

Teaching Tip

Web Survey Design in ASP.Net 2.0: A Simple Task with One Line of Code

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ABSTRACT

Over the past few years, more and more companies have been investing in electronic commerce (EC) by designing and implementing Web-based applications. In the world of practice, the importance of using Web technology to reach individual customers has been presented by many researchers. This paper presents an easy way of conducting marketing research for a Web-based survey in Microsoft Visual Studio 2005. The approach described in this paper helps students to fully understand Three-Tier design architecture, which requires only a single line of code when developing a Web-based survey in ASP.Net 2.0. The paper concludes with a discussion of "lessons learned" and suggestions for effectively teaching a questionnaire survey design in an EC design course.

Keywords: Survey, Design, ASP.Net, Electronic Commerce, Three-Tier Architecture

1. INTRODUCTION

Electronic commerce (EC) has allowed business organizations to enhance their economic growth, reduce barriers to market entry, improve efficiency and effectiveness, keep inventories lean, and reduce cost (Hof and Hamm, 2002). More and more firms go online to engage business transactions using the Internet and Web technology. Research indicates that EC will continue to grow and the number of Internet users worldwide was over 1 billion as of August 2006 (internetworldstats.com, 2006). This represents more than one sixth of the total world populations are Internet users. Indeed, EC is now the reality of our daily life. An important characteristic of the Web-based EC activities is its electronic communication to support the interaction between business enterprises and their consumers (Laudon and Traver, 2006). This two-way, on-line communication between consumers and businesses strongly facilitates building real-time, one-to-one relationship. Therefore, there exists a strong appeal to teach students the online survey design technique in an EC design course.

2. THE TEACHING APPROACH

A semester long e-commerce course taught in the summer of 2006 at a large mid-western university was used for this teaching strategy. It emphasized on Web-based application design using ASP.Net 2.0 technology. ASP.Net 2.0 is the latest server-based technology from Microsoft Visual Studio

2005 development platform, which is designed to create interactive and dynamic HTML pages for a Web site. Web developers typically use either Visual Basic or C# programming language for the ASP page design in a Visual Studio environment. One of the biggest advantages of using ASP.Net 2.0 for Web page design is its simplicity. Microsoft claims that tools and objects provided in Visual Studio 2005 help ASP.Net 2.0 reduce up to 70% of code, when compared with previous version of its ASP technology for Web development work (Hart, Kauffman, Sussman, and Ullman, 2006). This allowed the students much more opportunities to explore EC application design activities and dramatically reduced code writing time and efforts.

The students, who were at graduate level majoring in Management Information Systems (MIS), were first introduced to the Three-Tier Architecture for Web application development. The Three-Tier Architecture has become popular today because it splits an application's functionality into three separate logical tiers: presentation, business, and data (Darie and Watson, 2006). The students learned that they should follow this architecture for a Web-based application development which to focus on graphic interface (UI) design in the presentation tier, to concentrate on application logic which handling receiving requests from the presentation tier and returning a result back to the presentation tier based on the business logic contained in the business tier, and to handle data storage and data access to send data to the business tier when requested in the data tier. Figure 1 shows the Three-Tier Architecture.

In the class, the students were asked to complete a lab exercise for an online survey design in ASP.Net 2.0 by following the principle of Three-Tier Architecture. Figure 2 shows the screen of the online survey design form in Visual Studio 2005. The survey questions were embedded into the radio button controls in the ASP.Net Web form. Respondents can fill in answers by clicking on appropriate boxes and then submit their responses to a Web server, which is used to administrate the survey. All respondents' inputs were stored

into a relational database. In this exercise, the students created a *survey* table in a remote Microsoft SQL Server database for the data tier logic. Then, they concentrated on developing a professional UI of the survey form for the presentation tier. They also carefully named the radio button controls for each survey question to make sure there is no ambiguity for matching correspondence field names in the *survey* table.

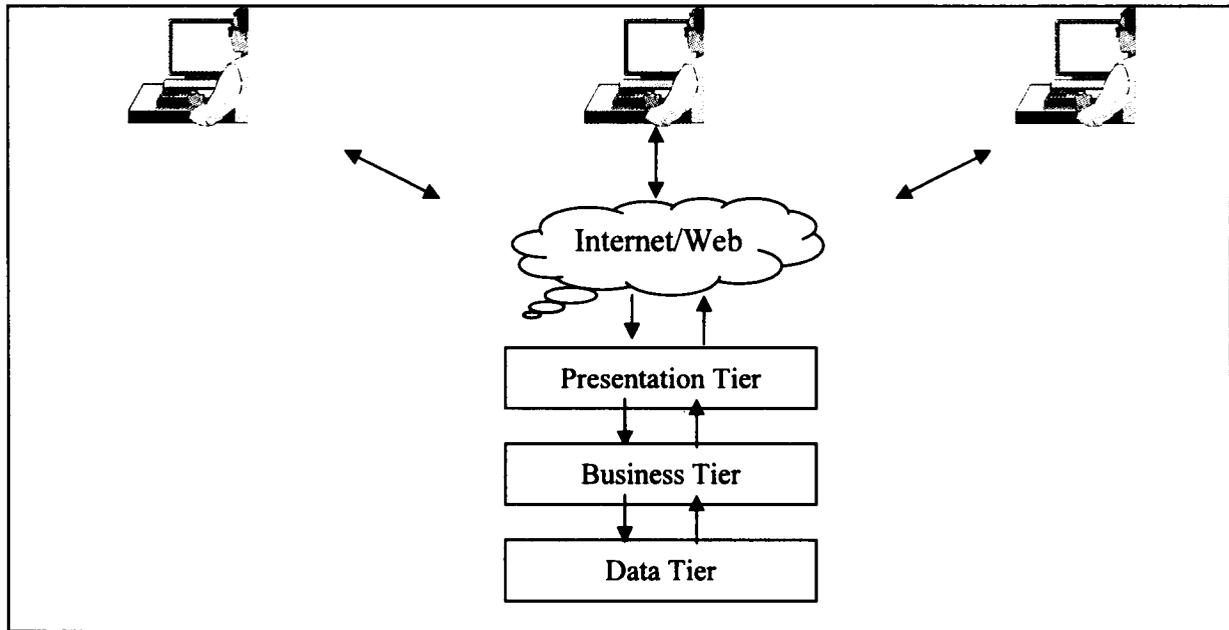


Figure 1. Three-Tier Architecture in a Web-based Application Design

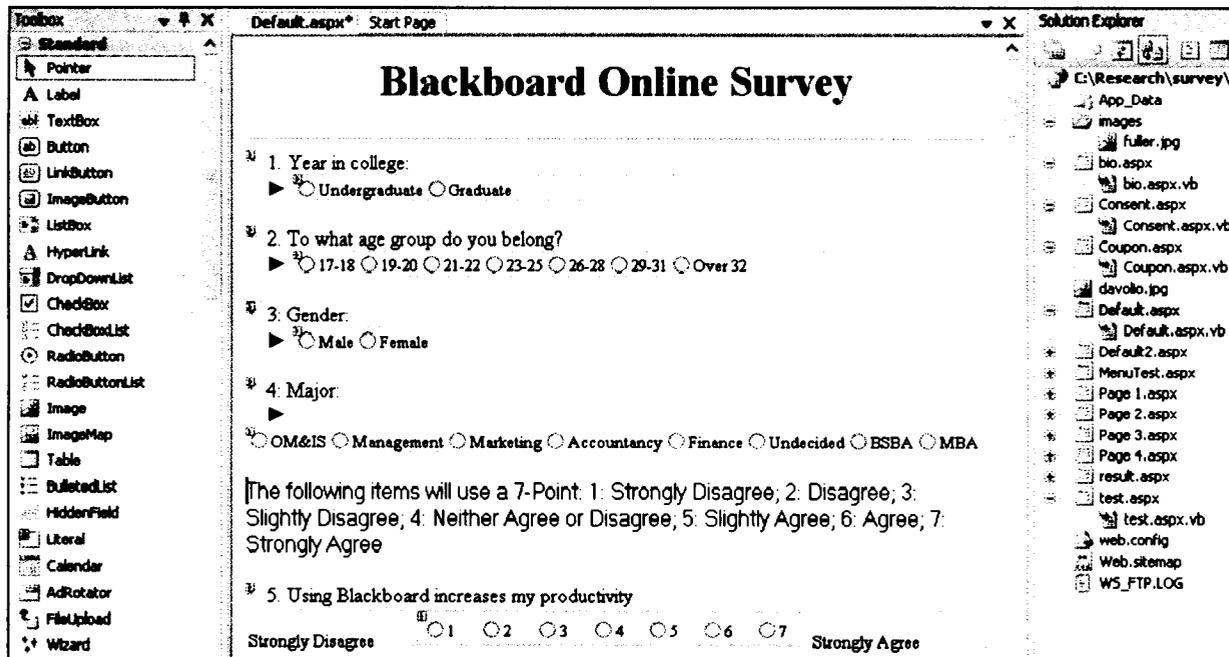


Figure 2. The Online Survey Example

All students were excited when they were informed that only one line of code is needed for handling data submission to the database table in the business tier. In doing this, they first dragged a SqlDataSource control to the survey form in the ASP.Net design.

Then, they learned to configure the SqlDataSource as shown in Figure 3 to select all fields in the *survey* table (Note: SqlDataSource1 was the id for the control). In addition, the "Advanced" button should be checked when configuring the SqlDataSource to include the "Insert" function as displayed in Figure 4. After this, they switched to Source View in Visual Studio platform and modify the set of <InsertParameters> tags.

Figure 5 shows that the students needed to match all control objects for the questionnaire questions to the table fields in the <InsertParameters> tags. Control parameter elements were used to bind the value of a control property, such as *SelectedValue* or *SelectedIndex*, to a parameter used in a parameterized SQL query. For example, a radio button control named "college" would send a user selected value of that control to the "year" data field in the backend *survey* table. At the end, the students were instructed to add one command line of `SqlDataSource1.Insert` for the Button_Click event of the submit button to complete the task.

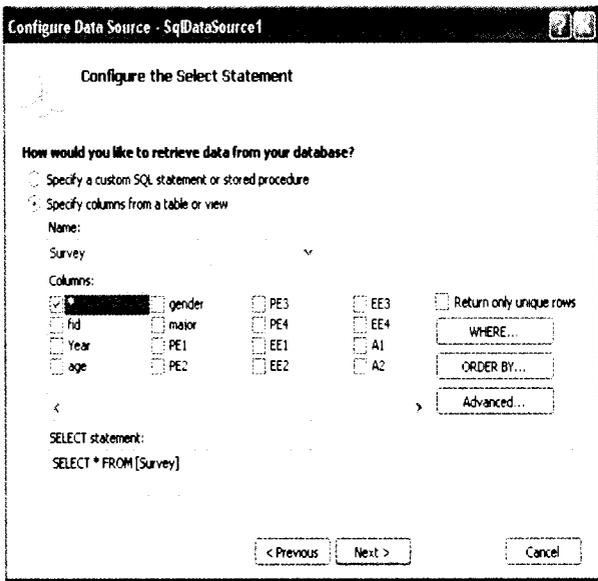


Figure 3. Configure the SqlDataSource Control

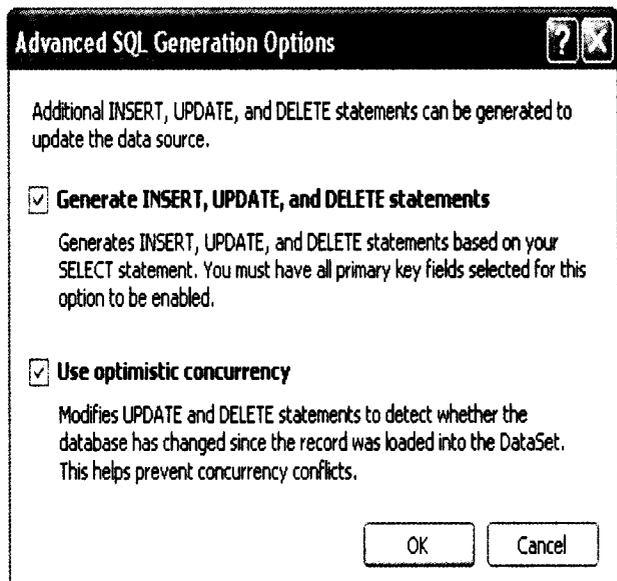


Figure 4. Insert Option in SqlDataSource Control

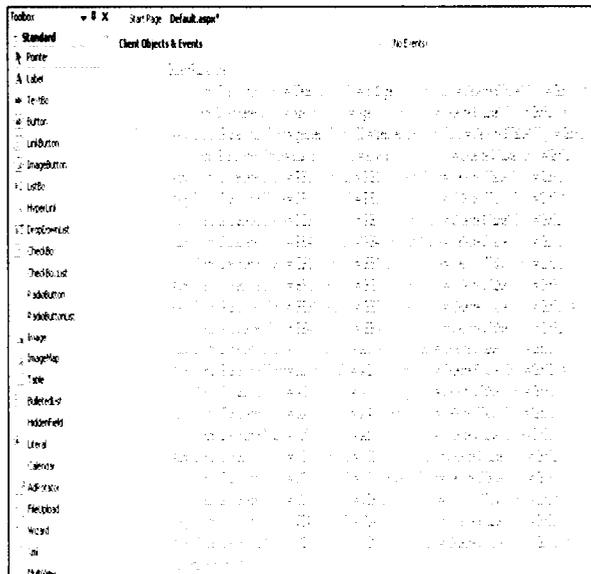


Figure 5. Match Control Objects to the Table Fields in the <InsertParameters> Tags

3. THE HANDS-ON ENVIRONMENT

All lab computers running Windows XP used in this class were installed with Professional edition of Visual Studio 2005. In addition, a dedicated Web server with Windows 2003 Enterprise edition was used for the class and implementation of the students' project works. The server also was equipped with Visual Studio 2005 and Microsoft SQL Server 2000. The students were asked to develop their ASP.Net applications at the lab desktop computers. After successfully testing the applications from their desktop computers, the students copied and published the applications at the remote Web server.

4. CONCLUSIONS

This paper demonstrated how to conduct survey design in ASP.Net. A survey conducted through the Web has the advantage of reduced cost and reduced response time comparing to mail-out surveys or interviews. It also allows researchers to reach some subjects who would not respond to surveys otherwise. The new ASP.Net 2.0 technology can simplify Web-based survey design work and save time in administering surveys if applied properly.

To evaluate student expectations and reactions, the author developed a post-course evaluation survey. This evaluation survey was in addition to the normal university course evaluation. Initial results indicated that ALL students felt lovely surprised that only one line of coding was needed for the survey design. Interestingly, several students went to other faculty members to offer survey design help because they now believe that a survey design using ASP.Net is a simple task. As a result of lessons learned, the following are some suggestions for other faculty to teach a Web-based survey development in their EC design class:

- Prerequisites for students include knowledge of the VB or C# programming language, HTML, and database concepts. Students can learn quickly and cover the design topics in more depth if they have these skills.
- Students should be challenged to further explore data collection issues in a Web-based survey. For example, a faculty member may require students to collect a computer's IP address and submission date for each response in addition to collecting data binded with control properties in a Web form. This will help students examine different parameterized operations in ASP.Net and learn to bind a parameter to a session variable or a query string in the URL.
- It would be very helpful to teach students to use the SessionID concept in ASP.Net to avoid a specific

response being submitted twice for a Web-based survey. Although research subjects typically remain anonymous and no personal information is collected or identified for a questionnaire survey, efforts should be made to prevent duplicate responses.

- Designing a good survey involves selecting the questions needed to meet the research objectives, testing them to make sure they can be asked and answered as planned, then putting them into a form to maximize the ease with which respondents can do their jobs. The Web-based survey design is not an exception. Students should be asked to carefully select and phrase their survey questions and the measurement scales, pre-test the questionnaire to confirm that the questions and their measurements are appropriate, correct, and understandable.

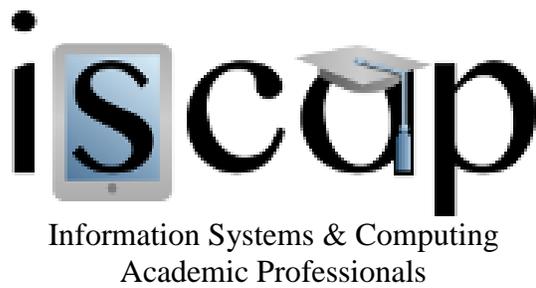
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