

Nutrition Database Project
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Mentor:

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1. INTRODUCTION

This summer I work with Prof Connelly in a nutrition database project. There are a lot of challenges and fun during this summer. I become a member of Security for Ubiquitous Resources Group (SURG). We focus on Sensors and processors embedded in the physical environment, Mobile devices and users, Collaborative applications, Context-aware (physical and virtual) applications and Non-technical users. The project I work is to allow patients with problems in eating and diet to easily record dietary information and allow patients to get information on their fluid and sodium intake assist researchers gain information about patient fluid and sodium compliance. As private consumers, businesses, or government have come to rely on the Internet for important daily tasks, the demand for web-based applications is almost everywhere. One of my major goals is to setup a web based application to help people who need information about nutrition access easily and also makes process easier for other developers from implementing appropriate strategies.

Easy use and access everywhere is my desire for this project. I begin my summer research from three ways. First I will setup web application, second make the application access by PDA and then you can call the service by phone. Wherever you

are or whenever you are, you can access the application easily, quickly and get feedback directly

The challenges I overcome when I am working on this project:

Web service setup

PDA application setup

Voice-XML

C#, MYSQL

The main contributions of this project include:

- allow patients with *special needs in food* to easily access food nutrition information
- assist researchers gain information about food nutrition

The simple users face of the application:

UPC

204 1 BOX Tic Tac Orange Mints 40 1.5 0 0g 0g 0mg 0mg

Name

5766 16 OZ TUB Dean's Sour Cream 15 60 50 5g 3.5g 20r

Web service application



PDA application

2. PROCEDURES

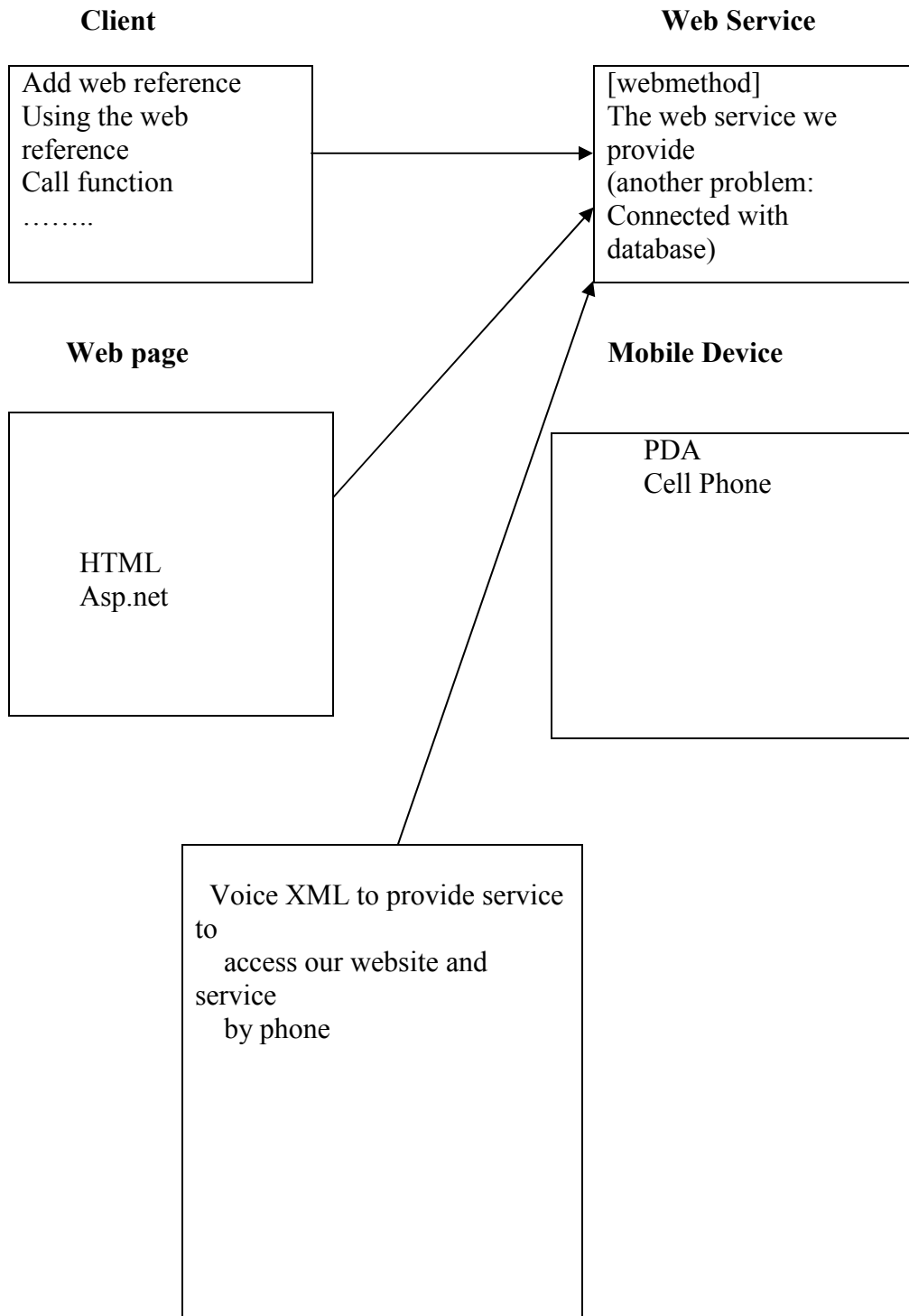
The first step I begin this project is to analysis what I should solve. I find several ways to access our core part – allow our client to access our database and provide corresponding service to help them easily and fast get the information they need. Considering that our client is not all high educated, our application must be easy to use and understand. I try to use the easiest ways we can imagine- Phone, PDA, and Internet.

There are three difficulties I met when I try to finish my project.

- Database connection problem
- Formatting problem

- PDA deploy and connected database problem

Under Prof Connelly's help I analysis the methods and then find solution for them.
This is the process flow of my project.



Other easy application access methods are waiting to explore!!!

Process Flow

We have UPC nutrition database. I setup a web service for clients to access the database and then deploy a web page to call the web service. In this part the key problem is database connection problem. ADO.NET has classes for making connections to a database. ADO.NET 1.x included only two: a connection for Microsoft SQL Server and another for connecting to OLEDB database. I prefer MYSQL, because its command is easy and structure is clear. By administrative tools – Data Sources (ODBC), I setup MYSQL ODBC 3.51 Driver and then connected with our database by our “typhoon” server. After it works, we still have connection problem. After I add DSN=”typhoon”, it works on local. But when I put my web application on our server “galway” it failed again. The reason is the configuration has some setting problem. After adding code,

```
<configuration>
```

```
  <add key="dsn" value="server=myserver;uid=myuser;pwd=Passw0rd!;database=MyDb" />
```

```
</configuration>
```

on configuration file, the problem is almost solved. And then I try to find the right IP address we should point to.

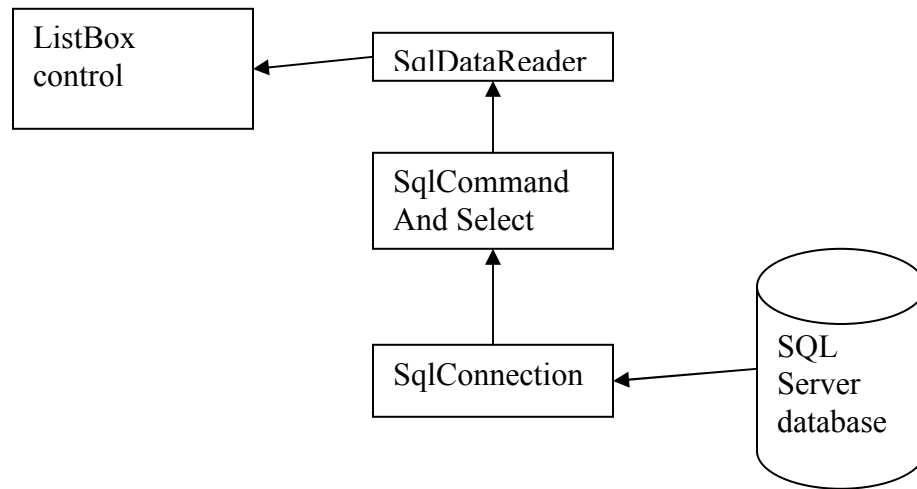
The application is easy to use.

- a. ask users to enter UPC
- b. connected to MYSQL database
- c. read data from MYSQL database
- d. format result
- e. show the result

We provide two kind of service one is to search database by UPC and another by Name. We also want to do a nutrition tree. When clients want to know some information about food, he or she can enter ice and then get all the information related ice. Just like Google search engine. About phone access database service

When clients can not access the database by the internet, they can dial our customers’ service number to access the database by phone directly. When Paul showed me the XML- voice project, I was really exciting. I did couple example project and get a solution that XML form of the W3C Speech Recognition Grammar Format is the best choice for our project. But we should not just limit one grammar, and Augmented BNF (ABNF) form of the W3C Speech Recognition Grammar Format, Nuance Grammar Specification Language (GSL) is also accessible. I feel sorry I do not finish it and if possible I will still work on this project in the future. For PDA application, Visual Studio is the best tool for me. It is the similar to how to call a web service on web page. In the formatting part, I prefer to use SqlDataReader and building a Dataset object. Dataset object is the core of data handling in ADO.NET.

This is the process follow:



3. CONCLUTION

During the summer I learned a lot about the web-application setup, web service setup and smart device application setup and at the same time learn the basics, both HTML and Asp.net, as well as mobile device techniques and details of the research process. Most part of my summer was spent learning about how to setup a web service and how to setup application on mobile device. I also got chance to install and run multiple applications, a process that taught me a lot how to organize application and how to code better. There will be a lot of work about this project in the future. The initial goal of my project, to create a website for the database that provides web service for clients who can enter UPC and then get all the nutrition information, Create a web service access application on PDA, and Create a web service access application by voice-XML. Because I am not familiar with C# and web service, it takes some time for me to learn some basic knowledge. However, this summer allows me to work on other aspects of the project and gain valuable experience in real research. This summer I also gained experience with MYSQL, CVS and writing technology report. DMP program make me involved in the real research process and also give me opportunity to see not only how computer science help people life become better and also how my desire become true and how I should improve my ability and skill.

REFERENCE:

Microsoft ASP.NET 2.0 Step by Step, George Shepherd, Microsoft Press
Microsoft .NET Compact Framework,
Andy Wigley and Stephen Wheelwright, Microsoft Press