Q1) Draw web services execution model?



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

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

CalculatorService.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()>
```

Assignment

```
IAD
Bisma Tahir
Public Class MathLibService
    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 "Error: Division by zero"
        Else
            Return (a / b).ToString()
        End If
    End Function
End Class
```

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



Bisma Tahir IAD Assignment ← → C ⋒ (i) localhost:51044/CalculatorService.asmx?op=Add 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: 2 b: 2 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 /CalculatorService.asmx HTTF/1.1 Host: localhost Content-Type: text/xml; charset=utf-8 Content-Length: length SOAPAction: "http://tempuri.org/Add" HTTP/1.1 200 OK Content-Type: text/xml; charset=utf-8 Content-Length: length <?xml version="1.0" encoding="utf-8"?> <sop:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema" xmlns:soap="http://schemas.xmlsoap.org/soap/envelope <sop:Envelope <sop:Envelope xmlns="http://tempuri.org/soap/envelope <sop:Envelope <addBesponse xmlns="http://tempuri.org/"> <addBesponse xmlns="http://tempuri.org/"> </addBesponse xmlns="http:/tempuri.org/"> </addBesponse xml

← → C ⋒ (i) localhost:51044/CalculatorService.asmx/Add

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/">4</string>

Bisma Tahir

Assignment

	IAD								
2	Windows Features								
	Turn Windows features on or off								
	To turn a feature an isolast its shack hav. To turn a feature off, clear its shack hav. A filled hav means that only not of the feature is turned on								
	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								
	Image: Instant State Stat								
	INET Framework 4.8 Advanced Services								
	Active Directory Linkswitcht Directory Services								
	Contrained Server								
	Data Center Bridging								
	Guarded Host								
	Hyper-V								
	Internet Information Services								
	FTP Server								
	🐵 💼 Web Management Tools								
	General World Wide Web Services								
	Internet Information Services Hostable Web Core								
	🖩 🔁 Legacy Components								
	😑 🗾 Media Features								
	🗾 Windows Media Player Legacy (App)								
	🔣 🦳 Microsoft Message Queue (MSMQ) Server								
	C Microsoft NT Kernel Integration Virtual Device								
	Microsoft NT Kernel Integration VSC Driver								
	Microsoft Print to PDF								
	Microsoft XPS Document Writer								
	MultiPoint Connector								
	Print and Document Services								
	The product of the second seco								
	Contract on NES								
	Jervices for these								

Simple TCPIP services (i.e. echo, daytime etc)



ma Tahir		IAD					
Internet Information Services (IIS)	Manager						
→ DESKTOP-NQ612	2JK 🕨 Application Pool	s					
e View Help							
Connections	Application Pools This page lets you view and manage the list of application pools on the server. Application pools are associated with worker processes, contain one or more applications, and provide isolation among different applications.						
	Filter:	- 7	🖉 Go 🕞 🥁 Sho	w All Group by:	No Grouping	•	
 ServiceClient App_WebRefer MathLibService App_Code 	Name NET v2.0 NET v2.0 Classic NET v4.5 Classic .NET v4.5 Classic .NET Ap DefaultAppPool MathLibService	Status Started Started Started Started Started Started	.NET CLR V v2.0 v4.0 v4.0 v4.0 v2.0 v4.0 v4.0 v4.0	Managed Pipel Integrated Classic Integrated Classic Classic Integrated Integrated	Identity ApplicationPoolld ApplicationPoolld ApplicationPoolld ApplicationPoolld ApplicationPoolld ApplicationPoolld	Applications 0 0 0 0 0 2 1	
	Internet Information Services (IIS) DESKTOP-NQ612 e View Help mections DESKTOP-NQ612JK (DESKTOP DESKTOP-NQ612JK (DESKTOP DESKTOP-NQ612JK (DESKTOP ServiceClient Ser	Internet Information Services (IIS) Manager	Internet Information Services (IIS) Manager	Internet Information Services (IIS) Manager	Internet Information Services (IIS) Manager	Internet Information Services (IIS) Manager	

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.

Calculator.aspx:

```
<%@ Page Language="VB" AutoEventWireup="false" CodeFile="Calculator.aspx.vb"</pre>
Inherits="Calculator" %>
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title>Calculator</title>
    <style>
        body {
            font-family: Arial;
            color: black;
            background: white;
            padding: 20px;
        }
        .container {
            width: 300px;
            margin: auto;
        }
        input, button {
            margin-top: 5px;
            margin-bottom: 10px;
            width: 100%;
        }
```

Assignment

Bisma Tahir

```
.result {
            margin-top: 10px;
        }
    </style>
</head>
<body>
    <form id="form1" runat="server">
        <div class="container">
            <h2>Calculator</h2>
            <asp:Label Text="Enter First Number:" runat="server" /><br />
            <asp:TextBox ID="txtNum1" runat="server" /><br />
            <asp:Label Text="Enter Second Number:" runat="server" /><br />
            <asp:TextBox ID="txtNum2" runat="server" /><br />
            <asp:Button ID="btnAdd" runat="server" Text="Add" /><br />
            <asp:Button ID="btnSub" runat="server" Text="Subtract" /><br />
            <asp:Button ID="btnMul" runat="server" Text="Multiply" /><br />
            <asp:Button ID="btnDiv" runat="server" Text="Divide" /><br />
            <asp:Label ID="lblResult" runat="server" CssClass="result" />
        </div>
    </form>
</bodv>
</html>
Calcuator.aspx.vb:
```

```
Imports System.Web.Services
Imports localhost
Imports System.Web.UI
Partial Class Calculator
    Inherits Page
    Dim proxy As New MathLibService()
    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
```

Bisma Tahir

IAD

Outputs:

ightarrow C () localhost:51084/Calculator.aspx	
	Coloulator
	Calculator
	Enter First Number:
	Enter Second Number:
	Add
	Subtract
	Multiply
	Divide
Calculator × +	
□ ⊕ Calculator × + → C ① Iocalhost:51084/Calculator.aspx	
□ ⊕ Calculator × + → C ③ localhost:51084/Calculator.aspx	Calculator
 □ ⊕ Calculator x + → C ○ localhost:51084/Calculator.aspx 	Calculator Enter First Number:
 Calculator x + → C () localhost:51084/Calculator.aspx 	Calculator Enter First Number: 10 Enter Second Number:
□ ⊕ Calculator x + → C ③ localhost:51084/Calculator.aspx	Calculator Enter First Number: 10 Enter Second Number: 20
 Calculator x + C (1) Iocalhost:51084/Calculator.aspx 	Calculator Enter First Number: 10 Enter Second Number: 20 Add Subtract
 Calculator x + C O localhost:51084/Calculator.aspx 	Calculator Enter First Number: 10 Enter Second Number: 20 Add Subtract Multiply
Calculator x + → C ① localhost:51084/Calculator.aspx	Calculator Enter First Number: 10 Enter Second Number: 20 Add Subtract Multiply Divide Result: 30
Calculator x +	Calculator Enter First Number: 10 Enter Second Number: 20 Add Subtract Multiply Divide Result: 30
Calculator x + C O localhost:51084/Calculator.aspx	Calculator Enter First Number: 10 Enter Second Number: 20 Add Subtract Multiply Divide Result: 30
Calculator x +	Calculator Enter First Number: 10 Enter Second Number: 20 Add Subtract Multiply Divide Result: 30
 Calculator x + C O localhost:51084/Calculator.aspx 	Calculator Enter First Number: 10 Enter Second Number: 20 Add Subtract Multiply Divide Result: 30
□ ⊕ Calculator x + → C ③ localhost:51084/Calculator.aspx	Calculator Enter First Number: 10 Enter Second Number: 20 Add Subtract Multiply Divide Result: 30

Bisma Tahir

⑦ □ ⊕ Calculator × +

 \leftarrow \rightarrow C (i) localhost:51084/Calculator.aspx

Calculator

Enter First Number:							
10							
Enter Second Number:							
20							
Add							
Subtract							
Multiply							
Divide							
Result: -10							

Calculator × +

 \leftarrow \rightarrow C (i) localhost:51084/Calculator.aspx

Calculator

nter First Number:						
0						
Enter Second Number:						
0						
Add						
Subtract						
Multiply						
Divide						
esult: 200						

Bisma Tahir	IAD	Assignment
Image: Calculator Image: Calculator Image: Calculator Image: Calculator		
	Calculator Enter First Number: 10 Enter Second Number: 20 Add Subtract Multiply Divide Result: 0.5	