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计算机与网络英语教程

刘兆毓 主编

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内 容 简 介

本书是用英语编写的计算机与网络技术教材，以计算机网络应用为主。全书由3部分组成，共13章。第一部分为计算机基础知识；第二部分为计算机网络基础；第三部分为Internet应用技术，这一部分是全书的重点且占据主要篇幅。书中对某些难于翻译和理解的句子做了注释，列出了常用的技术词汇。为方便读者掌握书中的内容，每一节课文后面均给出了练习题。在全书的最后给出了参考译文和练习题的参考答案。

本书可作为高等院校计算机网络相关专业的专业英语教材使用，也可供因特网爱好者和英语爱好者作为实用参考书。

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前　言

计算机技术的飞速发展推动着经济和社会的进步，改变了人们的生活和思维方式。计算机应用已经渗入到社会各个领域。近年来，已经有许多计算机专业英语教材面世，但关于计算机网络的英语教材还为数不多。

随着计算机网络技术的飞速发展以及 Internet 应用的普及，广大读者希望有一本反映这一技术的英文教材，以提高读者阅读英文资料的水平及上网能力，使之能轻松地浏览英文网页。本书就是为满足这一需求而编写的。

本书由刘兆毓主编，北京印刷学院的徐秀花、孙边旗、舒后、陈如琪、闫金平参与编写。全书共分 13 章，其中，徐秀花编写了第 1 章、第 2 章和第 12 章；孙边旗编写了第 3 章、第 11 章；舒后编写了第 9 章；陈如琪编写了第 7 章、第 8 章、第 10 章和第 13 章；闫金平编写了第 6 章；刘兆毓编写了第 4 章、第 5 章。

由于作者水平有限，书中难免有不当之处，敬请读者批评指正。

编　者

目　录

PART I COMPUTER AND ITS APPLICATIONS ····· 1
CHAPTER 1 FUNDAMENTS OF COMPUTER HARDWARE AND SOFTWARE ····· 1
1.1 WHAT ARE THE FIVE CATEGORIES OF COMPUTER HARDWARE ····· 1
1.2 TYPES OF COMPUTER SYSTEM ····· 5
1.3 COMPUTER SOFTWARE ····· 8
1.4 COMPUTER LANGUAGES ····· 10
1.5 OPERATING SYSTEMS ····· 14
1.6 MICROSOFT WINDOWS OVERVIEW ····· 17
1.7 LINUX ····· 20
CHAPTER 2 APPLICATIONS OF COMPUTER ····· 24
2.1 OFFICE AUTOMATION AND its software ····· 24
2.2 DATABASE MANAGEMENT SYSTEMS ····· 26
2.3 OBJECT-ORIENTED DATABASE MANAGEMENT SYSTEM(OODBMS) ·· 30
2.4 MULTIMEDIA ····· 32
2.5 COMPUTER-AIDED DESIGN (CAD) AND COMPUTER-AIDED MANUFACTURING(CAM) ····· 34
CHAPTER 3 SPECIAL APPLICATION SOFTWARE ····· 39
3.1 DESKTOP-PUBLISHING SOFTWARE ····· 39
3.2 PROJECT MANAGEMENT SOFTWARE ····· 41
3.3 DRAWING AND PAINTING SOFTWARE ····· 44
3.4 MULTIMEDIA AUTHORING SOFTWARE ····· 47

PART 2 FUNDAMENTALS OF COMPUTER NETWORK ····· 53
CHAPTER 4 FUNDAMENTALS OF COMMUNICATION ····· 53
4.1 DATA TRANSMISSION WITH ANALOG CARRIERS AND MODEM ····· 53
4.2 VOICE OR DATA TRANSMISSION WITH DIGITAL CARRIERS, PCM AND TDM ····· 56
4.3 OPTICAL FIBER COMMUNICATION ····· 59
4.4 WIRELESS COMMUNICATION ····· 63
4.5 SATELLITE COMMUNICATION ····· 68
CHAPTER 5 LOCAL AREA NETWORK (LAN) ····· 73
5.1 ETHERNET ····· 73
5.2 HUB AND SWITCH ····· 76
5.3 WINDOWS 2000 NETWORKING ····· 79
5.4 GIGABIT ETHERNET ····· 83
5.5 TODAY'S WLAN TECHNOLOGY ····· 86
5.6 VIRTUAL LOCAL AREA NETWORK (VLAN) ····· 89

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CHAPTER 6 WIDE AREA NETWORK (WAN) ····· 95
6.1 CIRCUIT SWITCHED NETWORKS AND PACKET SWITCHING NETWORKS ····· 95
6.2 B-ISDN AND ATM ····· 99
6.3 FRAME RELAY ····· 105
6.4 VIRTUAL PRIVATE NETWORK (VPN) ····· 108
6.5 ROUTER AND GATEWAY ····· 111

PART 3 INTERNET ····· 119
CHAPTER 7 BASICS OF THE INTERNET ····· 119
7.1 CONNECT TO THE INTERNET ····· 119
7.2 THE DOMAIN NAME SERVICE（DNS） ····· 122
7.3 BROADBAND ACCESS TECHNOLOGIES ····· 125
CHAPTER 8 WORLD WIDE WEB（WWW） ····· 131
8.1 BASIC CONCEPT OF WWW ····· 131
8.2 WWW BROWSER AND SERVER ····· 134
8.3 HOMEPAGE AND HTML ····· 138
8.4 MS-INTERNET EXPLORER ····· 141
CHAPTER 9 SEARCH ENGINE ····· 147
9.1 INTRODUCTION ····· 147
9.2 YAHOO ····· 149
9.3 GOOGLE ····· 154
CHAPTER 10 E-MAIL ····· 161
10.1 E-MAIL STRUCTURE ····· 161
10.2 E-MAIL PROTOCOL ····· 164
10.3 MS OUTLOOK EXPRESS ····· 167
CHAPTER 11 SERVICES ON INTERNET ····· 172
11.1 FILE TRANSFER ····· 172
11.2 TELNET ····· 176
11.3 ICQ ····· 181
11.4 VIDEO CONFERENCING AND IP TELEPHONY ····· 186
CHAPTER 12 ELECTRONIC COMMERCE ····· 193
12.1 INTRODUCTION ····· 193
12.2 EDI (ELECTRONIC DATA INTERCHANGE) AND B2B Commerce ····· 196
12.3 ONLINE SHOPPING ····· 199
12.4 ONLINE BANKING ····· 202
12.5 THE FUTURE OF E-COMMERCE ····· 204
CHAPTER 13 NETWORK SECURITY ····· 208
13.1 A VIEW OF NETWORK SECURITY ····· 208
13.2 AUTHENTICATION AND DIGITAL SIGNATURE ····· 211
13.3 NETWORK VIRUSES ····· 216
13.4 DATA-ENCRYPTIONS ····· 219
13.5 FIREWALLS ····· 223

参考译文

第一部分　计算机及其应用 …… 229
第 1 章　计算机硬件及软件基础 …… 229
1.1　计算机硬件的五种类别是什么 …… 229
1.2　计算机系统的类型 …… 230
1.3　计算机软件 …… 232
1.4　计算机语言 …… 233
1.5　操作系统 …… 234
1.6　Microsoft Windows 概论 …… 235
1.7　Linux …… 236
第 2 章　计算机应用 …… 238
2.1　办公自动化及其软件 …… 238
2.2　数据库管理系统 …… 239
2.3　面向对象的数据库 …… 240
2.4　多媒体 …… 241
2.5　计算机辅助设计与计算机辅助制造 …… 241
第 3 章　专用软件 …… 243
3.1　桌面出版软件 …… 243
3.2　项目管理软件 …… 244
3.3　制图与绘画软件 …… 244
3.4　多媒体创作软件 …… 246

第二部分　计算机网络基础 …… 247
第 4 章　通信基础 …… 247
4.1　使用模拟载波的数据传输和调制解调器 …… 247
4.2　使用数字载波的话音和数据传输、脉码调制和时分多路复用 …… 248
4.3　光纤通信 …… 248
4.4　无线通信 …… 249
4.5　卫星通信 …… 250
第 5 章　局域网 …… 252
5.1　以太网 …… 252
5.2　集线器与交换机 …… 253
5.3　Windows 2000 联网 …… 254
5.4　千兆位以太网 …… 255
5.5　当今的无线局域网技术 …… 255
5.6　虚拟局域网 …… 256
第 6 章　广域网 …… 258
6.1　电路交换网与分组交换网 …… 258
6.2　宽带综合业务数字网（B-ISDN）与异步传输模式（ATM） …… 259
6.3　帧中继 …… 260
6.4　虚拟专用网 …… 261

6.5 路由器和网关……263

第三部分 因特网……265
第 7 章 因特网基础……265
7.1 连接到因特网……265
7.2 域名服务（DNS）……266
7.3 宽带接入技术……267
第 8 章 万维网（WWW）……269
8.1 万维网的基本概念……269
8.2 万维网浏览器和服务器……269
8.3 主页和 HTML……271
8.4 MS Internet Explorer……272
第 9 章 搜索引擎……275
9.1 简介……275
9.2 雅虎……275
9.3 Google……277
第 10 章 电子邮件……280
10.1 电子邮件结构……280
10.2 电子邮件协议……281
10.3 MS Outlook Express……282
第 11 章 因特网服务……284
11.1 文件传输……284
11.2 远程登录……285
11.3 网络传呼（ICQ）……286
11.4 视频会议及 IP 电话……288
第 12 章 电子商务……291
12.1 引论……291
12.2 电子数据交换和企业间电子商务……292
12.3 在线购物……293
12.4 在线银行……295
12.5 电子商务的未来……295
第 13 章 网络安全……297
13.1 网络安全概述……297
13.2 验证和数字签名……298
13.3 网络病毒……300
13.4 数据加密……301
13.5 防火墙……303
参考答案……305
参考文献……311

PART I COMPUTER AND ITS APPLICATIONS

CHAPTER 1 FUNDAMENTS OF COMPUTER HARDWARE AND SOFTWARE

1.1 WHAT ARE THE FIVE CATEGORIES OF COMPUTER HARDWARE

Hardware — What most people think of when they visualize a computer system — consists of, among other things[1], the keyboard, screen, printer, and the computer or processing device itself. In general, computer hardware is categorized according to which of the five computer operations it performs (see Figure 1-1):

- Input
- Storage
- Data Processing and Memory
- Communications
- Output

Devices that are connected to the computer and controlled by the computer are referred to as peripheral devices. These devices can be external, such as keyboards, mice, monitors, and printers, or they can be internal (inside the computer cabinet), such as a floppy disk drive.[2]

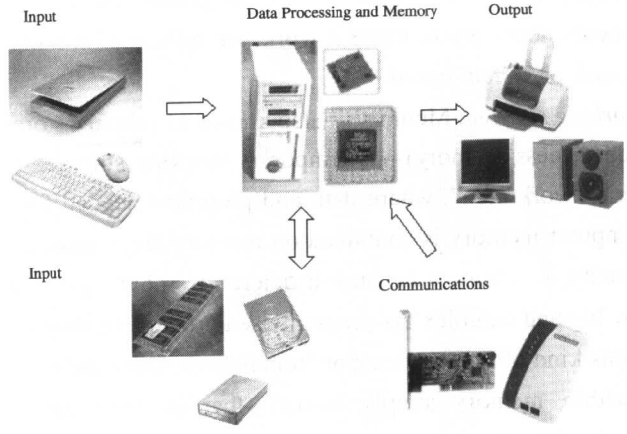

Figure 1-1 Computer Hardware System

Input Hardware

The function of input hardware is to accept data and convert it into a form suitable for computer processing. In other words, input hardware allows people to put data into the computer in a form that the computer can use. For example, input may be by means of a keyboard, mouse, or scanner.

- *Keyboard*: A keyboard includes the standard typewriter keys plus a number of function keys. The standard keys are used mostly to enter words and numbers. The function keys are used to enter software-specific commands.
- *Mouse*: A mouse is a device that is rolled about on a desktop to direct a pointer on the computer's display screen[3]. The pointer is a symbol, usually an arrow, that is used to select items from lists (menus) on the screen or to position the cursor. The *cursor*, also called an *insertion point*, is the symbol on the screen that shows where data may be entered next, such as text in a document.
- *Scanner*: Scanner —which are often used in desktop publishing—translate images of text, drawings, and photos into digital form[4]. The digital images can then be processed by a computer, displayed on a monitor, inserted in documents, stored on a storage device, or transmitted to another computer.

Data Processing and Memory (Primary Storage) Hardware

The computer's control center is made up of data processing and memory devices, housed in the computer's system unit. The system unit, or system cabinet, houses that part of electronic circuitry that does the actual processing and, except in large computers, the memory that supports processing[5]. Together, these components are referred to as processing hardware.

- *CPU—the processor*: The CPU, for central processing unit, is the processor, or computing part, of the computer. It controls and manipulates data to produce information. In a microcomputer the CPU is an approximately 1.5-inch (3.75- centimeter) square chip called a microprocessor, with electrical circuits printed on it. This microprocessor, and other components necessary to make it work, are mounted on a main circuit board called the *motherboard*, or *system board.*
- *Memory—working storage*: Memory —also known as primary storage, main memory, and RAM (random access memory)—is temporary working storage. That means memory is the computer's "work area", where data and programs needed for immediate processing are held. Computer memory is contained on memory chips mounted on the motherboard. Memory capacity is important because it determines how much data can be processed at once and how big and complex the program used process the data can be[6].

Despite its name, this kind of memory cannot "remember". Once the power is turned off, all the data and programs within memory simply vanish—that is, they are volatile. This is why data/information must also be stored in relatively permanent form on disks and tapes, which are called secondary storage devices to distinguish them from main memory's primary storage.

Secondary Storage Hardware

As previously mentioned, the function of secondary storage hardware is to store software and data in a form that is relatively permanent, or *nonvolatile*—that is, the data is not lost when the power is turned off—and easy to retrieve when needed for processing. Secondary storage hardware serves the same basic functions as do office filing systems except that it stores data as electromagnetic signals or laser-etched spots, commonly on magnetic disk, optical disk, or tape, rather than on paper[7].

Output Hardware

The function of output hardware is to provide the user with the means to view and use information produced by the computer system. For example, previously input but unorganized sales figures may be processed into meaningful form and displayed on a computer screen or printed out on paper.

Information is output in either hardcopy or softcopy form. Hardcopy output can be held in your hand—an example is paper with text (words or numbers) or graphics printed on it. Softcopy output is typically displayed on a monitor, a television-like screen on which you can read text and graphics. Another type of softcopy output is audio output, such as music.

Communications Hardware

The function of communications hardware is to facilitate the connections between computers and between groups of connected computers called networks. Such connections allows the sharing of resources, both hardware and software, as well as data. Of course, computers can be "stand-alone" machines, meaning that they are not connected to anything else. However, the communications component of a computer system vastly extends the computer's range and utility. To transmit your computer's digital signals over telephone lines, you need to use a MODEM to translate them into analog signals. The MODEM provides a means for computers to communicate with one another while the old-fashioned copper-wire telephone network — an analog system built to transmit the human voice — still exists.

NOTES

[1] 破折号内为同位语，而 when ...是时间状语从句；among other things，为介词短语，指计算机硬件的其他各个部分。

[2] mouse 的复数为 mice。

[3] 句中 that 引导的定语从句修饰前面的 device，about 为副词，做“到处”解；to direct 为目的状语；pointer 此处系指在屏幕上由鼠标控制的光标（cursor）。见下一句。

[4] image of text 是指文本，也按图像形式扫描。

[5] houses that..., house 在这里是及物动词，它有两个带定语从句的宾语 that part of... and the memory...。

[6] 在 because 引导的原因状语从句中有两个宾语从句，即 how much ... 和 how big ...，而后面一个从句中主语 the program 又由 used...定语修饰。

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[7] except that...，介词 except 是一个从属连词，it 指的是 secondary storage hardware。

KEYWORDS

central processing unit（CPU）	中央处理器
peripheral devices	外围设备
primary storage	主存储器
secondary storage	辅助存储器
random access memory(RAM)	随机存取存储器
scanner	扫描仪
mouse	鼠标
text	文本
monitor	监视器
floppy disk	软盘
audio	音频
MODEM	调制解调器
memory capacity	内存容量
volatile	易失的，挥发的

EXERCISES

1. Match the following terms to the appropriate definition:

（1）_____central processing unit (CPU)

（2）_____motherboard

（3）_____random access memory

（4）_____secondary storage

（5）_____floppy disk

（6）_____hard disk system

（7）_____keyboard

（8）_____scanner

a. A storage medium that records data using magnetic spots on disk made of flexible plastic or rigid metal.

b. The main circuit board of computer, located inside the system unit, to which all computer-system components connect.

c. A storage system consisting of one or more metal magnetic disks and access a mechanism typically permanently sealed inside its drive.

d. The chip located inside the system unit of a computer that performs the processing for computer and communicates with peripheral devices.

e. An input device containing numerous keys, arranged in a configuration similar to typewriter, that can be used to input letters, numbers, and other symbols.

f. Chips located on the motherboard that provide a temporary holding place for the computer to store data and program instructions while they are needed.

g. A device that translates images of text, drawings, and photos into digital form.

h. A low-capacity, removable magnetic disk made of flexible plastic permanently sealed inside a hard plastic cover.

2. True/False:

(1) _____Software includes all the physical equipment in a computer.

(2) _____Because memory is volatile, it is erased when the power for the computer is turn off.

(3) _____Computer programs are usually written in conversational English.

(4) _____Hardware is a term that only applies to storage devices.

(5) _____Most PCs today include a hard disk drive.

(6) _____A high-density 3-inch floppy disk holds 1.44MB.

(7) _____The function keys on keyboard are used to more easily input numerical data.

(8) _____The MODEM provides a way that a computer communicates with one another.

(9) _____The computer's control center is made up of processing and system unit.

(10) _____All the data and programs within memory aren't volatile.

1.2 TYPES OF COMPUTER SYSTEM

Computers have come a long way since first operational computer in 1940[1]. In 1969 the onboard guidance computer used by the Apollo 11 astronauts, who made the first moon landing, weighed 70 pounds (31 kilograms) and could hold the equivalent of a mere 2000 characters (bytes) of data in its main memory[2]. The Mission Control computer on the ground had only 1 million characters of memory. "It cost $4 millions and took up most of a room", says a space physicist who was there.

Fast forward to the present: today the shrinkage of computer components means that you can easily buy, for a couple of thousand of dollars, a personal computer that sits on a desktop and has hundreds of times the processing power and about 32 to 64 times the memory of the 1969 Mission Control computer[3]. You have more productivity at your fingertips than American space program had a generation ago[4]. And computer processing power is doubling at least every 18 months. In other words, that new computer that you just took out of the box may be only half as powerful as those introduced next year.

Although you may be familiar only with microcomputers, computers still come in a variety of sizes and with a variety of processing capabilities. We may categorize them as:

1. Supercomputers
2. Mainframe computers
3. Workstations

4. Microcomputers

It's hard to give a precise definition to each type because computer speeds and storage capacities change rapidly. Nevertheless, the following definitions will suffice:

- **Supercomputers**: First developed in the 1970s, Supercomputers are the fastest and highest-capacity computers. Their cost ranges from several hundreds of thousands to millions of dollars. They may occupy special air-conditioned rooms and are often used for research. Among their uses are worldwide weather forecasting and analysis of weather phenomena, oil exploration, aircraft design, evaluation of aging nuclear weapons systems, predictions of spreads of epidemics, and mathematical research. Unlike microcomputers, which generally have only one central processing unit, supercomputers have hundreds to thousands of processors and can perform trillions of calculations per second [5].
- **Mainframe computers**: The only type of computer available until the late 1960s, mainframe computers are less powerful than supercomputers, but they are still fast, mid-to large-size, large-capacity machines. Their size varies depending on how many concurrent users they are serving — from a few hundred to thousands of people[6]. Mainframes are used by many banks, airlines, insurance companies, mail-order houses, universities, and the Internal Revenue Service. Mainframes also have many processors.
- **Workstations**: workstations, introduced in the early 1980s, are expensive, powerful desktop computers used mainly by engineers, scientists, and special-effects creators for sophisticated purposes. Providing many capabilities comparable to midsize mainframes, workstations are used for such tasks as designing airplane fuselages, prescription drugs, and movies' special effects. Workstations are often connected to a large computer system to facilitate the transfer of data and information. The capabilities of low-end workstations overlap those of high-end microcomputers.
- **Microcomputers**: Microcomputers, also called personal computers (PCs), are small computers that can fit next to a desk or on a desktop, or can de carried around. Some microcomputers, called tower units, are higher than they are wide and can be placed on the floor. Whether desktop, tower, notebook, palmtop, electronic organizer, or pen-based, personal computers are now found in most businesses [7]. They are either used as stand-alone machines or connected to a network, such as a local area network. A local area network (LAN) connects, usually by special cable, a group of desktop PCs and peripheral devices in an office or a building.
- **Microcontrollers**: Also called embedded, dedicated, or hidden computers, micro-controllers are tiny computers installed in "smart" appliances like microwave ovens and pocket calculators. They are dedicated to performing a restricted number of tasks.

Some companies use a combination of computers, and, indeed, the predominant information system is now a hybrid model, whereby a variety of systems are connected, operated, and used by many people. For instance, an insurance company with branch offices around the country might use a mainframe computer to manage companywide customer data. To access information from the

mainframe, a local claims adjuster might use a desktop microcomputer. That same microcomputer can also be used to perform specialized tasks such as generating invoices or drafting letters to customers. Because microcomputers are generally versatile, increasingly powerful, and more affordable than other types computers, they are practical tools for organizations wishing to improve their productivity.

NOTES

[1] 一般的说法，第一台计算机是 1946 年诞生的。

[2] 句中主语 the onboard guidance computer 有两个谓语，分别是 weighed 和 could hold。其中 used 把持的分词短语作定语，后面由 who 引导的非限制性定语从句修饰 astronauts。

[3] ... and ...and，连接三个短语，修饰 a personal computer。

[4] productivity 生产力，此处是指处理能力很强。

[5] trillion [美]万亿，即 10^{12}，[英]10^{18}。

[6] concurrent，意为“并发的、并行的”。

[7] Whether 引导的是让步状语从句。

KEYWORDS

onboard computer	单板计算机
supercomputers	超级计算机
mainframe computers	主计算机
workstations	工作站
microcomputers	微型计算机
microcontrollers	微控制器
desktop	桌面的
tower	塔式的
palmtop	掌上的
local area network (LAN)	局域网
peripheral device	外围设备

EXERCISES

True/False:

（1）_____ Microcomputers are used as stand-alone machines only.

（2）_____ Mainframe computers are less powerful than supercomputers.

（3）_____ Processing power of today's computer is doubling at least every year.

（4）_____ Microcomputers are different from personal computers (PCs).

（5）_____ Mainframe computers are serving—from a few hundred to thousands of people at the same time.

(6) _____ Microcontrollers can be installed in smart appliances.

(7) _____ Supercomputers are the fastest and highest-capacity computers by far.

(8) _____ Workstations are often connected to a large computer system to facilitate the transfer of data and information.

(9) _____ Microcomputers also have more than two processors.

(10) _____ Supercomputers must occupy special air-conditioned rooms.

1.3 COMPUTER SOFTWARE

A computer has no intelligence of own and must be supplied with instructions that tell it what to do and how and when to do it[1]. These instructions are called software, because you can't feel it or see it. It flows through the computer's circuits as coded pulses of electricity. The importance of software can't be overestimated. Without software to "breathe life" into the computer, to make it do what you want it to do, the computer will only take up space[2].

Software is made up of a group of related programs written in a specific code called a programming language and based on the computer's language of 0s and 1s[3]. In turn, each program is made up of a group of related instructions that perform specific processing tasks. Software acquired to perform a general business function is often referred to as a software package. Software is usually created by professional software programmers and comes on disk, CD-ROM, or online, across the Internet.

Software can generally be divided into two categories:

1. System software
2. Applications software

System software

Software designed to allow the computer to manage its own resources and run the hardware and basic operations is called system software. System software consists of programs to control the operations of computer equipment. An important part of system software is set of programs called operating system. Instructions in the operating system tell the computer how to perform the functions of loading, storing, and executing an application program and how to transfer data. For a computer to operate an operating system must be stored in the computer's memory. When a computer is turned on, the operating system is loaded into the computer's memory from auxiliary storage. This process is called booting.

Today, most computers use an operating system that has a graphical user interface (GUI) that provides visual cues such as icon symbols to help the user[4]. Each icon represents an application such as word processing, or a file or document where data is stored. Microsoft Windows (Figure 1-2) is a widely used graphical operating system. DOS (Disk Operating System) is an older and seldom used operating system that is text-based.

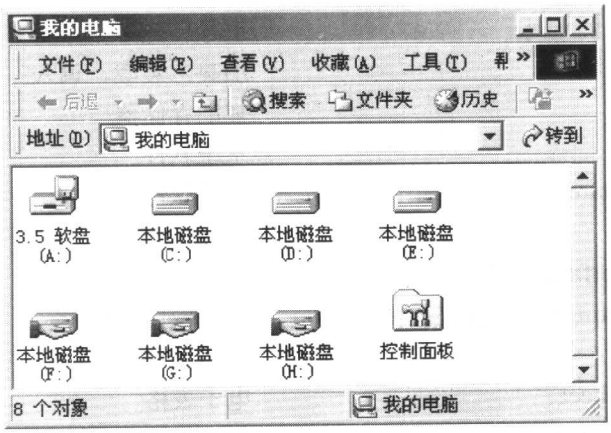

Figure 1-2 A graphical user interface such as Microsoft Windows makes the computer easier to use. The small pictures, or symbols, on the screen are called icons. A icon represents a program, an instruction, or some other objects the user can choose. A window is a rectangular area of the screen that is used to display a program, data, and/or information.

Applications software

Applications software allows you to increase your productivity and creativity in ways simply not possible without it. Applications software consists of programs that tell a computer how to produce information. The different ways people use computer in their careers or in their personal lives are examples of types of applications software. Business, scientific, and educational programs are all examples of applications software.

Personal computer users often use applications software. Some of them more commonly used applications are word processing, electronic spreadsheet, presentation graphics, database, communications, and electronic mail software. Some software packages, such as Microsoft Office 2000,also include access to the World Wide Web as an integral part of the applications.

NOTES

[1] supplied with 原义是“供给，供应”，这里可以翻译成“配备”。that 引导的定语从句修饰 instructions，该从句中第一个 it 代表 computer，第二个 it 代表其前面的 what。

[2] “breathe life”是比喻没有活力的软件进入计算机，只能占据计算机资源，即软件是计算机的呼吸生命。

[3] is made up … and based on … 是主语 software 的两个并列谓语。

[4] 由两个 that 引导的定语从句，分别修饰 operating system 和 GUI。

KEYWORDS

instruction	指令
software pack	软件包
CD-ROM (Compact Disk-Read Only Memory)	光盘只读存储器
online	联机，在线

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