Web services are of two kinds:

Simple Object Access Protocol (SOAP) and Representational State Transfer (REST). SOAP defines a standard communication protocol (set of rules) specification for XML-based message exchange. SOAP uses different transport protocols, such as HTTP and SMTP(**Simple Mail Transfer Protocol**.)

A web service is a software system designed for interoperable interaction over a network.

Web Services are no more or less than distributed applications that runs across heterogeneous network using HTTP protocol and XML data formats  
A Web service client on one machine can call a service on a host machine some where across Internet without needing to worry about the

platform, language or vendor of that service

A web service is an abstract resource that provides a set of functions and is implemented by an agent, which sends and receives

messages.

A provider entity provides the functionality of a web service with a provider agent and a requester entity uses the web service

functionality with a requester agent.

Webservices are based on SOA

Web services implement various technologies, some of which are XML, SOAP, and WSDL.

XML is a standard format for data exchange. Web service requests and responses are sent as XML messages.

The elements and attributes that may be specified in an XML document are specified in an XML Schema.

SOAP(Simple Object Access Protocol) provides a standard framework for packaging and exchanging XML messages.

A web service is defined with a WSDL (Web Services Description Language) document, and other systems interact with the web service

using SOAP messages, transferred using HTTP with an XML serialization.

WSDL (Web Services Description Language) provide a way to describe their interfaces in enough detail to allow user to write a client

program to access the service

WSDL is an XML document in the http://schemas.xmlsoap.org/wsdl/ namespace for describing a web service as a set of endpoints operating on messages.

A WSDL document specifies the operations (methods) provided by a web service and the format of the XML messages.

WSDL elements

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definitions --->Root element of a WSDL document.

types ----> Specifies data type definitions for the messages exchanged by the web service. XML Schema is the recommended type system.

message ----> Defines the data being transmitted. A message consists of one or more parts. A part is associated with a type.

portType ---> Defines a set of operations and the input-output messages for each operation.

operation ---> An action (method) supported by the service. Each operation consists of input and output messages.

input ----> Specifies a message format for the request.

output ----> Specifies a message format for the response.

binding ----> Defines message format and protocol details for operations and messages for a particular portType.

service ---> Specifies a group of ports.

port ----> Defines an endpoint by associating an address with a binding.

Create a PHP Web Service

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Download nusoap from Internet

nusoap-0.7.3.zip

Extract the above file and copy nusoap.php and all other extracted files to your application folder

Server.php

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<?php

require\_once("nusoap.php");

$ns="http://localhost:8082/PHPProj49/nusoap";

$server = new soap\_server();

$server->configureWSDL('Nums',$ns);

$server->wsdl->schemaTargetNamespace=$ns;

$server->register('addNum',array('x'=>'xsd:int','y'=>'xsd:int'),array('return'=>'xsd:int'),$ns);

$server->register('subNum',array('a'=>'xsd:float','b'=>'xsd:float'),array('return'=>'xsd:float'),$ns);

function addNum($x,$y)

{

$res=$x+$y;

return new soapval('return','xsd:int',$res);

}

function subNum($a,$b)

{

$res=$a-$b;

return new soapval('return','xsd:float',$res);

}

$server->service($HTTP\_RAW\_POST\_DATA);

?>

Start Apache Server and run server.php program or

Open browser and use the following URL to get the WSDL document for the above service

http://localhost:8082/PHPProj49/Server.php?wsdl

The above web service's service endpoint is

http://localhost:8082/PHPProj49/Server.php

Design a C# Windows Application to consume the above web service

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Open Visual Studio > Create a C# Windows Application > Add a form

Add Web Reference [By right clicking on Project in Solutions Explorer ]:

http://localhost:8082/PHPProj49/Server.php?wsdl > Go

Web reference Name is : localhost

private void button1\_Click(object sender, EventArgs e)

{

localhost.Nums obj = new localhost.Nums();

int a=int.Parse(textBox1.Text);

int b=int.Parse(textBox2.Text);

int c = obj.addNum(a, b);

textBox3.Text = c.ToString();

}

Client.php

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<?php

require\_once('nusoap.php');

$wsdl="http://localhost:8082/PHPProj49/server.php?wsdl";

$client=new soap\_client($wsdl, 'wsdl');

$param=array('a'=>10,'b'=>20);

echo $client->call('addNum', $param);

?>

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