BUILDING APPLICATIONS OF XML WEB SERVICES

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Abstract:
The paper presents the development and application of XML Web Services using .NET technologies. The development of the XML Web Services will be presented in ASP.NET Web Matrix Project environment.

Keywords:
XML Web Services, ASP.NET Web Matrix Project, moving process

1. INTRODUCTION

This paper presents the development and application of XML Web Services using .NET technologies. The computing industry is converging on a new model for building software, this model enables a standard way of connecting software applications and exchanging information using the Internet. This new Internet-based integration methodology, called XML Web services enables applications, machines, and business processes to work together in ways never previously possible [1].

The development of the XML Web Services will be presented in ASP.NET Web Matrix Project environment. The design of the XML Web Services of moving process is illustrated. Through the use of a Web Service, we can easily create a solution of a moving process.

The paper is organized as follows:
- Section 1, Introduction.
- In Section 2, the general architecture of the ASP.NET XML Web Services is illustrated.
- Building ASP.NET Web Service using ASP.NET Web Matrix Project is given in Section 3.
- Conclusions are given in Section 4.

2. THE GENERAL ARCHITECTURE OF THE ASP.NET XML WEB SERVICES

The Internet is quickly evolving from today's Web sites to a next generation of programmable Web sites. These programmable Web sites become more than passively accessed sites - they become intelligent Web Services.

The CLR (Common Language Runtime) provides built-in support for creating Web Services. We build Web Services using open standards that allow client developers to create and interact with Web services from variety of sources. Using the XML, the data generated to and from your service is formatted in a standard way. Web Services provide the ability to share data with large variety of clients.

Web services and clients use the SOAP (Simple Object Access Protocol) when communicating with one another. SOAP allows a client to make a request to registered object on a server via standard internet protocols, such as HTTP.

With the advent of .NET, support for ASP.NET development has been fully integrated into Visual Studio .NET. It provides an extremely powerful and usable environment for ASP.NET development in the guise of Web Forms. The structure of the Visual Studio.NET environment is shown in Fig. 1.
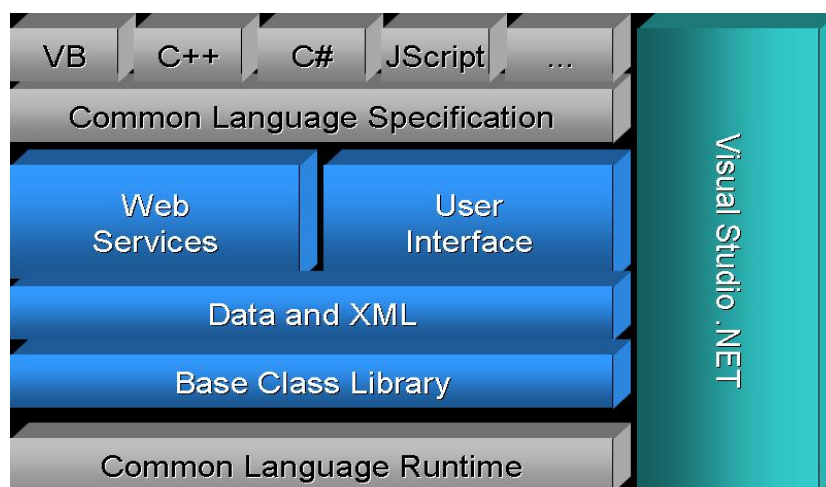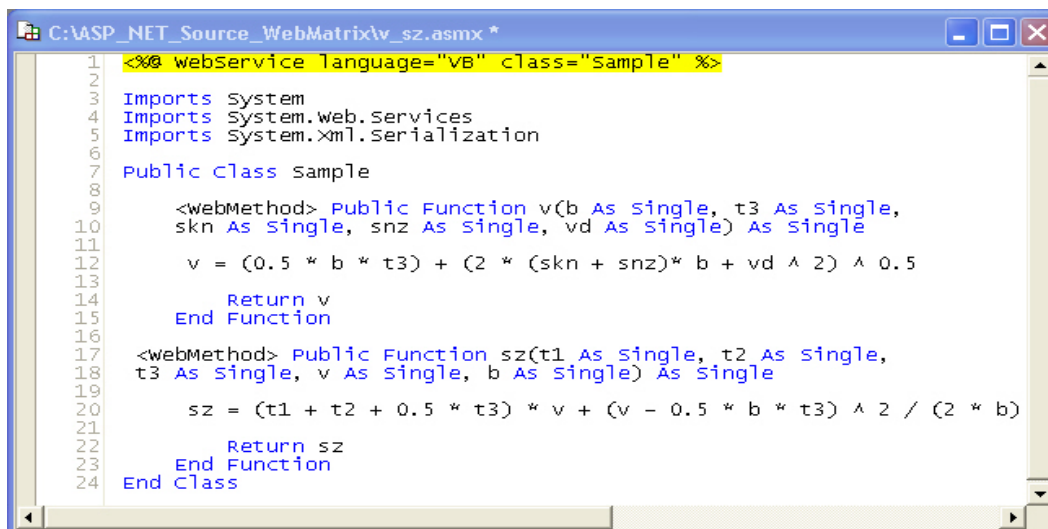

Fig. 1. *The structure of the Visual Studio.NET environment*

When we use Visual Studio.NET to create a XML Web Service, all components are built into a single Web Service project. Today Visual Studio.NET is joined by another MS product: ASP.NET Web Matrix Project. ASP.NET Web Matrix Project is just a simplified development environment for building ASP.NET applications, such as XML Web Services.

3. BUILDING XML WEB SERVICE USING ASP.NET WEB MATRIX PROJECT

ASP.NET provides support for XML Web Services with the .asmx file. This file (v_sz.asmx) starts with an ASP.NET directive <@**WebService**> using the language Visual Basic.NET. It imports the namespace System.Web.Services. We must include this namespace. Next, the class

Sample is declared. Finally, any methods that will be accessible as part of the service have the attribute **<WebMethod()>** in Visual Basic. The following code in Figure 2. shows a very simple v_sz.asmx file.

```
C:\ASP_NET_Source_WebMatrix\v_sz.asmx *

1   <%@ WebService language="VB" class="Sample" %>
2
3   Imports System
4   Imports System.Web.Services
5   Imports System.Xml.Serialization
6
7   Public Class Sample
8
9       <WebMethod> Public Function v(b As Single, t3 As Single,
10      skn As Single, snz As Single, vd As Single) As Single
11
12      v = (0.5 * b * t3) + (2 * (skn + snz)* b + vd ^ 2) ^ 0.5
13
14          Return v
15      End Function
16
17   <WebMethod> Public Function sz(t1 As Single, t2 As Single,
18    t3 As Single, v As Single, b As Single) As Single
19
20      sz = (t1 + t2 + 0.5 * t3) * v + (v – 0.5 * b * t3) ^ 2 / (2 * b)
21
22          Return sz
23      End Function
24   End Class
```

Fig. 2 *The code view of the v_sz.asmx file*

To make this service available we place the file v_sz.asmx on a server: http://localhost:8080/

inside a virtual directory. Then we save and run the XML Web Service. A dynamically generated page describing our XML Web Service will automatically appear in a new instance of our Web browser.
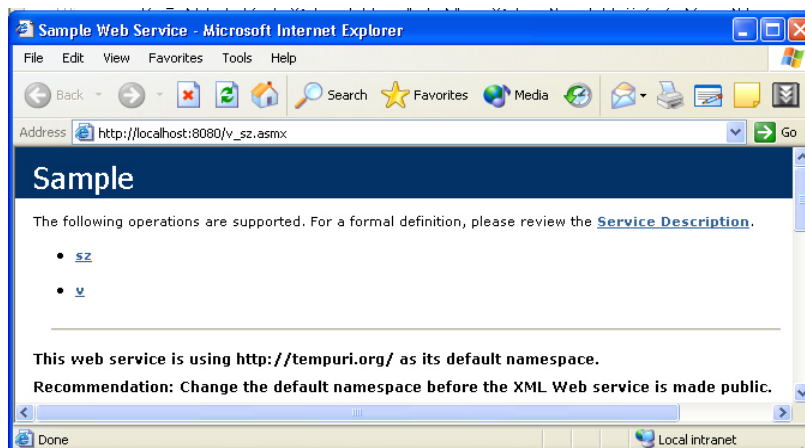
```
Sample Web Service - Microsoft Internet Explorer

File  Edit  View  Favorites  Tools  Help

Back        x  2        Search  Favorites  Media                

Address   http://localhost:8080/v_sz.asmx                        Go

Sample

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

    • sz

    • v

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.

Done                                                 Local intranet
```

Fig. 3 *The XML Web Service methods*

The resulting page would show the public methods for this Web service (Fig. 3), as well as which protocols (SOAP) we can use to invoke these methods (Fig. 4).

In Fig. 3 we will see the XML Web Service's HTML description file, containing two methods: sz and v. When we tested these methods, the XML Web Service will return an XML response of the solution of moving process in a new instance of our Web browser (Fig. 5).
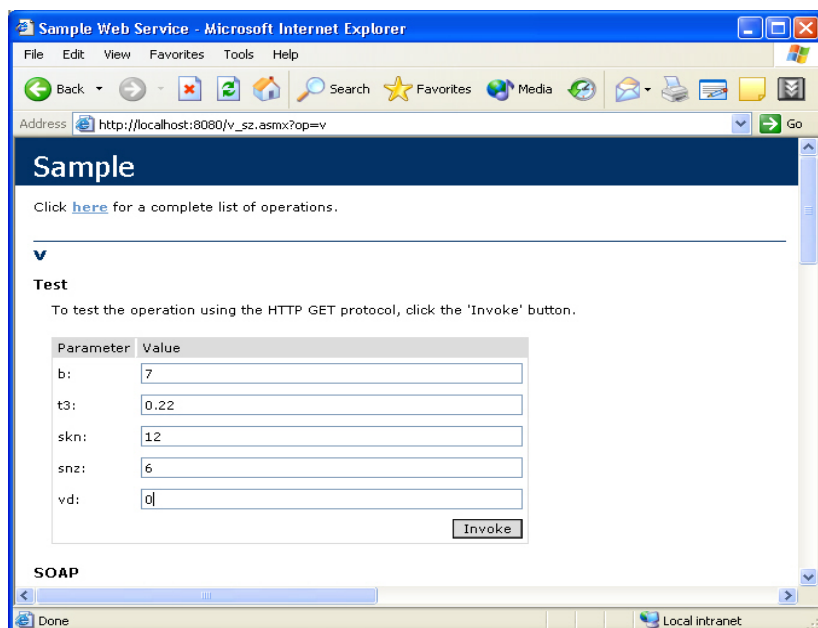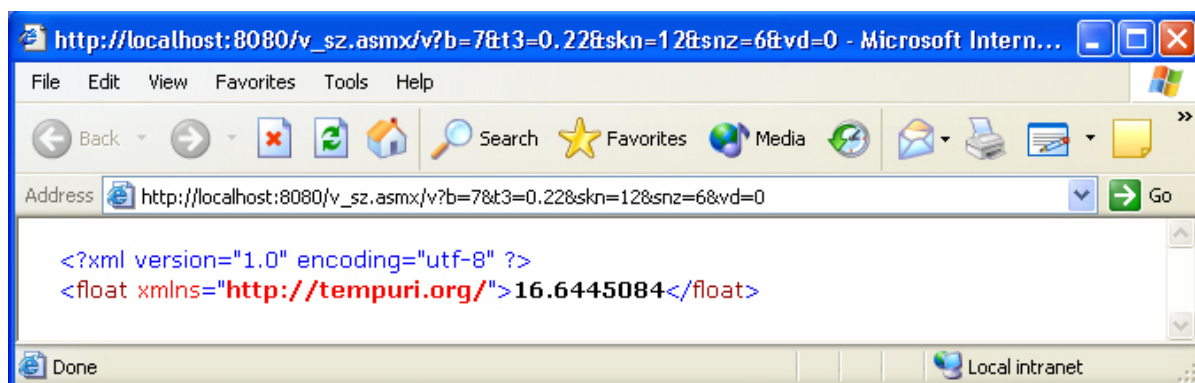
Fig. 4 *The test form*

Fig. 5 *The first solution of the moving process*

4. CONCLUSIONS

The paper presents the development and application of XML Web Services of the moving process using .NET technologies. The development of the XML Web Services will be presented in ASP.NET Web Matrix Project environment.

Web Matrix a powerful, intuitive, and extremely useful tool for creating web sites and web pages and provides support for developers to easily expose a SOAP-based XML Web Service.

5. REFERENCES

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