

Beginning PHP and MySQL E-Commerce

From Novice to Professional

SECOND EDITION



Cristian Darie and Emilian Balanescu

Beginning PHP and MySQL E-Commerce: From Novice to Professional, Second Edition

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Introduction

Welcome to the second edition of *Beginning PHP and MySQL E-Commerce: From Novice to Professional*!

This book is a practical, step-by-step PHP and MySQL tutorial that teaches you real-world development practices. Guiding you through every step of the design and build process, this tutorial will teach you how to create high-quality, fully featured, extendable e-commerce web sites.

Over the course of this book, you will develop the necessary skills to get your business up on the Web and available to a worldwide audience. In each chapter, you will implement and test new features of your e-commerce web site, and you will learn the theoretical foundations required to understand the implementation details. The features are presented in increasing complexity as you advance throughout this book, so that your journey will be as pleasant and painless as possible. By the end, you'll understand the concepts, and you'll have the knowledge to create your own powerful web sites.

Owners of the first edition will find that a large part of the book has been rewritten and many features have been added, as a result of the advances in the web development scene and the extensive feedback we've received from the readers of the first edition. Now, you'll find the book teaches you AJAX techniques, how to implement search engine optimization and product attributes, and many other exciting features.

The case study is presented in three phases of development. The first phase focuses on getting the site up and running as quickly as possible and at a low cost. Although not yet fully featured, at the conclusion of this phase, your site will have a fully functional, searchable product catalog and will be capable of accepting PayPal payments, enabling you to begin generating revenue immediately.

The second phase concentrates on increasing revenue by improving the shopping experience. In this phase, you'll learn how to proactively encourage customers to buy more by implementing a dynamic product recommendations mechanism. You'll also implement your own custom shopping cart to replace the PayPal one we'll implement initially, and you'll add AJAX features to your site.

In the third phase, we'll show you how to increase your profit margins by reducing costs through automating and streamlining order processing and administration and by handling credit card transactions yourself. You also learn how to integrate external functionality through web services and improve your customer's shopping experience by adding product review functionality.

We hope you'll enjoy reading our book, and that you'll find it useful and relevant to your development projects!

Who This Book Is For

Beginning PHP and MySQL E-Commerce: From Novice to Professional, Second Edition is aimed at developers looking for a tutorial approach to building a full e-commerce web site from design to deployment. The book teaches most of the necessary concepts and guides you through all the implementation steps, but it's assumed that you have some basic knowledge of building web sites with PHP and MySQL. W. Jason Gilmore's *Beginning PHP and MySQL: From Novice to Professional, Second Edition* (Apress, 2006) can provide this foundation knowledge for you.

The code in this book has been tested with PHP 5 and MySQL 5. The code is *not* compatible with older versions of PHP, which lack the object-oriented programming (OOP) support required to implement the presented code architecture.

Information regarding the compatibility with newer versions of PHP and MySQL will be kept updated on the book's support page at Cristian Darie's web site at <http://www.cristiandarie.ro/php-mysql-ecommerce-2/>.

How This Book Is Structured

This book is divided into three parts containing 22 chapters total. We cover a wide variety of topics and showing you how to

- Build a product catalog that can be browsed and searched
- Implement the catalog administration pages that allow adding, modifying, and removing products, categories, and departments, and other administrative features
- Create your own shopping basket and check-out mechanism in PHP
- Increase sales by implementing product recommendations and product reviews
- Handle payments using PayPal, DataCash, and Authorize.net
- Implement a customer accounts system
- Integrate Amazon.com web services to sell Amazon.com items through your web site

While implementing these features, you'll learn how to

- Design relational databases and write MySQL queries and stored procedures
- Use the MySQL full-text search feature to implement product searching
- Use the Smarty templating engine to write structured and extensible PHP code
- Implement search engine optimization features
- Use AJAX to improve the users' experience utilizing your web site
- Integrate external web services

The following brief roadmap highlights how we'll take you from novice to professional in these topics.

Phase I of Development

The first phase of development consists of the first 11 chapters of the book, and it concentrates on establishing the basic framework for the site and putting a product catalog online. We'll start by putting together the basic site architecture and deciding how the different parts of the application will work together. We'll then build the product catalog into this architecture.

Chapter 1: Starting an E-Commerce Site

In this chapter, we'll introduce some of the principles of e-commerce in the real world. You see the importance of focusing on short-term revenue and keeping risks down. We look at the three basic ways in which an e-commerce site can make money. We then apply those principles to a three-phase plan that provides a deliverable, usable site at each phase of this book.

Chapter 2: Laying Out the Foundations

The first chapter offered an overview of e-commerce in the real world. Now that you've decided to develop a web site, we start to look in more detail at laying down the foundations for its future. We'll talk about what technologies and tools you'll use, and even more importantly, how you'll use them.

Chapter 3: Starting the TShirtShop Project

In this chapter, you'll prepare the ground for developing the TShirtShop project—the e-commerce web site you'll be creating throughout the book. You'll be guided through installing and configuring the necessary software on your development machine, including the Apache web server and the MySQL database server. You'll also write a bit of code for the foundations of your project, and you will create the MySQL database that will store the web site's data.

Chapter 4: Creating the Product Catalog: Part 1

After learning about the three-tier architecture and implementing a bit of your web site's main page, it's time to continue your work by starting to create the TShirtShop product catalog. Because the product catalog is composed of many components, you'll create it over two chapters. In Chapter 4, you'll create the first database table, your first MySQL stored procedure, and implement the PHP code that accesses that stored procedure. By the end of this chapter, you'll have something dynamically generated on your web page.

Chapter 5: Creating the Product Catalog: Part 2

In Chapter 4, you created a selectable list of departments for TShirtShop. However, a product catalog is much more than a list of departments. In Chapter 5, you'll add the rest of the product catalog features, creating category pages, product lists, and product details pages. While designing the data structure that supports these features, you'll learn how to implement relationships between data tables and how to use parameterized MySQL stored procedures.

Chapter 6: Product Attributes

Many online stores allow shoppers to customize the products they buy. For example, when selling t-shirts (as TShirtShop does), it's common to let your customer choose the size and

color of the t-shirt—sparing them the fashion risk of one-size-and-one-color fits all. In this chapter, we'll implement the product attributes feature in TShirtShop.

Chapter 7: Search Engine Optimization

Search engine optimization, or simply SEO, refers to the practices employed to increase the number of visitors a web site receives from organic (unpaid) search engine result pages. Today, the search engine is the most important tool people use to find information and products on the Internet. Needless to say, having your e-commerce web site rank well for the relevant keywords will help drive visitors to your site and increase the chances that visitors will buy from you and not the competition! In this chapter, we'll update TShirtShop so that its core architecture will be search engine friendly, which will help marketers in their efforts.

Chapter 8: Searching the Catalog

In the preceding chapters, you will have implemented a functional product catalog for TShirtShop. However, the site still lacks the all-important search feature. The goal in this chapter is to allow the visitor to search the site for products by entering one or more keywords. You'll learn how to implement search results rankings and how to implement functionality to browse through the search results page by page. You'll see how easy it is to add new features to a working site by integrating the new components into the existing architecture.

Chapter 9: Receiving Payments Using PayPal

Your e-commerce web site needs a way to receive payments from customers. The preferred solution for established companies is to open a merchant account, but many small businesses choose to start with a solution that's simpler to implement, where they don't have to process credit card or payment information themselves.

A number of companies and web sites exist to help individuals or small businesses that don't have the resources to process credit card and wire transactions, and these companies can be used to process the payment between companies and their customers. In this chapter, we'll demonstrate some of the functionality provided by one such company, PayPal.

Chapter 10: Catalog Administration: Departments and Categories

The final detail to take care of before launching a web site is to create its administrative interface. Although this is a part visitors will never see, it's still key to delivering a quality web site to your client. In this chapter and the following one, you implement a catalog administration page. In Chapter 10, we deal with administering departments and categories.

Chapter 11: Catalog Administration: Products and Attributes

This chapter completes the catalog administration features by implementing products and product attributes management features. Once this chapter is complete, your site administrators will be able to create products, assign products to new departments or categories, create or delete product attributes, and so on.

Phase II of Development

The second phase of development teaches you how to increase revenue by improving the shopping experience. In this phase, you'll learn how to proactively encourage customers to buy more by implementing a dynamic product recommendations mechanism, and you'll also implement AJAX and search engine optimization features.

Chapter 12: Creating Your Own Shopping Cart

With this chapter, you enter the second phase of development, where you start improving and adding new features to the already existing, fully functional e-commerce site. In Chapter 12, you'll implement the custom shopping cart, which stores its data in the local database. This provides you with more flexibility than the PayPal shopping basket, over which you have limited control and which you can't save into your database for further processing and analysis.

Chapter 13: Implementing AJAX Features

In this chapter, we'll enhance our fully functional shopping cart and product catalog using the technology that made web development headlines in 2005. This technology is called AJAX, and it allows you to make your web applications easier and more pleasant to use for your visitors.

Chapter 14: Accepting Customer Orders

The good news is that the brand-new shopping cart implemented in Chapter 12, and then AJAXified in Chapter 13, looks good and is fully functional. The bad news is that it doesn't allow the visitor to place an order yet, making it totally useless in the context of a production system. As you have probably already guessed, you'll deal with that problem in Chapter 14, in two separate stages. In the first part of the chapter, you'll implement the client-side part of the order-placement mechanism. In the second part of the chapter, you'll implement a simple order administration page where the site administrator can view and handle pending orders.

Chapter 15: Product Recommendations

One of the most important advantages of an Internet store, compared to a brick-and-mortar location, is the capability to customize the web site for each visitor based on his or her preferences or on preferences based on data gathered from similar visitors. If your web site knows how to suggest additional products in a clever way, your visitors might end up buying more than initially planned. You have undoubtedly already seen this strategy in action on many successful e-commerce sites, and there is a reason for that—it increases profits. In this chapter, you'll implement a simple but efficient dynamic product recommendations system in your TShirtShop web store.

Phase III of Development

In the third phase of development, you'll learn how to increase your profit margins by reducing costs through automating and streamlining order processing and administration and by handling credit card transactions yourself. You also learn how to integrate external functionality through web services and improve your customer's shopping experience by adding product review functionality.

Chapter 16: Managing Customer Details

In the first two stages of development, you've built a basic (but functional) site and hooked it into PayPal for taking payments and confirming orders. In the third section of this book, you'll take things a little further. By cutting out PayPal from the ordering process, you can gain better control as well as reduce overhead. This isn't as complicated as you might think, but you must be careful to do things right. Chapter 16 lays the groundwork by implementing a customer account system, as well as looking into the security aspects of exchanging and storing customer and credit card details.

Chapter 17: Storing Customer Orders

In Chapter 16, we added customer account management capabilities, and we're now securely keeping track of customer addresses and credit card information. However, we're not currently using this information in our order-tracking system, which was created in Phase II of development. We currently don't associate an order with the account of the customer who placed that order.

In this chapter, we'll make the modifications required for customers to place orders that are associated with their user profiles. The main modification here is that the customer associated with an order will be identified by a new piece of information in the orders' table, and much of the rest of the modifications in this book will be made to use this information.

These changes will allow us to track into our database the orders placed by a particular customer and represent a base for implementing the order pipeline and credit card transactions in the following chapters.

Chapter 18: Implementing the Order Pipeline: Part 1

Order pipeline functionality is an extremely useful capability for an e-commerce site. Order pipeline functions let us keep track of orders at every stage in the process and provide auditing information that we can refer to later or if something goes wrong during the order processing. We can do all this without relying on a third-party accounting system, which can also reduce costs.

Implementing the order pipeline is the first step we're making toward creating a professional order management system. In this and the next chapter, we'll build our own order-processing pipeline that deals with credit card authorization, stock checking, shipping, e-mail notification, and so on. We'll leave the credit card-processing specifics for Chapter 20, but in this chapter, we'll show you where this process fits into the picture.

Chapter 19: Implementing the Order Pipeline: Part 2

In this chapter, you'll add the required pipeline sections so that you can process orders from start to finish, although you won't be adding full credit card transaction functionality until the next chapter. We'll also look at the web administration of orders by modifying the order administration pages added earlier in the book to take into account the new order-processing system.

Chapter 20: Processing Credit Card Transactions

The last thing you need to do before launching the e-commerce site is enable credit card processing. In this chapter, we'll look at how you can build this into the pipeline you created in

Chapters 13 and 14. You'll see how to use two popular credit card gateways to do this, DataCash and Authorize.net. By the end of this chapter, TShirtShop will be a fully functioning, secure, and usable e-commerce application.

Chapter 21: Product Reviews

At this point, you have a complete and functional e-commerce web site. However, this doesn't stop you from adding even more features to your site, making it more useful and pleasant for visitors. By adding a product review system, you increase the chances that visitors will return to your site, either to write a review for a product they bought or to see what other people think about that product.

Chapter 22: Using Amazon.com Web Services

So far in this book, you've learned how to integrate external functionality provided PayPal, DataCash, and Authorize.net to process payments from your customers. In this chapter, you'll learn new possibilities for integrating features from external sources through web services. Knowing how to interact with third-party web services can offer you an important advantage over your competitors. In Chapter 22, you'll learn how to use Amazon.com functionality from and through web services.

Downloading the Code

The code for this book can be downloaded in zip file format from the Downloads section of the Apress web site. You can find the code, errata, and other resources related to the book also on Cristian Darie's web site at <http://www.cristiandarie.ro/php-mysql-ecommerce-2/>.

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