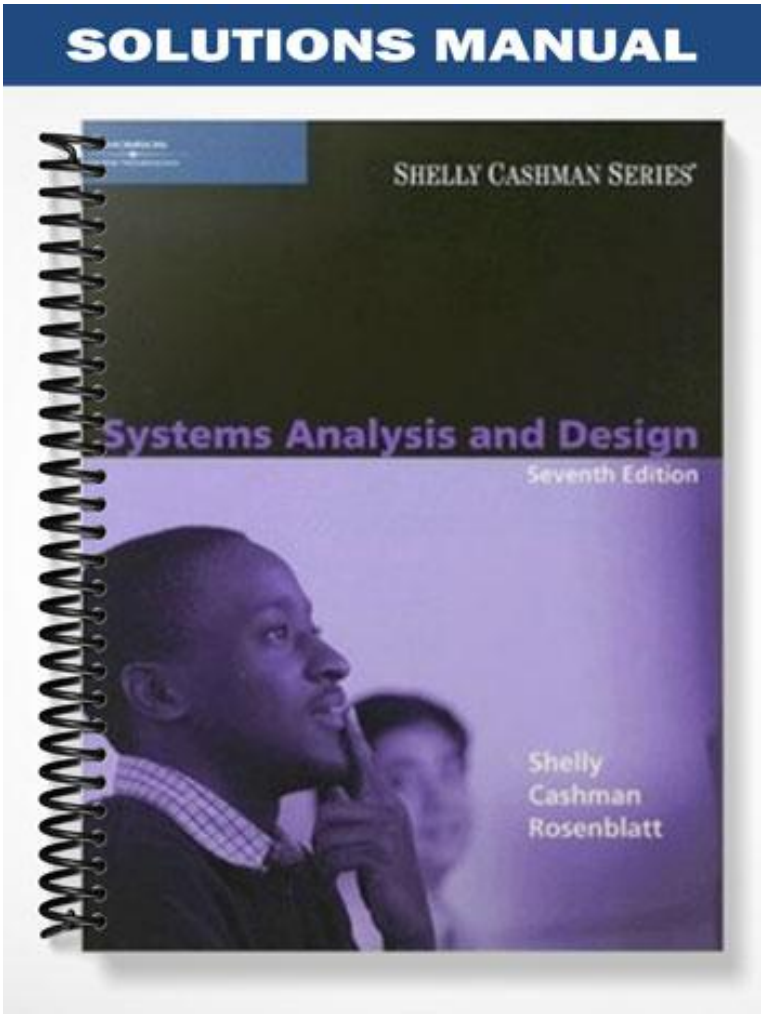
SOLUTIONS MANUAL



Systems Analysis and Design
Seventh Edition
End of Chapter Solutions
CHAPTER TWO
ANALYZING THE BUSINESS CASE

ANSWERS TO CASE-SIM: SCR ASSOCIATES

1. We need a corporate goal for SCR that refers to our new training activity. Prepare a draft to show Jesse.
   SCR states four main goals in dealing with its clients:
   - *SCR consultants will provide clients with cutting-edge technology and show them how it can be used to achieve business results. All clients will receive personal attention, professional service, and ethical behavior from the consultant.*
   - *SCR's fees will be fair, reasonable, and competitive. SCR will strive to earn its fees the old-fashioned way — by hard work, professionalism, and dedication to the client's needs.*
   - *Reputation is a priceless asset. To protect it, SCR will maintain a Code of Ethics to ensure that it avoids impropriety of any kind, or even the appearance of impropriety.*
   - *SCR's goal is not perfection, but constant quality improvement. SCR will encourage and solicit input and feedback from clients.*

   The textbook points out that a firm develops a set of goals to carry out its mission. SCR's training capability represents a major step for the company and should be mentioned in the company's mission statement. Answers will vary, but a sample might be worded as follows:

   SCR training will achieve excellence in three key areas: content, delivery, and results. To support our training function, we will focus on three main goals:
   - *Training content will provide world-class technical skills and knowledge required by IT industry leaders.*
   - *Delivery will be highly professional, with attention to individual needs and interaction with students.*
   - *Results will be measurable, and SCR will certify student achievement levels and competence.*

2. Jesse wants my opinion on whether or not SCR needs a systems review committee. Need to prepare a recommendation and reasons.
   As far as we know, SCR does not have a systems review committee. The SCR executive committee announced the new TIMS system by giving employees advance notice of a news release. Students know that top management directives are one source of systems projects. Should SCR consider a committee? You could argue that in a firm like SCR, the top managers make all major decisions, and a committee would add an unnecessary layer of decision-making. Also, the company is small enough to allow constant, direct communication among all members of the SCR team — so what would be the advantage of a committee?
   On the other hand, not all decisions involve major IT projects. Most of the time, IT departments deal with day-to-day maintenance requests. Without a systems review committee, the IT director must allocate corporate resources. Would a systems review committee provide more interdepartmental input and allow more user involvement? The chapter presents various pro and con arguments, and you should encourage students to apply these concepts to the SCR situation.

3. Draft a project scope statement for the TIMS system and describe the constraints. She said be specific.
   Based on the information in the SCR documents for this chapter, the project will have a specific timetable and must include various features and capabilities. A sample statement might read as follows:

> ***Project Scope and Constraints***
> *The new training information system must support SCR's training operations, and meet the requirements of users and SCR management. Specific constraints include the following:*
> - *The system must be operational by February 1.*
> - *The system must track courses, instructors, students, and grades.*
> - *The system must interface with SCR's accounting system.*
> - *The system must be able to support online courses registration in the future.*
> - *The system must track industry certification requirements.*

4. Need to identify the people I want to interview to learn more about the new training activity, and prepare a list of the questions I will ask.
   At this point, you would want to obtain more background and a better understanding of the project. The most important people would be the SCR employees who have experience with corporate training and will be involved in the new training function. Additional investigation and detailed fact-finding will be performed during the systems analysis phase, starting in Chapter 3.
   A sample interviewee, job title, and list of interview topics follows. The topics are listed generally, but you can ask students to frame specific questions based on the topics they suggest.

Person	***Title***	***Interview Topics***
Jill Martin	*Manager, Training Group*	▪ *Overall vision of how the new system can support the SCR training operation* ▪ *Prior experience with training information management systems; provide samples of documents if possible* ▪ *Estimate of future volume of courses and students* ▪ *Comments on key features or capabilities that should be included in the project scope statement*

ANSWERS TO CHAPTER EXERCISES

Review Questions

1. What is a business case? How does a business case affect an IT project?
   The term business case refers to the reasons, or justification, for a proposal. A strong business case suggests that the company should pursue the alternative, above other options, because it would be in the firm's best interest to do so. To analyze the business case for a specific proposal, the analyst must consider the company's overall mission, objectives, and IT needs. ***(Page 46)***

2. What is a SWOT analysis and why is it important?
   During strategic planning, top managers ask a series of questions that is called a SWOT analysis because it examines a company's strengths (S), weaknesses (W), opportunities (O), and threats (T). Each question leads to an IT-related issue, which in turn requires more review, analysis, and planning. ***(Page 48)***

3. What are five common reasons for systems projects?
   The main reasons for systems projects are improved service to customers, better performance, more information, stronger controls, and reduced cost. ***(Page 54)***

4. What are some internal and external factors that affect systems projects?
   Internal factors include the strategic plan, top managers, user requests, the IT department, and existing systems. External factors include technology, suppliers, customers, competitors, the economy, and government. ***(Page 56)***

5. What are some advantages and disadvantages of a systems review committee?
   A systems review committee provides a variety of experience and knowledge in evaluating systems requests. With a broader viewpoint, a committee can establish priorities more

effectively than an individual, and one person's bias is less likely to affect a committee's decisions. On the other hand, action on requests must wait until the committee meets. To avoid delay, committee members use memos, e-mail, and teleconferencing to communicate with each other. Another potential disadvantage of a committee is that members could favor projects requested by their own departments, and internal political differences can delay important decisions. ***(Page 61)***

6. What is feasibility? List and briefly discuss four feasibility tests.
A systems project must be feasible from an operational, technical, economic, and schedule standpoint. Operational feasibility means that a proposed system will be used effectively after it has been developed. If users have difficulty with a new system, it will not produce the expected benefits. Technical feasibility refers to the technical resources needed to develop, purchase, install, or operate the system. Economic feasibility means that the projected benefits of the proposed system outweigh the estimated costs and usually consider the total cost of ownership (TCO), which includes ongoing support and maintenance costs, as well as acquisition costs. Costs can be one-time or continuing, and can be incurred at various times during project development and use. Schedule feasibility means that a project can be implemented in an acceptable time frame. When assessing schedule feasibility, a systems analyst must consider the interaction between time and costs. ***(Pages 61 through 64)***

7. How do tangible benefits differ from intangible benefits?
Tangible benefits are benefits that can be measured in dollars. Tangible benefits result from a decrease in expenses, an increase in revenues, or both. An example of tangible benefits might be a new scheduling system that reduces overtime. Intangible benefits are difficult to measure in dollars but also should be identified. An example of an intangible benefit might include a new, user-friendly system that improves employee job satisfaction. ***(Page 63)***

8. What are the steps in a preliminary investigation?
A systems analyst conducts a preliminary investigation to study the systems request and then recommend specific action. After obtaining an authorization to proceed, the analyst interacts with managers and users. The analyst gathers facts about the problem or opportunity, project scope and constraints, project benefits, and estimated development time and costs. The end product of the preliminary investigation is a report to management. ***(Page 67)***

9. What is project scope? What is a constraint? In what three ways are constraints classified?
Determining the project scope means to define the boundaries, or extent, of the project — being as specific as possible. For example, the statement, "Payroll is not being produced accurately" is too general, compared with the statement, "Overtime pay is not being calculated correctly for production workers on the second shift at the Yorktown plant." Similarly, the statement, "The project scope is to modify the accounts receivable system" is not as specific as the statement, "The project scope is to allow customers to inquire online about account balances and recent transactions."
A constraint, or requirement, is a condition that the system must satisfy or an outcome that

the system must achieve. A constraint can involve hardware, software, time, policy, law, or cost. Constraints can be classified as present versus future, internal versus external, and mandatory versus desirable. Constraints are present or future depending on whether the constraint must be met as soon as the system is developed, or modified at some future time. Constraints are internal or external, depending on whether the constraint arises from within the organization or from an external force, such as a government regulation. Constraints are mandatory or desirable depending on whether the constraint is absolutely essential, or merely desirable. ***(Page 69)***

10. What are three fact-finding techniques that systems analysts use during the preliminary investigation?
    To obtain more information about a systems request, you might perform initial fact-finding by analyzing organization charts, conducting interviews, reviewing documentation, observing operations, and surveying users. If the systems request is approved, more intensive fact-finding will continue during the systems analysis phase. ***(Pages 71 and 72)***

Discussion Topics

1. Directives from top management often trigger IT projects. Suppose that the vice president of marketing tells you to write a program to create mailing labels for a one-time advertising promotion. As the IT manager, you know that the labels can be prepared more efficiently by simply exporting the data to a word processing program with a mail merge feature. How would you handle this situation?
   If the company has a systems review committee, then the committee would review all systems requests, including this one. As IT manager, you probably are a member of that committee. If you can demonstrate to the committee that the systems request is impractical, then it would be rejected. The rejected systems request would then be returned to the vice president of marketing along with the committee's reasons for rejection.
   If the organization does not use a systems review committee, then as IT manager you probably have the authority to accept or reject projects. If you decide that this particular systems request is impractical, then return the request along with the reasons for rejection. So, in this case too, it is your responsibility to demonstrate that this systems request is not practical.
   If a project truly is impractical, then time and cost estimates should reveal that. In this situation, prepare estimates of the costs to prepare the mailing labels on the computer by writing and using a computer program versus the cost of having a staff person prepare the labels using a word processor. If the systems request can be shown to be an inefficient use of the firm's time and money, the vice president of marketing will agree that the project should not be done.

2. The vice president of accounting says to you, the IT director, "This systems development life cycle stuff takes too long." She tells you that her people know what they are doing and that all systems requests coming from her department are necessary and important to the organization. She suggests that the IT department bypass the initial steps for any accounting department request and immediately get to work at the solution. What would you say to her?
   You must answer two points in the vice president's statement. The first point is that the accounting department requests should bypass the approval and priority-setting process. The second point is that the initial phases of the systems development life cycle are unnecessary.
   To respond to the first point, you should point out that the purpose of the approval cycle is to recognize and reject those projects that are unnecessary or impractical. The approval cycle, therefore, poses no threat to worthy accounting department projects. Even more critical is the setting of priorities for the approved systems requests, all of which presumably are important and necessary. Most often, the total time necessary to complete approved systems requests exceeds the available information systems staff time. Information systems staff time is a scarce resource that must be managed wisely. Priority must be given those projects that are considered the most necessary and most valuable to the entire organization. Even one systems request bypassing the approval and priority-setting cycle could, therefore, harm the organization.
   It is possible that the vice president of accounting complained because the organization's approval and priority-setting cycle takes too long, unnecessarily delaying the start of critical projects. You should check this out; perhaps these procedures could be streamlined and improved.
   To answer the second point, you should explain a problem cannot be solved without first understanding it. The systems development life cycle was developed as a logical series of steps to respond to feasible systems requests. Unnecessarily bypassing any one step could result in an inferior solution to the systems request.

3. One of your coworkers says, "Mission statements are nice, but they really don't change things down here where the work gets done." How would you reply?
   Remind students of the famous story of the airline pilot who informed the passengers that there was bad news and good news. The bad news was that they were lost, but the good news was that they were making great time. The obvious point is that without a long-term mission, an organization cannot establish goals, objectives, and milestones. The real challenge for a company is to motivate employees to feel that they are contributing directly and significantly to the organization's success.

4. Would you continue to work for a company if you disagreed with the firm's mission statement? Why or why not?
   This discussion topic is intended to stimulate a discussion of corporate politics and professional ethics. Obviously, more information would be needed. But pose some examples, such as "Suppose the company president wanted to make a long-term commitment to a technology that you believed was weak and likely to be superseded in a few years. How far would you be willing to go in voicing your opposition, and what factors would influence your answer?"

Projects

1. Use the Internet to find an example of a corporate mission statement.
   Students should have no trouble locating numerous examples of mission statements. Perhaps the easiest method would be to search on the phrase "mission statement." You also might encourage students to share the mission statement of the company for which they work, and analyze the mission statement of your school or organization, if it has one.

2. Risk management is an important part of information systems planning and project management. Perform Internet research to learn more about risk management, and write a summary of the results. Be sure to search for a book titled *Waltzing with Bears*, by Tom Demarco and Timothy Lister.
   The chapter points out that every IT project involves risks that systems analysts and IT project managers must address. A risk is an event that could affect the project negatively. Risk management is the process of identifying, evaluating, tracking, and controlling risks to minimize their impact. An Internet search should produce numerous articles, Web sites, and information about risk management. The book by DeMarco and Lister is especially interesting to an IT student. According to the publisher, "by ignoring the threat of negative outcomes—in the name of positive thinking or a can-do attitude—software managers drive their organizations into the ground." The publisher claims that in this book, the authors show readers how to identify and embrace worthwhile risks. Developers are then set free to push the limits.

3. Suppose you own a travel agency in a large city. You have many corporate clients, but growth has slowed somewhat. Some long-term employees are getting discouraged, but you feel that there might be a way to make technology work in your favor. Use your imagination and suggest at least one strength, weakness, opportunity, and threat that your business faces.
   Students should have no trouble identifying the weaknesses and threats to this troubled industry. Opportunities and strengths might be a bit more difficult.
   Travel agencies have been battered by the airlines' profit squeeze, and a traveling public that travels less and looks for discounts every step of the way. Nonetheless, innovative travel firms can and do come up with ways to survive and even grow in niche markets. Encourage students to think of ways that information technology could be a potent weapon for a small firm. For example, some travel agencies are offering "name-your-price" options that depart from the traditional commission-based concept. Vacation.com is an industry group that offers member travel agents various IT tools and solutions designed to strengthen their competitive ability.

4. Write a mission statement and at least three goals for the travel agency described in Project 3.
   Answers will vary, depending on the strengths, weaknesses, opportunities, and threats identified in the previous question. Encourage students to use some of the screen shots in the chapter and the SCR case as models for the mission statement and goals.

ANSWERS TO APPLY YOUR KNOWLEDGE

1 Last Chance Securities

Situation: The IT director opened the department staff meeting today by saying "I've got some good news and some bad news. The good news is that management approved the payroll system project this morning. The new system will reduce clerical time and errors, improve morale in the payroll department, and avoid possible fines and penalties for noncompliance. The bad news is that the system must be installed by the end of December in order to meet new federal reporting rules, costs must be within the budgeted amount, the new system must interact with existing systems, and the vice president of finance insists on approving the final design."

1. Name the constraints and indicate whether each is present, future, internal, external, mandatory, or desirable.
   Based on the fact statement, the December deadline constraint is present and mandatory. It can be viewed as internal, because management handed it down, but the deadline actually is necessary to meet an external requirement (the new Federal reporting rules). The budget constraint and the final design approval constraints both are present, internal, and mandatory.

2. Explain why it is important to define the payroll project's scope. Explain how to define project scope.
   To determine project scope, define the specific boundaries, or extent, of the project. In this case, you need to know exactly what requirements the system must meet. To define project scope for the Last Chance Securities payroll system, determine all deadlines and budget limitations, and obtain a clear understanding of the new system's features and capability.
   Your next step would be to identify any other constraints, which might include hardware, software, policy, or legal issues. To represent the project scope, you might want to use a graphical model to show the systems, people, and business processes that will be affected by the proposed system. Your main objective is to obtain a clear definition of system requirements, and by establishing the project scope, you will determine the boundaries of the preliminary investigation itself.

3. Identify tangible and intangible benefits of the new payroll system.
   Tangible benefits include a reduction in clerical time, which can be measured in dollars. A reduction in payroll errors also might be translated into time and dollar savings. Morale improvement seems to be an intangible benefit, unless it can be quantified in terms of reduced turnover or absenteeism. The avoidance of possible fines and penalties for noncompliance might be a tangible benefit, if the dollar amounts could be predicted. Otherwise, this benefit is more like an insurance policy against future problems.

4. What topics should be included in a report to management at the end of the preliminary investigation?
   The preliminary investigation report for the Last Chance Securities payroll system might include the following sections:

1. *Introduction. The first section is an overview of the report. The introduction has a brief description of the system, the name of the person or group who performed the investigation, and the name of the person or group who initiated the investigation.*
2 *Systems Request Summary. The summary describes the basis of the systems request.*
3. *Findings. The findings section contains the results of your preliminary investigation, including a description of the project's scope, constraints, and feasibility.*
4. *Recommendations. Recommendations for further action, with specific reasons and justification, are explained in this section. Management will make the final decision, but the IT department's input is an important factor.*
5. *Time and Cost Estimates. This section describes the cost of acquiring and installing the system and the total cost of ownership during the system's useful life.*
6. *Expected Benefits. Anticipated tangible and intangible benefits and a timetable that shows when they are to occur are included in this section.*
7. *Appendix. An appendix is included in the report if you need to attach supporting information.*

2 Way Out Bikes

Situation: The owner of Way Out Bikes asked you for advice about acquiring an information system for her business. The company specializes in helping customers select exactly the right bicycle for their needs and lifestyles. Way Out cannot compete on price with mass merchandisers, but it seeks to offer value and expertise for which customers are willing to pay. You ask the owner whether she has long-range plans for the company, and she replies that she has not really thought beyond a one-year time frame.

1. Explain the concept of strategic planning to Way Out's owner.
   Give her an overview of the strategic planning concept. You might start by telling the story about the two stonecutters, one of whom had a strategic vision of what he was doing. Explain that during strategic planning, a company examines its purpose, vision, and values and develops a mission statement, which leads to goals, objectives, day-to-day operations, and business results that affect company stakeholders. Even small firms need to plan strategically. Perhaps this is even more important than it would be in larger companies, because the small firm typically has more limited resources and a smaller margin for error. Also explain that strategic planning looks beyond day-to-day activities and focuses on a horizon that is 3, 5, 10, or 20 years in the future. Ask her that if she does not know where she is heading, how will she know when she gets there?

2. Decide what else you might want to know about Way Out. Consider the internal and external factors described on pages 56 through 59, and make a list of questions to ask the owner.
   Answers will vary, but the following questions might be asked:
   - *What are Way Out's key lines of business or market segments?*
   - *Are there any products or services within business segments that separately can be identified and described?*
   - *Are there various customer types and characteristics that can be identified?*
   - *Who are the company's suppliers, and what are their characteristics?*
   - *Who are the company's competitors, and what are their characteristics?*

- *What are the financial, regulatory, and other forces that might impact the company?*

Also, you might want to ask a series of broadly worded questions called a SWOT analysis because it will examine Way Out's strengths, weaknesses, opportunities, and threats. The answers could be the basis for the company's long-term plans. Some sample questions follow:

- *What are Way Out's major strengths, and how can you use them in the future? Is IT one of the strengths?*
- *What are Way Out's major weaknesses, and how can you overcome them? Are there weaknesses in IT resources and capabilities?*
- *What are Way Out's major opportunities, and how can you take full advantage of them? What about IT support for these business opportunities?*
- *What major threats does Way Out face, and what can you do about them? Do any of the threats involve IT issues?*

3. Draft a mission statement for Way Out.
   Answers will vary. Students should look at the samples on page 50, or review similar examples on the Internet. The mission statement should include a brief description of the company's overall purpose, products, services, and values. This might be a good opportunity for a team exercise for students, followed by a critique.

4. Make a list of Way Out's stakeholders.
   Although Way Out is a small firm, its stakeholders include the same groups as a multinational giant. Way Out's stakeholders include anyone affected by the company's performance, such as customers, employees, suppliers, stockholders, and members of the community.

3 The Monday IT Department Staff Meeting

Situation: Your boss, the IT manager, was ready to explode. "Why can't we get our priorities straight?" he fumed. "Here we go again, working on a low-value project, just because it's a favorite of the marketing group. I wish we could get away from departmental politics! I want you to draft a memo that proposes a systems review committee for this company. Explain the advantages, but don't step on anyone's toes!"

1. Write a draft of the proposal, as your boss requested.
   You can approach this task in many ways. Students should demonstrate that they understand the concept of a systems review committee and how it can help a company maximize its IT resources. Although answers will vary, a sample answer follows:

SYSTEMS REVIEW COMMITTEE PROPOSAL

To be competitive, we must use all corporate resources, including IT resources, to produce the greatest possible benefit for our company and our stakeholders. We believe that the best strategy is to create a systems review committee (SRC), with one representative from each major department. The SRC will work as a team to review systems requests, set priorities, and oversee IT projects across the company. In order

to avoid any departmental bias, the committee will select a chair, who will report directly to the president.

2. Write a memo to your boss explaining potential disadvantages of the committee approach.
   The memo should point out that even where a committee is in place, the IT director must act as a technical consultant to the committee to ensure that members are aware of crucial issues, problems, and opportunities. Also, a potential disadvantage of the committee approach is that action on requests must wait until the committee meets. To avoid delay, committee members use memos, e-mail, and teleconferencing to communicate with each other. Another potential disadvantage of a committee is that members might favor projects requested by their own departments, and internal political differences can delay important decisions.

3. Draft a set of ground rules for committee meetings. Try to suggest rules that will minimize political differences and focus on the overall benefit to the company.
   The committee should meet frequently in order to deal with requests promptly, and stay on top of pending IT projects. In addition, the committee should establish ground rules that remove possible bias, and achieve an even-handed approach. A sample set of ground rules follows.

SAMPLE OF SYSTEMS REVIEW COMMITTEE GROUND RULES
In order to manage IT resources in a way that provides maximum benefit to the company and our stakeholders for all proposed projects, we will:
- *Determine why the proposal is necessary to achieve the company's mission, goals, and objectives.*
- *If corporate resources are needed, require the sponsoring department to present a financial analysis that includes the project's payback period, return on investment, and present value.*
- *Rank all proposals, using a system of categories and point values.*
- *Require independent analysis of costs and benefits by committee representatives who are not members of the department sponsoring the proposal.*
- *Require a statement from the sponsoring department that describes specific consequences that will occur if the proposal is not approved.*
- *Consider all proposals from four separate viewpoints: operational, technical, economic, and scheduling.*

4. Most people serve on a committee at some point in their lives. Write a brief memo describing your committee experiences, good or bad.
   Answers will vary.

4 The Friday IT Department Staff Meeting

Situation: By the end of the week, things quieted down. The IT staff discussed how to prioritize IT project requests, taking into account technical, operational, economic, and schedule feasibility. The IT manager asked for suggestions from the group.

1. Provide three examples of why a project might lack technical feasibility.
   Examples might include:
   - *The company lacks the necessary hardware, software, and network resources, and it will be difficult to acquire these elements.*
   - *The company lacks the needed technical expertise.*
   - *The proposed platform does not have enough capacity for future needs, and it cannot be expanded.*
   - *The hardware and software environment are unreliable, and will not integrate with other company information systems.*
   - *The system will not interface properly with external systems operated by customers and suppliers.*
   - *The combination of hardware and software will not supply adequate performance.*
   - *The proposed system lacks clear expectations and performance specifications.*
   - *The system is unable to handle future transaction volume and company growth.*

2. Provide three examples of why a project might lack operational feasibility.
   Examples might include:
   - *Management does not support the project. Users do not support the project. The current system is well liked and effective, and users see no need for change.*
   - *The new system will cause a workforce reduction, and employees seriously are concerned.*
   - *The new system will require extensive training for users, but the company is not prepared to provide the necessary resources for training people.*
   - *Users will not be involved in planning the new system.*
   - *The proposed system will place new demands on users and require major operational changes. Information will be less accessible and produced less frequently.*
   - *Customers will experience adverse effects.*
   - *A risk to the company's image and goodwill exists.*
   - *The development schedule is not reasonable.*
   - *Legal and ethical issues have not been considered.*

3. Provide three examples of why a project might lack economic feasibility.
   Examples might include:
   - *The projected benefits of the proposed system do not outweigh the estimated costs involved in acquiring, installing, and operating it.*
   - *The project does not meet the company policy for acceptable payback period, return on investment, or present value.*
   - *Based on the future cost of ongoing support and maintenance, TCO will be excessively high.*
   - *Expensive training will be required.*
   - *Licenses, fees, consulting expenses, and facility costs will add substantially to project cost.*

- *Other, less expensive alternatives exist, and the estimated risk of not developing the system or postponing the project is not unreasonable.*

4. Provide three examples of why a project might lack schedule feasibility.
   Examples might include:
   - *The project cannot be completed by a specific date.*
   - *The new hardware will not be available until after the deadline date for the project.*
   - *Because the network will not be ready, system development cannot be started until next year, which is not acceptable to management.*
   - *The final version of the software will not be available for two months, and that will cause an unacceptable delay in the launch date for the project.*

ANSWERS TO CASE STUDIES

New Century Health Clinic

1. Dr. Jones arranged an introductory meeting between the associates of New Century Health Clinic and you to determine if mutual interest exists in pursuing the project. What should the associates try to learn about you? What should you try to learn in this meeting?
   Associates should try to learn pertinent facts about your background, qualifications, and areas of knowledge. They should ask about similar work you have done in the past and ask you for references from previous clients. In the process, they should decide if you are a person they and their office staff could work with.
   You should try to get a feel for the situation — if the associates have realistic expectations and the necessary commitment to follow through with the proposed project. You should learn enough about what needs to be done to determine if this is something you want to do and feel qualified to do.

2. Does the proposed system present a strong business case? Why or why not?
   The operation appears to be typical of a professional practice of this size, and no technical problems are apparent. You do not have enough information to reach a conclusion about economic feasibility, but it is known that the staff is facing a constantly growing workload, which certainly will increase administrative costs. At this point, it seems likely that reducing this paperwork will result in cost saving and increased productivity. In all three areas (operational, technical, and economic), the project appears to be feasible. You need to get an understanding of current office systems and define the scope and constraints of the proposed system. This is a critical issue, especially with a major new system that will change the way the clinic operates.

3. For each type of feasibility, prepare at least two questions that will help you reach a feasibility determination.
   Answers will vary. Students should be able to suggest questions that would focus on the four types of feasibility. In addition to the specific question, the student should be able to envision an overall approach to gathering the necessary data. For example, he or she might begin by meeting with Dr. Jones to gain an understanding of the organization and activities of the clinic and to learn more about what he and his associates have in mind for this project. Then they would meet with Anita Davenport, possibly more than once. They

might suggest that Dr. Jones sit in on at least the beginning of the first meeting with Anita to help define the scope of the investigation and to discuss New Century's office systems in general.
In subsequent meetings with Anita, it will be necessary to get a general idea of the record keeping done in the office and learn about the general office procedures. If written procedures exist, ask for copies. When sufficient information is available, prepare a report detailing the findings and stating a recommendation for further action.

4. You begin the preliminary investigation. What information is needed? From whom will you obtain it? What techniques will you use in your fact-finding?
Answers should follow the six-step approach described in the textbook. A sample answer follows:
The first step is to understand the problem or opportunity. The analyst should develop a business profile of New Century's operations to determine which departments, users, and business processes are involved.
The second step is to define the project scope and constraints. At this point, you want to define the specific boundaries, or extent, of the project. Along with defining the scope of the project, you need to identify and classify any constraints, which might involve hardware, software, time, policy, law, or cost. A clear definition of project scope and constraints will avoid possible misunderstandings between you and New Century.
The third step is to perform fact-finding. To do this, you have to examine organization charts, conduct interviews, review current documentation, observe operations, and carry out a user survey. When conducting interviews during the preliminary investigation, you should interview people who have a broad knowledge of the system and can give you an overview of the business processes involved. Depending on the situation, you might talk to new Century staff members to obtain more detail about day-to-day functions.
The fourth step is to determine feasibility. At this point you will have analyzed the situation, defined the project scope and constraints, performed fact-finding, and estimated the costs and benefits of the new system. Now you can review the results and make an initial determination about operational, technical, and economic feasibility.
The fifth step is to prepare an estimate of how much time and money it will take to complete the next systems development phase, systems analysis. Also, you should prepare a rough estimate for the overall project, so New Century can understand the full cost impact and timetable.
The sixth step is to present your results and recommendations to New Century. You will want to prepare a written report and deliver a brief presentation.

Personal Trainer, Inc.

1. Based on the background facts described in Chapter 1, draft a mission statement for Personal Trainer. Consider the firm's overall direction, and the services, products, and experiences the company might want to offer its customers in the future. In your statement, consider all the stakeholders affected by Personal Trainer's operations.
Answers will vary. Of key importance is that the mission statement includes a brief description of the company's overall purpose, products, services, and values. Students should review the Personal Trainer fact statement in Chapter 1, analyze the sample mission statements shown in Figure 2-4 on page 50, and adapt the factual material to the

Personal Trainer situation. This is an opportunity to articulate the company's long-term vision. For example, if the supercenter concept is successful, what would be the next logical step, and where would it lead? Does Personal Trainer want to become a lifetime partner in family fitness, serving multiple generations with the widest possible range of fitness and lifestyle services and products? If so, that is the mission.
Encourage students to use their imagination and set forth the vision they would have if they were a member of Personal Trainer's top management team. This might be a good opportunity for a team exercise for students, followed by a critique.
The stakeholders include anyone affected by the Personal Trainer's performance, such as customers, employees, suppliers, stockholders, and members of the community.

2. Susan and Gray probably will need more information about the proposed system. Make a list of people that they might want to interview. Also, suggest other fact-finding techniques they should consider.
In a preliminary investigation, it is important to get an overview of the company's business requirements and how the proposed system would support operational and strategic goals. In this case, the best person to get that information from would be Cassia Umi, Personal Trainer's president. Susan and Gray also might want to visit with other top management members, including Janet McDonald, finance manager; Tai Sung, sales and marketing manager; and Reed Cotter, operations manager.

3. Consider the internal and external factors that affect information systems. Which factors, in your opinion, will have the greatest impact on the system proposed for the new supercenter? Explain your answer.
Answers will vary. Knowing the nature of Personal Trainer's business, students should be able to come up with a list of relevant internal and external factors that would most affect Personal Trainer. For example, as a multinational operation, government regulations might be a major factor. Also, customers, and how they behave in an uncertain economy, certainly would have an impact on a leisure business such as this. Other students might cite the strategic plan and the directives from top managers, who have a strong influence on the shape and features of the information system. The main objective is to encourage analytical thinking and to encourage students to apply what they learned in the chapter to the Personal Trainer fact situation.

4. At the conclusion of the preliminary investigation, Susan and Gray will deliver a written summary of the results and deliver a brief presentation to Personal Trainer's management team. Prepare a list of recommendations that will help make their written and oral communications more effective. Put your list in priority order, starting with what you consider the most important suggestions. Before you complete this task, you should review Part 1 of the Systems Analyst's Toolkit, which provides suggestions for oral and written presentations.
The purpose of this assignment is to get students to review Part 1 of the Systems Analyst's Toolkit and realize how important it is to deliver a clear, interesting presentation to management during the preliminary investigation. The Toolkit contains many suggestions and guidelines for successful presentations, and students should have no trouble coming up with a list. This assignment might be extended to include an actual presentation, which

would summarize the results of the preliminary investigation and actually apply the principles mentioned in the Toolkit.

Original Kayak Adventures

1. Does a strong business case exist for developing an information system to support the Caputos' business? Explain your answer.
   Most students will conclude that a strong business case does exist. The chapter defines a business case as the reasons, or justification, for a proposal. OKA seems to be doing well and has good growth prospects for the future. Although a full review of the business case would include a SWOT analysis and the development of a strategic plan for OKA, the facts provided in Chapter 1 do appear to support a strong business case. We know that the Caputos are too busy running the business to address IT issues. Sooner or later, the business will outgrow its current data management resources — if it has not done so already. Students should be able to build a strong case for proceeding with the development of an information system for OKA.

2. In a small- to medium-sized business, such as OKA, is it really important to use a structured approach for information systems development? Why or why not?
   This is an interesting issue. Some people believe that smaller firms do not require a structured approach; others believe that small firms with limited resources need careful IT planning even more than large companies that can better afford a mistake or expense overrun. If the Caputos lack specific IT experience, they might consider hiring a consultant who could explain the options and provide a recommendation. Then, if development proceeds, they would want to use a step-by-step approach to be sure they were achieving their goals and getting good value for their investment. Whether or not they use a formal structure such as the SDLC, they would do well to use a structured approach to minimize risk and maximize the potential benefits.

3. Based on the facts provided, draft a mission statement for OKA. In your statement, consider all the stakeholders who might be affected by OKA operations.
   Answers will vary. Students should look at the mission statement samples on page 50 or review similar examples on the Internet. The mission statement should include a brief description of the company's overall purpose, products, services, and values. This might be a good opportunity for a team exercise for students, followed by a critique.
   Although OKA is a small firm, its stakeholders include the same groups as a large company giant. For example, OKA's stakeholders include anyone affected by the company's performance, such as customers, employees, suppliers, stockholders, and members of the community.

4. What internal and external factors might affect OKA's business success?
   Using the fact statement in Chapter 1, students should be able to identify various internal and external factors that might affect OKA. Some examples follow:

Factor	***Type***	***Example***

Factor	***Type***	***Example***
Strategic plan	*Internal*	*OKA does not have a plan yet, but clearly the plan, when created, will influence the development of an information system for the company.*
Top managers	*Internal*	*John and Edie Caputo have expressed a strong desire for additional IT resources to help them manage the business. In a small firm, the top manager typically is the owner, and the Caputos have established this as a top priority.*
User requests	*Internal*	*The Caputos are managers, but they also are users, and they have expressed a desire to get more information about rental patterns, customer profiles, advertising effectiveness, and future business opportunities. These needs will drive the development of an information system that provides they support they seek.*
IT department	*Internal*	*OKA is too small to have an IT department. In small- and medium-sized firms, IT responsibility typically is the job of the manager, who might be assisted by another person. In the OKA case, Edie might decide to have Janet Jacobs help her, but Janet is a college student and probably will not stay with the company. One way or another, as OKA grows and IT becomes more important, the Caputos will have to decide how they want to manage the function.*
Existing systems	*Internal*	*Currently, Edie uses a Microsoft Access database to record reservations. Also, manual systems exist to display kayak availability, and Edie uses an inexpensive accounting package. These systems must be integrated into an overall design, which will become the systems development task for the Caputos.*
Government	*External*	*The fact statement does not indicate any specific area where government-induced factors would affect the system. OKA is subject to various federal, state, and local laws that affect business operations, however. Every business must be aware of safety, employment, record-keeping, and tax regulations — and stay alert to any changes in these areas.*

Factor	***Type***	***Example***
The economy	*External*	*The national **(**and global**)** economy affects every business, large and small. The Caputos are in a recreation business, which might be especially affected by changes in leisure time patterns, unemployment, and lifestyle trends. So far, the economy has posed no problem, but the Caputos will have to be alert to any warning signals that might affect their business and the IT support it requires.*
Competitors	*External*	*The fact statement notes that no other kayak rental firms exist within 20 miles of OKA. That might change in the future. The company will have to monitor this situation and gauge its advertising and marketing strategy accordingly. Note that the Caputos want more information about advertising effectiveness and customer profiles, which are related issues.*
Customers	*External*	*Information about customers is essential in any business, and an information system will provide a valuable source of data that can be analyzed and interpreted. Customer data generated by an information system can be used to make decisions, monitor operational costs, and improve profits.*
Suppliers	*External*	*We know that OKA's inventory includes 16 rental kayaks of various types, eight car-top carriers, and a large assortment of accessories and safety equipment. Also, we know that based on customer requests, Edie is considering adding a selection of books and videos about kayaking and eco-tourism. Obvious opportunities exist for electronic data interchange and for OKA to be part of a supply chain management system with one or more of its suppliers. This could reduce costs, speed up purchasing transactions, and provide better management of inventory.*

Factor	***Type***	***Example***
Technology	*External*	*Technology is an overarching factor that drives IT decisions in every company. For example, firms must decide which technology to buy, where to invest resources, how much of a commitment to make to a specific environment or platform, and so on. OKA, though a small firm, is no different. The Caputos, possibly with the help of a consultant, will have to develop a checklist of technology issues to consider before any major decisions are made.*

Town of Eden Bay

1. Upon investigation, you learn that the town does not have a strategic plan or a mission statement. In your view, does this affect the current situation? Why or why not?
   Observant students will note that the town has many good, dedicated employees who are frustrated by the lack of an overall vision or purpose. Students should be able to link the lack of a strategic plan directly to some of the problems the town is facing. The situation is not unlike the humorous example of the stonecutters mentioned on page 48. Without a plan, day-to-day activities continue, but they might not lead to a specific set of goals or long-term results.

2. Based on the fact statements provided, summarize the maintenance department's most important strengths, weaknesses, opportunities, and threats.
   Answers will vary, but the fact situation described on pages 83 and 84 contains ample material for students to develop a SWOT analysis. This might be good team exercise for the class, with a group of students pretending to be IT consulting firms called in to provide the town with their input. Encourage students to use their imaginations in coming up with answers, but suggest that they follow the guidelines on page 48 and ask the questions that are presented in the bulleted list.

3. Describe the specific steps you will follow during a preliminary investigation, including any fact-finding techniques you will use.
   The purpose of a preliminary investigation is to study the systems request and then recommend specific action. After obtaining an authorization to proceed, you should interact with managers and users. Your objective is to gather facts about the project scope and constraints, project benefits, and estimated development time and costs. The end product of your preliminary investigation is a report to management.
   To obtain the information you need, you might perform initial fact-finding by analyzing organization charts, conducting interviews, reviewing documentation, observing operations, and surveying users.

4. Of the four tests of feasibility — operational, technical, economic, and schedule — which would you perform first to measure the system project's feasibility? Why?
   Answers will vary. In some ways, this is a "chicken-or-egg" question. In fact, all four feasibility measures are important. Some IT professionals feel that operational feasibility is at the top of the priority list, because regardless of the other factors, if the project will not be useful to the company, it should not be undertaken. But the same can be said about each of the other tests. This might make a good topic for a class debate.

ANSWERS TO CHAPTER CAPSTONE CASE: SoftWear, Limited (SWL)

1. You have been assigned to write a formal mission statement for SWL. Start by reviewing SWL's background in Chapter 1, then do Internet research to find mission statements that seem clear, focused, and easy to understand. Pay special attention to Web-based and catalog retail firms to see how they approach the issue.
   Answers will vary. Encourage students to find as many examples as possible, and to rate them on a scale of 1 to 5 based on clarity and overall impact. Two actual examples follow:

   PC Connection (online computer retailer):
   Ever-changing technology will continue to shape the way we work, communicate and manage our lives. As technology continues to march forward, PC Connection will continue to be a primary rapid response provider for complete IT solutions. This will be accomplished with you — the customer — at the forefront of every decision. With our team of networking experts, account managers, and customer service specialists, you can be sure that our customer commitment will always be backed by the best service in the industry before and after the sale.

   Internet Marketing and Design Agency (online business technology and advertising solutions)
   The Internet Marketing and Design Agency will at all times endeavor:
   - To present our clients' companies in their best possible professional manner, and, ultimately, to provide them with a functional advertising medium they will be proud to share with the world.
   - To maintain a totally committed, ethical, and close personal relationship with our clients throughout the entire production process, and will work professionally and diligently at all times.
   - To regard all conversations, emails, materials, and ideas as totally confidential between the client and InternetMark. These will never be divulged to another business, whether a competitor or not.
   - To never attempt to sell our client something that we feel is unnecessary to the context of their site, either functionally or aesthetically.

2. Review the preliminary investigation report to see whether all four feasibility tests were discussed in the report. Write a brief summary of your findings.
   Students should review the factual information in the case, and especially the preliminary investigation report on page 89. The report addresses each area as follows:

   ***Operational feasibility**: The report specifically mentions employee morale, and suggests that a new system would improve morale. Citing SWL's recent growth, the report suggests that a new system would meet the company's future needs. The report does not mention any*

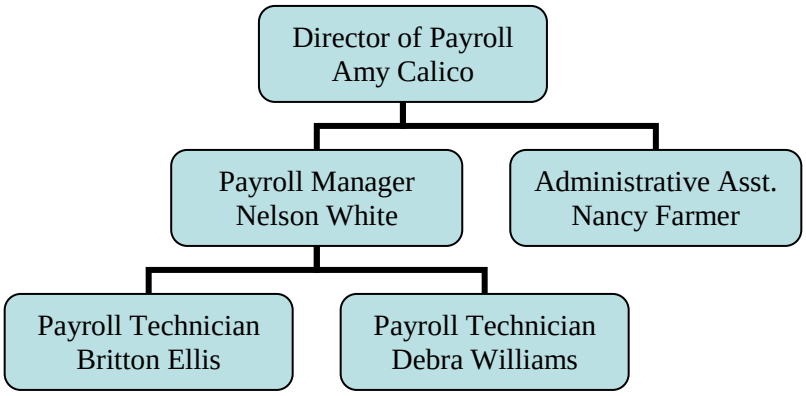
negative factors that would affect operational feasibility, and appears to find that the project is operationally feasible.

Technical feasibility: *The report does not mention any specific factors that would affect technical feasibility. It is reasonable to assume that SWL would either have the technical resources to develop a new payroll system, or would be able to manage the outsourcing of such a project.*

Economic feasibility: *The report makes a clear case for economic feasibility, citing the sharp reduction in overtime and other factors. Notice, however, that the report warns that total cost will depend on what development strategy is followed.*

Schedule feasibility: *The report suggests a feasible schedule that could be achieved without disruption.*

3. Review the payroll department organization information on page 86. Using this information, prepare an organization chart for this group. If you have Microsoft Word 2003 or Microsoft Word 2002, you can click the Insert Diagram or Organization Chart button on the Drawing toolbar, then click the Organization Chart button. If you have an older version of Word, you can click Insert – Object – MS Organization Chart.
An organization chart might look like this:



4. Rick asked you to investigate other firms that offer payroll processing services. Perform an Internet search using the term "payroll processing services." Try your search both with and without placing quotes around the phrase and notice what happens. Based on your search results, select an example of a payroll processing firm and write a brief report to Rick. Include the name of the firm's name, Web address, and services offered.
A recent search using the popular Google search engine with the three words, payroll, processing, and services turned up 5,400,000 hits. When quotes were placed around the words, the results narrowed to 106,000 hits. Students should not have any trouble finding research material and using it to create a report.

Manage the SWL Project

1. One of your most important activities will be to identify project tasks and determine when they will be performed. Before you begin, you should review the SWL case in this chapter. Then follow these steps:

(a) Start by identifying at least ten tasks that the SWL team needs to perform to fulfill the objectives of this chapter.

An answer might include tasks listed in the Chapter Introduction Case, and other examples of tasks found in the SWL case or elsewhere in the chapter. A sample answer follows:

Task List

- *Review the systems request*
- *Analyze the reasons for the proposed project*
- *List any internal or external factors that affect the proposed project*
- *Review the company's organization chart to identify people to interview*
- *Review the job descriptions of prospective interviewees*
- *Schedule interviews*
- *Conduct interviews*
- *Determine whether the project has operational feasibility*
- *Determine whether the project has technical feasibility*
- *Determine whether the project has economic feasibility*
- *Determine whether the project has schedule feasibility*
- *Prepare a presentation to management describing the results of the investigation*

(b) Now analyze the tasks to determine the order in which they should be performed. You can start by dividing your list into two groups and then numbering each task. The first group should contain concurrent tasks that can be performed at any time because they are not dependent on other tasks. The second group should contain sequential tasks that cannot be performed until one or more other tasks have been completed.

Answers will vary. A sample answer follows:

Concurrent Tasks	***Sequential Tasks***
1. Review the systems request	*5. Identify the various levels of SWL management*
2. Analyze the reasons for the proposed project	*6. Review job descriptions of prospective interviewees*
3. List any internal or external factors that affect the proposed project	*7. Schedule and conduct interviews*
4. Draw an SWL organization chart	*8. Determine whether the project has operational feasibility*

	9. Determine whether the project has technical feasibility
	10. Determine whether the project has economic feasibility.
	11. Determine whether the project has schedule feasibility
	12. Prepare a presentation to management describing the results of the investigation

(c) Next, for each sequential task, identify the specific task or tasks that must be completed before this task can begin.
Answers will vary. A sample answer follows:

Sequential Tasks	***Predecessor Tasks***
5. Identify the various levels of SWL management	1, 2, 3, 4
6. Review job descriptions of prospective interviewees	5
7. Schedule and conduct interviews	6
8. Determine whether the project has operational feasibility	7
9. Determine whether the project has technical feasibility	7
10. Determine whether the project has economic feasibility	7
11. Determine whether the project has schedule feasibility	7
12. Prepare a presentation to management describing the results of the investigation	8, 9, 10, 11
5. Identify the various levels of SWL management	

6. Review job descriptions of prospective interviewees	

2. Visit **scsite.com/sad7e/swlproject** and explore one or more links in the SWL project management resources library. Your instructor may assign a specific topic or allow you to choose a topic on your own. Write a brief summary of your research and what you learned about project management.
Answers will depend on the topics chosen. Instructors are encouraged to challenge students with tasks that require critical thinking skills. Instructors also can require students to use Open Workbench, the free project management planning tool, which can be downloaded and installed using the link in the Features section on the Student Study Tool CD-ROM.

3. Visit the Features section on your Student Study Tool CD-ROM, where you can learn more about Microsoft Project and Open Workbench, an open-source project management program that you can download and install.
The Features section on the Student Study Tool CD-ROM includes user guides and Web links for Microsoft Project and Open Workbench. Instructors can demonstrate Microsoft Project if it is available, and show students how to download and install Open Workbench. Instructors also can create additional assignments that use project management software skills in a systems development environment.