**Systems Analysis and Design, Tenth Edition**

**End of Chapter Solutions**



 **Chapter Exercises s**

**Questions**

1. What is information technology and why is it important? Suggest three fictitious headlines that might be added to Figure 1-1 on page 2.

*Information technology (IT) is a combination of hardware and software products and services that companies use to manage, access, communicate, and share information. Your students should be able to suggest many interesting headlines. You might want to hold a class contest and reward the most creative headline writers.* ***(Pages 2, 4)***

1. Why would a systems analyst have to act as a translator? What groups might be involved?

*To succeed, analysts often must act as translators. For example, when they describe business processes to programmers, they must speak a language that programmers will understand clearly. Typically, the analyst builds a series of models, diagrams, decision tables, and uses other descriptive tools and techniques. Similarly, when communicating with managers, the analyst often must translate complex technical issues into words and images that nontechnical people can grasp. To do this, the analyst uses various presentation skills, models, and communication methods.* ***(Page 29)***

1. Write a business profile for a large business in your town. You can use your imagination to supply details you might not know.

*A business profile is an overview that defines a company’s overall functions, processes, organization, products, services, customers, suppliers, competitors, constraints, and future direction. Students should be able to identify a large local firm, supply the basic information, and fill in the details.* ***(Page 13)***

1. What strategies are Wal-Mart and Lowes using to gain more online customers?

*Most successful brick-and-mortar firms, such as Lowe’s, Costco, Target, and Wal-Mart, have expanded their Web-based marketing channels to increase sales and serve customers better. This strategy combines the convenience of online shopping and the alternative of hands-on purchasing for those who prefer that option. Figure 1-11 shows several shopping and pickup options that Wal-Mart offers, so customers can choose the method they prefer.* ***(Page 11)***

1. Identify the main components of an information system. What is a mission-critical system?

*An information system has five main components: hardware, software, data, processes, and people. A mission-critical system**is one that is vital to a company’s operations. An order processing system, for example, is mission-critical because the company cannot do business without it.* ***(Page 6)***

1. Compare enterprise computing systems to transaction processing systems. Provide three examples of each type of system.

*Enterprise computing systems support company-wide data management requirements. Airline reservations, asset management, and credit card billing systems are examples of enterprise computing systems. Transaction processing (TP) systems process data generated by day-to-day business operations. Examples of TP systems include customer billing, accounts receivable, and warranty claim processing.* ***(Page 15)***

1. What are the four organizational levels common to many businesses? Which level typically requires data that supports long-term strategic planning and the overall business enterprise? What level of worker might rely heavily on transaction processing systems?

*Four organizational levels are operational personnel, lower management, middle management, and top management. Top managers need summary-level information; one-time, what-if information; and external information to support the strategic planning process. Operational personnel are the main users of transaction processing systems.* ***(Page 15)***

1. Describe three systems development tools and three development methods.

*Systems analysts use modeling, prototyping, and computer-aided systems engineering (CASE) tools. Modeling produces a graphical representation of a concept or process, whereas prototyping involves the creation of an early working model of the information or its components. A systems analyst uses CASE tools to perform various systems development tasks.*

 *Three popular system development methods are structured analysis, which is a traditional method that still is widely used, object-oriented analysis (O-O), which is a more recent approach that many analysts prefer, and agile methods, also called adaptive methods, which include the latest trends in software development.* ***(Page 21)***

1. What are the phases of the SDLC waterfall model? Who was Barry Boehm, and what did he have to say about spiral models?

*The SDLC waterfall model consists of five phases: systems planning, systems analysis, systems design, systems implementation, and systems operation and support. During the systems planning phase, you identify the nature and scope of the problems discovered in the systems request and conduct a preliminary investigation. The purpose of the systems analysis phase is to learn exactly what takes place in the current system, determine and fully document in detail what should take place, and make recommendations to management on the alternative solutions and their costs. The purpose of the systems design phase is to determine how to construct the information system to best satisfy the documented requirements. Systems implementation is the phase during which the information system actually is constructed.*

 *Spiral models initially were suggested in the 1990s by Barry Boehm, a noted software engineering professor. He stated that each iteration, or phase, of the model must have a specific goal that is accepted, rejected, or changed by the user, or client. The spiral model produces feedback and enhancements, which enable the team to reach the overall project goal. Spiral model activities include planning, risk analysis, engineering, and evaluation. The repeated iterations produce a series of prototypes, which evolve into the finished system. Notice that these phases resemble SDLC tasks, which also can be iterative.* ***(Pages 22-26)***

1. Review the IBM history on page 4, and then consider the powerful statement shown in Figure 1-33 on page 33. Is there a connection between the two? Why or why not?

*IBM’s history truly is remarkable. IBM is a 100-year old global giant with a half-million employees, numerous patents, and more Nobel Prize winners than any other IT firm ever. How did this come to be? The answer might the equally remarkable statement by IBM’s leaders, which is shown in Figure 1-33. It begins with the thought that “At this institution, an individual can actually change the world.” The statement describes a culture that is the foundation of IBM’s success. The bottom line is that a corporate culture like IBM’s will attract, retain, and motivate the very best and brightest people. Game over.* ***(Pages 4, 33)***

**Discussion Topics**

1. Some experts believe that the growth in e-commerce will cause states and local governments to lose tax revenue, unless Internet transactions are subject to sales tax. What is one argument that supports this view, and one that opposes it?

*This issue has sparked strong differences of opinion among national and state leaders, consumer advocacy groups, and trade associations whose members offer online sales and services. Those who believe that Internet transactions should not be taxed often point to other sales channels, such as mail order firms that conduct no physical operations within a state or locality, and therefore do not collect sales tax. Should the Internet be treated differently? Opponents of a tax-free Internet often cite the impact on local and state government, and suggest that* ***all*** *channels should operate on a level playing field. You might ask your students to research and debate this issue. Also, you might follow this topic as news occurs during the course.*

1. Are top managers likely to be more effective if they have IT experience? Why or why not?

*Some possible arguments for a “Yes” answer:*

* 1. *Information technology (IT) management has a broad understanding of the information processing of the company instead of the narrower view held by managers from other areas of the company.*
	2. *IT management deals with all functional company areas so members of IT management know and interrelate with the people who lead and who work in these areas. Because they provide needed services to these areas, IT management personnel have the support of the key personnel from these areas.*
	3. *Information systems development and maintenance is complex and requires extraordinary management skills to operate successfully. These same skills are necessary in top-level management positions.*
	4. *Computer technology dominates many companies today. Today's technology leaders should be tomorrow's business leaders.*

*Some possible arguments for a “No” answer:*

1. *IT management is more comfortable dealing with computers and with procedures, and less comfortable dealing with people. Top-level management positions require a strong interest in people and strong skills in dealing with people.*
2. *Whether a firm is product-oriented or service-oriented, it must make a profit to survive. Future company leaders should, therefore, come from the production, service, or financial areas, because these areas are the most important to a company. Possibly, in Internet-dependent firms, the best choice would be an IT manager — but only if he or she had extraordinary business skills apart from technical ability.*
3. *It is unwise to restrict prospects for top-level management positions to one specific area of the company. Competent leaders are apt to rise from many different departments.*
4. *People who have worked in several different functional areas are better rounded than those restricted to just one area. So, unless the IT manager has worked outside the IT department, he or she essentially is a specialist and is at a disadvantage compared to someone with more general knowledge and skills.*
5. Should the IT director report to the company president, or somewhere else? Does it matter?

*No clear organizational pattern exists. Perhaps the strongest case for having the IT department report to the president is that information technology is a vital corporate asset, and should not be “owned” by a particular department or function. IT can have a huge impact on profitability, and deserves equal attention from the top executive.*

 *However, not everyone agrees with this view, and many would argue that IT should report to the chief financial officer, because financial functions require the most IT support. Also, the operation of the IT department represents a large expense for most companies, and the chief financial officer probably is in the best position to monitor and control this expense.*

4. Will online transactions eventually replace person-to-person contact? Why or why not?

*IT professionals agree that computer technology is changing the way companies do business. Many brick-and-mortar firms are launching large-scale B2B and B2C ventures that profoundly will affect traditional business practices and operations. Few observers think that IT will replace person-to-person contact totally, although many clerical and administrative functions will become automated. The real question is how these changes will affect people in an information-oriented society. Many observers feel that the implications of huge quantities of information and 24/7 access can cut in both directions.*

 *Reasonable people differ on these issues, and you might want to propose a debate among your students. For additional background and viewpoints about the impact of computer technology on traditional person-to-person interaction, students can perform research on the Internet and compare the views of technology-based publications such as InfoWorld, to mainstream business publications such as Fortune, Forbes, and the Harvard Business Review, among others.*

**Projects**

1. Contact four people at your school who use information systems. List their positions, the systems they use, and the business functions they perform.

*Students can perform this task as individuals or work in teams. It might be interesting to compare and discuss the various ways in which the departments manage information.*

1. Research newspaper, business magazine articles, or the Web to find IT companies whose stock is traded publicly. Choose a company and pretend to buy $5,000 of its stock. Why did you choose that company? What is the current price per share? Report each week to your class.

*To perform the task, students will need a basic understanding of the stock market. Sites such as Yahoo! offer financial information and analysis links and resources. If students need fundamental information about investing in stocks, you might direct them to the material at* [*www.free-financial-advice.net/stock-market.html*](http://www.free-financial-advice.net/stock-market.html)*. Industry leader Vanguard also offers free online information about investing at* [*www.vanguard.com*](http://www.vanguard.com)*. Also, many school and community libraries can assist students in learning about financial terms and concepts, including stock market investments.*

1. Visit at least three Web sites to learn more about agile system development and spiral models. Prepare a list of the sites you visited and a summary of the results.

*Many sites describe and discuss agile methods. Students should have no trouble finding material on agile methods and spiral models and preparing a summary of the results. Several sites are shown in the text, and a simple search will produce a list of many more.*

1. Explore the Critical Thinking Community Web site at criticalthinking.org. Identify three important topics currently being discussed, and describe your findings.

*You might encourage students to explore beyond the suggested link, and challenge them to identify additional resources and issues. Also consider asking them to examine their own approach to learning, and whether they would consider themselves to be critical thinkers.*

 **Apply Your Knowledge ri al] e**

**1 Hi-Volt Components**

You are the IT manager at Hi-Voltage Components, a medium-sized firm that makes specialized circuit boards. Hi-Voltage’s largest customer, Green Industries, recently installed a computerized purchasing system. If Hi-Voltage connects to the purchasing system, Green Industries will be able to submit purchase orders electronically. Although Hi-Voltage has a computerized accounting system, that system is not capable of handling EDI.

**Tasks**

1. What options does Hi-Voltage have for developing a system to connect with Green Industries’ purchasing system?

*Hi-Voltage has the option to develop a business-to-business transaction processing system to facilitate the electronic data exchange (EDI) that Green Industries recently installed. By developing a new order entry system, Hi-Voltage will improve efficiency and strengthen its bond with Green Industries.*

1. What terms or concepts describe the proposed computer-to-computer relationship between Hi-Voltage and Green Industries?

*Electronic data exchange (EDI) is the term used to describe the computer-to-computer transfer of data between Hi-Voltage and Green Industries.*

1. Would Hi-Voltage’s proposed new system be a transaction processing system? Why or why not?

*Transaction processing (TP) systems process data generated by day-to-day business operations. Hi-Voltage’s proposed order entry system will perform online transaction processing.*

1. Before Hi-Voltage makes a final decision, should the company consider an ERP system? Why or why not?

*Answers will vary. An ERP strategy depends on the size of the firm and how it integrates its operations and financial data, among other factors.*

**2 Systems Analyst Salaries**

As part of your job search, you decide to find out more about salaries and qualifications for systems analysts in the area where you would like to work. To increase your knowledge, search the Internet to perform the following research:

**Tasks**

1. Find information about a career as a systems analyst.

*Many sources for IT career information exist on the Web. Online publications such as Occupational Outlook Handbook provide information, resources, and links. If students have trouble getting started, you can suggest http://www.bls.gov.*

1. Use the Internet to determine whether the Federal Bureau of Labor Statistics lists salary information for systems analysts in the area where you would like to work. If so, summarize the information you find.

*The Bureau of Labor Statistics maintains salary surveys for a wide range of jobs. For example, systems analysts are included in job code 151051, and computer support staff is included in job code 151041. To review the results of BLS salary surveys, you can visit* [*http://data.bls.gov/oes/search.jsp*](http://data.bls.gov/oes/search.jsp)*.*

1. Find three online job postings for systems analysts. List the employers, the qualifications, and the salaries, if mentioned.

*The Internet offers numerous sites for job seekers, and students should have no problem locating examples. A good starting point to suggest is* [*http://www.indeed.com/*](http://www.indeed.com/)

1. Visit monster.com and search for IT positions. Report your findings

*Answers will vary. You might consider setting up parameters such as salary, location, title, and so on to force students to narrow their search, and see who can find the best job opportunities.*

**3 NewTech Interview**

You have an interview for an IT position with NewTech, a large telecommunications company, and you want to learn more about the firm and its organizational structure. To prepare for the interview, you decide to review your knowledge about corporations, including the following questions:

**Tasks**

1. What are the four organizational levels in a typical company?

*In the typical organizational model, operational personnel report to lower-level and middle-level managers, who in turn report to top managers. The top managers report to the board of directors that is elected by the company’s shareholders.*

1. Go online and find three examples of retailers that offer both in-store and Web-based sales. What were the firms? Which one did you like best, and why?

*Students will suggest many examples, including Wal-Mart, Target, Lowes, Apple, and Office Depot, just to name a few. It will be interesting to see how they evaluate the shopping experience. Also, you might consider asking them to pretend they are the CEO of one of these forms, and trying to plan a grand strategy for three to five years from now.*

1. What is empowerment? Provide two specific examples.

*In many companies, operational employees need information to handle tasks and make decisions that previously were assigned to supervisors. This trend, called empowerment, gives employees more responsibility and accountability. Many companies find that empowerment leads to better employee motivation and increased customer satisfaction. Examples might include increasing an employee’s authority to resolve a customer issue, allowing lower-level employees to take over short-term operations planning, and allowing them to handle issues usually managed at a higher level.*

1. What types of information systems might a large company use? Would the same systems be found in a smaller firm? Why or why not?

*Large companies require many different types of information systems. For example, all employees, including top managers, use office systems. Similarly, operational personnel often require information support from what formerly were called management information systems. Now, it is more useful to identify a system by its functions and features, rather than by its users. Today’s systems include enterprise computing systems, transaction processing systems, business support systems, knowledge management systems, and user productivity systems. The best answer probably is that a smaller firm might use any or all of these systems, but as scaled-down versions appropriate to size of the firm. This is where scalability would be especially important in order to meet the future needs of a growing business.*

**4 Rainbow’s End Interview**

Your NewTech interview seemed to go well, but you did not get the job. During the meeting, the interviewer mentioned that NewTech uses structured analysis and relies heavily on modeling, prototyping, and CASE tools. Thinking back, you realize that you did not fully understand those terms. As you prepare for an interview with Rainbow’s End, a large retail chain, you decide to review some IT terms and concepts. You want to be ready for the following questions:

**Tasks**

1. What are the main differences between structured analysis, O-O, and agile development methods? Which method do you think is best, and why?

*While structured analysis regards processes and data as separate components, object-oriented (O-O) analysis combines data and the processes that act on the data into things called objects. O-O analysis uses object models to represent data, behavior, and by what means objects affect other objects. By describing the objects (data) and methods (processes) needed to support a business operation, a system developer can design reusable components for faster system implementation and decreased development cost. Many analysts believe that, compared with structured analysis, O-O methods are more flexible, efficient, and realistic in today’s dynamic business environment.*

 *As noted in the suggested answer to Review Question 9, agile development methods have attracted a wide following and an entire community of users. Agile methods typically use a spiral model, which represents a series of iterations, or revisions, which are based on user feedback. Proponents of the spiral model believe that this approach reduces risks and speeds up software development. Analysts should recognize that agile methods have advantages and disadvantages.*

 *By their nature, agile methods allow developers to be much more flexible and responsive, but can be riskier than more traditional methods. For example, without a detailed set of system requirements, certain features requested by some users might not be consistent with the company’s larger game plan. Other potential disadvantages of adaptive methods can include weak documentation, blurred lines of accountability, and too little emphasis on the larger business picture. Also, unless properly implemented, a long series of iterations might actually add to project cost and development time.*

1. What is a CASE tool and why is it important? What are two CASE tool examples?

*Computer-aided systems engineering (CASE) is a technique that uses powerful programs, called CASE tools, to help systems analysts develop and maintain information systems. CASE tools provide an overall framework for systems development and support a wide variety of design methodologies, including structured analysis and object-oriented analysis. CASE tools can boost IT productivity and improve the quality of the finished product. For example, developers use CASE tools to maintain design integrity, manage a complex project, and generate a wide variety of business, process, and data models. Many CASE tools can be used to build prototypes and generate code modules that speed up implementation. Two popular CASE tool examples are Visible Analyst, and IBM’s Rational software.*

1. What is business process modeling and how is it done?

*A business process model (BPM) graphically displays one or more business processes that systems developers can analyze, test, and modify. A systems analyst can describe and simplify an information system by using a set of business, data, object, network, and process models. Modeling involves various techniques, such as data flow diagrams, entity-relationship diagrams, use cases, and unified modeling language.*

1. What is prototyping and why is it important? What industries are likely to use prototyping?

*Prototyping involves the creation of an early working version of the information system or its components. A prototype can serve as an initial model that is used as a benchmark to evaluate the completed system, or the prototype itself can develop into the final version of the system. Either way, prototyping speeds up the development process significantly. Prototyping tests system concepts and provides an opportunity to examine input, output, and user interfaces before final decisions are made.*

 **Case Studies s**

 **Chapter Case: Hudson Kayak Adventures** s

**Tasks**

1. Develop a business profile for Hudson Kayak Adventures. Create a separate section for each of the following: HKA’s business activities, organization, resources, customers, and potential for Web-based marketing.

In the textbook, students learn that a business profile defines a company’s overall functions, processes, organization, products, services, customers, suppliers, competitors, constraints, and future direction. The first step is to create an outline using the facts presented in the background statement. A sample answer follows:

**Business Activities**
HKA has three main business functions: kayak rentals, instruction, and guided tours.

**Processes**To support its business functions, HKA performs various business processes. Based on the background statement, a partial list might include entering reservations, displaying kayak availability, creating schedules, billing, updating the HKA Web site, updating kayak fleet data, and maintaining an inventory of accessory and safety equipment.

**Organization**The organization chart includes Steve and Linda Lane, and Janet Jacobs, a local college student. Linda handles most of the computer work at this time.

**Products**At this time, HKA does not sell products. Linda would like to offer a selection of books and videos about kayaking and eco-tourism.

**Services**
HKA offers kayak rentals, instruction, and guided tours. If the business expands, HKA might consider other services, such as kayak repair and maintenance, kayak sales and brokerage, expansion of the HKA Web site to share more information about kayaking, and Elderhostel tours.

**Customers**
HKA’s business is split evenly between customers with reservations and walk-in customers. These two groups may have different profiles and might respond differently to marketing and pricing policies. Also, HKA offers three different services (rentals, instruction, and guided tours) that appeal to different customers. With better information, HKA will better understand the needs of its customers and gauge the potential of promotions, special discounts, and so on.

**Suppliers**
The background information does not mention HKA’s suppliers. Students can assume that HKA deals with wholesale sources for kayaks and marine equipment.

**Competitors**No other Kayak rental firms operate within 20 miles of HKA’s location.

**Constraints**Steve and Linda have been too busy to update the system, and it seems clear that outside assistance will be required. Nothing is known about budget or time constraints, and these would have to be discussed in an initial meeting.

**Future Direction**HKA appears to be doing well after two years in business. The Lanes would like to see the business grow, and they realize that they need more information in order to plan for the future. A business support system with decision support features would enable the Lanes to examine potential business opportunities by creating business models and using what-if analysis.

1. List HKA’s main functions and business processes. Draw a model of an HKA kayak rental, including possible events and results.

*A business model graphically represents business functions that consist of business processes. Students can use Figure 1-14 on page 14 as a sample, but there are many ways to develop a graphical model, including CASE tools, drawing programs, and freehand. The main objective is to show the events, subprocesses, and results. Answers to this assignment will vary depending on the process selected. An example follows:*



1. What types of information systems does HKA use? Do these systems support its current and future business objectives? Why or why not? What would you recommend?

The notebook entries represent a manual type of transaction processing system, and the transaction data is managed by the Access database. Together with the visible display of kayak availability, these systems provide some business support, but they lack decision support and what-if capability.

 Linda Lane also uses an inexpensive accounting system, which is a user productivity tool. The Lanes would like more information about scheduling, rental patterns, customer profiles, advertising effectiveness, and future business opportunities. Additionally, Linda is considering new business functions, such as adding books and videos. Clearly, the HKA’s information systems do not support the firm’s current business activities and will be unable to support future objectives.

1. From an object-oriented viewpoint, HKA treats kayaks as a class. Based on the background information provided, what are some properties of kayak objects?

*Students should understand that an object is a member of a class, which is a collection of similar objects, and that objects have characteristics called properties. Because an object can represent a person, thing, or event, a reservation can be represented as an object. The properties of a kayak object might include an ID number stamped into the hull by the manufacturer, an HKA “stock” number, model number, cost, year purchased, length, single or double, sit-on-top or sit-in, color, and similar characteristics.*

 **Continuing Case: Personal Trainer, Inc.** s

**Tasks**

1. Use the background information to develop a business profile for Personal Trainer. Be sure to indicate where more information will be needed.

*According to Gray Lewis, who will manage the new facility at the new “supercenter,” Personal Trainer will offer exercise equipment, a health food store, a pool, a snack bar, sporting goods, child care, child-fitness programs, a teen center, and a computer cafe. Each of these activities represents a major business function, which in turn includes various business processes. Examples of business processes might include the following:*

* *Add new member*
* *Create fitness class*
* *Schedule fitness instructor*
* *Register member in class*
* *Sell health food products*
* *Sell sporting goods*
* *Design training program for member*
* *Enter member charges*
* *Prepare monthly bills*
* *Apply member payments*
1. Each new supercenter service represents a business function, which is composed of one or more business processes. Using the background information and the conversation between Susan and Gray, list the business functions and the processes with each function.

 *Based on his comments, Gray seems a bit skeptical. Although he knows that Cassia wants more information support for the new operation, he states that he is not so sure. Sometimes managers like Gray are reluctant to embrace major changes in IT management. A further clue is his statement about not wanting to “reinvent the wheel.”*

 *In response to his comments, Susan offers a specific approach, which Gray seems to accept. Students should recognize that an IT professional must work effectively with various levels within the organization in order to gain trust, confidence and management support. Also, Susan must be courteous and discreet — she is an outside consultant, not Gray’s boss. But Gray knows that she was brought in by Cassia, who is Gray’s boss. The relationship between managers and the IT team is critical to a project’s success, and it would appear that Susan is trying hard to get off on the right foot in her meeting with Gray.*

 *Each service would require one or more processes, and it is OK for students to use their imagination in providing that part of the answer. Examples of business functions might include the following:*

* *Customer management*
* *Fitness classes*
* *Exercise equipment*
* *Pool*
* *Snack bar*
* *Sporting goods sales*
* *Child fitness service*
* *Yoga*
* *Zumba*
* *Dance*
1. Based on what you know, should Personal Trainer consider any of the following systems: ERP, transaction processing, business support, knowledge management, or user productivity? Why or why not?

*With a dozen or more fitness centers, Personal Trainer might be ready for a company-wide approach to managing its IT resources. Enterprise computing and ERP systems allow a company to integrate its primary functions (such as production, sales, services, inventory control, and accounting) to improve efficiency, reduce costs, and help managers make key decisions. Enterprise computing also improves data security and reliability by imposing a company-wide framework for data access and storage.*

*Personal Trainer will certainly use transaction processing in its day-to-day operations, and the firm could benefit significantly from using a business support system to help mangers make key decisions. For example, based on data generated by the TP system, a business support system might help Gray to identify fast-moving services and products, and use that information to plan future staffing and marketing decisions.*

 *Personal Trainer might not be large enough to benefit from a knowledge management system, but the company certainly can use user productivity systems to empower its employees, reduce expenses, and serve its customers better.*

1. What opportunities might Personal Trainer have for Web-based B2C transactions in the future? What about B2B?

*From the meeting discussion, it is clear that Cassia wants members to have online access to their fitness programs. Internet access would be an example of B2C commerce, which would give Personal Trainer the ability to sign up new members, provide online class registration, and explore new markets for its services. Personal Trainer also could examine opportunities for B2B commerce in its dealings with the suppliers of products or services that it purchases. By opening up B2B links with its suppliers, Personal Trainer might achieve better inventory management and reduce its internal purchasing and communications costs.*

 **Capstone Case: New Century Health Clinic** c

**Tasks**

1. Use the background information to create a business profile for New Century, and indicate areas where more information will be needed. The profile should include an organization chart of the office staff. You can create the chart using Microsoft Word or a similar program, or you can draw it by hand. In Word 2010, click the Insert tab on the Ribbon, then Smart Art, then Organization Chart.

*Answers will vary but should include components of a business profile including an overview of a company’s mission, functions, organization, products, services, customers, suppliers, competitors, constraints, and future direction.*

 *A sample organization chart is shown in the following figure. The job titles are not important, but it is necessary to identify the functions. Your students will want to refer to this chart in later chapters. Systems analysts must draw critical facts from a written summary, and creating an organization chart requires students to practice their analytical*

1. Identify six business processes that New Century performs, and explain who has primary responsibility for each process. Also describe what data is required and what information is generated by each process.

| ***Business Process*** | ***Person Responsible*** | ***Data*** |
| --- | --- | --- |
| *Prepare office payroll* | *Corinne Summers* | *Employment hours, benefits, pay check data* |
| *Handle tax reporting* | *Fred Brown* | *Tax reports and payments* |
| *Handle Employment Paperwork* | *Fred Brown* | *New employee paperwork and training records* |
| *Handle profit distribution* | *Fred Brown* | *Track partner ownership, performance, and payments* |
| *Maintain patient medical records* | *Susan Gifford* | *Patient information and treatment records.* |
| *Handle insurance reporting billing* | *Tammy Alipio* | *Insurance information and billing data for patient visits.*  |
| *Handle accounting* | *Tom Capaletti* | *Accounts receivable and payable.* |
| *Manage appointment book* | *Lisa Sung* | *Calendar and exchange information* |
| *Make patient reminder calls* | *Lisa Sung* | *Call record data* |
| *Prepare daily appointment list* | *Lisa Sung* | *Calendar data* |
| *Order office and clinic supplies* | *Carla Herrera* | *Inventory data* |
| *Organize office and clinic supplies* | *Carla Herrera* | *Inventory data* |

1. Based on what you know at this point, is it likely that you will recommend a transaction processing system, a business support system, or a user productivity system? What about an ERP system? Explain your reasons.

*The clinic could utilize a transaction processing system to track each charge, payment, and insurance claim. This system would reduce administrative costs, speed up insurance reimbursement, and provide controls and reports. A business support system could be used to analyze provider workloads, turnaround time for claims and payments, and forecast future staffing needs. A user productivity system would increase office efficiency and improve patient satisfaction.*

New Century must develop computerized information systems for all critical operations as soon as possible. The first step is to identify New Century’s current procedures, which are typical of many small- and medium-size companies. These include managing customer (patient) records, accounts receivable (patient and insurance billing), accounts payable; scheduling production or services; and handling inventory, payroll, and human resources.

 Because New Century deals with many insurance companies, there probably are opportunities to exchange claim information and payment status using EDI. Also, New Century can consider vertical and horizontal packages that would support the clinic’s information management needs. The following table shows some possible systems that might be considered, along with potential benefits.

| **System** | **Type** | **Use** | **Benefit** |
| --- | --- | --- | --- |
| Accounts receivable | Vertical or horizontal | Track money owed the clinic for goods sold/services rendered; send monthly bills/statements to patients and insurance companies; automatically generate reminder statements | Identify overdue accounts and credit risks; provide faster, more accurate billing; improve customer service; increase cash flow by reducing the time between goods sold/services rendered and payment |
| Accounts payable | Vertical or horizontal | Send checks to suppliers; generate a purchases journal | Increase clinic’s control over purchasing; minimize manual data entry; improve cash flow; increase profitability; provide more effective management of current liabilities |
| Inventory | Vertical or horizontal | Track inventories of office and clinic supplies | Obtain real-time inventory data; better inventory management |
| Payroll | Horizontal | Generate employee checks and federal and state tax forms; manage profit distribution to partners | Monitor and control pay to individual employees; determine cost of completing jobs; allow for electronic funds transfer (direct deposit) into employee bank accounts |
| Voice mail | Horizontal | Internal and external messaging | Allow customers to contact office after hours; faster, more effective internal messaging |
| Fax | Horizontal | Transmit forms to insurance companies; order office and clinic supplies | Faster transmission and ordering speeds insurance claim processing/order fulfillment |
| Word processing | Horizontal | Create letters, memos, faxes, agendas, newsletters; do business mailings | More professional-looking documents via formatting features and templates; easier editing |
| Scheduling; automated calendars | Vertical or horizontal | Managing and tracking schedules; printing daily appointment lists | Minimize scheduling conflicts; provide efficient service, while maximizing appointment times |
| Database management | Horizontal | Managing and providing access to customer records (patients, employers, and insurance firms) | Increase access to records; provide better organization in a single repository; allow for querying and filtering of records; reduce paper flow |
| Spreadsheets | Horizontal | Plan and/or track costs, budgets, profits | Increase clinic’s control over costs, budgets, profits; improve cash flow; increase profitability; provide more effective management of assets and liabilities |
| Intranet | Horizontal | Share data across the entire clinic (e.g., forms, policies, procedures; patient data; announcements) | Increase access to corporate and customer (patient) information; reduce paper flow |
| Web-based  | Internet | Order office and clinic supplies online; place prescription orders for patients; send/check status of deliveries; create Web page to market the clinic, inform prospective patients, and answer frequently asked questions  | Better customer service; reduce paper; less expensive ordering; real-time tracking data for orders |
| E-mail | Internet | Send reminder e-mails to patients; communicate with employers, insurance firms | More efficient, less expensive than long-distance calls |
| EDI | Internet | Track claim data and reimbursement status | Reduce administrative costs, speed up insurance reimbursement, and provide controls and reports |

 4. Describe the systems development method you plan to use, and explain the pros and cons of using this method.

*Answers will vary but students should describe why the method was chosen, and compare the strengths and weaknesses of other methods.*

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Structured analysis** | **Object-oriented (O-O) analysis** | **Agile methods** |
| **Modeling Tools** | Data flow diagrams (DFDs) and process descriptions, which are described in Chapter 5. Also, business process modeling, which is explained in Part B of the Systems Analyst's Toolkit. | Various object-oriented diagrams depict system actors, methods, and messages, which are described in Chapter 6. Also, business process modeling, which is explained in Part B of the Systems Analyst's Toolkit. | Tools that enhance communication, such as collaborative software, brainstorming, and whiteboards. Business process modeling, which is explained in Part B of the Systems Analyst's Toolkit, works well with agile methods. |
| **Strengths**  | Traditional method, which has been very popular over time. Relies heavily on written documentation. Frequent phase iteration can provide flexibility comparable with other methods. Well-suited to project management tools and techniques. | Integrates easily with object-oriented programming languages. Code is modular and reusable, which can reduce cost and development time. Easy to maintain and expand as new objects can be cloned using inherited properties. | Very flexible and efficient in dealing with change. Stresses team interaction and reflects a set of community-based values. Frequent deliverables constantly validate the project and reduce risk. |
| **Weaknesses** | Changes can be costly, especially in later phases. Requirements are defined early, and can change during development. Users might not be able to describe their needs until they can see examples of features and functions. | Somewhat newer method might be less familiar to development team members. Interaction of objects and classes can be complex in larger systems. | Team members need a high level of technical and communications skills. Lack of structure and documentation can introduce risk factors. Overall project might |

 **CASE Tool Workshop s**

**Background**

Suppose you are a part-time student assistant in the computer lab at your school. Janet Jacobs, the IT department chair, recently announced that a CASE tool will be installed on the lab network. Her decision was welcomed by many IT faculty members, who think it is important for students to learn about CASE tools and how use them to complete assignments in MIS courses.

 You have been asked to evaluate various CASE tools, and submit the results. Your initial tasks will be to provide an overview of the Visible Analyst® CASE tool, or a similar tool.

**Tasks:**

1. Describe the user interface. Is it attractive and easy to use? Why or why not?

*A CASE tool interface is like any other application interface; some features are excellent, some are not. Students should be able to evaluate the interface and suggest what needs to be improved.*

1. How do you open an existing project? How do you create a new project?

*In Visible Analyst, you use the menu at upper left and click* ***File-Select Project****, and then click one of the listed projects. To create a new project, you would use the same menu and click* ***File-New Project****, and then follow the menu prompts.*

 **MIS CourseMate Features**

If your students have MIS CourseMate access codes, you can reinforce and extend their learning with premium content created for this textbook. For example, you can launch interactive Video Learning Sessions to help you understand systems development concepts and practice your skills. In addition, you can use MindTap Reader, which is a full, interactive, digital e-book.

 **Online Case Simulation: SCR Associates**



**Session 1: Introduction**

**Introductory note:** The SCR case study provides a valuable real-world experience for students. The case involves an imaginary IT consulting firm that maintains a realistic Web site, complete with a company intranet that students can access. The student becomes an entry-level systems analyst reporting to a supervisor named Jesse Baker.

In each session, the student receives e-mail messages, voice mail messages, and a list of tasks to perform. The voice mail all comes from Jesse Baker, and the e-mail messages come from Jesse Baker and other members of the firm. Each message contains guidance and direction that would be typical of a real-life situation. After reading the e-mail, listening to the voice messages, and consulting the task list, the rest is up to the student. He or she must go back to the chapter, review the terms, concepts, and skills, and then apply them in the context of the case study. Four main tasks occur in each session. A typical task might require the student to prepare an e-mail message, a memo, Internet research, or a graphic element such as a chart or diagram. The task list for Session 1 follows.

**Tasks**

Jesse wants me to learn as much as possible about SCR, and she gave me a checklist with four tasks:

1. Investigate SCR's Web site and learn about the company's history, purpose, and values. Is the site user-friendly? Why or why not? Provide at least four improvements you would suggest to Jesse.

*The SCR Web site includes realistic features, content, and links that allow students to learn about the company and its background. Encourage students to find examples of other IT consulting firms and compare them to the SCR site. This task could tie into Assignment 4, which requires Web research to find other firms. It would be helpful to get students interested in the SCR site’s design and navigation features before they start working on the case itself. Students with a background in Web design probably will have suggestions and comments to share with the class.*

1. On the SCR intranet, visit the data, forms, and resources libraries and review a sample of the information in each library. What other libraries might be created? Suggest at least two to Jesse.

*This task provides an overview of the site and will give students a valuable introduction to the case study. If you have not done so already, this would be a good time to explain the main features of the case study, which include the SCR intranet, personalized e-mail messages, the reference libraries, and the task list for each session*

1. Using the SCR functions and organization listed in the data library; create an organization chart using Microsoft Word, Visio, or a drawing program. Be sure to show your own position on the chart.

*Students can use the list of SCR functions and organization (Document 1-2 from the Data Library) to create an organization chart. A sample chart follows:*

1. Jesse says that SCR has plenty of competition in the IT consulting field. Get on the Internet and find four other IT consulting firms. She wants a brief description of each firm and the services it offers. Also tell her which firm impressed you most, and why.

*Students should have little difficulty locating IT consulting firms. This would be a good topic for student reports and for actual visits to the online sites if computer resources are available in the classroom. You might ask students to critique each site using three factors: the amount of useful information, site organization, and aesthetics.*

 **Critical Thinking Challenge**

**Background**

You are an intern in the IT department at Game Technology. You report to the IT director, Mike McGee. Mike assigned you to work with two systems analysts: Lauren Jacksina and Cathy Ross. Lauren and Cathy both report to Felesia Stukes, manager — IT development, who reports to Mike. Joe Turner, manager — IT operations also reports to Mike. Dawn Rountree, database administrator, and Greg Wade, network administrator, report to Joe.

As an intern, you are expected to keep a journal to record your day-to-day experiences and what you are learning. This week, you will describe the systems development methods that the IT team uses, including structured analysis, object-oriented analysis, and agile approaches. Your journal should include a description of each method and its characteristics.

**Practice Tasks and Answers**

1. Draw an organization chart showing all IT department positions. You can use Microsoft Word or a similar program, or you can draw it by hand. In Word 2010 and Word 2007, click the Insert tab on the Ribbon, then click Smart Art, then Hierarchy.



1. Write a journal entry that describes the three development methods and the characteristics of each method.

|  |  |
| --- | --- |
|  | SYSTEMS ANALYSIS JOURNALTopic: Development Methods |
|  |  |
|  | Popular methods include:  |
|  | * Structured Analysis
 |
|  | Data and process-oriented |
|  | Traditional, but still popular approach |
|  | * Object-Oriented Analysis
 |
|  | Uses “object” to represent people, things, events, etc.  |
|  | Shows interaction among objects  |
|  | * Agile/Adaptive Approach
 |
|  | Relies on hands-on teams and rapid iteration |
|  | Uses “stories” to build and link small modules |
|  |  |

**Challenge Tasks and Answers**

Three weeks ago, Mike McGee left to join a larger company, and management decided to reorganize the IT department. Felesia Stukes was promoted to IT director, and to save money, her old job was eliminated. You, Lauren, Cathy, and Joe will report to her. The rest of the team is unchanged, except that a new programmer, Annie Edenton, has been hired, reporting to Dawn Rountree. Dawn’s title has been changed to Senior Data Technician. Also, to update your journal, you need to add more information about the various development methods:

* What are some pros and cons of each development method?
* What modeling tools are typically used with each development method?
1. Draw a new organization chart showing the changes, with full names and titles.

*A sample chart might look like this:*



1. Write a journal entry that answers the additional questions about development methods.

*Figure 1-23 on page 21 offers a detailed comparison of the three development methods, and should be a key resource for students seeking information for their journal entry.*

 **Video Learning Sessions**

**Note:** *The textbook includes 18 Video Learning Sessions and an introductory session to help students become familiar with this feature. In Chapters 2, 3, 4, 5, 6, 7, 9, and 11, students assist the IT Training Director by creating a preview to boost interest in the VLS for that chapter. In the role of a training assistant, the student must be perceptive, creative, and an effective communicator.*

*Chapters 1, 8, 10, and 12 do not align with a specific VLS, so students are asked to help create a new VLS for that chapter. Still in the role of a training assistant, the student is asked to describe the specific skills and concepts to be covered, explain how the material would be presented, and describe at least three graphic images to be included in the session.*

**Practice Tasks (Your Turn)**

*Students should perform these tasks after watching each VLS to practice their skills and check the sample answers. For convenient reference, a full set of Your Turn tasks and solutions is included in the Additional Activities for Students section of the Instructor materials.*

**Training Tasks**

*These tasks might seem quite simple, but they actually require metacognition, which can be described as “knowing what you know.” Students need to step back and provide an overview of the session and why it is important, and then select a specific segment that does a “good job” of explaining a skill or concept. To do that, the student must evaluate the topics, and choose one that is effective, in his or her view. The topic is not important, and answers will vary.*

*The real issue is the student’s ability to grasp the objective of the training and come up with effective ways to explain key points and concepts. Those skills will be extremely valuable in the workplace.*