_App_Code
        V 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()>
  計
          Public Class MathLibService
              Inherits System.Web.Services.WebService
              <WebMethod()>
              1 reference
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()
               <WebMethod()>
               1 reference
Public Function Divide(ByVal a As Double, ByVal b As Double) As String
                   If b = 0 Then
                       Return "Cannot divide by zero."
                   End If
                   Return (a / b).ToString()
               End Function
           End Class
```

### **OUTPUT:**

## Math Web Service Client

## Math Web Service Client

Number 1: 34	N
Number 2: 4	Nı
Add 🕶	S
Calculate	

Number 1: 34
Number 2: 4
Subtract <b>∨</b>
Calculate

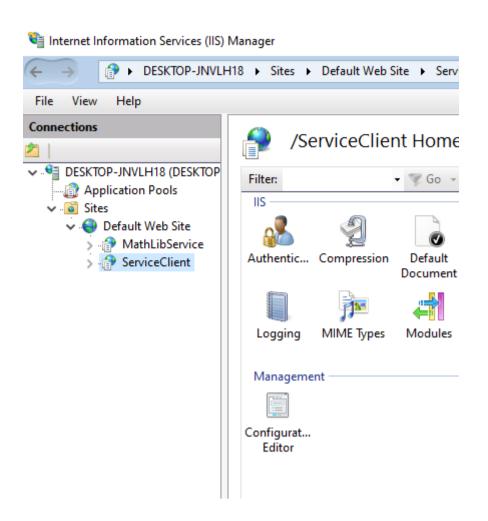
Result: 38 Result: 30

## Math Web Service Client Math Web Service Client

Number 1: 12	Number 1: 165
Number 2: 8	Number 2: 15
Multiply 🕶	Divide 🕶
Calculate	Calculate
Result: 96	Pacult: 11

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.

### WebService

The following operations are supported. For a formal definition, please review the Service Description.

- Add
- <u>Divide</u>
- 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 a more 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 actual 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 code example that sets the namespace to "http://microsoft.com/webservices/":

```
[WebService(Namespace="http://microsoft.com/webservices/")]
public class MyWebService {
    // implementation
Visual Basic
```

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

### WebService

Click here for a complete list of operations.

### Add

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

Parameter	Value	
a:	12	
b:	3	
	Invo	ke

### 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 /MathLibService.asmx HTTP/1.1
Host: localhost
Content-Type: text/xml; charset=utf-8
Content-Length: length
SOAFAction: "http://tempuri.org/Add"
</soap:Body>
</soap:Envelope>
HTTP/1.1 200 OK
Content-Type: text/xml; charset=utf-8
Content-Lenoth: lenoth
```

<string xmlns="http://tempuri.org/">15</string>