

# Windows Communications Foundation Tutorial

**PDF:** <http://buchananweb.co.uk/wcf.pdf>

**Lecture:** [http://buchananweb.co.uk/e\\_presentations/dotnet\\_wfc/dotnet\\_wfc.htm](http://buchananweb.co.uk/e_presentations/dotnet_wfc/dotnet_wfc.htm)

- 1a.** In this tutorial we will create a service which will determine the capital of a country. First create a WCF Service Library which will act as the server. An outline of the code is:

```
using System;
using System.Collections.Generic;
using System.Text;
using System.ServiceModel;

namespace Tut1.Server
{
    [ServiceBehavior(InstanceContextMode = InstanceContextMode.PerCall)]
    class ServiceImplementation : Tut1.Contract.IService
    {
        public string GetCapital(string Country)
        {
            Console.WriteLine("Contacting server...");
            if (Country == "scotland") return ("edinburgh");
            else if (Country == "england") return ("london");
            return "Not known";
        }
    }
}

public class Program
{
    private static System.Threading.AutoResetEvent endServer = new
System.Threading.AutoResetEvent(false);

    public static void Main()
    {
        ServiceHost svh = new ServiceHost(typeof(ServiceImplementation));
        svh.AddServiceEndpoint(
            typeof(Tut1.Contract.IService),
            new NetTcpBinding(), "net.tcp://localhost:8080");
        svh.Open();

        Console.WriteLine("Server running");
        endServer.WaitOne();

        Console.WriteLine("Server shutting down");
        svh.Close();

        Console.WriteLine("Server stopped");
    }
}
```

```

public static void StopServer()
{
    endServer.Set();
}
}
}

```

**1b.** In the IService.cs file add code in the form of:

```

using System;
using System.Collections.Generic;
using System.Text;

using System.ServiceModel;

namespace Tut1.Contract
{
    [ServiceContract]
    public interface IService
    {
        [OperationContract]
        string GetCapital(string message);
    }
}

```

**1c.** Build the project, and note the DLL location created.

**1d.** Next create a Windows console application, and add the WCF DLL created in the first part of this tutorial. After this, add the code which can access the server, such as with:

```

using System;
using System.Collections.Generic;
using System.Text;
using System.ServiceModel;

namespace WCFSimple
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Calculate Capital - Simple WCF");
            // start server
            System.Threading.Thread myCountryServer = new
System.Threading.Thread(Tut1.Server.Program.Main);
            myCountryServer.IsBackground = true;
            myCountryServer.Start();
            System.Threading.Thread.Sleep(100); // give the server time to start

```

```
ChannelFactory<Tut1.Contract.IService> scf;
scf = new ChannelFactory<Tut1.Contract.IService>(
    new NetTcpBinding(),
    "net.tcp://localhost:8080");
Tut1.Contract.IService s;
s = scf.CreateChannel();
while (true)
{
    Console.Write("Enter a country: ");
    string country = Console.ReadLine();
    if (country == "") break;
    string capital = s.GetCapital(country);
    Console.WriteLine("The capital is " + capital);
}
(s as ICommunicationObject).Close();
// shutdown server
Tut1.Server.Program.StopServer();
}
}
```

- 1e.** Prove the operation of the program. Now add three services in the Service, which should either FindCapital(country), FindCountry(capital) and FindCurrency(country), where FindCapital() finds the capital city, FindCountry() finds the country of a certain capital, and FindCurrency() finds the currency of a certain country.
  
- 2a.** Create a Service which returns the number of prime numbers for a given range (FindNumberOfPrimes(start, end)) and also finds all the primes and returns as an ArrayList (FindPrimes(start,end)).