DATA PROCESSING

When did the digital revolution begin? Some historians mark the 1980s as the beginning of the digital revolution, but engineers built the first digital computers during World War II for breaking codes and calculating missile trajectories. In the 1950s, computers were marketed for business applications, such as payroll and inventory management.

What was computing like back then? In this first phase of the digital revolution, computers were huge, complex, and expensive devices. They existed in limited numbers, primarily housed in big corporations and government agencies. Computers were operated by trained technicians. Each computer installation required specialized software. The idea that computers might be used by ordinary people in their homes was only a glimmer of an idea in the minds of science fiction writers.

Back then, processing components for computers were housed in closet-sized cabinets that did not usually include a keyboard or display device. Computers were accessed using the keyboard and display screen of a terminal. Terminals had little processing capability of their own, so they were simply used to enter data and view results produced by software that ran on the main computer.

During the antiestablishment era of the 1960s, the digital revolution was beginning to transform organizations, but ordinary people had little direct contact with computers. As with many new technologies, computers were initially viewed with suspicion by consumers, who were uncomfortable with the idea of giant machine "brains." Computers seemed remote. They were housed out of sight in special facilities and were inaccessible to ordinary people. Computers also seemed impersonal. Instead of names, computers used Social Security numbers to uniquely identify people (Figure 1-3).

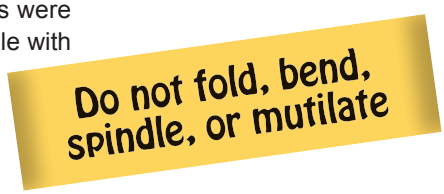

FIGURE 1-3

In the 1950s and 1960s, data used by government and business computers was coded onto punched cards that contained the warning "Do not fold, tear, or mutilate this card." Similar slogans were used by protesters who were concerned that computers would have a dehumanizing effect on society.

Throughout the first phase of the digital revolution, businesses adopted computers with increasing enthusiasm as benefits for cutting costs and managing mountains of data became apparent. Computers and data processing became crucial tools for effective business operations.

What is data processing? **Data processing** is based on an input-processing-output cycle. Data goes into a computer, it is processed, and then it is output. For example, a batch of employee time cards are entered into a payroll computer system; the payroll data is processed to calculate take-home pay, deductions, and taxes; paychecks are output (Figure 1-4).

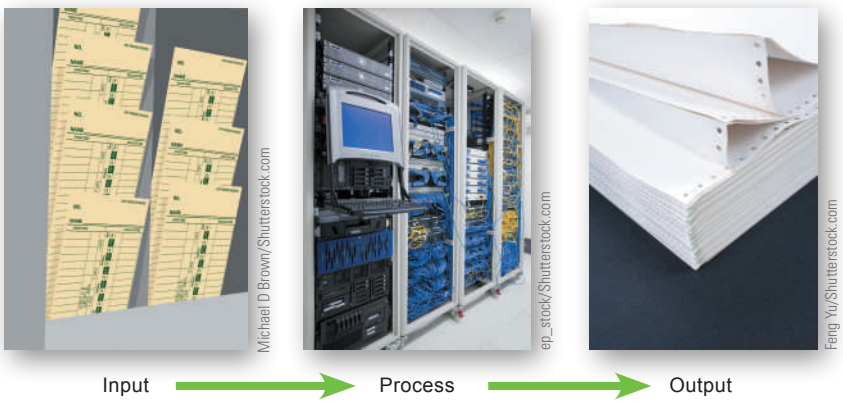

FIGURE 1-4

Data processing is the computing model for the first phase of the digital revolution. The concept of large computers performing tasks based on the input-processing-output cycle represents the primary way computers were used from the 1940s through the 1970s. Data processing installations still exist today, but other technologies emerged, making computing available to a more diverse group of users. See an example of data processing.