MODULE 5:Web Services and WCF

1. Create xml based webservice to create calculator and consume it in website.
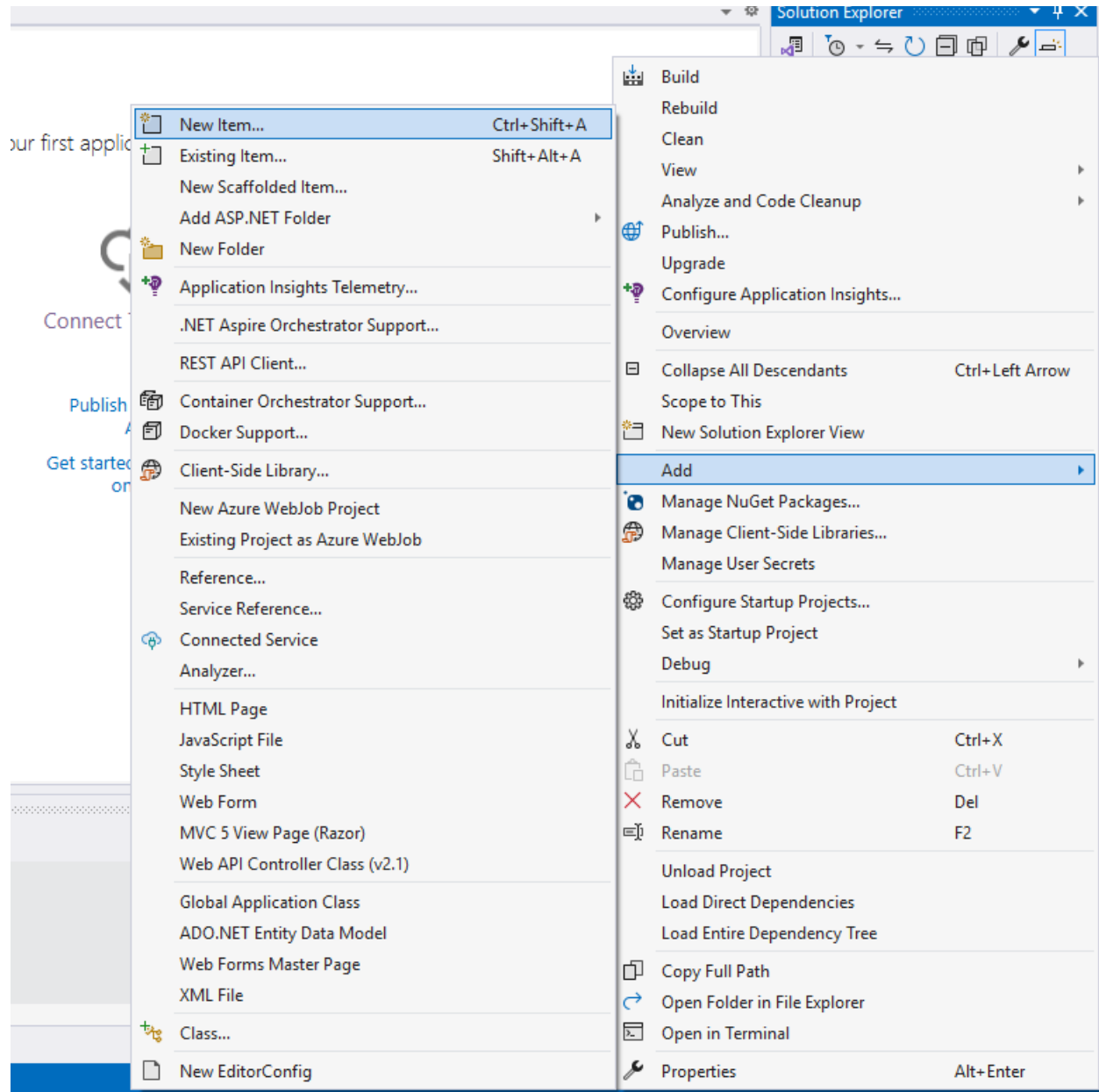
Name: Rajvardhan Ganpatrao Patil
Div: A   Roll No: 40
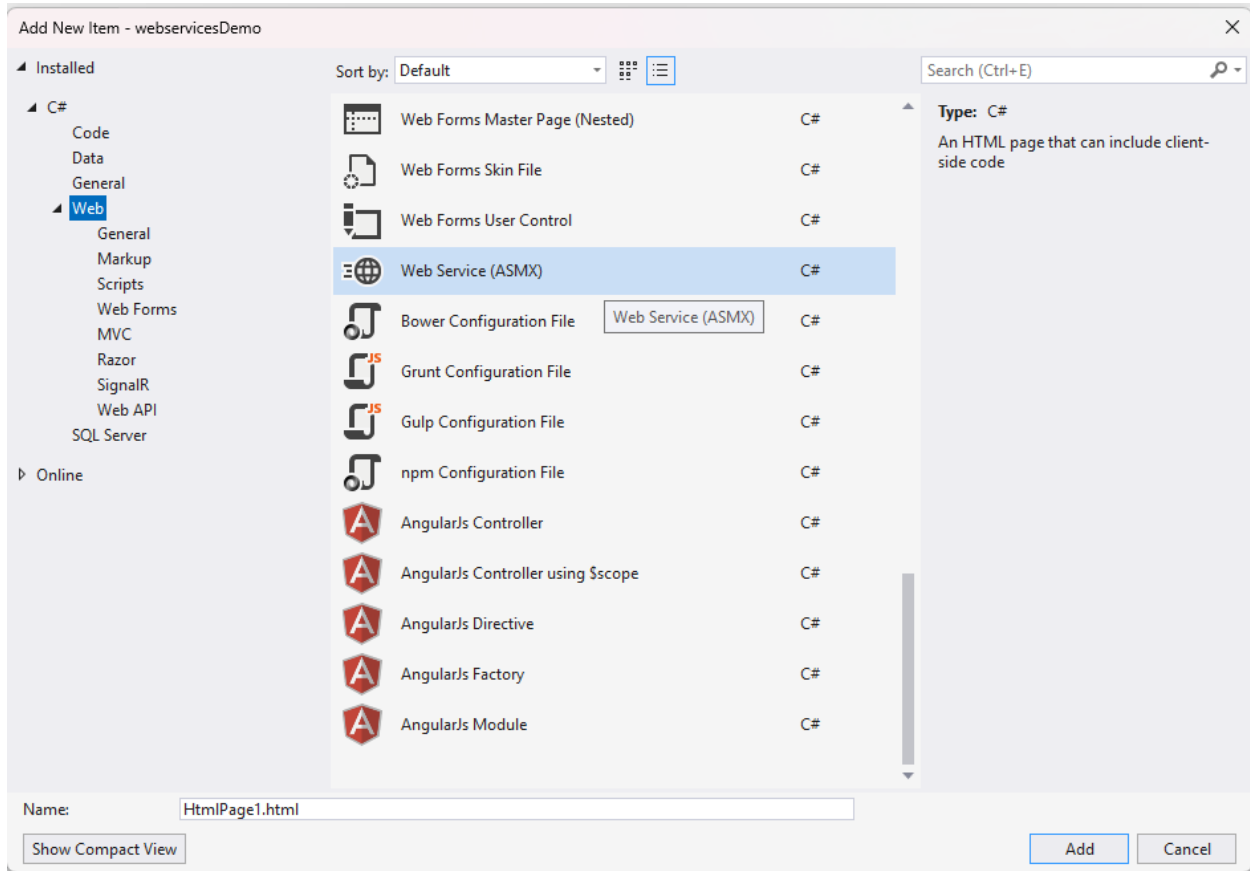
Calci.asmx.cs

```csharp
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.Services;

namespace webservicesDemo
{
    /// <summary>
    /// Summary description for Calci
    /// </summary>
    [WebService(Namespace = "http://tempuri.org/")]
    [WebServiceBinding(ConformsTo = WsiProfiles.BasicProfile1_1)]
    [System.ComponentModel.ToolboxItem(false)]
    // To allow this Web Service to be called from script, using ASP.NET AJAX,
    uncomment the following line.
    // [System.Web.Script.Services.ScriptService]
    public class Calci : System.Web.Services.WebService
    {

        [WebMethod]
        public int Add(int n1, int n2) {
            return n1 + n2;
        }
```

```
[WebMethod]
public int Sub(int n1, int n2) {
    return n1 - n2;
}
[WebMethod]
public int Mul(int n1, int n2)
{
    return n1 * n2;
}
[WebMethod]
public float Div(int n1, int n2)
{
    return n1 / n2;
}
    }
}
```

Run this file and check all the method work fine

Calci

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

- Add
- Div
- Mul
- Sub

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(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.

| demo.aspx.cs | demo.aspx ⊟ ✕ | Calci.asmx.cs | webservicesDemo: Overview |

body

Enter First No: ☐

Enter Second No: ☐

Add ▼

[Cal]

Result:

|

```csharp
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;

namespace webservicesDemo
{
    public partial class demo : System.Web.UI.Page
    {
        Calci service = new Calci();
        protected void Page_Load(object sender, EventArgs e)
        {

        }

        protected void Button1_Click(object sender, EventArgs e)
        {
            int n1 = int.Parse(txtFirst.Text);
            int n2 = int.Parse(txtSecond.Text);

            string op = DropDownList1.SelectedValue;
            float result = 0;

            switch (op)
            {
                case "Add":
                    result = service.Add(n1, n2);
                    break;
                case "Sub":
                    result = service.Sub(n1, n2);
                    break;
                case "Mul":
                    result = service.Mul(n1, n2);
                    break;
                case "Div":
                    result = service.Div(n1, n2);
                    break;
```

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```
        }
        lblres.Text = "Result: " + result.ToString();
    }
  }
}
```

Output:

Enter First No: [   ]

Enter Second No: [   ]

Add ▾

[Cal]

Result:

Addition

Enter First No: [2   ]

Enter Second No: [4   ]

Add ▾

[Cal]

Result: 6

Subtraction

Enter First No: [2   ]

Enter Second No: [4   ]

Sub ▾

[Cal]

Result: -2

Multiplication:

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Enter First No: 2
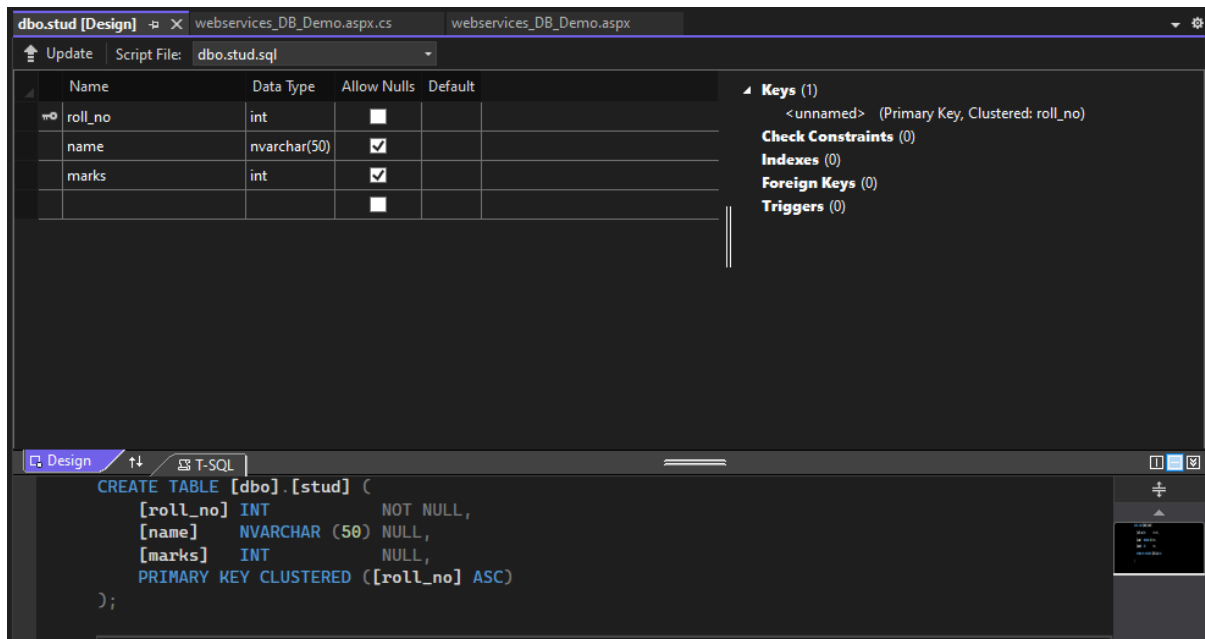
Enter Second No: 4

Mul   ▾

Cal

Result: 8

Division:

Enter First No: 4

Enter Second No: 2

Div   ▾

Cal

Result: 2

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<mark>Stud Table</mark>
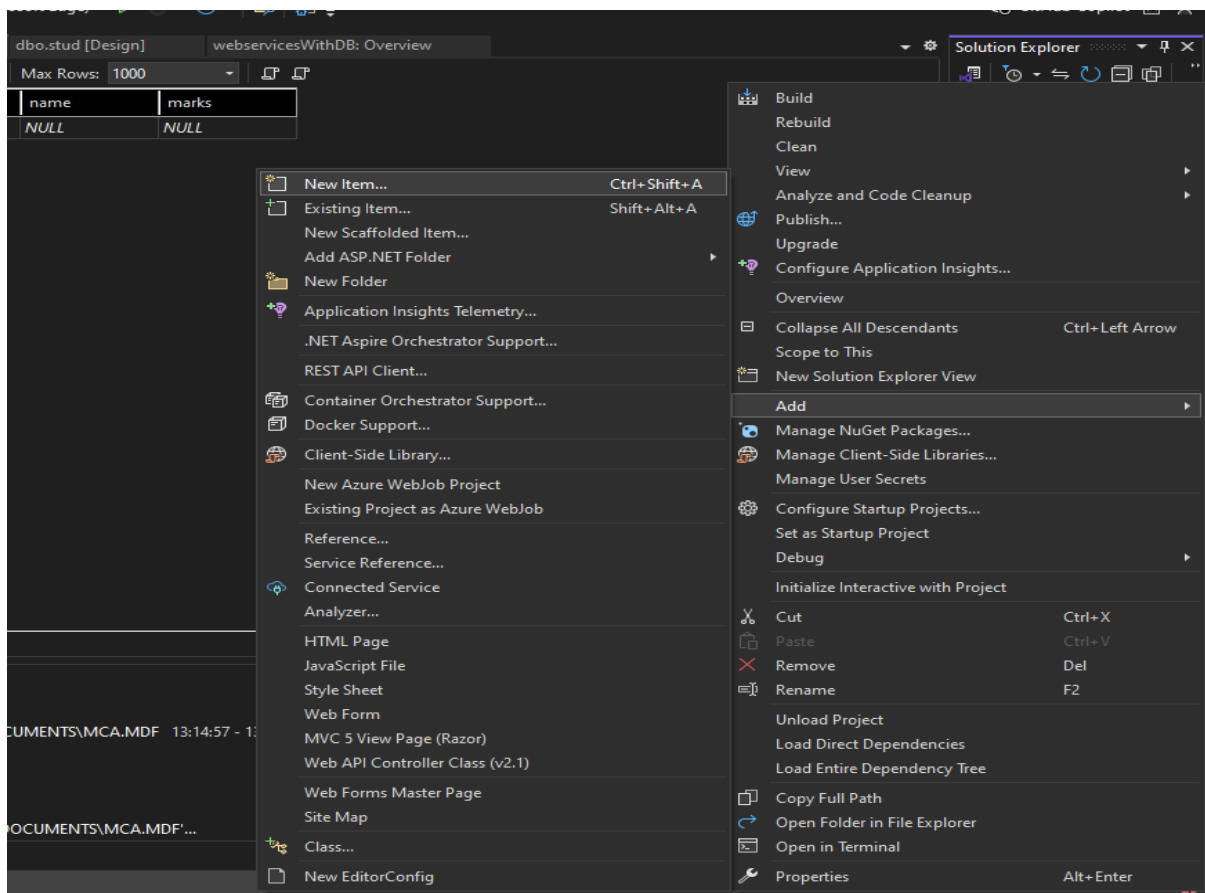

```
CREATE TABLE [dbo].[stud] (
    [roll_no] INT          NOT NULL,
    [name]    NVARCHAR (50) NULL,
    [marks]   INT          NULL,
    PRIMARY KEY CLUSTERED ([roll_no] ASC)
);
```


<mark>Stud.asmx.cs</mark>

```
using System;
```

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```csharp
using System.Collections.Generic;
using System.Data;
using System.Data.SqlClient;
using System.Linq;
using System.Web;
using System.Web.Services;

namespace webservicesWithDB
{
    /// <summary>
    /// Summary description for Stud
    /// </summary>
    [WebService(Namespace = "http://tempuri.org/")]
    [WebServiceBinding(ConformsTo = WsiProfiles.BasicProfile1_1)]
    [System.ComponentModel.ToolboxItem(false)]
    // To allow this Web Service to be called from script, using ASP.NET AJAX,
    uncomment the following line.
    // [System.Web.Script.Services.ScriptService]
    public class Stud : System.Web.Services.WebService
    {
        private string connectionString = "Data
Source=(LocalDB)\\MSSQLLocalDB;AttachDbFilename=C:\\Users\\Admin\\Documents\\MCA.m
df;Integrated Security=True;Connect Timeout=30";


        [WebMethod]
        public DataSet GetAllStudents()
        {
            using (SqlConnection con = new SqlConnection(connectionString))
            {
                SqlDataAdapter da = new SqlDataAdapter("select * from stud", con);
                DataSet ds = new DataSet();
                da.Fill(ds,"stud");
                return ds;
            }
        }
        [WebMethod]
        public string InsertStudent(int Id, string Name, int Marks){
            using (SqlConnection con = new SqlConnection(connectionString))
            {
                con.Open();
                SqlCommand cmd = new SqlCommand();
                cmd = new SqlCommand("insert into stud
values('"+Id+"','"+Name+"','"+Marks+"')",con);
                int rowsAffected = cmd.ExecuteNonQuery();
                return rowsAffected > 0 ? "Student inserted successfully!" :
"Failed to insert student.";
            }
        }
    }
}
```

Stud

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

- **GetAllStudents**
- **InsertStudent**

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
```
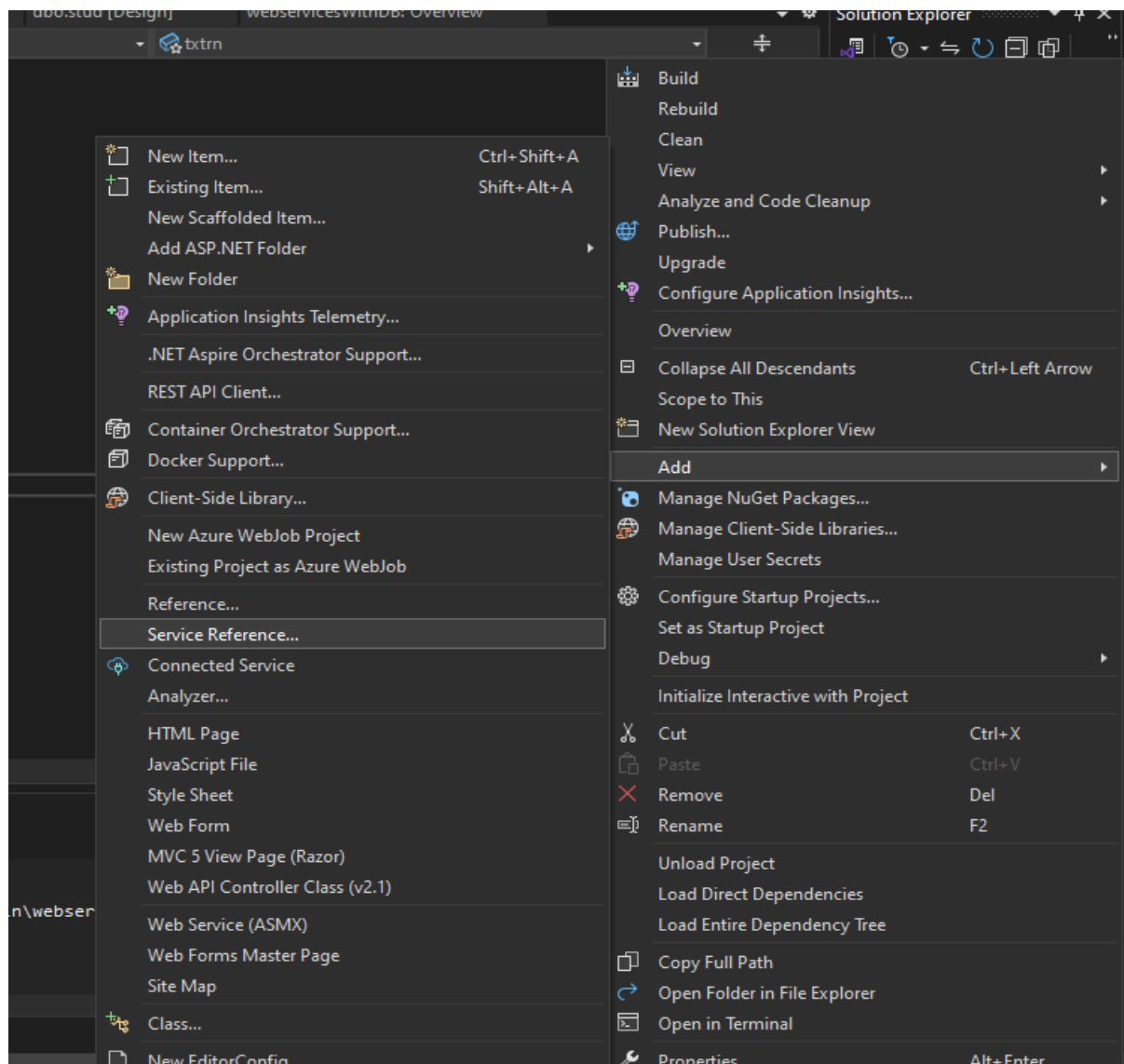
C++

```
[WebService(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.

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Add Service Reference   ?   ✕

To see a list of available services on a specific server, enter a service URL and click Go. To browse for available services, click Discover.

Address:

https://localhost:44358/Stud.asmx   ⌄   Go | Discover ▾

Services: Operations:

▲ 🖥 Stud.asmx   🔷 GetAllStudents
  ▲ ⛓🌐 Stud   🔷 InsertStudent
      🔗 StudSoap

1 service(s) found at address 'https://localhost:44358/Stud.asmx'.

Namespace:

ServiceReference1

Advanced...   OK   Cancel

---

webservices_DB_Demo.aspx ⌐ ✕
[form#form1]

Roll No   [   ]
Name   [   ]
Marks   [   ]
[Submit]

Column0	Column1	Column2
abc	abc	abc
abc	abc	abc
abc	abc	abc
abc	abc	abc
abc	abc	abc

[Fetch]

[lblmsg]

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webservices_DB_Demo.aspx.cs

```
using System;
using System.Collections.Generic;
using System.Data;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;

namespace webservicesWithDB
{
    public partial class webservices_DB_Demo : System.Web.UI.Page
    {
        Stud service = new Stud();
        protected void Page_Load(object sender, EventArgs e)
        {

        }

        protected void btnsb_Click(object sender, EventArgs e)
        {
            string result = service.InsertStudent(int.Parse(txtrn.Text),
txtnm.Text, int.Parse(txtmrk.Text));
            lblmsg.Text = result;
            btnFetch_Click(sender, e);
        }

        protected void btnFetch_Click(object sender, EventArgs e)
        {
            DataSet ds = service.GetAllStudents();
            GridView1.DataSource = ds.Tables["stud"];
            GridView1.DataBind();
        }
    }
}
```

Output:

Roll No	
Name	
Marks	

Submit

Fetch

Roll No   1

Name   Raj

Marks   75

  Submit

roll_no	name	marks
1	Raj	75

  Fetch

Student inserted successfully!

Roll No   2

Name   Amol

Marks   100

  Submit

roll_no	name	marks
1	Raj	75
2	Amol	100

  Fetch

Student inserted successfully!

Fetch data

Roll No

Name

Marks

  Submit

roll_no	name	marks
1	Raj	75
2	Amol	100

  Fetch

3. Create and consume the WCF service to calculate simple interest.
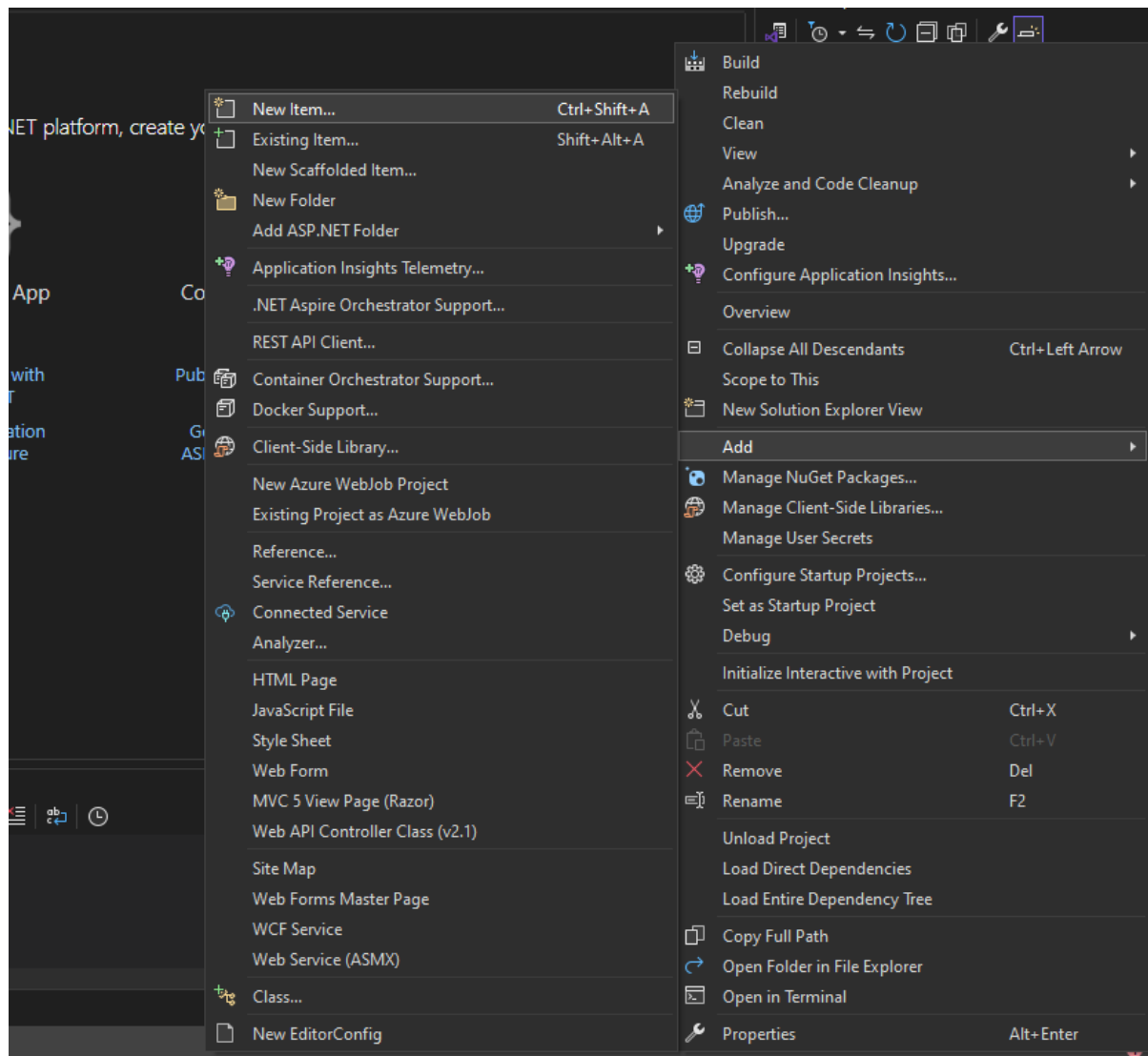
Name: Rajvardhan Ganpatrao Patil
Div: A   Roll No: 40
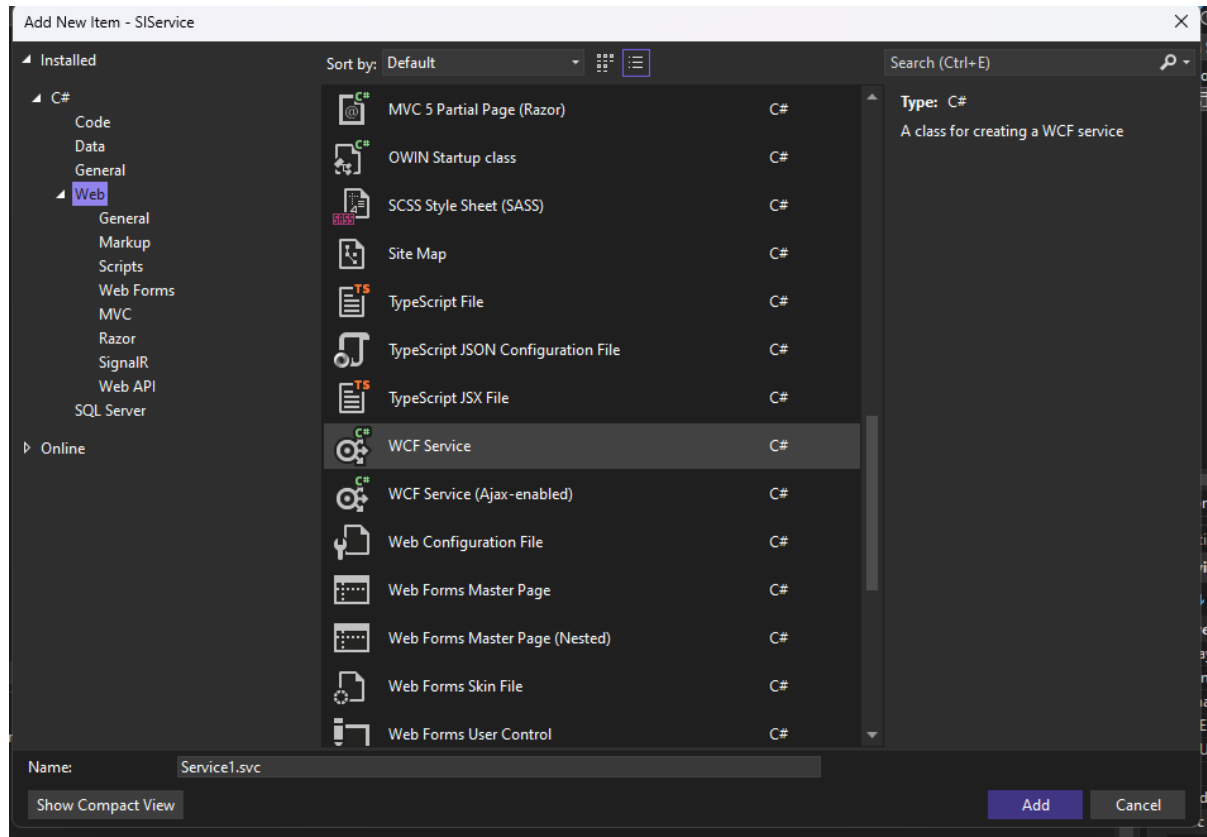
ISimpleIService1.cs

```csharp
using System;
using System.Collections.Generic;
using System.Linq;
using System.Runtime.Serialization;
using System.ServiceModel;
using System.Text;

namespace SIService
{
    // NOTE: You can use the "Rename" command on the "Refactor" menu to change the
interface name "ISimpleIService1" in both code and config file together.
    [ServiceContract]
    public interface ISimpleIService1
    {
        [OperationContract]
        double CalculateSimpleInterest(double principal, double rate, double
time);
    }
}
```
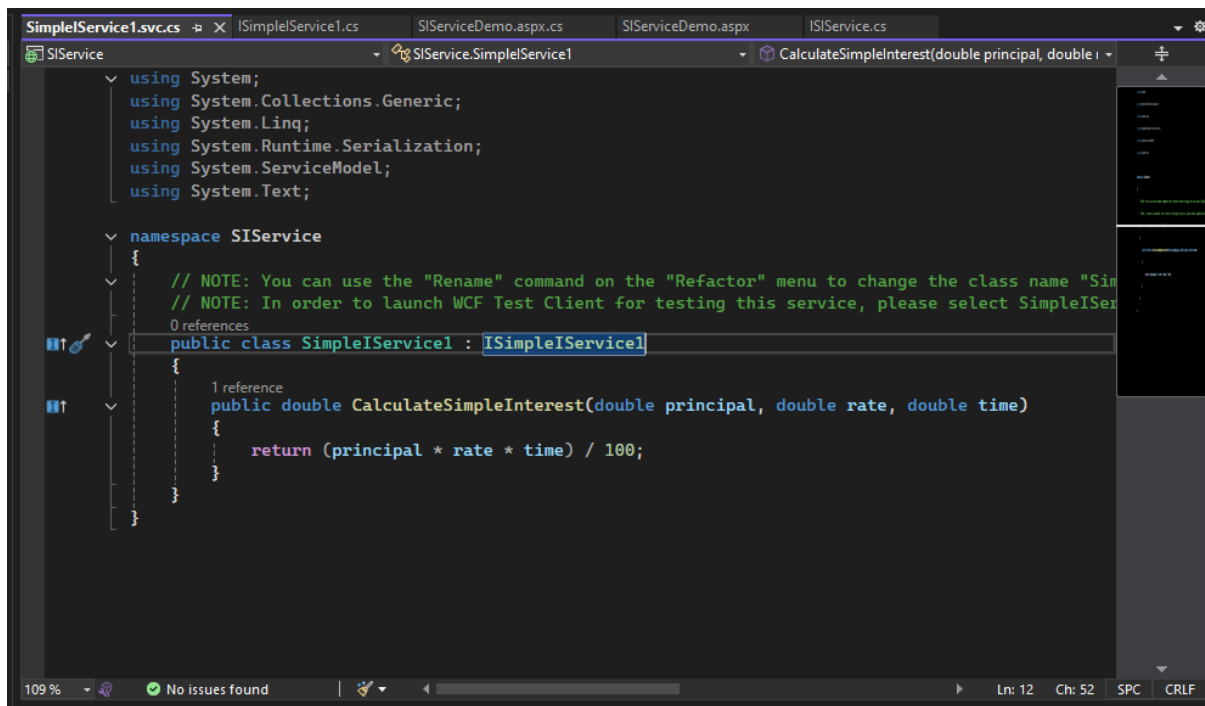
Name: Rajvardhan Ganpatrao Patil
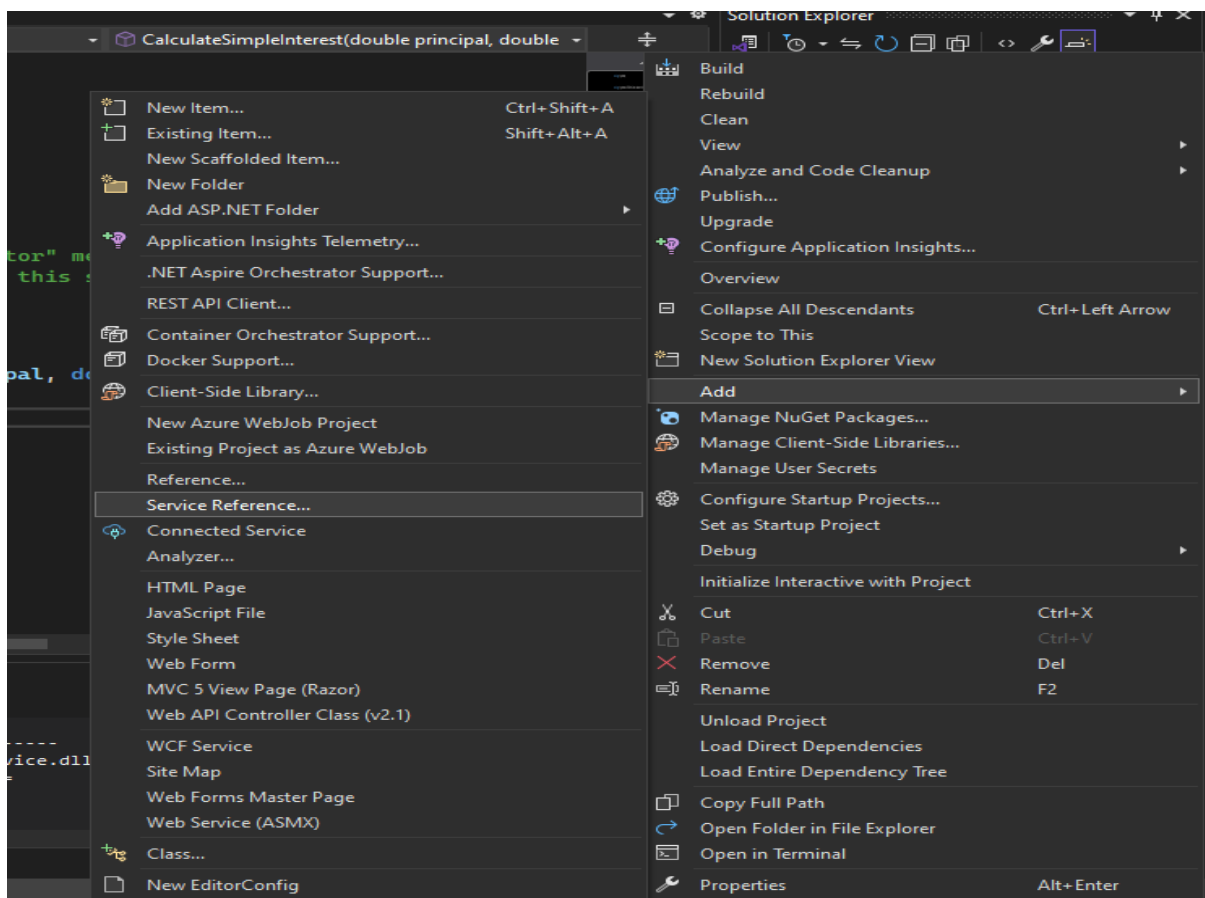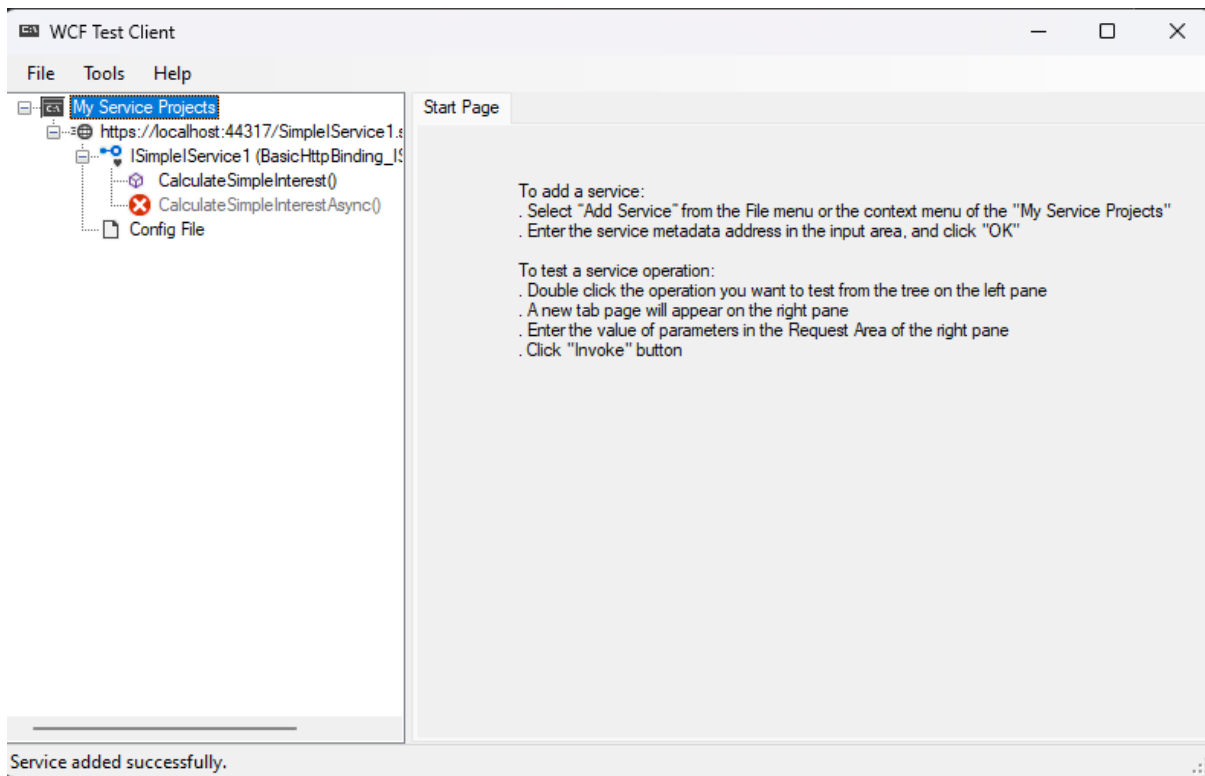**Div: A   Roll No: 40**

SimpleIService1.svc.cs

```csharp
using System;
using System.Collections.Generic;
using System.Linq;
using System.Runtime.Serialization;
using System.ServiceModel;
using System.Text;

namespace SIService
{
    // NOTE: You can use the "Rename" command on the "Refactor" menu to change the
class name "SimpleIService1" in code, svc and config file together.
    // NOTE: In order to launch WCF Test Client for testing this service, please
select SimpleIService1.svc or SimpleIService1.svc.cs at the Solution Explorer and
start debugging.
    public class SimpleIService1 : ISimpleIService1
    {
        public double CalculateSimpleInterest(double principal, double rate,
double time)
        {
            return (principal * rate * time) / 100;
        }
    }
}
```

Run this file

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Name: Rajvardhan Ganpatrao Patil
Div: A   Roll No: 40

SIServiceDemo.aspx.cs

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;
```

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```
namespace SIService
{
    public partial class SIServiceDemo : System.Web.UI.Page
    {
        ServiceReference1.SimpleIService1Client service = new
ServiceReference1.SimpleIService1Client();
        protected void Page_Load(object sender, EventArgs e)
        {

        }

        protected void Button1_Click(object sender, EventArgs e)
        {
            double prin = Convert.ToDouble(txtprin.Text);
            double rate = Convert.ToDouble(txtrate.Text);
            double time = Convert.ToDouble(txttime.Text);

            double interest = service.CalculateSimpleInterest(prin, rate, time);
             lblres.Text = "Simple Intrest = " + interest.ToString("0.00");
        }
    }
}
```

Calculate Simple Interest

Principal [   ]

Rate(%)   [   ]
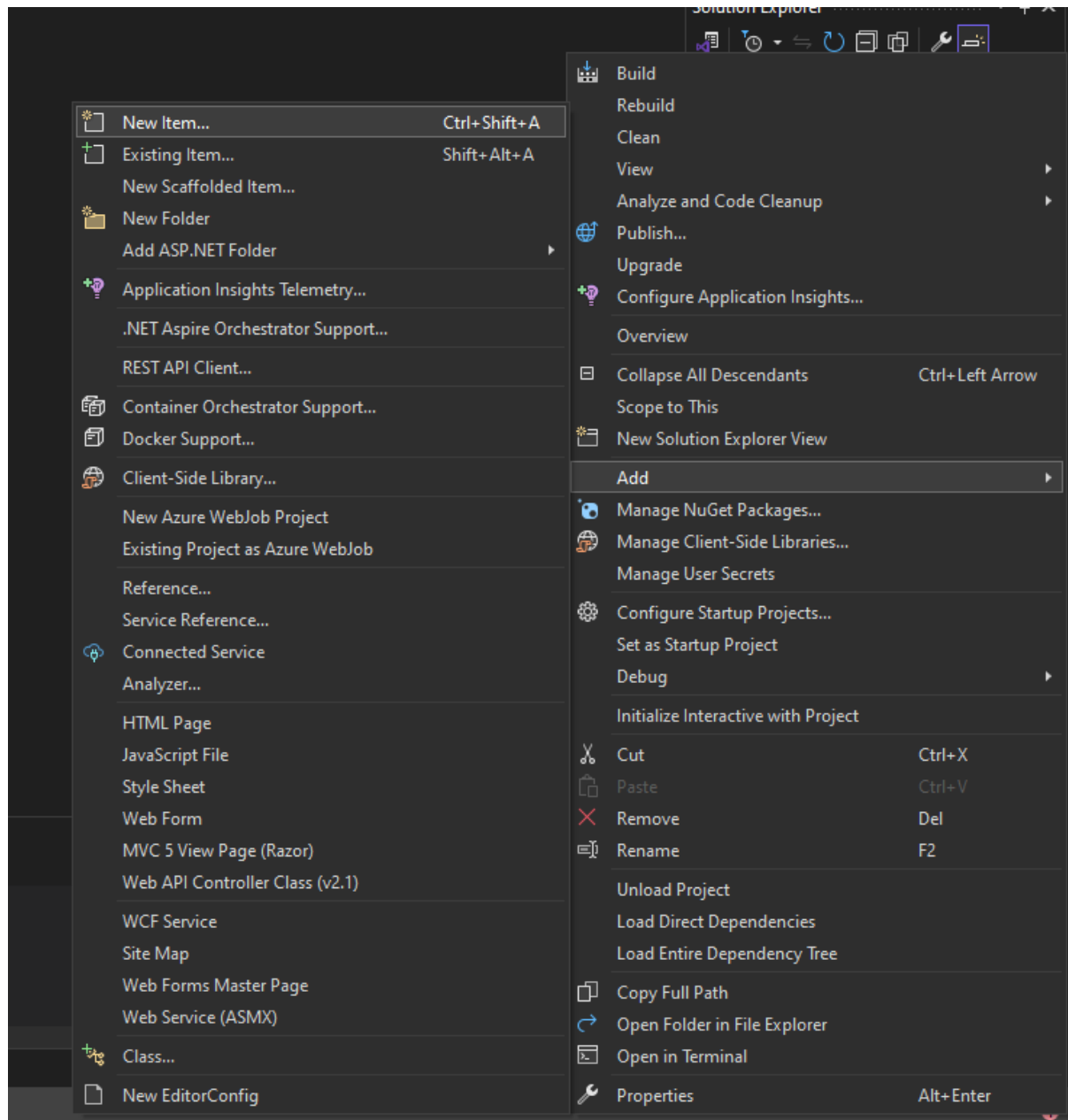
Time (years) [   ]

[Calculate]

Result

Calculate Simple Interest

Principal [2000   ]

Rate(%)   [10   ]

Time (years) [2   ]

[Calculate]

Result   Simple Intrest = 400.00

4. Create a WCF Web Service Using Database

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IstudDB.cs

```csharp
using System;
using System.Collections.Generic;
using System.Data;
using System.Linq;
using System.Runtime.Serialization;
using System.ServiceModel;
using System.Text;

namespace Service_DB
{
    // NOTE: You can use the "Rename" command on the "Refactor" menu to change the
    interface name "IstudDB" in both code and config file together.
    [ServiceContract]
    public interface IstudDB
    {
        [OperationContract]
        Employee GetEmp();
    }
    [DataContract]
    public class Employee
    {
        [DataMember]
        public DataTable EmpTable
        {
            get;
            set;
        }
```

```
        }
}
```

studDB.svc.cs

```csharp
using System;
using System.Collections.Generic;
using System.Data;
using System.Data.SqlClient;
using System.Linq;
using System.Runtime.Serialization;
using System.ServiceModel;
using System.Text;

namespace Service_DB
{
    // NOTE: You can use the "Rename" command on the "Refactor" menu to change the
class name "studDB" in code, svc and config file together.
    // NOTE: In order to launch WCF Test Client for testing this service, please
select studDB.svc or studDB.svc.cs at the Solution Explorer and start debugging.
    public class studDB : IstudDB
    {
        SqlConnection con;
        SqlDataAdapter ad;
        SqlCommand cmd;
        DataTable dt;
        Employee st = new Employee();

        public Employee GetEmp()
        {
            con = new SqlConnection(@"Data
Source=(LocalDB)\MSSQLLocalDB;AttachDbFilename=C:\Users\Admin\Documents\MCA.mdf;In
tegrated Security=True;Connect Timeout=30;");
            cmd = new SqlCommand("select * from [STUD]", con);
            ad = new SqlDataAdapter(cmd);
            dt = new DataTable("s");
            ad.Fill(dt);
            st.EmpTable = dt;
            return st;
        }
    }
}
```

Run this file
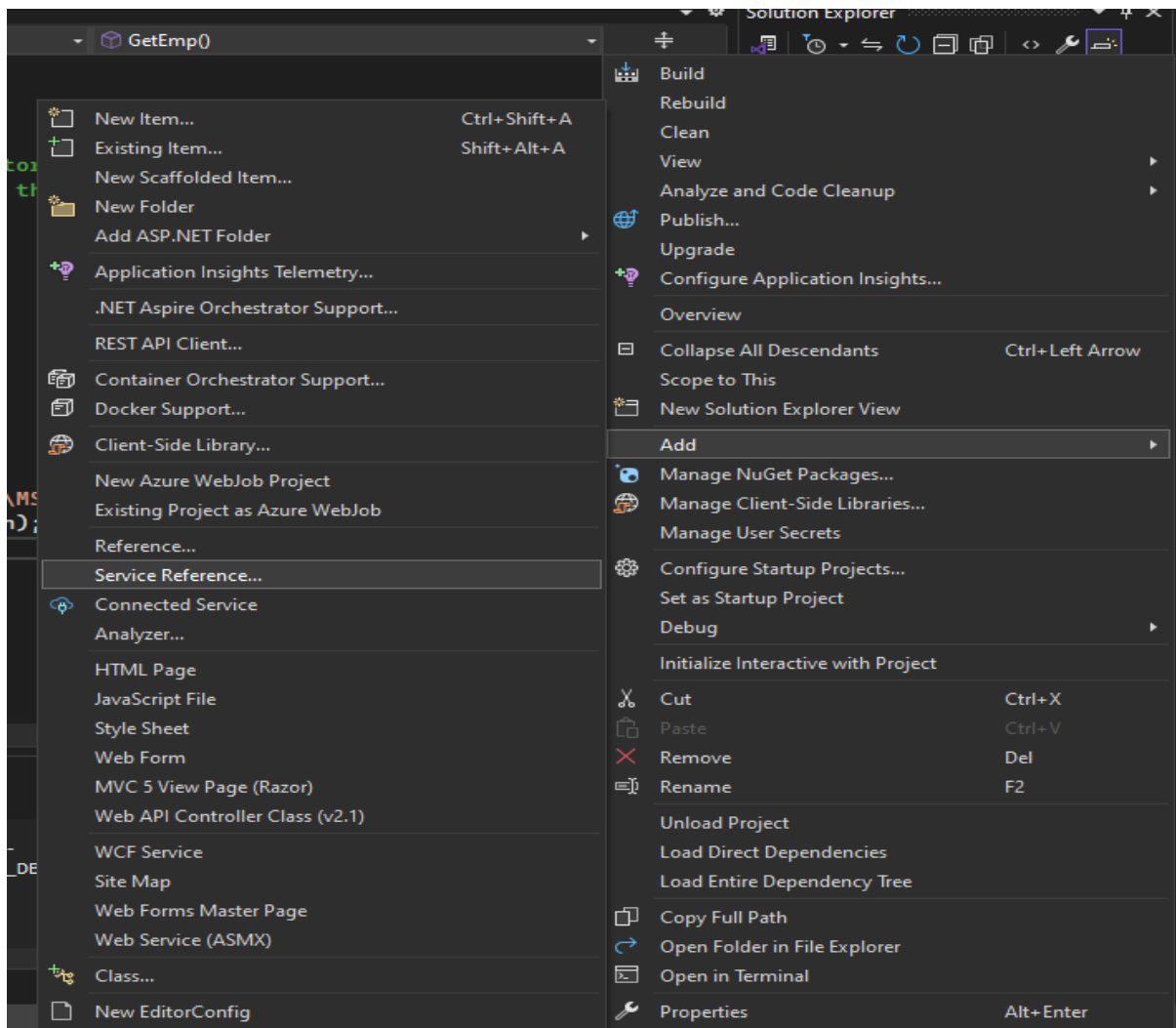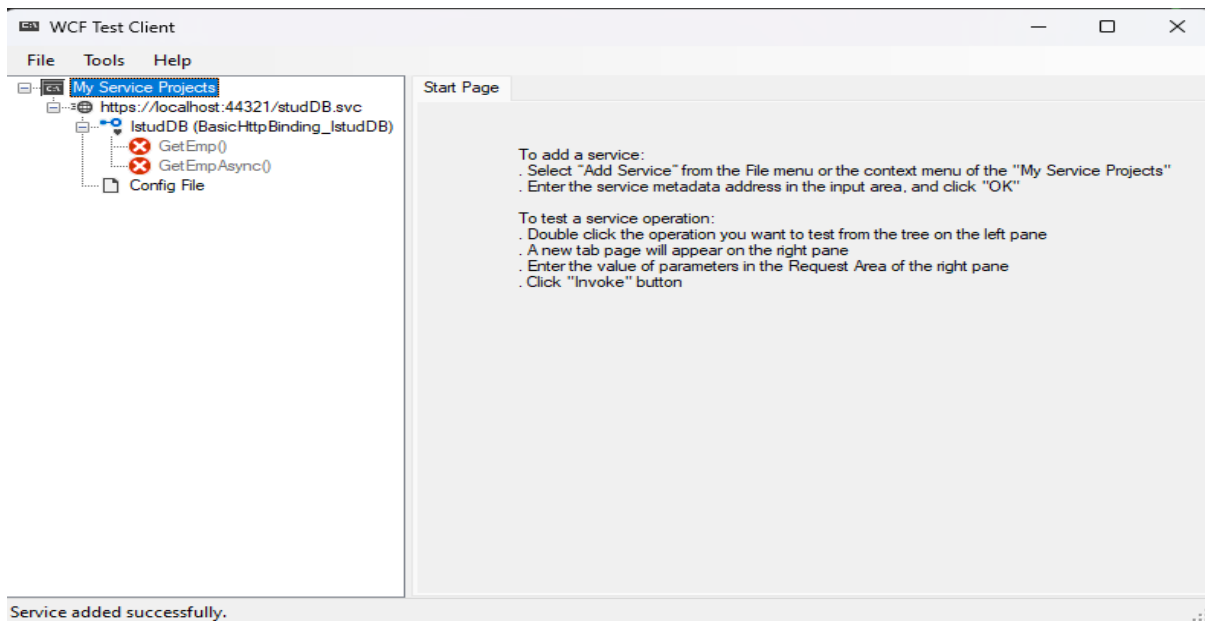
Add Service Reference   ?   ✕

To see a list of available services on a specific server, enter a service URL and click Go. To browse for available services, click Discover.

Address:

https://localhost:44321/studDB.svc   ⌄   Go | Discover ▾

Services: Operations:

▲ 🔳 studDB.svc   🔲 GetEmp
  ▲ ⚙ studDB
    °⚙ IstudDB

1 service(s) found at address 'https://localhost:44321/studDB.svc'.

Namespace:

ServiceReference2

Advanced...   OK   Cancel

---

studDBService.aspx.cs   **studDBService.aspx** ⊣ ✕ studDB.svc.cs   IstudDB.cs
[body]

Column0	Column1	Column2
abc	abc	abc
abc	abc	abc
abc	abc	abc
abc	abc	abc
abc	abc	abc

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Div: A   Roll No: 40

studDBService.aspx.cs

```csharp
using System;
using System.Collections.Generic;
using System.Data;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;

namespace Service_DB
{
    public partial class studDBService : System.Web.UI.Page
    {
        protected void Page_Load(object sender, EventArgs e)
        {
            ServiceReference1.IstudDBClient ob = new
ServiceReference1.IstudDBClient();
            ServiceReference1.Employee st = new ServiceReference1.Employee();
            st = ob.GetEmp();
            DataTable dt = new DataTable();
            dt = st.EmpTable;
            GridView1.DataSource = dt.DefaultView;
            GridView1.DataBind();
        }
    }
}
```

roll_no	name	marks
1	Raj	75
2	Amol	100