Lab 1: Hello, World Web Service

In this lab, you will write the "Hello, world" of Web services to get you started in Web services development.

For this lab only, you will work outside of the development environment to demonstrate how JDK version 6 supports JAX-WS Web services.

Objectives:

- To write a simple Web service
- To write a simple standalone Web service client

Part 1: Creating a Web Service

Steps:

_1. Ask your instructor for the following information:

Lab Installation directory: _____

RAD Installation directory: _____

If your computer has the standard lab setup on a computer running a version of Windows before Windows Vista, the directories are:

```
Lab Installation directory:   c:\websrvclass
RAD Installation directory:   C:\Program Files\IBM\SDP
```

If your computer is running Windows Vista, Windows 7 or later, the directory will be:

```
Lab Installation directory:   c:\Users\username\websrvclass
RAD Installation directory:   C:\Program Files\IBM\SDP
```

Note that you should substitute your actual user name for the "username" text above, e.g. "libtrain1".

_2. Use My Computer or Windows Explorer to navigate to the **{RAD Installation Directory}/jdk** directory,

Browse to the JDK's *bin* folder, then write down the full path to that folder here (and copy it to the clipboard to save typing later):

```
JDK bin folder path:    _____________________________________________________
```

The full path should be something like:

```
C:\Program Files\IBM\SDP\jdk\bin
```


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_3. Next, choose *Run* from the Windows Start menu and enter **cmd** to start a command-prompt window.

a. Set the Windows PATH in the command prompt to include the JDK's *bin* directory (you can paste from the clipboard for the JDK path):

```
set PATH=C:\Program Files\IBM\SDP\jdk\bin;%PATH%;
```

Be sure to substitute the path you noted in the last step.

b. Test your work so far:

```
javac -version
```

You should see the version of your JDK, which needs to be 1.6.0 or greater.

c. Change the current directory in the command prompt to a subdirectory in the **{Lab Installation Directory}**.

If your computer has Windows XP and the standard lab setup, enter:

```
c:
cd \websrvclass\lab01\server
```

If your computer has Windows Vista or later and the standard lab setup, enter:

```
c:
cd \Users\username\websrvclass\lab01\server
```

Be sure to substitute your actual user name.

_4. Use Notepad (or other editor) to create a new file named **HelloWorld.java**:

```
notepad service\HelloWorld.java
```

Complete the file by entering the following:

```
package service;

import javax.jws.*;

@WebService
public class HelloWorld
{
    public String hello(String name)
    {
        return "Hello, " + name;
    }
}
```

Be sure to save the file.

_5. Use Notepad (or other editor) to create a file named **HelloPublisher.java**:

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```
notepad service/HelloPublisher.java
```

Complete the file by entering the following:

```
package service;

import javax.xml.ws.*;

public class HelloPublisher
{
    public static void main(String[] args)
    {
       Endpoint.publish("http://localhost:8080/Hello",
           new HelloWorld());
       System.out.println("Service running...");
    }
}
```

Be sure to save the file.

_6. Compile the service code:

```
javac service\*.java
```

_7. Start the service:

```
java service.HelloPublisher
```

You should see a "Service running" message.

_8. Test that your service is running correctly by examining the service description (WSDL). Open a Web browser and navigate to:

```
http://localhost:8080/Hello?WSDL
```

You should see the XML for the service description. See if you can make any sense of it.

_9. Open a new command prompt window, then change to a directory in which you will write a client.

If your computer has Windows XP and the standard lab setup, enter:

```
c:
cd \websrvclass\lab01\client
```

If your computer has Windows Vista or later and the standard lab setup, enter:

```
c:
cd \Users\username\websrvclass\lab01\client
```


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Be sure to substitute your actual user name.

_10. In the new command prompt window, repeat the command you did in an earlier step to set the Windows PATH to include the JDK's *bin* directory.

_11. Generate a "stub" for your service from the WSDL:

```
wsimport http://localhost:8080/Hello?WSDL
```

_12. Examine the generated stub classes:

```
dir service
```

The **HelloWorld.class** file is a Java interface that represents the Web service. The **HelloWorldService.class** file is a Java class that acts as a "factory" for retrieving a stub object.

_13. Use Notepad (or other editor) to create a file named **HelloClient.java**:

```
notepad main\HelloClient.java
```

Complete HelloClient.java by entering the following:

```
package main;

import service.*;

public class HelloClient
{
   public static void main(String[] args)
   {
       HelloWorldService svc = new HelloWorldService();

       HelloWorld stub = svc.getHelloWorldPort();

       String reply = stub.hello("My name");
       System.out.println("Return from service: " + reply);
   }
}
```

Substitute your name for "My name".

_14. Compile your client:

```
javac main\*.java
```

_15. Run the client:

```
java main.HelloClient
```


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You should see the reply from the service.

_16. You can clean up by closing all of the command windows.

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