

**LIBRARY AUTOMATION
FOR
LIBRARY TECHNICIANS:**

An Introduction

by

Joan I. Tracy

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INTRODUCTION

Library automation affects the daily activities of almost everyone who works in libraries today. This book is intended for the person who plans to seek a position as a technician in a library with automated systems and for the technician employed in a library that has automated systems or will be installing them.

Because someone who is training to be a technician may never have worked in a library before, the first chapter describes the place of libraries in American society today. The basic principles of library automation and of computers (including microcomputers) are explained in the next three chapters. The library applications of automation are outlined. While computers will never replace individual, personal service to library patrons, automation can help a library staff provide information and materials more quickly, efficiently, and completely.

The following chapters describe automated systems now in use in libraries of all sizes and for all aspects of library service: library-operational, user-related, and support functions. Operational functions include technical services: acquisitions, cataloging and processing, and serials control. User-related functions include circulation and public services. Support functions are the business operations carried out in the library administration office by the secretary and the bookkeeper or accounts technician.

All of the automated systems described in these chapters are based on systems in operation or soon to be available. Rather than setting out the specific steps for identified systems, the chapters offer a summary of the procedures involved. It is hoped that the principles can be applied to any automated system of the types described. While many systems were researched for this book, the chapter descriptions are based on the following systems from detailed observation, and, in most cases, from hands-on experience:

Acquisitions

Baker & Taylor systems: LIBRIS, Bataphone, microcomputer systems
OCLC Online Library Computer Center, Inc. (OCLC)
Western Library Network (WLN) (formerly Washington Library Network)

Cataloging

OCLC
WLN
Follett Book Trak

Serials control

OCLC
Faxon LINX and Microlinx
CHECKMATE

<u>Circulation</u>	Universal Library Systems, Ltd. (ULYSIS) Follett Book Trak
<u>Public services</u>	OCLC (Interlibrary loan) VTLS (Virginia Tech Library System), online catalog
<u>Support services</u>	Mass 11 (Word processing) Multiplan TM (Electronic spreadsheet) PC-File III (copyright Jim Button, 1984) (Database management system)

I wish to express my appreciation to all those who helped in the research for the writing of this book. Many librarians and technicians took time from their busy days to demonstrate automated systems and discuss their systems with me. My thanks to John F. Reister of California State University at Hayward; Debbie Krim of the Alameda County Library; Patricia Campbell of the Puyallup Public Library; Louis Zubaly of the Tacoma Public Library; Elliott Swanson of the Kitsap Regional Library; Ruth Hoover of the Vancouver School District Learning Resources Library; Claudia O'Driscoll and Eloise Peeples of Clackamas Community College; Pat Faubjon of Ridgeview School in Spokane; Antoinette Savalli of the Spokane Public Library; Virgil Dedas of Whitworth College; and Susan Bradley of Spokane Community College.

I am especially grateful to the staff of the Eastern Washington University Library for their interest in the book and for their help and patience in demonstrating systems, answering my questions, and posing for pictures. My special thanks to Charles H. Baumann, University Librarian, and to Duane G. Thompson, Vice President and Provost--Academic Affairs, for their encouragement and support; to Suzanne Schenk for interlibrary loans and for posing for several photos; to Sara Hakim for her help in downloading files; and to my colleague and friend V. Louise Saylor, whose suggestions helped make this a better-written book. Dawn Holladay is responsible for the photographs that are not otherwise credited. Cindy Silver rendered the drawings and flowcharts. And my husband, Keith Tracy, encouraged me every step of the way.

PROPRIETARY NAMES AND PHRASES

Apple®

"Apple presents ... Apple" (© Apple®
Computer 1982)

Bank Street Writer™

CP/M®

dBaseII™

Hayes®

IBM® personal computer

Leading Edge™

Lotus 1-2-3™

MS-DOS™

MacPaint™

Multimate™

Multiplan™

Perfect Writer™

The Source™

The Stickybear™ ABC

VisiCalc®

Wordstar®

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1

LIBRARIES AND AUTOMATION

Introduction

Libraries exist to provide information and materials to users.

Information, materials, and users come in many varieties: A high school student consults the encyclopedia for a term paper. A homemaker looks up a recipe in a magazine. A scientist searches on a computer for a chemical formula. A three-year-old listens to a story told by the children's librarian. An elderly person borrows a recording of a Beethoven symphony.

Although people often think of a library only as a place where books are stored and made available, most libraries today provide materials in many forms: books, magazines, sound recordings, pamphlets, computer software, and other formats. Many libraries now provide information and materials through the use of computers, sometimes from great distances--Looking up data in local computer-based files, computer searches of remote data bases, transmission of documents over telephone lines.

While all provide information and materials to a group of users, libraries are divided into four main types, depending on the patrons served and the source of funding: Public, academic, school, and special. Each type of library serves a different primary group of users:

<u>Type of library</u>	<u>Users</u>
Public library	The entire community
Academic library	The students, faculty, and staff of a college or university
School library	The students, teachers, and staff of the school
Special library	The staff and employees of an organization

A public library serves all the citizens of a city or town or a larger area, such as a county. The library is funded by taxation, usually a tax (levy) on real property within the area served. All citizens of the community are welcome to use the library free of charge (except for fees for special services, such as use of a meeting room). Because the public library serves the entire community, it provides information and materials in many forms, from picture books for toddlers to stock market reports for business executives.

An academic library serves the academic community of a college or university: students, faculty, and staff. Often persons outside the academic community may use the library, sometimes by payment of a fee. The academic library is funded by the college or university. In turn, the college or university is supported by the tuition paid by students, from public taxation (for state colleges and universities) or by endowments (private colleges and universities).

A school library (or instructional media center, as it is often called) serves the students, teachers, and staff of a school. (In a few communities, school and public libraries have been combined, but this arrangement is exceptional). Most school libraries, as part of a public school district, are funded by local and state taxation. The library of a private school is funded by the school, which may derive its funds from a religious denomination or endowments, as well as from tuition fees.



Courtesy of the Spokane Public Library
Learning to use indexes

A special library serves a limited clientele: the staff and employees of an organization. It is funded by the organization. A large bank may have a library to provide current financial data to its employees. A manufacturing company often has a technical library for its research and development staff. A church or synagogue may have a library to serve the staff and members of the congregation. Sometimes a special library is a branch of a larger library, such as the library of the medical school of a university.

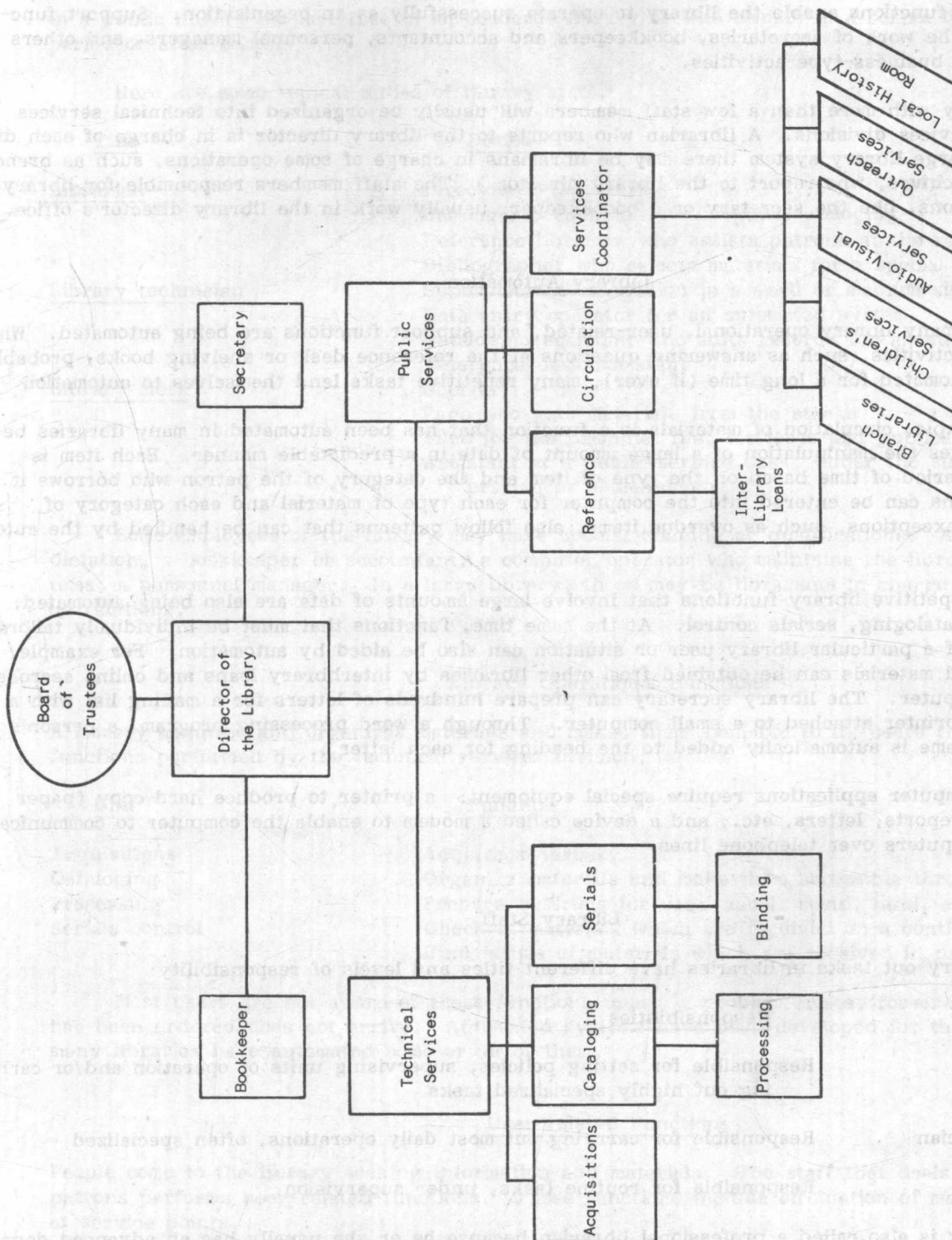
Of course, one person may use all types of libraries at different times in his or her life. As a child, you probably went with your parent to sign your name for a card at the local public library. When you reached school age, you undoubtedly made frequent visits to the school library. If you attended a college or university, you probably used the academic library of an institution. You may have worked for an organization or business that had its own library (special library).

Library Organization

To serve their patrons, libraries acquire, organize, and make available information and materials. The staff of a library carries out many activities, which are grouped into three basic functions: library operational functions, user-related functions, and support functions.

The units within the library that carry out operational functions are called technical services because their activities are internal to the library and rarely concern patrons directly. Technical services include acquisitions, cataloging and processing, and serials control.

The units that carry out user-related functions are called public services because they provide services directly to the users of the library. Public services include circulation and assistance at such service points as information and reference.



Organization Chart: Public Library

Support functions enable the library to operate successfully as an organization. Support functions include the work of secretaries, bookkeepers and accountants, personnel managers, and others who carry out business-type activities.

A library with more than a few staff members will usually be organized into technical services and public services divisions. A librarian who reports to the library director is in charge of each division. (In a large library system there may be librarians in charge of some operations, such as branch libraries or archives, who report to the library director.) The staff members responsible for library support functions, like the secretary or a bookkeeper, usually work in the library director's office.

Library Automation

Increasingly, many library operational, user-related, and support functions are being automated. While some library activities, such as answering questions at the reference desk or shelving books, probably will not be automated for a long time (if ever), many repetitive tasks lend themselves to automation.

For example, circulation of materials is a function that has been automated in many libraries because it involves the manipulation of a large amount of data in a predictable manner. Each item is loaned for a period of time based on the type of item and the category of the patron who borrows it. These conditions can be entered into the computer for each type of material and each category of patron. The exceptions, such as overdue items, also follow patterns that can be handled by the automated system.

Other repetitive library functions that involve large amounts of data are also being automated: acquisitions, cataloging, serials control. At the same time, functions that must be individually tailored to the needs of a particular library user or situation can also be aided by automation. For example, information and materials can be obtained from other libraries by interlibrary loans and online searches through a computer. The library secretary can prepare hundreds of letters for a mailing list with a letter-quality printer attached to a small computer. Through a word processing program, a person's address and name is automatically added to the heading for each letter.

Some computer applications require special equipment: a printer to produce hard copy (paper printouts) of reports, letters, etc., and a device called a modem to enable the computer to communicate with other computers over telephone lines.

Library Staff

People who carry out tasks in libraries have different titles and levels of responsibility:

<u>Title</u>	<u>Responsibilities</u>
Librarian	Responsible for setting policies, supervising units of operation and/or carrying out highly specialized tasks
Library technician	Responsible for carrying out most daily operations, often specialized
Library clerk	Responsible for routine tasks, under supervision

A library is also called a professional librarian because he or she usually has an advanced degree from a graduate school of librarianship.

The library technician may be called a library technical assistant, library media technical assistant, library paraprofessional, or some similar title. The technician may have graduated from a library technician program at a two-year college or have some other education beyond high school. Or, someone may be hired without any previous library experience and be trained on the job.

The library clerk (also called library page) is often a student who works during non-class hours

in a public library or part-time in an academic library or who assists in a school library during a class period or after school.

Here are some typical duties of library staff:

<u>Title</u>	<u>Duties</u>
<u>Librarian</u>	Director of the library Cataloger responsible for original cataloging Reference librarian who assists patrons at the reference desk Bibliographer who selects materials for a special subject area
<u>Library technician</u>	Supervisor of circulation in a small or medium-sized library Data entry operator for an automated system Cataloging assistant who edits records for an automated data base Reference desk assistant
<u>Library clerk</u>	Shelver Page who gets materials from the stacks Filer for the pamphlet file, for loose-leaf publications, and other files Assistant at a public service desk, under the supervision of a librarian or a technician

Some employees of the library may have special training or qualifications: A secretary who takes dictation, a bookkeeper or accountant, a computer operator who maintains the library's automated systems, a personnel manager. In a large library, there may be librarians in charge of planning or public relations.

Library Operational Functions

A library acquires and organizes materials and makes them available to its users through operational functions performed by the technical services division:

<u>Unit</u>	<u>Function</u>
Acquisitions	Acquire materials
Cataloging	Organize materials and make them accessible through a catalog
Processing	Prepare materials for use: label, mend, bind, etc.
Serials control	Check in materials which are received on a continuing basis Bind issues of materials which are received in parts (periodicals)

Most users are not aware of these functions unless a problem arises, for example, if a book that has been ordered does not arrive. Automated systems have been developed for these functions, and many libraries have automated some or all of them.

User-related Functions

People come to the library seeking information and materials. The staff that deals directly with library patrons performs user-related functions. These functions include circulation of materials and assistance at service points.

A person may have a question which can be answered quickly by a librarian or a technician. Another person may be doing research which requires the use of many different sources of information and even of materials which the library does not own.

Some user-related functions have not been affected by automation. Many frequent library users go directly to the shelves where they know that they can find the information or materials they need.

The place in the library where people ask for help in finding and using information and materials is called a public service point. Most libraries have a separate information or reference service



Courtesy of the Spokane Public Library

Reference interview

point as well as a circulation desk. A large library may have several service points: General information and direction, reference, serials information, branch library reference, and others. There may be more than one circulation desk (for example, one for general materials and another for reserve items) as well as a circulation desk in each branch.

When the patron finds materials which he or she wishes to take out of the library, there must be a circulation procedure for loaning the items, linking them to the patron as long as he or she is responsible for them, maintaining a record of their status, and replacing them in their location in the library when they are returned.

Automation increasingly affects the daily work of a library staff in user-related functions. Circulation is a user-related function which has been automated in many libraries.

Librarians and technicians also take advantage of automation to assist users at a service point. For example, if a patron comes to a reference librarian with a question, the librarian interviews the user to determine exactly what is needed. After the reference interview, the librarian may decide to search in an automated data base in a computer, as well as in printed materials, to obtain the information.

Through automation, information and materials can be made available more efficiently, even if the library does not own them. Here are examples of user-related functions that are being automated in many libraries:

<u>Function</u>	<u>Services or materials</u>
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<u>Circulation</u>	Registering patrons and maintaining patron records
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Loaning materials

Maintaining a record of the status of each item which is not in its usual location, including a link to a patron who has checked it out

Sending overdue notices for items not returned on time

Assessing and accounting for fines and charges

Other circulation functions: holds, inventories, etc.

Access to information

Quick information

Directories, community bulletin board, local newspaper, other information data bases in a computer

Help with reference questions

Computer assistance in finding and using information and materials

Indexes

Computer-based indexes of files and small collections

Online searches

Electronic access to information from distant data bases

Access to materials

Online catalog

Computer access to the library's holdings

Media booking

Use of audio-visual equipment and materials through a computer

Circulation of reserve materials

Short-time circulation of materials in high demand by an automated system

Interlibrary loan

Electronic access to materials in other libraries

Microcomputer software for use of patrons

Computer-assisted instruction

Computer-assisted instruction in use of library tools: catalogs, indexes, etc.

Recreation

Computer-assisted instruction in many subjects

Microcomputer software for loan to patrons for use at home

Computer games

Support Functions

Like any other organizations, a library has staff members who write letters, account for funds, and carry out other general business functions. The library director and administrators need accurate and up-to-date information to manage the library effectively. Through automation, many of the support functions in the library can be carried out more efficiently and effectively. Here are examples of computer applications that aid in support functions.

<u>Application</u>	<u>Function</u>	<u>Product or service</u>
<u>Word processing</u>	Write reports	Reports, memos
	Write letters	Letters, mailing lists
	Document procedures	Guides, manuals
	Produce forms	Forms for routing, job application
	Communicate with library users	Newsletters, flyers
<u>Data base management</u>	Maintain files	Files, lists
	Take inventories	Inventories
	Maintain personnel records	Employee schedules and records
<u>Electronic spreadsheet</u>	Plan budget	Budgets
	Account for funds	Ledgers
	Forecast library use, expenditures	Forecasts
	Compile statistics	Statistics

Graphics

Produce designs, illustrations, graphs,
charts

Guides, handouts
Posters, banners, signs
Illustrations for reports, memos,
newsletters, etc.

Communication software Electronic mail

Access to other computers

Implementing an Automated System

Before the director and administrators of a library decide to acquire and install an automated system, many questions have to be answered:

- Does this function lend itself to automation in this library?
- Will automation of this function improve service to the users of this library?
- Will automation of this function be cost effective?
- What data base must be created to implement the automated system and how will the data be entered?
- What staff training will be required?
- How much time will be required for planning and implementing the automation of this function?
- What systems are available to automate this function and what do they cost?
- Which of the systems that the library can afford is best suited for automation of the function in this library?

The function that is being considered for automation must be carefully studied before a decision is made to automate. As a technician, you may take part in such a study, perhaps by writing down all the steps you carry out in completing a manual function or by keeping a time sheet. For example, you may keep a record of the hours per week that you spend maintaining a card file that could be replaced by an automated data base.

As a result of the study, it may become apparent that the function is being handled so efficiently with manual procedures that automation would not improve service or be cost effective. Or, the cost of entering data into an automated data base may be too high.

Although an automated system sometimes reduces costs for a library, the decision to automate is usually made in order to improve service and to provide services that were never possible with non-automated procedures. For example, in a large library with a manual circulation system, it is seldom possible to determine with certainty whether a book is checked out because circulation department staff do not have time to look through all the cards in the files. But with an automated system, a staff member or patron can look up the title at a terminal and, in just a minute or two, find the status of the item: on the shelf, checked out, at the bindery, in another location.

If the planned automation represents a major change in procedures or a large expense to the library, a consultant may be hired to recommend possible options and help in drawing up a Request for Proposal (RFP). The RFP is then sent for bids to companies that specialize in library automation. The lowest bidder who meets the requirements is selected to install the system.

Networks

Some aspects of automation, such as programming (instructing the computer) or creating a large data base, are extremely expensive. Few libraries can afford to create a large automated system entirely by themselves. To make automation affordable, libraries have joined together into networks to share the costs.

There are many local and regional networks. These include groups of libraries that share a co-operative data base or circulation system or maintain a union list of periodicals (magazines) that are held by the members. A regional network, like CLASS (California Library Authority for Systems and Services) or AMIGOS Bibliographic Council, Inc., offers other services as well: discounts to members for purchase of computer services and equipment, continuing education, publications.

Since creating a data base of records for cataloging (and other uses) is one of the most expensive aspects of library automation, networks have been formed to create and maintain very large data bases. If your library has automated systems, it may belong to one of these networks:

OCLC	OCLC Online Computer Library Center, Inc.
RLIN	Research Libraries Information Network
UTLAS	University of Toronto Library Automated Systems
WLN	Western Library Network (formerly Washington Library Network)

Besides supplying cataloging records and products (cards, labels, printed lists), these networks now offer other services as well: automated acquisitions and serials control, electronic interlibrary loan, communication with distant data bases. Because each of these networks has a large bibliographic data base but also offers other services (just as the utilities department in a city or town offers services that include electricity, water, etc.), the network is called a bibliographic utility. That term will be used in this book to refer to OCLC, RLIN, UTLAS and WLN.

The Future for Libraries and Library Workers in an Age of Automation

Many people are concerned that automation will lead to a more impersonal world, where an individual is reduced to a piece of information in a huge computer that is beyond human comprehension. And others are concerned that automation may change their jobs or eliminate their work altogether.

There is no doubt that automation is changing our lives in almost every aspect of our daily existence, including our jobs. But automation also eliminates many dull, tedious chores in libraries as in other organizations. And, best of all, it offers opportunities for better service to library users, especially as information in all forms (print, audio-visual, computer-based) continues to increase at a tremendous rate and as people expect more from libraries.

As a technician in an automated library, you will participate in the most exciting development in libraries since the invention of printing, more than five hundred years ago. You will be challenged and perhaps sometimes discouraged, but the skills you learn will help your library provide good service to the group of users that depend on it. And, for you, automation offers the opportunity of more interesting work experiences in the new world of computers.

Review Questions

List the four principal types of libraries and describe their users.

Name the three types of staff members usually found in a library and describe their responsibilities.

Name three units that carry out library operational functions and describe their activities.

Name two units that carry out user-related functions and describe their activities.

What kind of activities are performed by library staff who are responsible for support functions?

How do library administrators arrive at the decision to automate and what are some of the questions that must be answered?

In your opinion, how has automation affected your job (or will affect it)?

2

COMPUTERS IN LIBRARIES

Introduction

Through automation, library functions are carried out more quickly and efficiently by the use of machines. While some automated machines, like those that sort punched cards, have been used in libraries for many years, these machines were usually expensive and slow. With the advent of electronic computers (especially the compact and relatively inexpensive microcomputer), libraries of all sizes and types are now automating their functions.

The Computer

Although a computer is any machine that computes, the kind discussed in this book is an electronic computer, that is, one activated by electrical pulses. The computer is able to accept, store, and manipulate data, just as a human being takes information from the surroundings to store and manipulate in the brain. However, the computer can only do what it has been programmed (told) to do. A powerful computer can perform some functions, such as computation (addition, multiplication) many times faster than a human brain.

A computer "thinks" by processing only two digits: 0 or 1 (yes/no, on/off). Because only two digits are involved, this is called a binary system. Each digit is called a bit (for Binary digit). A series of bits is called a byte. To the computer, a byte stands for a character, such as a letter or number. Here is a byte for a letter in a widely-used computer code:

<u>Letter</u>	<u>Byte</u>
M	01001101
m	01101101

The computing power of a computer is often expressed in terms of kilobytes (called Ks). A kilobyte is equal to 1,024 bytes. A small computer (microcomputer) ranges in basic capacity from 64K to 256K. A large computer (mainframe or minicomputer) can handle millions (Ms) of bytes. As large computers become more compact in size and smaller ones become more powerful, the lines between these categories--mainframes, minicomputers and microcomputers--are less distinct.

The earliest computers, developed during World War II, were enormous and consumed huge quantities of electricity because they included large numbers of glass vacuum tubes. Modern computers substitute for tubes tiny pieces of material called chips. These chips are made of silicon, or sand, one of the commonest materials on the earth. All the programs that run the basic operations of a small computer can be stored on one chip. New devices are being developed that are even smaller than the silicon chip and may eventually replace it.

Many people refer to anything with glowing letters or numbers on a screen as a computer. However, except for a small computer (microcomputer) which is self-contained, the unit with a screen like a television set is usually a terminal that is connected by a cable or telephone line to a computer.