

Programming Skills (Design Patterns and C#)

CSCI-541 / CSCI-641

10/03/2013

Lab 3: Web Services T9 Messenger

Due Dates:

Part A: Monday, October 28, 2013 at 11:59pm

Part B: Monday, November 11, 2013 at 11:59pm

1 Goals

Familiarize yourself with:

- Fundamental ideas of rich internet applications (RIA)
- Silverlight - one of the current technologies for client side web technologies
- Dealing with a program that has local application services and remote web (HTTP/HTTPS) based services.

2 Overview

During Part A, you will be required to publish how your server is working. The specification should indicate what input your server is expecting and what output your server is giving back. You will NOT be publishing the code, just the dlls and other contract for your service. You will be allowed to download a 3rd party server and run it locally for testing. If you have questions on how the server should be behaving, you should contact the author of the service.

For Part B, you will be creating a client that connects to one of the servers A (not your own). You may also elect to support your own server that you wrote in Part A (though this will not count toward your grade). If you elect this option, you must provide the ability to switch servers either through the UI or a command line parameter.

The following items will apply to the server you select:

- No more than 2 people may select the same server
- You select a server by replying to the post indicating your intent to use it
- If you elect to change servers, you will be required to delete the post indicating your choice
- When posting your server, you will be required to give details on the architecture, the methods, and the expected performance

You will implement most of the functionality of the previous lab (T9 Texting) with changes to the application to split it between a client side (Silverlight app running in the browser) and a server side piece using Windows Communication Foundation (aka, Windows Communication Framework) web service on the server side. Additional requirements: will be listed below.

3 Requirements

Much like the previous lab, you will be required to have a toggle between predictive and non-predictive mode. In non-predictive mode, the client should be independent of the web service (it should work without an internet connection).

The set of legal words comes from a file [english-words.txt](#). You may find that it is prudent to shorten this list for testing purposes.

See the previous lab for information regarding the behavior of the buttons.

4 Design

How will you split up your architecture between the client and server side? There are many options, most having to do with the nature of the connection between the two sides. Two approaches that come to mind are transferring each key stroke across the network; another is to send complete digit sequences across. But remember that the display has to somehow be updated every time a button is pushed. Here are the design constraints within which you must work.

1. **The entire list of words must never exist on the client side.**
2. The mode toggle control must happen completely on the client side.

One of the most interesting challenges you will face is how to deal with the fact that Web Services, like any HTTP-based protocol, is at its fundamental level stateless.

It is also expected that you will utilize an official WCF Web Service for your server side.

Finally, you must also include a design document that explains the design decisions you made. The document should be in Adobe's Portable Document Format (.pdf). It should be approximately a page in length and include the following information.

- Which (whose) alternate server are you using
- What components exist on the client side
- What components exist on the server side
- Why you elected the server you did. What drove you to select it - note that, "It was the first in the list", or "there were no other choices" are not valid reasons.
- Why you designed your server the way you did, and who is using it.
- What, if any problems, did you encounter with using the server you selected.

Figures are optional. If you use them, you may go beyond one page.

Place this document in the home directory of your project so that it is easily included in the submission.

4.1 Helpful links

- [Silverlight Web Services](#)
- [WCF Sessions](#)

5 Submission

Part A is submitted to the myCourses Discussion forum (include an attachment), by the date indicated.

Part B is to be submitted by zipping (not RAR, not 7zip, or anything other new fangled format, just plain zip) your entire VisualStudio solution directory into a file named lab3.zip and putting it into the appropriate drop box in myCourses. This should include the executables for the alternate server.

6 Grading

There is a [rubric](#) available for this assignment, which you should review.