Web Services in .Net

This exercise introduces you to the development of simple Web Services in .NET.
For this exercise we will use the Windows 2003 Server `sandstorm.cs.ut.ee`

Creating a Web Service Client to a Remote Web Service

- Use Visual Studio to create a console application (C# or VB.NET)
  - Add a web reference (service reference in VS2008) to http://terraservice.net/TerraService2.asmx?WSDL
  - In your main method, create an instance of the `TerraService` proxy class (when using WCF and Visual Studio 2008, the name of the proxy class is `TerraServiceSoapClient` instread).
  - Create a `Place` object called `NY` and set its properties to "New York", "New York", "United States".
  - Invoke the `GetPlaceFacts` method of the service to retrieve a `PlaceFacts` object about New York.
  - Write out the type of place that it is and the longitude and latitude its centre.
  - Compile and test your application.

- Invoke the `GetTileMetaFromLonLatPt` method of the service, passing the centre of New York, a theme of `1` and a scale of `8` metres.
  - If the tile metadata indicates that the tile `exists`, invoke the `GetTile` method of the service to retrieve the `tileId` contained in the metadata.
  - Convert the byte array into a `System.Drawing.Image` using (you may have to add reference to `System.Drawing`):
    ```
    Image.FromStream(new System.IO.MemoryStream(tile))
    ```
  - Invoke the image's `save` method to write the image to a file.
  - Compile and test your application.

- Try out some other scales (1m – 512m), themes (1 or 2) and cities (North America only).

Creating a Web Service (using WSDL first approach) – WCF version

- Open a Visual Studio command prompt
  - Use the `svcutil` tool to generate a client interface for the WSDL file located at ITempConverter.wsdl
    (svcutil ITempConverter.wsdl /language:C#)

- Use Visual Studio to create a new WCF Service Application called `TemperatureConverter`.
  - Delete `IService1.cs` from the project.
  - Add the `ITempConverterService.cs` file (generated by svcutil) to the project.
  - Delete all but the `ITempConverter` interface from `ITempConverterService.cs`.
  - Remove the `GeneratedCodeAttribute` from the interface and return attributes from the methods.
  - Rename `Service1.svc` to `TempConverterService.svc`.
  - Right click on `web.config` to open WCF Service configuration dialog.

        - Change endpoint contracts to `iTempConverter` from `ITempConverterService`.
    - Modify the implementation of the Service:
        - Remove the methods in `TempConverterService`.
        - Change `IService1` with `ITempConverter` in the list of classes inherited by the service class.
        - Let Visual Studio implement the interface.
    - Implement the `CtoF` and `FtoC` methods:
        - F = C * 9/5 + 32
        - C = (F – 32) * 5/9
    - Compile and "test" your web service.
        - Do not create a client application – just test locally via web browser and wcftestclient (run from Visual Studio command prompt)

You can then deploy the Web service on the Sandstorm server by dropping the entire directory containing your Web site into `\\Inetpub\ESI\`***`YourLogin`*** on Sandstorm, and then check it by pointing your browser to:
http://sandstorm.cs.ut.ee:**PortNumber**/***YourLogin*** /TemperatureConverter.asmx

Creating a Web Service (using WSDL first approach) – version for VS.Net 2005

- Open a Visual Studio command prompt
    - Use the `wsdl` tool to generate a server interface for the WSDL file located at ITempConverter.wsdl
- Use Visual Studio to create a new Web Site containing an ASP.NET Web Service called `TemperatureConverter`.
    - Add the `ITempConverterserviceInterfaces.cs` file to the `App_Code` folder of the Visual Studio project
    - Modify the implementation of the Service:
        - Remove the constructor and `HelloWorld` method
        - Remove the attributes from the class.
        - Change the base class to `IITempConverterbinding`
        - Create `CtoF` and `FtoC` methods as defined in the interface.
    - Implement the `CtoF` and `FtoC` methods:
        - F = C * 9/5 + 32
        - C = (F – 32) * 5/9
    - Compile and "test" your web service.
        - Do not create a client application – just test locally via web browser

You can then deploy the Web service on the Sandstorm server by dropping the entire directory containing your Web site into `\\Inetpub\ESI\`***`YourLogin`*** on Sandstorm, and then check it by pointing your browser to:
http://sandstorm.cs.ut.ee: **PortNumber**/ YourLogin /TemperatureConverter.asmx
The "login" is your normal university login. The port number will be disclosed by the lab assistant during the tutorial.