Internet Application Development

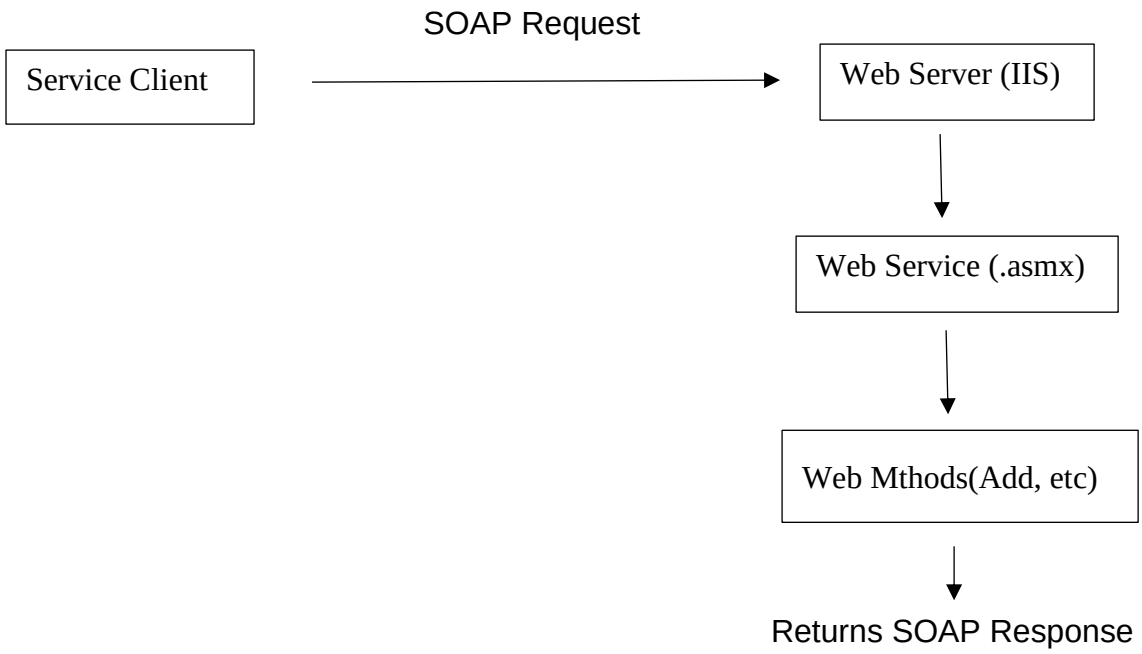
Web Services - Assignment

Dated: Thursday, 15th May 2025

Registration No:____03 -3-1-20-2022_____

Full Name: _____HAJRA_____

Q1) Draw web services execution model?



Explanation:

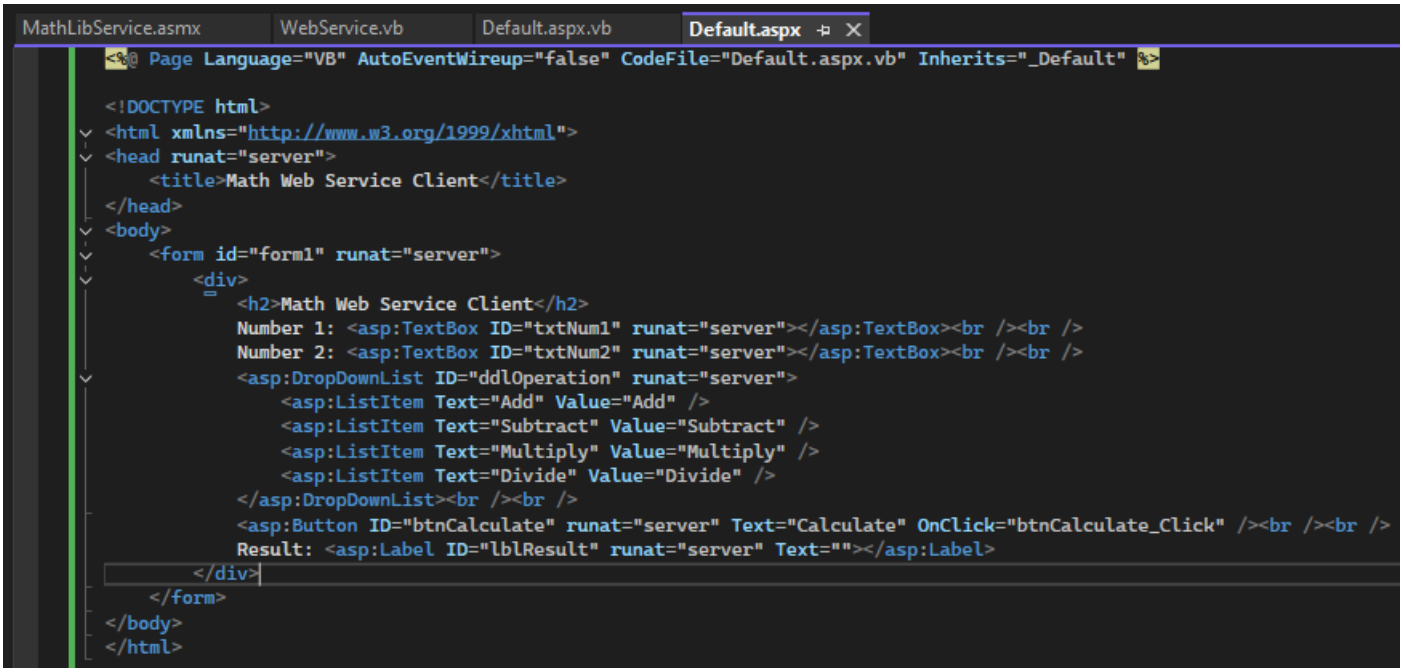
1. The client sends a request using SOAP protocol.
2. IIS routes the request to the appropriate .asmx file.
3. The web service processes it and invokes the desired web method.
4. Response is returned back to the client via SOAP.

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

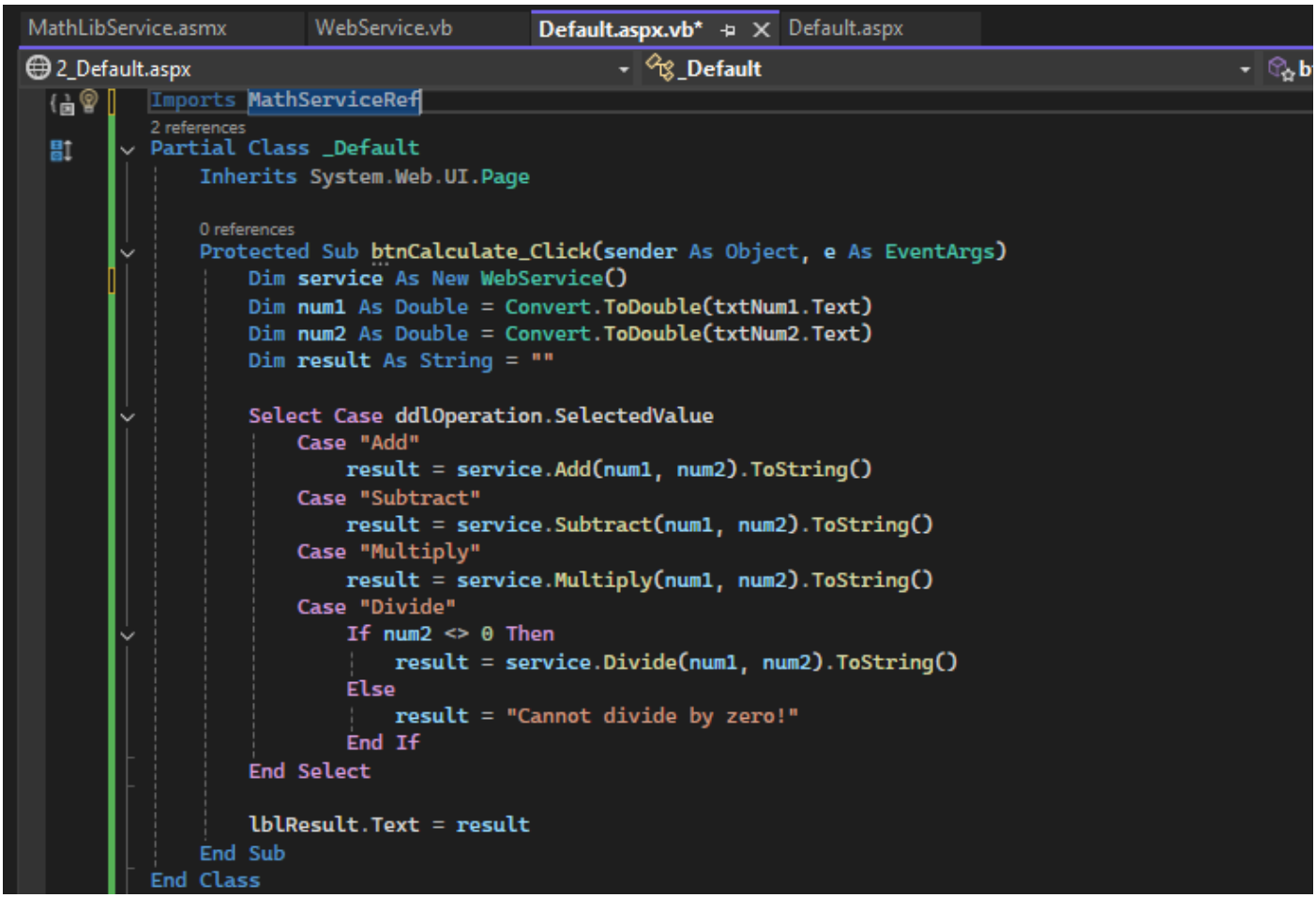
(a) Add
(b) Subtract
(c) Multiply
(d) Divide

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

Default.aspx



Default.aspx.vb



MathLibService.asmx

MathLibService.asmx | WebService.vb | Default.aspx.vb | Default.aspx

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

WebService.vb

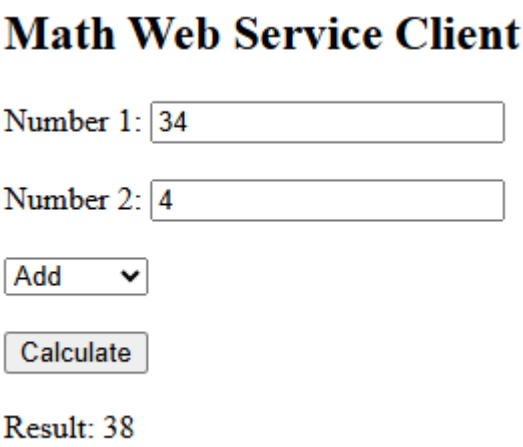
MathLibService.asmx | WebService.vb | Default.aspx.vb | Default.aspx

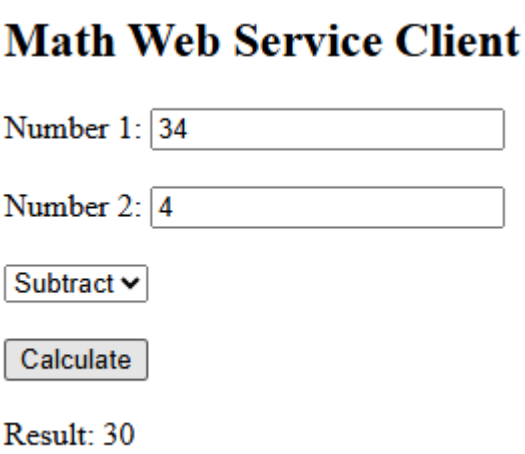
3_App_Code | MathLibService | Subtract

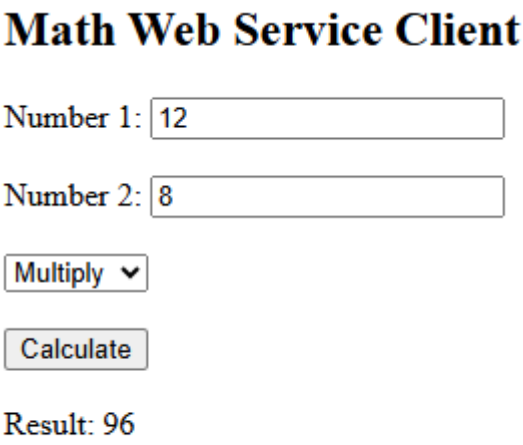
```
Imports System.Web.Services
Imports System.Web.Services.Protocols
Imports System.ComponentModel

<WebService(Namespace:="http://tempuri.org/")>
<WebServiceBinding(ConformsTo:=WsiProfiles.BasicProfile1_1)>
<Global.Microsoft.VisualBasic.CompilerServices.DesignerGenerated()>
1 reference
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()>
    1 reference
    Public Function Subtract(ByVal a As Double, ByVal b As Double) As String
        Return (a - b).ToString()
    End Function
```

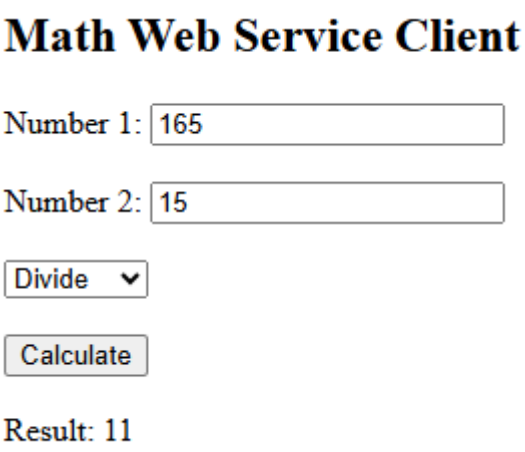
```
    <WebMethod()>
    1 reference
    Public Function Multiply(ByVal a As Double, ByVal b As Double) As String
        Return (a * b).ToString()
    End Function

    <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:









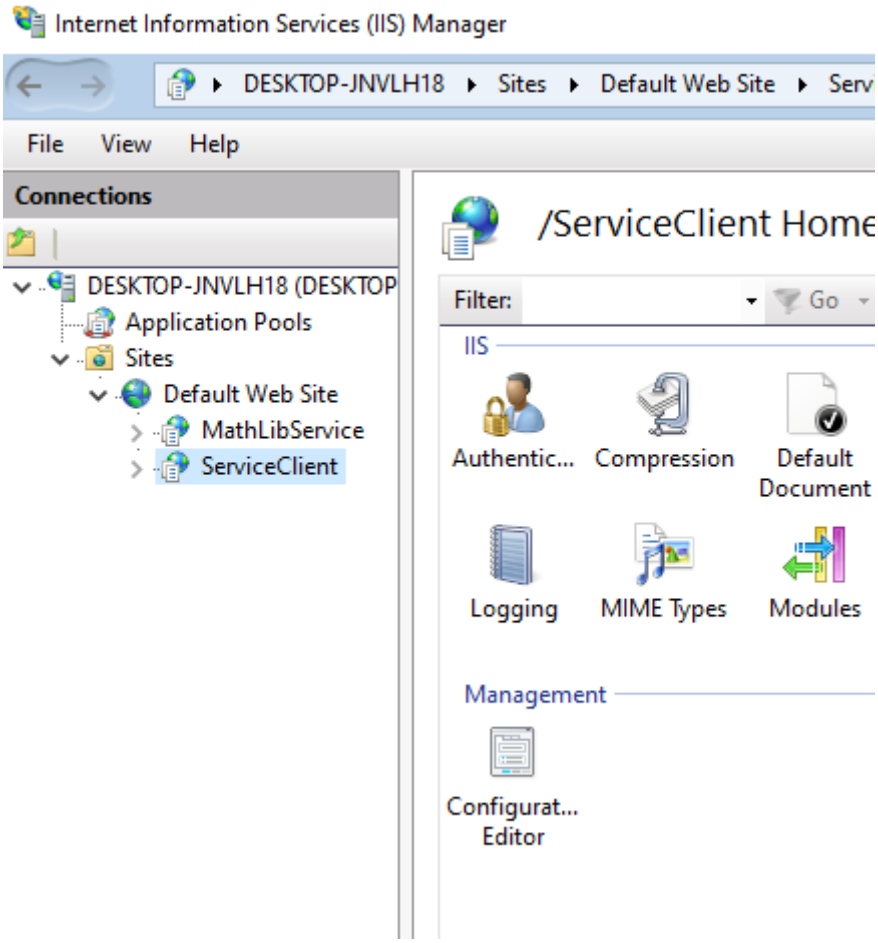
Q3) Test the web service using browser on local pc

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
- 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 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/":

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

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:	12
b:	3

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 /MathLibService.asmx HTTP/1.1
Host: localhost
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/">
      <a>double</a>
      <b>double</b>
    </Add>
  </soap:Body>
</soap:Envelope>
```

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

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