**Systems Analysis and Design**

What, exactly, is a **system**? We can define it as a collection of activities and elements organized to accomplish a goal. As we know, an *information system* is a collection of hardware, software, people, procedures, and data. These work together to provide information essential to running an organization. This information helps to produce a product or service and, for profit-oriented businesses, derive a profit.

Information about orders received, products shipped, money owed, and so on, flows into an organization from the outside. Information about what supplies have been received, which customers have paid their bills, and so on, also flows within the organization. To avoid confusion, the flow of information must follow a route that is defined by a set of rules and procedures. However, from time to time, organizations need to change their information systems. Reasons include organizational growth, mergers and acquisitions, new marketing opportunities, revisions in governmental regulations, and availability of new technology.

**Systems analysis and design** is a six-phase problem-solving procedure for examining and improving an information system. The six phases make up the **systems life cycle.** The phases are as follows:

**1.** *Preliminary investigation:* The information problems or needs are identified.

**2.** *Systems analysis:* The present system is studied in depth. New requirements are specified.

**3.** *Systems design:* A new or alternative information system is designed.

**4.** *Systems development:* New hardware and software are acquired, developed, and tested.

**5.** *Systems implementation:* The new information system is installed and adapted to the new system, and people are trained to use it.

**6.** *Systems maintenance:* In this ongoing phase, the system is periodically evaluated and updated as needed.

In organizations, this six-phase systems life cycle is used by computer professionals known as **systems analysts.** These people study an organization’s systems to determine what actions to take and how to use computer technology to assist them. A recent survey by *Money* magazine compared salary, prestige, and security of 100 widely held jobs. The top job classification was computer engineer, followed by computer systems analyst.

As an end user, working alone or with a systems analyst, it is important that you understand how the systems life cycle works. In fact, you may *have* to use the procedure. More and more end users are developing their own information systems. This is because in many organizations there is a three-year backlog of work for systems analysts. For instance, suppose you recognize that there is a need for certain information within your organization. Obtaining this information will require the introduction of new hardware and software. You go to seek expert help from systems analysts in studying these information needs. At that point you discover that the systems analysts are so overworked it will take them three years to get to your request! You can see, then, why many managers are learning to do these activities themselves. In any case, learning the six steps described in this chapter will raise your computer competency. It also will give you skills to solve a wide range of problems. These skills can make you more valuable to an organization.

**CONCEPT CHECK**

1. What is a system?

2. Name the six phases of the systems life cycle.

3. What do systems analysts do?