Chapter IV

Software Architectures and Requirements for a Web-Based Survey System

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Abstract

Many businesses obtain feedback by surveying customers and business partners. Increasingly, these surveys are conducted via the Web. This chapter reviews briefly literature regarding Web-based surveys and describes a software architecture for a Web-based survey system. The architecture for the survey system is based on three-tiers comprised of a Web server, Web application server, and database server. The Web application server hosts the application modules that display and process the surveys. The application software consists of packages for establishing connections to the database and for reading static and dynamic data from the database. The processed surveys are written to the database with the survey responses. This system allows for anonymous survey responses and maintains user confidentiality. At the University of Wisconsin-Parkside, we have implemented this Web-based survey system, and used it to conduct three different surveys. This survey system is easily extensible to new surveys, and is used for instructional purposes to teach server-side programming.
In this chapter, we discuss the key ideas behind the design and implementation of the extensible survey system, and provide results on its application.

Introduction

Maintaining a high-level of customer satisfaction is critical for any business to succeed. Especially in today’s difficult economic environment where economic growth is limited by intense competition, businesses are seeking to improve customer satisfaction with their products. Traditionally, businesses have obtained feedback from their customers using surveys. These surveys used to be conducted via paper or telephone. However, with the advent of the Internet an increasing number of businesses are conducting surveys via the Web. Businesses prefer electronic commerce (or e-commerce) because of the inherent advantages such as increased efficiency and reduced costs associated with selling products. Consumers are attracted by the ease of shopping, the ability to search among different brands and products in less time, and the reduction in the overall costs. As businesses use the Internet to sell their products, many have concluded that it is cost effective and convenient to conduct surveys using the same medium.

In this chapter, we first review general advantages, disadvantages, and recommendations regarding Web surveys discussed in the literature. Next, we describe a Web-based survey system that we developed at the University of Wisconsin-Parkside. We discuss the software architecture for this survey system and the processes involved in constructing the system. One guiding principle of this system is that it should be easily extensible to conduct new surveys. We have used this system at UW-Parkside (UWP) to conduct three different surveys. The system uses server-side Java programs such as servlets and Java Server Pages (JSPs). We have also used this survey system for pedagogical purposes. That is, it is used to teach students how to model/construct survey databases and develop server-side Java programs. The remainder of this book chapter is organized as follows. The next section gives an overview of the existing literature on Web-based survey systems. The third section describes a general architecture for Web-based survey systems. The fourth section briefly describes a few commercial survey applications, and provides a critical difference analysis of our approach versus the approach of the commercial software vendors. The fifth section describes the processes involved in conducting a Web-based survey. The sixth section discusses a high level software architecture for the Web-based survey system that we developed at the University of Wisconsin-Parkside (UWP). The seventh section discusses the database model for the Web-based survey system. The eighth section discusses the current state of the Web-based survey project at UWP. The ninth section discusses time estimates for extending
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