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## ***Teaching Tip***

# **A Technical Module for the E-Commerce Course**

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### **ABSTRACT**

The development of a single e-commerce course that integrates technical and non-technical aspects of e-commerce for business IS majors is imperative. This note provides tips for designing and teaching a technical module for an e-commerce course.

**Keywords:** Electronic commerce, Web-based business applications, programming languages

### **1. INTRODUCTION**

E-commerce courses have been popular in business schools for about six years. In its broadest definition e-commerce is any activity that uses some form of electronic communication in the distribution, inventory, exchange, advertisement, or payment of goods and services (Kerin 2002). Given the breath of the topic and how it has diffused throughout the business curriculum and IS programs, it is natural that there are a variety of approaches to teaching/learning e-commerce. Yet, they can be placed in two major categories: non-technical and technical.

In the non-technical e-commerce course students typically learn a variety of business models such as sales-revenue, and they study cases such as PeaPod, the online grocer, or Amazon, the online bookstore. In this approach, students learn that e-commerce has created a variety of new opportunities for certain products and services and has opened the door to new choices in distribution, inventory management, branding, strategy and tactics. Students get a general technical overview of e-commerce, perhaps practice some simulations and may receive an overview of the impact of e-commerce on society (Landon and Travers 2002). But, in this approach it is not intended that students learn the techniques of e-commerce implementation. On the other hand, in a technical e-commerce course, students learn techniques of Web-based business applications, including Web page design (HTML and client-side programming) and server-side programming (Nelson and Nelson 2002). In this approach it is probable that the

subject matter of the non-technical course is taught as an introductory course or as part of a prerequisite course.

Given the restricted number of major elective courses in the AACSB curricula, for business IS majors, it is ideal to have a single e-commerce course that integrates the two approaches. However, there are few textbooks that strike a practical balance between the two approaches. Teaching methods for integrated e-commerce courses are scarce in the IS education literature. This note describes design concepts for a technical module of an e-commerce course and tips for teaching this module.

### **2. DESIGNING THE TECHNICAL MODULE**

Normally, business IS majors have taken at least one intro-level computer programming course before they can take an elective e-commerce course at the senior level. In our case, IS students have learned major features of Java applets and HTML in the intro-level programming course (Wang, 2002). It is reasonable to assume that client-side computing is not a focus for the e-commerce technical module. Accordingly, the technical module for an e-commerce course shall cover the key concepts of server-side computing and the interaction scheme between clients and server. These key concepts particularly relating to e-commerce are summarized as follows.

#### **2.1 The Mechanism of Online Business Process**

E-commerce is implemented through Web-based business applications. Technically, a Web-based business process is

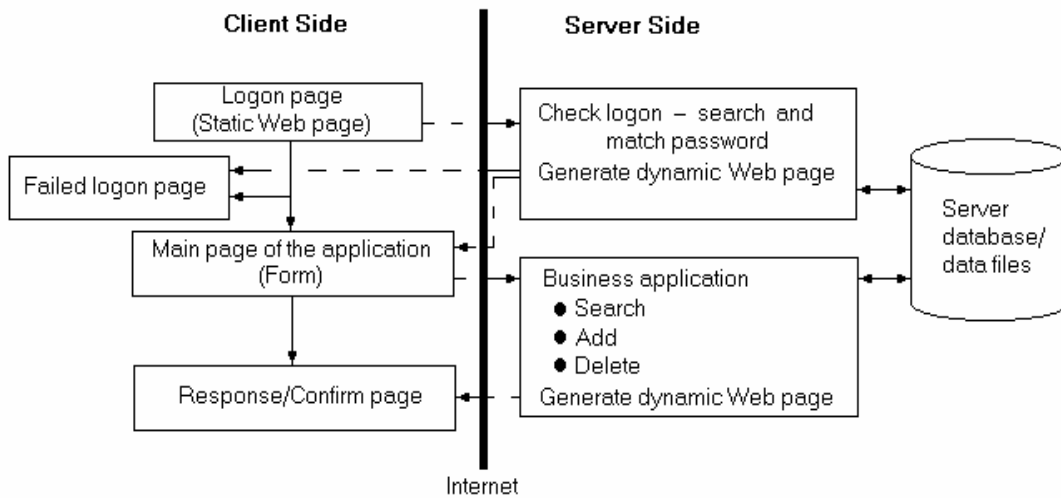


Figure 1. The "White-Box" View of Web-Based Business Applications

the course of interactions between the user and the online business. Web pages with client-side programs, Web browser, the Internet protocol, server-side programs, and server database or data files comprise the chain of a Web-based business process.

### 2.2 Construction of Online Business

Business IS professionals need to know how to construct an online business. The basic procedure in constructing an online business includes two steps: building a Web site and a set of server-side programs for the online business process, and uploading them to a remote commercial server.

### 2.3 Dynamic Web Pages Generated by Server-Side Programs

The key feature of server-side programming that is unique to client-side programming is the generation of dynamic Web pages, no matter what computer language is used to implement e-commerce. Dynamic Web pages provide answers to many new business models in e-commerce, such as one-to-one marketing.

### 2.4 Remote Data Processing Performed by Server-Side Programs

The ultimate outcomes of e-commerce behind the online business is data saving, searching, maintenance, and presentation.

## 3. TEACHING THE TECHNICAL MODULE

This technical module has been used by the author in an upper-level elective team-taught e-commerce course for our undergraduate business IS majors. Its time length is about one quarter of the entire course (i.e., 3.3 weeks). Three strategies are used in teaching this module, as discussed below.

### 3.1 "White-Box" View of Online Business Applications

Examples of Web-based business applications include online shopping, online registration, online group discussion, online auction, online inquiry, etc. Regardless of the variety of Web business applications, their scheme is almost the same. On the client side, the user can see one static Web page for logon, which is located at a known URL. This static Web page can trigger a server-side program that verifies the login and generates dynamic Web pages. A dynamic Web page either rejects the logon or provides a main page for the application. The main page contains a form that allows the user to input data and trigger a server-side program to perform the application. Typically, the program manipulates a database (or data files) on the server through searching, adding, deleting, and then generates a dynamic Web page as a response or confirmation for the user. We use the typical scheme as a "white-box" (see Figure 1) to teach students what happens behind the scenes in computer "black-boxes" in online business. Students are encouraged to discuss how this schematic "white-box" could be expanded for a complicated application where several tasks are involved. For example, online shopping has several tasks including browsing a catalog, filling a shopping cart, making a payment, etc. In this case, the main page of the application might contain several menu items or forms. Each item or form will in turn trigger a server-side program that performs the particular task.

### 3.2 Pragmatic Exercise

In this module, students are supposed to find a commercial Web service provider for small business and create their own Web site for online business. Many commercial Web service providers provide excellent services for small business at very low prices (e.g. Netfirms 2004)). After finding their commercial Web service providers, students receive a small software package from the instructor. This software package contains a home Web page and 3-4

server-side programs, and it is actually a simple prototype of a Web-based business application (e.g., online ordering) (Wang, 2004). The source code of this small package can be easily read and understood. Students learn how to upload (e.g., using WS\_FTP) the home pages and the server-side programs to corresponding directories on the remote server. Each student then plays dual roles by acting as the user on the client's side as well as the webmaster on the server's side. Through practicing on the prototype Web application and unmasking the software package, students learn e-commerce in the technical perspective.

### 3.3 Hands-On

A teaching note (available on request) about the prototype online business application is distributed to students. It provides the structure of the prototype and the source code of the server-side programs. Since the majority of commercialized Web service providers, who charge low fees, support Perl or Java, which are platform independent, the server-side programs were written in both Perl and Java (servlets). The teaching note provides brief explanations on these programs. To let students fully understand the mechanism of client-server interactions and the data processing on the server's disk, each student is required to make changes to the original prototype including the corresponding home Web page and the server-sides programs for his/her own "small online business." The more changes he/she makes, the higher grade he/she will receive for this module. Their focus point shall be placed on the server-side processing, rather than fancy designs of Web pages.

## 4. CONCLUSIONS

Student course evaluations have indicated their positive learning experiences and overall satisfaction with this module. According to our observations on the hands-on projects, students have no difficulty in learning this technical module within a short timeframe. The progressive nature of the exercise also accommodate differing levels of preparation for learning the technology and sets the stage for students to progress to advanced levels on their own. We found that this technical module integrated with non-technical aspects into a single e-commerce course is useful as well as feasible.

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