DESIGN AND IMPLEMENTATION OF AN ONLINE DATABASE PANEL

Frenny Thomas
Design and Implementation of an Online Database Panel
by
Frenny Thomas

Honors Thesis
http://students.colstate.edu/thomas_frenny/thesis

Thesis Advisor: Dr. Stan Kurkovsky
Honors Coordinator: Dr. Barbara Hunt

********************************
9:30am - 10:45am
Monday July 22, 2002
Computer Science Dept. (FOB)
Main Office Conference Room
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I. Thesis Proposal

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HONS 4001 Project Proposal
By: Frenny Thomas
Mentor: Dr. Stan Kurkovsky

Project title/proposal:
Design and Implementation of an Online Database Panel
Sample application: newspaper content management system

Motivation:
There is a growing need for administrative panels such as the one described in this project. More and more website administrators wish to make changes to their online business without having to directly modify the database file. This project provides the perfect solution for this scenario by placing all database access on the World Wide Web. Administrators can now use this software to add, edit, and delete tables, fields, and records. Additionally, users will be able to generate queries without knowledge of Structured Query Language.

Rationale/significance:
This project acts as a summary of my computer science education at this university by requiring the following skills:

- Knowledge of HTML design and coding
- Experience in planning and designing software projects
- Database planning, design, and usage
- Knowledge of VBScript to code Active Server Pages (ASP)
- Use of Javascript for client-side data validation
- Practice in SQL generation and use of Recordsets

Target Users:
Website administrators who require online access to databases, thereby allowing instantaneous content modification.

Goals/Objectives:
To implement a user-friendly online interface that functions exactly as Microsoft Access 2000. This involves the creation and manipulation of tables, fields, and records. It requires the knowledge of internal functions within the Microsoft.Jet.OLEDB.4.0 Provider to create SQL instructions, as well as the ability to create and display Recordsets in an efficient and accurate manner.

In addition to being able to manipulate data, the online panel must also be able to display the data in any modified format as designed by the user. Therefore the panel must pose a series of questions regarding the desired results, and convert the request into one SQL query. This may involve the use of Session objects as well.

Comments or suggestions for the proposed method of implementation:
In its commencement, the project will simply function as an online interface surrounding an empty Access database. Then through links on a navigation menu, users will have the choice to manipulate tables, fields, and/or records on this project. Once the panel is completely able to modify an Access database through its interface, a fictional newspaper’s administrative panel will be designed to implement this project. The newspaper panel will run the features of this panel once login authentication has been completed.
This project will include the use of FrontPage 2000 and Notepad for HTML & Graphical design, MS Access 2000 for database applications, and Visual Interdev for ASP coding.

**Sample Application:**
For future purposes, this project can serve as a model for an administrative panel for the Book Bulletin (students.colstate.edu/causa/books) – a service for CSU students to post their used textbooks for sale. To keep the Book Bulletin running without erroneous data, it is essential that future administrators of the Honoris Causa website be able to view, update, and delete entries in the Book Bulletin database. An online administrative panel must be user-friendly and simple so that one does not have to have extensive technical knowledge to use the system.

**Proposed Project Schedule**

*Note: Each checkpoint will test and verify the functionality listed on the previous period*

<table>
<thead>
<tr>
<th>Date</th>
<th>Task Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 3</td>
<td>Allocate folders and empty Access database file on CSU web space; prepare website for project</td>
</tr>
<tr>
<td>May 3 - 15</td>
<td>Forming a Table: Research and implement internal Access functions to create a table with user’s field specifications</td>
</tr>
<tr>
<td>May 15</td>
<td>Checkpoint with mentor</td>
</tr>
<tr>
<td>May 15 – May 29</td>
<td>Modifying Tables: implement options to add/edit/delete fields, change primary key, rename and drop tables.</td>
</tr>
<tr>
<td>May 29</td>
<td>Checkpoint with mentor</td>
</tr>
<tr>
<td>May 29 – June 12</td>
<td>Adding Records: implement ability to add, edit, and delete records in any selected table.</td>
</tr>
<tr>
<td>June 12</td>
<td>Checkpoint with mentor</td>
</tr>
<tr>
<td>June 12 – June 26</td>
<td>Query Generation: produce SQL queries through a series of simple questions.</td>
</tr>
<tr>
<td>June 26</td>
<td>Checkpoint with mentor</td>
</tr>
<tr>
<td>June 26 – July 10</td>
<td>Practical application: Newspaper administrative panel that implements all previous functionalities</td>
</tr>
<tr>
<td>July 10 – July 15</td>
<td>Revisions and corrections made to project with mentor</td>
</tr>
<tr>
<td>July 15</td>
<td>Submission of final project to mentor</td>
</tr>
<tr>
<td></td>
<td>Arranging of Honors thesis panel</td>
</tr>
<tr>
<td>July 22</td>
<td>Oral Defense presented to Thesis panel</td>
</tr>
<tr>
<td>July 23 – 29</td>
<td>Revisions (if any) made on final Thesis</td>
</tr>
<tr>
<td>July 29</td>
<td>Submission of Thesis copies to library and Dr. Hunt</td>
</tr>
</tbody>
</table>
HONS 4001
Honors Thesis Oral Defense

July 22, 2002
By: Frenny Thomas

What is an Honors Thesis?

- Senior in the Honors Program
- HONS 4001
  - Study an approved topic or
  - Create a project to accomplish some computing task
- Result = A software project to be presented and defended in an oral defense
- Copies placed in the Simon Schwob Library and/or on the CSU Honors Program website

The Book Bulletin

- Independent Study Project
- An online service for students to post and search for used textbooks
- Skills involved
  - Database access
  - Table design
  - Record management

http://students.colstate.edu/causa/books

Some Key Terms

- **Database** = A structure that holds all data relating to a particular purpose Ex. NorthWind
- **Table** = An entity that actually holds the data and is defined by a particular structure Ex. Customers
- **Field/Column** = An element of a table record Ex. Email
- **Record** = The primary unit of information contained in a table
- **Primary Key** = The field that uniquely identifies each record Ex. SSN

<table>
<thead>
<tr>
<th>SSN</th>
<th>Name</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>200325235</td>
<td>Sandra Connor</td>
<td>sc <a href="mailto:Connor@yahoo.com">Connor@yahoo.com</a></td>
</tr>
<tr>
<td>201304135</td>
<td>David Hardy</td>
<td><a href="mailto:David@hotmail.com">David@hotmail.com</a></td>
</tr>
<tr>
<td>210025142</td>
<td>Laura James</td>
<td><a href="mailto:Ljames@colstate.com">Ljames@colstate.com</a></td>
</tr>
</tbody>
</table>
The Plan

- **Motivation**
  - Online database access for web administrators to keep their sites "up-to-date"
  - Stored data presented without Server-Side scripting knowledge
  - Dynamic generation of queries

- **Objectives**
  - A web-based interface to Microsoft Access® 2000
  - Newspaper content management system

Part I: Access 2000 Interface

- **Tables**
  - Create/Rename/Delete

- **Fields**
  - Add/Edit/Delete any number of Fields
  - Set Access 2000 data types
  - Primary Keys
  - ADOX – Extended ADO

- **Records**
  - Add records according to listed data type
  - View only specified fields within a table
  - Edit if Primary Key specified
  - Delete from Edit mode

Project Tools

- HTML
- Software Project experience
- Database design
- JavaScript
- Active Server Pages (VBScript)
- SQL

- Access 2000
- Visual Interdev
- FrontPage 2000
- Adobe Photoshop 6.0
- WS_FTP

Part I: Access 2000 Interface (contd..)

- **SQL**
  - Columns
  - Tables
  - Other specifications

** Results in table format showing only selected fields
Part II: Online Newspaper

Entity Relationship Diagram

Part II: Online Newspaper

PseudoASP Guidelines

1 Field of 1 Record
At least one Field specification required
Submission method
  Cut & paste (requires filename)
  Upload
Templates saved in database table
Demo

Online Newspaper

students.colstate.edu/thomas_tecronymysis

Any Questions?

Conclusion

- Accomplishments
  - A web-based tool for database management
  - An online newspaper composed entirely from the PseudoASP template processor
- Future Uses
  - Book Bulletin administrative panel

The End
**Step # 1**

- Open up Internet Explorer on your computer
- Type in [http://students.colstate.edu/thomas_frenny/thesis](http://students.colstate.edu/thomas_frenny/thesis) as the URL destination

**Note:** After July 31, 2002, the URL will be renamed to [http://studentwebs.colstate.edu/thomas_frenny/thesis](http://studentwebs.colstate.edu/thomas_frenny/thesis)
Step # 2

- Click the “Tables” Link on the top navigational bar
- Click on the “Add New” button to create a table
Step # 3

- Type "Customers" as the Table Name
- Type the number "3" into the # of Fields, then hit the "Update!" button (The 3 field areas will appear below)
- Provide 3 Field names and specify field types. Check the box(es) next to the field(s) you wish to set as a primary key field(s).
- Click the "Create Table" button to create the specified table
Step # 4

- A confirmation message will appear on the main "Tables" page, and the table "Customers" will appear in the list of existing tables.
- Click the "Edit" button beside the "Customers" table to redefine the Table specifications.
Step # 5

- All the fields within the "Customers" table will be displayed.
- Additional fields can be added by specifying the desired number below, clicking the "Generate" button, completing the field names and data types, and clicking the "Add Fields" button to complete the process.
- Change the Field Name "Name" to "LName" and click the Update button.
- A confirmation message will appear on the same page and the field name will have been permanently changed.
Step # 6

- Click on the "Records" link on the top navigational bar
- Click on the "Add" link beside the "Customers" table to add 1 record to the entity
Step # 7

- A Record layout will be displayed for the Customers table; including Field Names and Field data types as guides
- Fill in all the fields and click the "Submit" button to create the first record
Step # 8

- A confirmation message will appear on the Records main menu.
- Click on the "View" link beside the "Customers" table to view & edit the previous record.
Step # 9

- Before viewing all records, you must specify which fields you’d like to see from the table Customers.
- Place a checkmark next to each field you’d like to see in the results.
- Click the “View Records” button.
Step # 10

- The following page will display all the records within the "Customers" table customized by the previously selected fields
- A radio button will appear beside each record
- To Edit the 1st record, click the "Modify Selected Record" button while the first record is selected
Step # 11

- The following page will display the previously selected record in Edit mode, as well as guides to each Field data type
- Change the Email value to "pjohn@msn.com"
- Click the "Update" button. A confirmation message will appear on the Main Records page
Step # 12

- Click the "SQL" link on the top navigational bar
- Fill in a SQL query to retrieve all the records within the "Customers" table
- Click the "Submit" button
Step # 13

- Query Results as well as a record count will be shown on the following page

<table>
<thead>
<tr>
<th>Email</th>
<th>LName</th>
<th>SSN</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="mailto:pjohn@msn.com">pjohn@msn.com</a></td>
<td>John</td>
<td>123456789</td>
</tr>
</tbody>
</table>
Step # 14

- Click the "HTML" link on the top navigational bar
- Type (or Cut & Paste) a general html page into the large text area.
- Use the HTML and PseudoASP guidelines to display the "Email" value for a record in the "Customers" table which has a LName of "John"
- Provide a filename of "demo.asp"
- Click the "Submit" button

```
<html>
<body>
<h1>Good Morning Panelists!</h1>
<p>The following is a value from Customers</p>
<p><font color="purple">Email</font></p>
</body>
</html>
```
Step # 15

- A preview of the submitted HTML will be shown on the next page
- Click on the link up top to “Save it for later”

Good Morning Panelists!

The following is a value from Customers

pjohn@msn.com
Step # 16

- A confirmation message will be displayed on the next page
- There will also be a list of all the previously submitted files and their details
- (Notice the "demo.asp" file at the bottom)
- Click on the "Online Newspaper" button to view the fictional newspaper previously generated
Step # 17

- The cover page of the Cougar Report will be displayed
- Click on the "demo.asp" link on the left navigational bar (it had been previously hard-coded into the cover page)
Step # 18

- The recently created “demo.asp” file will be displayed with current information from the “Customers” table.

Good Morning Panelists!

The following is a value from Customers:

pjohn@msn.com
Step # 19

- Click on the “Sports” section to view all the authors and their articles within this category.
Step # 20

- Click on any one of the article titles to read the content and view (if any) accompanying photos

OAKLAND -- After closing the first half of the regular season with seven straight one-run games, the A's could use a few days off before they attempt to duplicate their second-half heroics of last season. "It's been a tough week, but it's been a tough season," All-Star left-hander Barry Zito said. "It's a good time for everybody to get some time off." After a three-day break to relax and recharge while Zito and shortstop Miguel Tejada go to Milwaukee for the All-Star Game, the A's seem destined for another exciting playoff chase. They got in shape for it last...
References


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A Thesis Submitted in Partial Fulfillment of
Requirements of the CSU Honors Program

For Honors in the degree of
Bachelor of Science
in
Computer Science,
College of Science,
Columbus State University

Thesis Advisor

Date 7/22/02

Committee Member

Date 7/22/02

Committee Member

Date 7/22/02

CSU Honors Committee Member

Date 7/22/02

Coordinator, Honors Program

Date 7/22/02