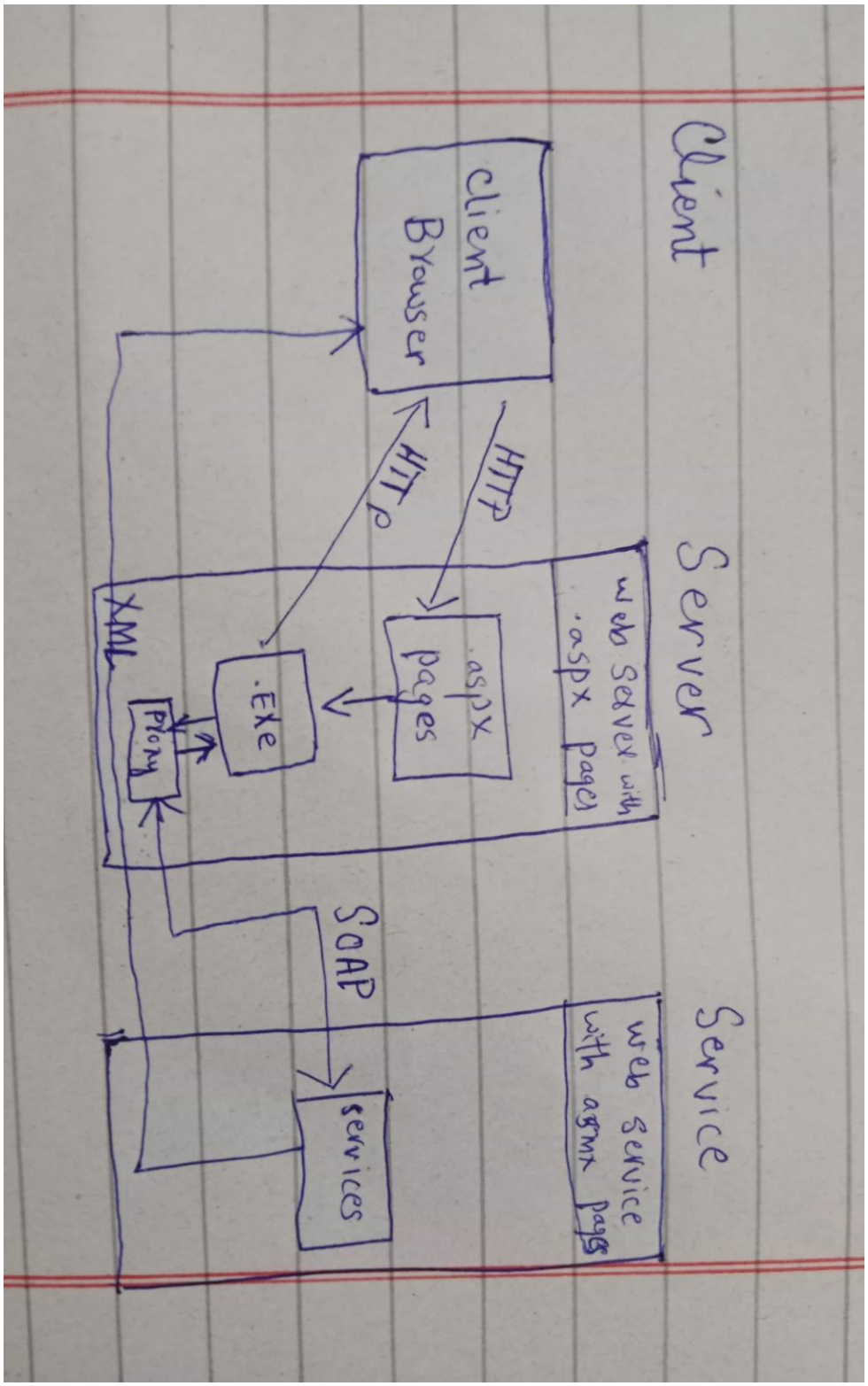
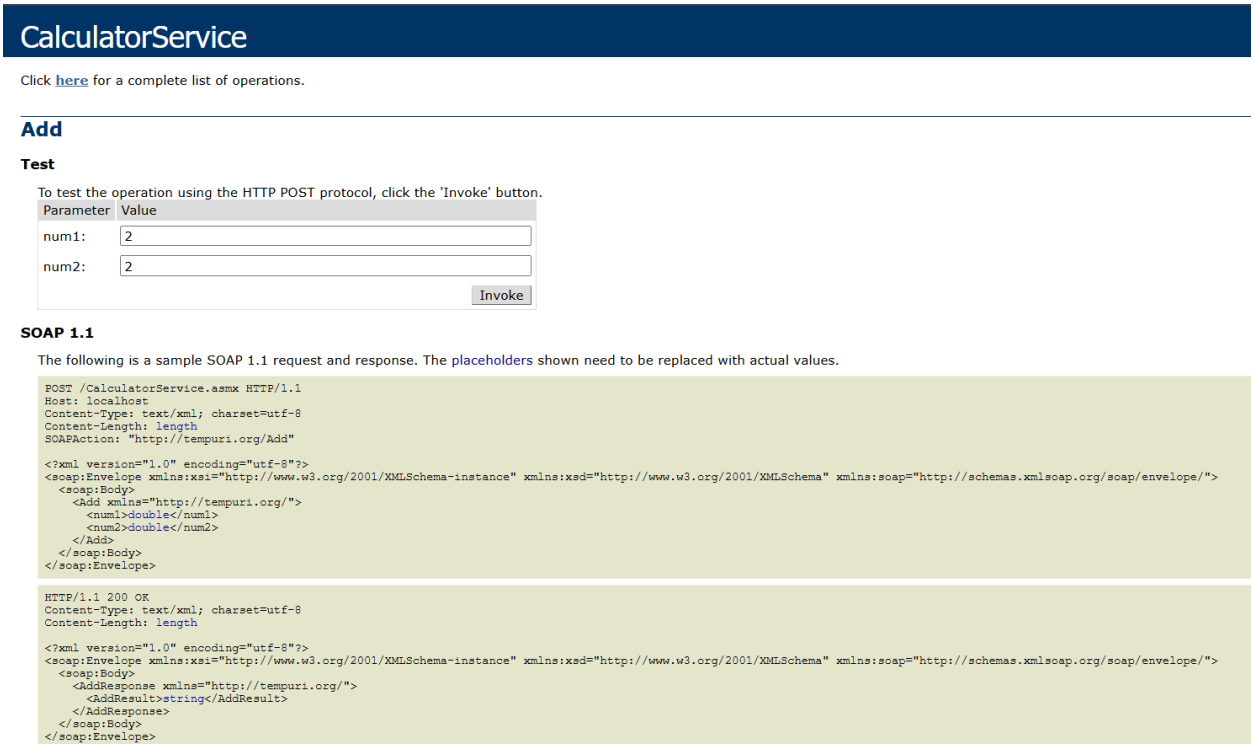
Q#1


Client
Server
Service
Client Byouser
HTTP
HTTP
web Server with .aspx pages
aspx pages
.Exe
XML
Proxy
SOAP
web service with asmx page
services

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 stringvalue



Code

.asmx

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

.vb

Imports System.Web.Services

Imports System.Web.Services.Protocols

Imports System.ComponentModel

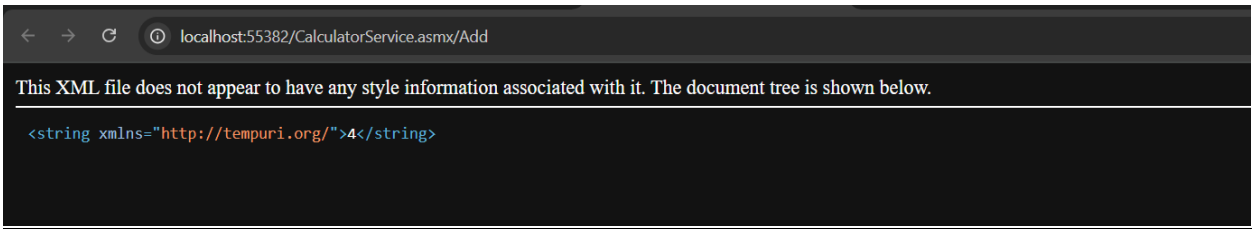
<WebService(Namespace:="http://tempuri.org/")>

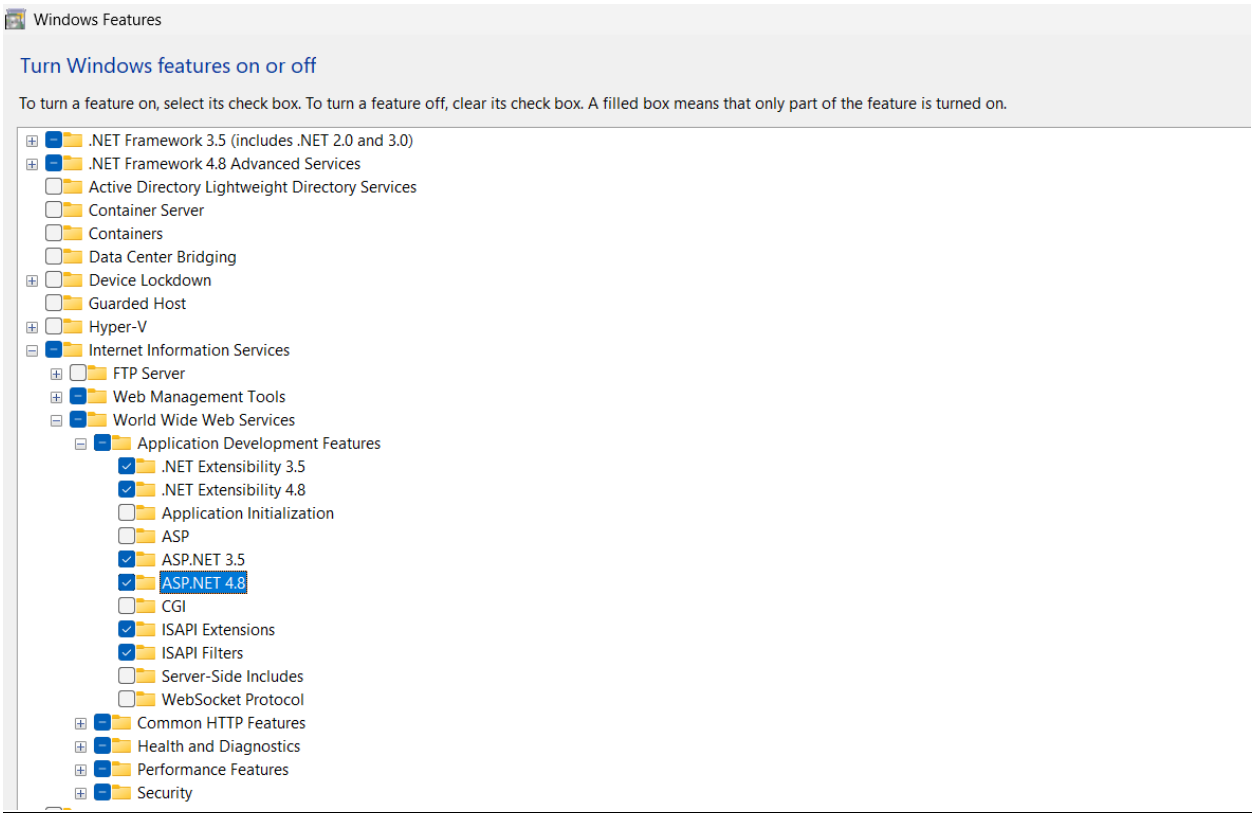
```
<WebServiceBinding(ConformsTo:=WsiProfiles.BasicProfile1_1)>
<Global.Microsoft.VisualBasic.CompilerServices.DesignerGenerated()>
Public Class CalculatorService
  Inherits System.Web.Services.WebService

  <WebMethod()>
  Public Function Add(ByVal num1 As Double, ByVal num2 As Double) As String
    Return (num1 + num2).ToString()
  End Function

  <WebMethod()>
  Public Function Subtract(ByVal num1 As Double, ByVal num2 As Double) As String
    Return (num1 - num2).ToString()
  End Function

  <WebMethod()>
  Public Function Multiply(ByVal num1 As Double, ByVal num2 As Double) As String
    Return (num1 * num2).ToString()
  End Function

  <WebMethod()>
  Public Function Divide(ByVal num1 As Double, ByVal num2 As Double) As String
    If num2 = 0 Then
      Return "Error: Division by zero"
    End If
    Return (num1 / num2).ToString()
```

End Function

End Class

TESTING

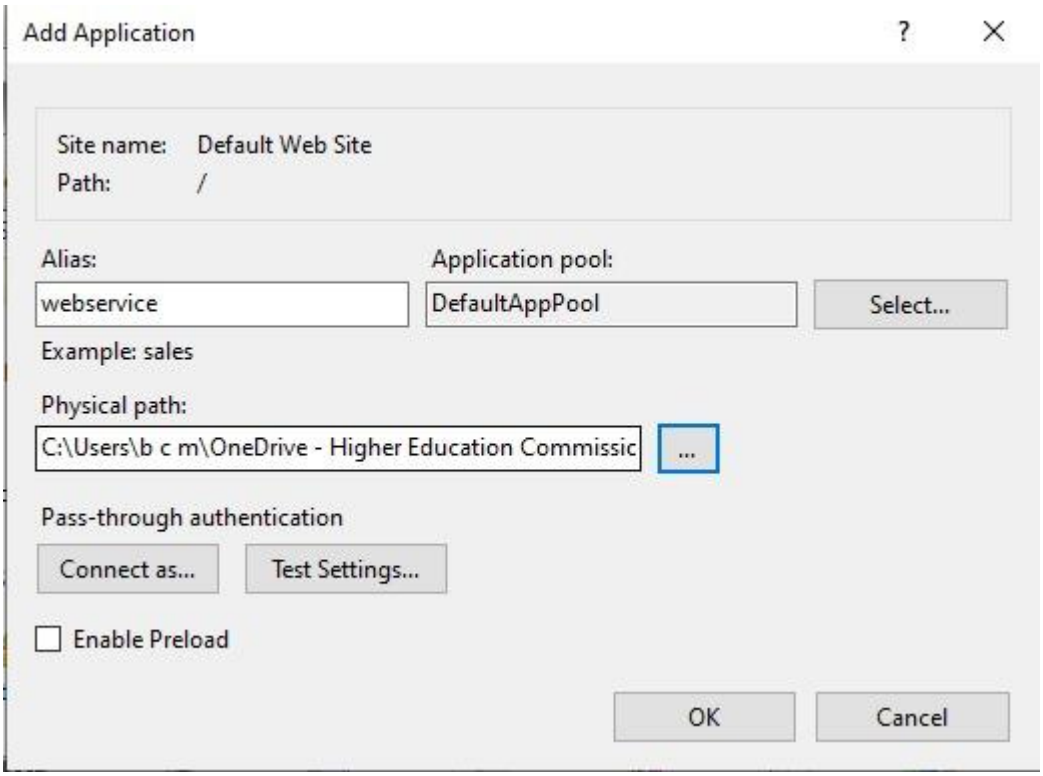




Q3)

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

MathLibraryService on IIS:



ServiceClient on IIS:

.aspx

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


<!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>

      <h2>Math Operations</h2>

      <asp:Label ID="Label1" runat="server" Text="Enter Number 1: " />

      <asp:TextBox ID="txtNum1" runat="server" /><br /><br />


      <asp:Label ID="Label2" runat="server" Text="Enter Number 2: " />

      <asp:TextBox ID="txtNum2" runat="server" /><br /><br />


      <asp:Button ID="btnAdd" runat="server" Text="Add" OnClick="btnAdd_Click" />

      <asp:Button ID="btnSubtract" runat="server" Text="Subtract"
OnClick="btnSubtract_Click" />

      <asp:Button ID="btnMultiply" runat="server" Text="Multiply"
OnClick="btnMultiply_Click" />

      <asp:Button ID="btnDivide" runat="server" Text="Divide" OnClick="btnDivide_Click"
/><br /><br />
```

```
        <asp:Label ID="lblResult" runat="server" Font-Bold="true" Font-Size="Large"
ForeColor="Blue" />
    </div>
  </form>
</body>
</html>
```

.vb

```
Partial Class _Default
  Inherits System.Web.UI.Page

  ' Create an instance of the web service client
  Dim service As New MathRef.WebService()

  Protected Sub btnAdd_Click(sender As Object, e As EventArgs)
    Dim num1 As Double = Double.Parse(txtNum1.Text)
    Dim num2 As Double = Double.Parse(txtNum2.Text)
    lblResult.Text = service.Add(num1, num2)
  End Sub

  Protected Sub btnSubtract_Click(sender As Object, e As EventArgs)
    Dim num1 As Double = Double.Parse(txtNum1.Text)
    Dim num2 As Double = Double.Parse(txtNum2.Text)
    lblResult.Text = service.Subtract(num1, num2)
  End Sub

  Protected Sub btnMultiply_Click(sender As Object, e As EventArgs)
```

```
    Dim num1 As Double = Double.Parse(txtNum1.Text)
    Dim num2 As Double = Double.Parse(txtNum2.Text)
    lblResult.Text = service.Multiply(num1, num2)
  End Sub

  Protected Sub btnDivide_Click(sender As Object, e As EventArgs)
    Dim num1 As Double = Double.Parse(txtNum1.Text)
    Dim num2 As Double = Double.Parse(txtNum2.Text)
    lblResult.Text = service.Divide(num1, num2)
  End Sub

End Class
```

Math Operations

Enter Number 1: 89

Enter Number 2: 98

Add | Subtract | Multiply | Divide

0.908163265306122