

Exercise

Q. 1. Name the six main pieces of the e-commerce site puzzle.

Ans. The six main pieces of the e-commerce site puzzle are the organizational capabilities and human resources you will need to build and manage the site, the hardware, the software, the telecommunications infrastructure you will need to meet the demands of your customers and the site design you will need to implement your business objectives.

Q. 2. Define the systems development life cycle and discuss the various steps involved in creating an e-commerce site.

Ans. The systems development life cycle is a methodology for understanding the business objectives of any system so that an appropriate solution can be designed. The five major steps in the SDLC for an e-commerce site are systems analysis, systems design, building the system, testing the system and implementation. In the systems analysis step, the business objectives for the site are identified. The list of the necessary capabilities for the site is translated into lists of the types of information systems and the elements of information that will be needed to achieve them. Next, the main components in the system and their relationships to one another must be identified. The system design includes a data flow diagram and the physical components that will need to be purchased. After the system has been built and programmed, the program modules must be tested one at a time and then the site must be tested as a whole, examining every conceivable path a user might try to utilize while on the

site. Implementation of an e-commerce site includes the continuing maintenance that will be needed over the life of the site to keep it functional, including correcting mistakes and continuing to improve, update and modify links and other site features.

3. **Discuss the differences between a simple logical and simple physical Web site design.**

A simple logical design for a Web site describes the flow of information at the site including the processing functions that must be performed and the databases that will provide information. It also includes a description of the security and emergency backup procedures and the controls that will be used in the system. A simple physical design, on the other hand, translates the logical design into the physical components that will be needed such as the servers software and size of the telecommunications link, backup servers and security system.

4. **Why is system testing important? Name the three types of testing and their relation to one another.**

System testing is important because there can be up to thousands of different pathways within a typical e-commerce Web site and you must make sure that customers can find what they want easily and quickly and, most importantly, that they can complete a purchase without a hitch. The three types of testing that must be completed are unit testing, which involves checking each program module; system testing, which includes testing the site as a whole in the way a "typical" user might navigate and make requests for functionality; and acceptance testing, which requires the firm's key personnel and managers to use the system to verify that the business objectives as originally conceived are being met.

5. **Compare the costs for system development and system maintenance. Which is more expensive and why?**

The costs for system maintenance for an e-commerce Web site, can run anywhere from 50 percent to 100 percent per year of the original systems development costs. For small sites the annual maintenance cost can parallel the development costs, with larger sites achieving some economies of scale. Maintenance is more expensive because e-commerce sites are always in a process of change, improvement and correction. E-commerce sites are in fact, never finished. They are always in the process of being built and rebuilt.

6. **Why is a Web site so costly to maintain? Discuss the main factors that impact cost?**

Web sites are so costly to maintain because code must be debugged, hyperlinks must be tested and repaired continually; emergencies must be handled and reports, data files and links to backend databases must be maintained and updated as necessary. General administrative tasks of the site require attention including updating the products and prices. Changes and enhancements to the system are also continually being made so that the site is always adapting to changing market conditions. All of this requires a Web team that includes programmers, designers and business managers from the marketing, sales support and production departments. This will ensure timely response to customer feedback and that the site is adequately monitored for correct prices and links with updated page display.

7. **What are the main differences between single-tier and multi-tier site architectures?**

Single-tier site architecture simply consists of a server machine running the basic Web server software. Multi-tier site architecture, on the other hand, provides much more functionality by linking a Web server layer that can include multiple Web servers to a middle tier that includes many Web application servers, which provide a wide variety of transaction processing tasks. This middle

layer is also linked to a backend layer that includes existing databases, human resources systems, corporate applications, financial data and enterprise systems. A multi-tiered site typically employs several or more physical computers each running some of the software applications and sharing the workload across many computers.

Q. 8. Name five basic functionalities a Web server should provide.

Ans. The basic functionalities a Web server should provide are:

- (a) Processing HTTP requests (requests for HTML pages)
- (b) Providing security services to verify the username and password or process the certificates and private/public key information required for credit card processing (Secure Sockets Layer or SSL)
- (c) Processing FTP requests (transfers of very large files from server to server)
- (d) Providing search engine services
- (e) Capturing data such as logs of visits, time, duration and referral sources
- (f) Providing e-mail services including the ability to send, receive and store e-mail
- (g) Providing site management tools to calculate and display key site statistics such as unique visitors, page requests and the origin of requests, as well as to check the links on the site

Q. 9. What are the three main factors to consider when choosing the best platform for your Web site?

Ans. In choosing the best platform to use for your Website, the three main factors to consider are the anticipated number of simultaneous users who will likely visit your site, the customer user profile with their expected requests and behavior while at the site and the nature of the content on your site. The more visitors you have, the greater the demand will be on your system. If the users will be viewing dynamic pages and large multimedia files, far more capacity will be required.

Q. 10. Why is Web server bandwidth an important issue for e-commerce sites?

Ans. The three factors discussed in Question 9 will help to determine the telecommunications link you will need for your site. Web server bandwidth is another important consideration because the larger the bandwidth available, the more customers that can hit your site simultaneously. Most ISPs or other site-hosting providers are obligated to provide enough bandwidth so that your site can meet peak demands. By the end of 2008, about 75 million American households had broadband cable or DSL access to the Internet and this will present additional demands for more dynamic content and additional site capacity.

Q. 11. Compare and contrast the various scaling methods. Explain why scalability is a key business issue for Web sites.

Ans. In order to meet the demands for service at your site, you can scale your hardware vertically, scale your hardware horizontally, or improve the processing architecture at your site. You scale vertically by upgrading the servers from a single processor to multiple processors. You can add up to 20 processors to a machine and also increase chip speeds. The drawbacks to this method are that it can become expensive to purchase new machines with every growth cycle and that your entire site becomes dependent on just a small number of very powerful computers.