

# A Web-Based Application for a Rug Cleaning Company

*Senior Project Proposal*

Spring 2002

<Student Name>

CSC 498

18 February 2002

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## **Summary**

I am designing a web-based application for use by the employees of a rug cleaning business. The company is broken down into several areas in which they offer cleaning: residential carpet cleaning, a 'cash & carry' counter where the customer can drop off area rugs for cleaning and receive a 20% discount, and a pick up and delivery service for area rugs. I would like to integrate each of these service lines into a single company wide program that shares a common, stable database. Integration will allow common financial reports to be run as well as common communication between the different areas of the company. I will begin by building an Oracle database and then attach a web-based front-end application built with Active Server Pages. The Oracle database will be a collection of tables to hold customer information (approx 70,000 clients), employee data (mainly commission information), service line data and descriptions, financial data, information about a particular work order/invoice for a certain customer and a schedule of the work to be done. The front-end will be an employee interface into these data sets. This interface will contain several 'areas' for employees to work in. Each area will be specific to an area of the business (C&C, location, or pick up & delivery) and contain a separate menu. From each menu, user will be able to create new work orders, look up in progress and finished work orders, access reports specific to each area, and view a schedule of work for any given day. Administrators will also have an area with a menu. This menu will contain a list of reports to help administrators keep track of commissions for individual employees, follow service lines to see which services are being purchased more or less frequently, and keep up with company wide sales goals and other financial data.

## **Significance**

This project will use many concepts from the Database and File Systems course. First the back-end of the project resides in an Oracle Database. The design and implementation of the database covers many topics discussed in this course: ER-diagrams and their transformation into the table structures and defined relationships in Oracle, as well as the SQL (structured query language) needed to implement the tables in Oracle. In addition the tables will have to be maintained throughout the project and kept up to date. The relationships that will exist between the tables to allow for financial reporting, commissions reporting, and scheduling will draw again on key topics such as entity relationship building also discussed in class. In addition, the front-end will be built with Active Server Pages using JavaScript, VBScript, and embedded SQL; each topics/languages used in the DBFS course. This part of the project will be along the same lines, though more involved, than the group project in the DBFS course. The group project dealt mostly with establishing communication with the database and building a few pages that ran queries on the database server. This project will make those communications and do much more involved updating, inserting and selecting from the database tables, as well as pull large amounts of data and do calculations to list daily, monthly and yearly revenue, in addition to other financial reports.

## **Required Tools and Availability**

This project needs several hardware and software components. The hardware needed includes a database server, a web server and a client PC. The database server will be *Jupiter* in the Linux lab. The web server to be used resides in Carl Singer's office. I presently have an Oracle account on *Jupiter* and a folder with the necessary permissions on Carl's web server. The software to be used includes Microsoft Visual InterDev 6.0, Oracle client, Internet Explorer, and Toad. InterDev 6.0 is on each of the computers in the Prevo Lab, as well as each of the computers in room 26. The Oracle client is also on each of these PCs (Carl is using room 26 for his DBFS class this semester and has plans to have the Oracle client installed on each of the PC's there soon). IE, or some web browsing software is on any computer I will use. Finally, Toad is shareware that can be used to edit tables and data in Oracle, it is GUI interface that is easier to use than SQL Plus – the software Oracle provides for the same purpose. Toad will be available in the CSC498 folder on the I: drive. The .exe file resides on Carl's PC and can be run over the network as long as the PC you are running it on has the Oracle client installed already.

## **Demonstration Plans**

Demonstration will take place in Room 26. I will use the administrator's PC to easily access the large screen. Using Internet Explorer I will be able to navigate to all of the pages in my application. For the best viewing of the application's table structures, relationships and the data that resides in the tables the Oracle Client needs to be installed on the this PC so I can use Toad to connect to my database. Carl is teaching the DBFS course in Room 26 and plans on having the Oracle Client added to these machines. Without the Oracle Client I could still use telnet to view the table structures and data.

## **Qualifications**

Last spring I work as a Technology Consultant at Andersen. I built a web-based application using JavaScript, VBScript and embedded SQL with a team of three other consultants. The project was divided into sections and I was in charge of an administrative section where partners would be able to edit and view jobs they were currently working on. I also worked on a project with a team of six in which we built a data warehouse. I helped build and maintain the database definitions throughout the project as well as did most of the data populating with a tool from Informatica called PowerMart. In addition, I took the DBFS course taught by Carl Singer that touched on database topics ranging from schema design and implementation to a look at web-based languages and technologies.

## **Project Specification**

This project is being specifically designed for use at a cleaning and restoration business in St. Louis. I have worked there for five years and have thought extensively about this type of application for use in this business. Presently this business is using a software package similar to the one I am going to build, but there are many aspects of the current system that are clumsy as it does not fit exactly with the way this particular business would like to operate. For example, each work order needs to be associated with several different dates: work dates, inspection dates, and payment dates. In the current system it is unclear which dates should be used for a particular purpose so that the revenue can be recognized on the correct day, and so that the job shows up on the schedule on the correct day. My main goal is to build a system custom specified to this particular business, so they do not have to work around a clumsy system to continue using their business rules and techniques. Another goal that I have is to get the large customer database of the company into a stable DBMS. Presently their data resides in an Access database, and the 70,000+ customers is too much for Access to handle efficiently and it is not reliable to have such a large set of data in Access.

### *Functional Specification*

There are two main components of this system: the Database back-end and the web-based front-end. The database will hold all of the data for front-end application. All operations performed on the database will be through the web-based user interface. The user interface will first require the user to login. And based on that login, the user will have different menus. C&C users will have options of finding an old work order or creating a new one, looking-up a customer, running a report, or viewing the schedule. Customer

Service Specialists will have all of these options except they won't be able to run reports. Accountants will have options of finding a work order, looking-up a customer, and running financial reports. Finally administrators will have options of looking up customers and work orders, running all of the reports, viewing the schedule, and viewing the commission reports.

After selecting one of these options the user will be guided into the specific engines that accomplish each of the previously mentioned tasks. These engines will be divided into different sections: a work order builder, work order finder, reporting engine, and scheduling area. The work order builder will allow employees to enter customer information, dates for when the work is to be done, descriptions of the articles that need cleaning, descriptions of the services to be performed, and bill and payment information. The work order finder will allow employees to look up a work order that has already been created. They will be able to look up the work order by entering the unique work order number or the customer's last name or phone number. The reporting engine will contain a combination of financial reports and other reports. The financial reports will be daily, weekly, monthly, and yearly revenue reports that will be divided among the departmental divisions on the company balance sheet. Other reports will be built to determine which services are being used more frequently, how many rugs are cleaned during a given time period, commissions reports, and lists of what customers have rugs due out the next day. (There is usually a week long turn-around for rug cleaning.) The scheduling area will allow customer service representatives to schedule a job while on the phone with a customer. The scheduling will be based on the size of the job and what time of the day the customer wants to have the work done.



### *Technical Details*

The database back-end will consist of many tables and relationships. (See Appendix A)

These tables will be populated in two different ways. First, I have the 70,000-client data set in an Excel spreadsheet that I will use to populate the customer table with names and address. Second, the smaller data sets will be entered manually. These data sets include employee names, service lists, and financial data.

## **Timeline**

### ***Checkpoint #1: (5 March)***

- I will show typed summaries of the interviews I conducted with the head accountant, customer service manager, and C&C manager at the cleaning business.
- I will demonstrate the table structures in Oracle using shareware called Toad that connects to databases and can show the entities and attributes of the tables.
- I will demonstrate the login screen with the four types of logins possible and include error checking.
- I will demonstrate (in toad) the SQL queries needed to do the following:
  - Log in
  - Search for a work order by last name or work order #
  - Update all of the contents of a work order
  - Add/update a work order on the schedule
  - Display a customer list of orders due out for a specific day
  - Display an employees commissions for a two week time period
  - Sales revenue for a day long time period
  - Daily receipts (money – cash, check, charge - taken in for a given day)
  - Adding a new customer
  - Display number of items a particular service was applied to

### ***Checkpoint #2: (19 March)***

- I will demonstrate adding these things to a generic work order:
  - Customer name, address, and phone numbers
  - Dates to be associated with the order (in/out dates)
  - Sales Rep associated with the order
  - Status
  - Item breakdown (including description, size, and current damages)
  - Selection of a service for each item and automatic pricing
  - Entering payment information
- Error checking will be included when the work order is submitted

- I will demonstrate using toad that the things added above have been added to the database.

***Checkpoint #3: (9 April)***

- I will demonstrate the differences between each of the work orders:
  - The C&C work order will have an in and ready date, one Sales Rep, and a specific place for the size of the rug
  - The location work order will only have a work date, but include a place for a Sales Rep, a Customer Service Rep, and the Cleaning Technician, and will have a place for the CSR to estimate the cost of the job as well as a button to use for scheduling the job
  - The route work order will have a pick-up and delivery date, a place for a Customer Service Rep and the Technician that gets the item, as well as the estimating feature and scheduling feature.
- I will demonstrate adding a job to the schedule using a location work order. This will include estimating the job first and picking a day when that size job will fit in the schedule of \$6,000 a day.

***Checkpoint #4: (16 April)***

- I will demonstrate the different reports that Administrators can run:
  - Commissions reports for individuals over a 2 week time period
  - A service line report that gives the total times that each service was used in a week or month
- I will demonstrate the different reports that C&C representatives can run:
  - Daily Receipts (breakdown of the money taken in for a day at the cash and carry counter)
  - Orders due out, list of customers that have rugs due out the next day that have a status other than done
- I will demonstrate the report that the Accountants will use:
  - Sales Revenue with the dollar amounts broken down into specific balance sheet accounts (daily, weekly, monthly)

## **Bibliography**

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## **Appendix A**

ER Diagram would be placed here.