

# Preface

The explosive growth in the demand for mobile and wireless products and services, from both businesses and consumers in the recent years, indicates that mobile commerce is starting to take off. As more and more companies begin to realize the compelling value offered by mobile and wireless technologies and start to explore mobile business opportunities, IT professionals need to understand the business and technical issues related to mobile commerce application development. *Mobile Commerce Application Development* introduces you to the various technologies and techniques that are widely used for developing m-commerce applications today. The book is designed to provide readers with an appreciation for the use of wireless and mobile technologies in achieving business objectives and changing the way business strategies are being implemented, an understanding of the various technologies used in m-business, and technical skills for developing and deploying wireless and mobile commerce systems.

In this book, mobile commerce application development techniques are introduced within the context of their applications. Readers learn to use these techniques by developing business applications. This approach is highly successful and widely used in information technology training. Readers with any systems development background will be able to quickly grasp the technologies and techniques discussed in this book.

This book is organized in 10 chapters as follow.

Chapter I provides a high level overview of the value proposition, applications and technologies relevant to mobile commerce. The chapter discusses the drivers behind the growth of mobile commerce and explains how mobile and wireless technologies offer compelling values to businesses. The chapter presents a technology-independent and application-oriented impact/value

framework for m-business applications. The framework includes twelve business opportunities enabled by mobile and wireless technologies. The chapter also provides readers with an in-depth discussion of the various technologies that support Wireless Personal Networks, Wireless Local Area Networks, and Wireless Wide Area Networks. The chapter concludes with a discussion on the challenges companies will encounter when they conduct mobile business.

Chapter II examines the Wireless Application Protocol (WAP). The history and current status of WAP are presented. In order to understand the layers of the protocol, the architecture is illustrated, along with a thorough discussion of each layer. WAP provides the necessary support for using wireless Internet applications.

In addition to the discussion of the WAP, software development kits (SDKs), which allow the user to develop applications, are examined. Each toolkit presented in the chapter is readily available.

Chapter III discusses the Wireless Markup Language (WML) and takes the reader through the syntax of the language. Examples are provided that illustrate the creation of wireless Internet applications that use various elements of the WML.

Chapter IV illustrates how the WMLScript is used to enhance WML documents similar to the ones created in Chapter III. Both the use of WMLScript functions and their relationship to WML documents are studied. The chapter discusses the data types supported by the scripting language. The creation of variables and the operators they use are presented in the chapter. Decision-making, flow control, and iteration in WMLScript functions are illustrated and how they are used in the creation of useful applications.

The WMLScript Standard Libraries are examined in detail in Chapter V. Each major function contained in the standard libraries is discussed, along with an example of how the function can be accessed and the results of using that function. The use of examples is presented to aid the reader in understanding how the standard libraries can be employed in creating applications.

XHTML Basic allows the user to create applications that are compliant with WAP without the use of WML. The advantage of using XHTML Basic is discussed in this chapter. The creation of applications is illustrated throughout the chapter. Integration of WML documents and WMLScript functions with XHTML is discussed, along with the presentation of appropriate code examples. The use of Cascading Style Sheets and XHTML Basic is examined.

Chapter VII through Chapter X focuses on the technologies and techniques for developing two categories of mobile commerce applications: wireless and mobile applications. Wireless applications are designed to function when the mobile device is connected to networks (e.g., the Internet) or other devices wirelessly. Mobile applications, on the other hand, may or may not involve wireless communication with networks or other devices. Mobile applications can function without a network connection. The differences between wireless and mobile applications require developers to use different technologies and techniques when developing these applications.

Chapter VII discusses the techniques for developing dynamic wireless applications using Macromedia ColdFusion, a server-side Web application development tool. The chapter illustrates the use of ColdFusion through the example of a mobile sales force automation system. The system operates on both personal digital assistants and mobile handsets. Topics discussed in this chapter include ColdFusion Markup Language (CFML), Web-based database programming, state management in the Web environment (form variable, URL variable, cookie, and session variable), e-mail service, application-level security, Wireless Telephony Application Interface (WTAI), and shopping cart application.

Chapter VIII discusses the techniques for developing dynamic wireless applications using Microsoft Visual Studio .NET, an integrated development environment. In the recent years, the .NET framework has gained increasing popularity among developers due to its versatility and ease of use. Wireless applications can be developed using the ASP.NET Mobile Web Application tool in Visual Studio .NET. This chapter illustrates the use of this tool through an example of a parking finder application. Relevant topics discussed in this chapter include ASP.NET, Visual Basic .NET, and Web-based database programming (OleDbDataAdapter, OleDbDataCommand, and OleDbDataReader objects).

Chapter IX discusses the techniques for developing mobile applications using Microsoft's Embedded Visual Tool. This chapter uses a series of examples to illustrate the use of Embedded Visual Basic for developing mobile applications. While Embedded Visual Tool has some limitations compared to more sophisticated development tools such as Visual Studio .NET, it is a free software that can be downloaded from the Web. It proves to be an excellent learning tool for new programmers. Relevant topics discussed in this chapter include Embedded Visual Basic variable, control structures (e.g., sequence, choice, and repetition), array, file control, HTTP WinSock control, and menu-driven graphic user interface design.

Chapter X discusses the techniques for developing mobile applications using Microsoft's Visual Studio .NET. Smart Device Application tool was introduced in Visual Studio .NET 2003, and it was designed to enable developers to develop and deploy mobile applications for Pocket PC or Windows CE platforms quickly. This chapter illustrates the use of the Smart Device Application tool through the example of an order placement system. Relevant topics discussed in this chapter include Visual Basic .NET, SQL Server CE, and database programming (SQLCeConnection, SQLCeCommand, and SQLCeDataReader objects).

We believe that this book makes a major contribution in the diffusion and education of mobile commerce application development technologies and techniques. The book is designed to appeal to a broad audience base including IT professionals, corporate managers, and university students. Throughout the book, our objective has been to keep the material practical. For IT professionals and corporate managers, this book will help them understand the wide array of development technologies for wireless and mobile applications. By following the hands on application building exercises in this book, readers will acquire technical skills that can be readily applied to work. Currently, a growing number of universities are starting to offer courses in the mobile commerce area in response to market demands. The material in this book is well suited for a course in mobile commerce application development. Both authors have extensive experience in higher education, and the material in this book has been tested in both undergraduate and graduate IT and mobile commerce courses. The hands-on application building approach used in this book was well received by students from a wide range of IT background.