

CHAPTER 12: CONSTRUCTION

Because the material in this chapter actually takes place throughout the systems development process, this installment of the CD Selections case simply revisits some of the earlier installments and shows where this material has either already been described or where the development team should have performed these tasks.

Managing Programming

To keep the project on schedule, Anne requested that she be allowed to assign three programmers from the CD Selections programming staff to develop the three major parts of the Internet Sales System. The first was the Web interface, both the client side (browser) and the server side. The second was the client-server-based management system (managing the CD information and marketing materials data bases). The third was the interfaces between the Internet Sales System and CD Selections' existing distribution system and the credit card center. Programming went smoothly and despite a few minor problems went according to plan.

Testing

While Anne and the programmers were working, Alec began developing the test plans. The test plans for the three components were similar, but slightly more intensive for the Web interface component (see Figure 12-A). Unit testing would use black box testing based on the CRC cards, class diagrams, and contracts for all components. For example, the Order class was described in the chapter (see Figures 12-4, 12-6, and 12-7) and the CD class has been described in earlier installments (see Figures 8-C and 8-D).

Integration testing for the Web interface and system management component would be subjected to all user interface and use case tests to ensure the interface works properly. The system interface component would undergo system interface tests to ensure that the system performed calculations properly and was capable of exchanging data with the CD Selections' other systems and the credit card center.

Systems tests are by definition tests of the entire system—all components together. However, not all parts of the system would receive the same level of testing. Requirements tests would be conducted on all parts of the system to ensure that all requirements were met. Security was a critical issue, so the security of all aspects of the system would be tested. Security tests would be developed by CD Selections' infrastructure team, and once the system passed those tests, an external security consulting firm would be hired to attempt to break-in to the system.

Performance was an important issue for the parts of the system used by the customer (the Web interface and the system interfaces to the credit card and inventory systems) but not as important for the management component that would be used by staff, not customers. The customer-facing components would undergo rigorous performance testing to see how many transactions (whether searching or purchasing) they could handle before

Test Stage	Web Interface	System Management	System Interfaces
Unit tests	Black-box tests	Black-box tests	Black-box tests
Integration tests	User interface tests; use-case tests	User interface tests; use-case tests	System interface tests
System tests	Requirements tests; security tests; performance tests; usability tests	Requirements tests; security tests	Requirements tests; security tests; performance tests
Acceptance tests	Alpha test; beta test	Alpha test; beta test	Alpha test; beta test

FIGURE 12-A
Test Plan for
CD Selections

they were unable to provide a response time of two seconds or less. Alec also developed an upgrade plan so that as demand on the system increased, there was a clear plan for when and how to increase the processing capability of the system.

Finally, formal usability tests would be conducted on the Web interface portion of the system with six potential users (both novice and expert Internet users).

Acceptance tests would be conducted in two stages, alpha and beta. Alpha tests would be done during the training of CD Selections' staff. The Internet Sales manager would work together with Alec to develop a series of tests and training exercises to train the Internet Sales group staff on how to use the system. They would then load the real CD data into the system and begin adding marketing materials. These same staff and other CD Selections staff members would also pretend to be customers and test the Web interface.

Beta testing would be done by "going live" with the Web site but only announcing its existence to CD Selections employees. As an incentive to try the Web site (rather than buying from the store in which they worked) employees would be offered triple their normal employee discount for all products ordered from the Web site. The site would also have a prominent button on every screen that would enable employees to e-mail comments to the project team, and the announcement would encourage employees to report problems, suggestions, and compliments to the project team. After one month, assuming all went well, the beta test would be completed, and the Internet Sales site linked to main Web site and advertised to the general public.

Developing User Documentation

While Anne and Alec were busy with the programming and test plans, Brian began the process of developing all necessary documentation. There were three types of documentation (reference documents, procedures manuals, and tutorials) that needed to be produced for the Web interface and the management component. Since the number of CD Selections staff using the system management component would be small, Brian suggested that they only produce the reference documentation (an online help system). After talking with Alec and Anne, the team felt that an intensive training program and a one month beta test period would be sufficient without tutorials and formal procedures manuals. Likewise, they felt that the process of ordering CDs and the Web interface itself was simple enough to not require a tutorial on the Web—a help system would be sufficient (and a procedures manual didn't make sense).

Brian decided that the reference documents for both the Web interface and system management components would contain help topics for user tasks, commands, and definitions. He also decided that the documentation component would contain four types of navigation controls: a table of contents, an index, a find, and links to definitions. He did not feel that the system was complex enough to benefit from a search agent.

After these decisions were discussed with the development team, Brian delegated the development of the reference documents to a technical writer assigned to the project team. Figure 12-B shows examples of a few of topics that the writer developed. The tasks and

Tasks	Commands	Terms
Find an album	Find	Album
Add an album to my shopping cart	Browse	Artist
Placing an order	Quick search	Music type
How to buy	Full search	Special deals
What's in my shopping cart?		Cart
		Shopping cart

FIGURE 12-B
Sample Help Topics
for CD Selections

FIGURE 12-C
Sample
Documentation Topic
for CD Selections

Help Topic	Navigation Controls
<p>How to Place an Order</p> <p>When you are ready to pay for the merchandise you have selected (the items in your shopping cart) you can place your order. There are four steps.</p> <p>1. Move to the Place order Page</p> <p>Click on the Place order button to move to the place order page.</p> <p>2. Make sure you are ordering what you want</p> <p>The place order screen displays all the items in your shopping cart. Read through the list to make sure these are what you want because once you submit your credit card information you cannot change the order.</p> <p>You can delete an item by</p>	<p>Table of Contents list: How to Place an Order</p> <p>Index list: Credit Card Order Pay Place order</p> <p>Search find by: Credit Card Delete Items Order Pay Place order Shopping Cart Verify Order</p> <p>Links: Shopping Cart</p>

commands were taken directly from the interface design. The list of definitions were developed once the tasks and commands were developed based on the writer's experience in understanding what terms might be confusing to the user.

Once the topic list was developed, the technical writer then began writing the topics themselves and the navigation controls to access. Figure 12-C shows an example of one topic taken from the task list: how to place an order. This topic presents a brief description of what it is and then leads the user through the step by step process needed to complete the task. The topic also lists the navigation controls that will be used to find the topic, in terms of the table of contents entries, the index entries, and search entries. It also lists what words in the topic itself will have links to other topics (e.g., shopping cart).