21世纪 高等职业教育通用教材

实用计算机英语

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李万华 主审

上海交通大学出版社

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内 容 提 要

本书用英语介绍了计算机的主要硬件和一些常用软件，以及计算机网络知识。内容如下：硬件知识主要包括中央处理器、主板、芯片组、显卡、声卡、多媒体、打印机、硬盘和显示器等；软件知识包括了操作系统如 DOS、Windows、Linux，常用软件 AUTOCAD、FOXPRO 和 MATLAB 等；网络知识主要包括和 Network、Internet、E-mail、BBS 等方面知识。本教材所使用的材料力求能反映当前计算机技术的新发展。

本书内容比较浅显，但覆盖的计算机知识面较广，也比较实用，适合计算机类和工科类高职学生使用；也可以供广大计算机爱好者和读者参阅。

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序

发展高等职业教育，是实施科教兴国战略、贯彻《高等教育法》与《职业教育法》、实现《中国教育改革与发展纲要》及其《实施意见》所确定的目标和任务的重要环节；也是建立健全职业教育体系、调整高等教育结构的重要举措。

近年来，年轻的高等职业教育以自己鲜明的特色，独树一帜，打破了高等教育界传统大学一统天下的局面，在适应现代社会人才的多样化需求、实施高等教育大众化等方面，做出了重大贡献。从而在世界范围内日益受到重视，得到迅速发展。

我国改革开放不久，从1980年开始，在一些经济发展较快的中心城市就先后开办了一批职业大学。1985年，中共中央、国务院在关于教育体制改革的决定中提出，要建立从初级到高级的职业教育体系，并与普通教育相沟通。1996年《中华人民共和国职业教育法》的颁布，从法律上规定了高等职业教育的地位和作用。目前，我国高等职业教育的发展与改革正面临着很好的形势和机遇：职业大学、高等专科学校和成人高校正在积极发展专科层次的高等职业教育；部分民办高校也在试办高等职业教育；一些本科院校也建立了高等职业技术学院，为发展本科层次的高等职业教育进行探索。国家学位委员会1997年会议决定，设立工程硕士、医疗专业硕士、教育专业硕士等学位，并指出，上述学位与工程学硕士、医学科学硕士、教育学硕士等学位是不同类型的同一层次。这就为培养更高层次的一线岗位人才开了先河。

高等职业教育本身具有鲜明的职业特征，这就要求我们在改革课程体系的基础上，认真研究和改革课程教学内容及教学方法，努力加强教材建设。但迄今为止，符合职业特点和需求的教材却还不多。由泰州职业技术学院、上海第二工业大学、金陵职业大学、扬州职业大学、彭城职业大学、沙洲职业工学院、上海交通高等职业技术学校、上海交通大学技术学院、上海汽车工业总公司职工大学、立信会计高等专科学校、江阴职工大学、江南学院、常州技术师范学院、苏州职业大学、锡山职业教育中心、上海商业职业技术学院、潍坊学院、上海工程技术大学等百余所院校长期从事高等职业教育、有丰富教学经验的资深教师共同编写的《21世纪高等职业教育通用教材》，将由上海交通大学出版社等陆续向读者朋友推出，这是一件值得庆贺的大好事，在此，我们表示衷心的祝贺。并向参加编写的全体教师表示敬意。

高职教育的教材面广量大，花色品种甚多，是一项浩繁而艰巨的工程，除了高职院校和出版社的继续努力外，还要靠国家教育部和省(市)教委加强领导，并设立高等职业教育教材基金，以资助教材编写工作，促进高职教育的发展和改革。高职教育以培养一线人才岗位与岗位群能力为中心，理论教学与实践训练并重，二者密切结合。我们在这方面的改革实践还不充分。在肯定现已编写的高职教材所取得的成绩的同时，有关学校和教师要结合各校的实际情况和实训计划，加以灵活运用，并随着教学改革的深入，进行必要的充实、修改，使之日臻完善。

阳春三月，莺歌燕舞，百花齐放，愿我国高等职业教育及其教材建设如春天里的花园，群芳争妍，为我国的经济建设和社会发展作出应有的贡献！

叶春生

前　言

对于高职的计算机专业英语教学而言，编写一本比较合适的教材十分必要，因此我们编写这本作为探索。

高职的计算机英语教材该是怎样、包括哪些内容、深浅程度如何，都是我们一直在思考的问题。我们有关的任课教师经讨论一致认为：教材一定要适合大部分高职学生的实际水平，这包括两个方面：首先，要考虑他们的实际英语水平，希望学生借助词典就能看懂教材，不觉得很困难；其次，所选内容必须是他们这一层次的，这样才能学以致用，而且所选的内容一定要使学生感兴趣，学生不仅能学到专业英语词汇，而且扩大了知识面，并能获得一些有趣的小知识。教材在内容上也应分层次，对于英语水平较高的和感兴趣的学生，应为他们收集一定数量的有关技术的阅读材料，供他们课余时间阅读，提高他们的实际阅读能力。

本教材的使用对象是高中后受过两年高职普通英语教育的高职学生，他们已掌握相应的基本英语词汇和常用语法。

本教材的授课时数为 60～70 学时。经过学习，学生能掌握数百个科技和专业词汇，基本上能看懂有关计算机及其零部件的说明书和广告，能基本理解各种软件的操作提示和帮助说明，能上网浏览计算机英语世界。

本教材经过两个学期的试教，实践证明效果不错，一些学习认真的学生在 100 分钟的考试中完成 3 页 7000 多词的专业翻译。现在在这基础上又做了修改，充实了许多新内容，更新了部分陈旧、过时的内容，使可读性更强。经过测试和评估，只要学生认真学习，可以对今后的继续深造、学习英文的原版教材和专业资料，打下一个很好的基础。

参加本书编写的有武汉职业技术学院的饶文涛、饶成，河北工业职业技术学院的李军和郧阳师范高等专科学校的周天宏等同志，由饶文涛统稿。

李万华同志的仔细审稿减少了许多错误，不胜感谢。

由于时间紧，教材专业性强，编者水平有限，书中难免存在错误，恳请广大同行指正。

编　者

2003 年 5 月

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CHAPTER1 INTRODUCTION

1.1 WHAT IS A COMPUTER SYSTEM

What is system? "System", the terminology is widely used in activity fields of science, technology, economy, culture, education, etc. Systems appear everywhere. A society is a system, a government is a system, an enterprise or company is a system, and a production line is a system, an automatic machine is a system, and a computer is a system.

A system means a group of related parts working together in order. All the parts in a system are linked with, restricted, interacted and depended on each other.

What is a computer system? It is an information processing system. A digital computer system consists mainly of three parts: the input devices, the output devices and the central processing unit (CPU) which can accept, store and process data or symbols and yield output results fast under the indication of a set of instructions. The Fig.1.1 gives you a simple and perfect show of the basic organization of a computer system.

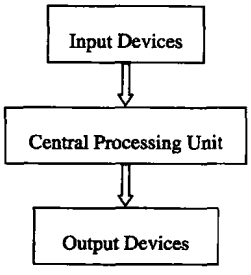

Fig. 1.1

If a computer system were compared to one of human being, the CPU would be the person's brain. The CPU is the key core of a computer system, so some people prefer to call a computer as an electronic brain. Hence, the input devices would certainly be sense organs of the person for sight, sound, touch, taste and smell to deliver the information to the brain. After the CPU processing the information accepted by the input devices, the output devices give out the results users need.

Computer working in order depends on programs. Von Neumann proposed initially the program accessing and controlling principles. So, the principle is titled Von Neumann principle. The principle points out: The instruction sequence (program) directing the computer how to operate, and original data will be first stored in the internal memory devices. Every instruction definitely contains the address where a datum being gotten, which operation the computer will execute, the location where the result will go in the memory. When a computer works, it fetches the first

instruction from the memory, the ID (Instruction Decoder) translates the instruction, and it takes a datum from the memory and processes the datum under the direction of the instruction. Then, it sends the result to a location in the memory. Next, it gets the second instruction from the memory and repeats the steps again until the program ends.

Instructions play key roles in a program. Actually, a computer has its own instruction set that contains all instructions it can implement. An instruction consists of two parts: opcode and operand. Opcode means what kind of operation the computer will carry out. Operand represents the datum or the address of the datum.

It is the CPU that is the most important for a computer system. How do engineers design and organize the CPU then? The CPU is really divided into three main parts depending on their functions: The primary storage section, the arithmetic-logic section and the control section. You can learn their functions from their names respectively.

Users hardly touch CPUs, but have used the input devices. In PC systems, users often work with keyboards, mice, input pens, touch screens, microphones and others for direct input. Regardless of their differences. They are components to make interpretation and communication between users and computer systems. The storage devices, floppy disk drives and hard disk drives ,are commonly used for indirect input.

Users have also employed a variety of output devices such as monitors, printers and plotters, which get the outcomes from the CPU in machine-coded form and change them into the forms users can understand. Hard disk drives or floppy disk drives often record the results on disks for next or another machine input.

Input/output devices, floppy and hard disk drives, monitors, printers, plotters, etc, are often together called peripheral devices (or just peripherals) for ease.

NEW WORDS

input device	输入设备
central processing unit	中央处理器
store	储存
enterprise	企业
restricted	限制
interacted	相互作用的
indication	指示
component	部件
arithmetic-logic section	算术逻辑段
keyboard	键盘
machine-coded form	机器码形式
printer	打印机
monitor	显示器
instruction decoder	指令译码器

a series of instructions	一串指令
operand	操作数
opcode	操作码
brain	大脑
Primary storage section	基本储存段
hard disk drive	硬盘驱动器
interpretation	解释，翻译
communication	通信，交通
floppy disk drive	软盘驱动器
peripheral	外围的
plotter	绘图机

EXERCISE

1. Translate the following into English.

(1) 外围设备是人机交流的桥梁。

(2) 计算机分成三部分：输入设备、输出设备和中央处理器。

(3) CPU 的功能是接受指令和处理数据。

(4) 屏幕上的符号反映了人机对话的内容。

(5) 计算机的 I/O 设备包括键盘、鼠标、绘图机、打印机、软盘和硬盘。

2. Write a brief composition of the text to sum its main idea in 40 words with the following words: store, process, input, output, peripheral, floppy, hard, communication.

1.2 DIVISION OF COMPUTERS

Nowadays, Computers have been widely used in varieties of fields, such as in industry, agriculture, medical treatment, science, and life, etc. Their applications are so spacious, their influence is so deep, and their development is so fast that they become important signs or marks to measure the modernized level of a nation.

Multiple applications make computers fall into that of different properties, functions, shapes, size, and even manufactures. Therefore, there are diverse sorts of computers in the world. For management and development of computers, people have to classify computers into sorts. But different viewpoints have different results on the division of computer types.

Traditionally, computers fall into two categories: digital computers and analog computers. Processing numbers and symbols is the work of the digital computers; the analog computers only work on the control of quantities such as electrical currents or voltages. But nowadays, the former will be more powerful and occupy the positions of the later.

Some people preferring a new way to classify computers aim at their purposes. One is the special-purpose computer that is designed to perform a unique task, into or in which a series of instructions is wired or permanently stored. It lacks versatility but works quickly and efficiently. A general –purpose computer can store varieties of programs and can so be applied to countless cases or jobs.

Although all digital computers are similar, different size computers work on different speeds and show different functions as well as accept different tasks required by people. In general speaking, the larger is the computer size, the faster is its speed and the more powerful is its function. For examples, playing games or working in office only needs a PC; to monitor space shuttle launch or to forecast the weather requires a large and powerful computer. From this point, Computers can be classified into four groups by their physical sizes. The smallest general-purpose computers are called microcomputers or PCs; the small computer systems are named minicomputers; the large computers are termed mainframes; the largest computers have a title super computer. The largest should be fastest, but it does not mean that others are slow. The properties and functions of computers not only depend on their speeds.

There are a few development stages in the history of computers. Therefore, several computer generations occur in the history.

The first electronic digital computer was borne in America in 1946 and its basic elements were vacuum tubes. Through the 1950s, several others were built. They were the first generation of computers, huge, heavy, expensive and slow, poorly reliable, only use of machine language or assemble language, almost without software configuration, merely used in scientific computation, as well as using much more power than today's, but they still made great contributions to computer science, such as the concepts of stored programs, random access. They made a basic model of modern electronic computers.

The invention of transistors not only produced small portable radios, but also bore the second generation of computers, which became small, light, less expensive, and began to use some high programming languages, such as BASIC, FORTRAN, ALOGOL, COBOL, etc., and software configuration appeared, peripherals increased more, besides they were used in scientific calculation, also used in data process and industrial control, but were not yet small and cheap enough to enter families.

In 1960s, integrated circuits came. Integrated circuits mean that huge complicated circuits and millions of their elements are only made on a small semiconductor chip, and they ushered in the third generation of computers. The computers in third generation made great progress in computer science in all ways. The operating systems came out, the commercial computers began to be standardized, modularized, categorized and serialized, and further more, the problems of software compatibility were solved at that time, therefore, computers entered many other application and research domains. Their typical models were The System 360 line of IBM computers. Specially, large-scale integrated circuits created miracles: computer's speed has arrived at 400000Mz more, and the memory space is over 2G, hand-held computers can be saw in many offices, digital computers are so popular that most middle class families could easily afford them. It is why you can see PCs everywhere.

Under the development of science and technology, biological computers and quantum computers will emerge out in near future. New generations of computers will be borne. They will be the new products of combination of electronic, optical technologies, superconductor and bionics. New products can process knowledge, automatically edit and test programs, correct errors, and can proceed to enter and output natural languages, graphs, sounds and characters. New technologies will make computer system construction and model be reformed, for examples, data-flow computers and nerve-network computers have been suggested.

NEW WORDS

viewpoint	观点
space shuttle	航天飞机
versatility	多样性
digital computer	数字计算机
analog computer	模拟计算机
standardized	标准化
modularized	模块化
Categorized and serialized	系列化
superconductor	超导体
bionics	仿生学
mainframe	大型机
feature	特征
concept	概念

classify	分类
vacuum tube	真空管
transistor	晶体管
integrated circuit	集成电路
generation	代
biological	生物的
quantum	量子
technology	技术
emerge	浮现

EXERCISE

1. Translate the following into English.

(1) 计算机可分成模拟计算机和数字计算机两种。

(2) 计算机越大，能干的事情越多。

(3) 科学和技术是发展计算机的动力。

(4) 集成电路标志着第三代计算机的问世。

(5) 计算机的模式也可改革。

(6) 光电技术的结合创造奇迹。

2. Answer the following questions in English.

(1) How to assess the properties and functions of a computer?

(2) How to classify the generations of computers?

(3) In computer market, they say that the fourth generation computers exist. Is the judgment correct? Why?

(4) Could you tell the future of computers?

3. Write a brief summary of in 50 words.

READING MATERIAL

SUPERCOMPUTER

IBM has inked a deal to provide what it says will be one of the 10 largest supercomputers.

The Armonk N.Y., company announced Friday that it will build a supercomputer capable of 4.24 trillion calculations per second for the Korea Institute of Science, Technology and Information.

Supercomputers are the fastest class of computers, generally tying hundreds of processors together to tackle mathematics-intensive tasks such as weather forecasting and genetics research.

Under the agreement, worth $27 million, IBM will begin installing the machine late in the year and finish early in 2003. The machine based on IBM's forthcoming Power4 processor will be used by the institutes to study physics, chemistry and fluid mechanics, and other things.

IBM is the dominant supercomputer maker, and its ASCI White nuclear weapons simulation machine tops the list of the world's fastest. The company of late has begun signing contracts to deliver supercomputers that use Power4.

Germany's Max Planck Society for the Advancement of the Sciences announced in May that it would install a Power 4 supercomputer, designed to perform up to 3.8 trillion calculations per second. The Munich, Germany-based society will use it to research astrophysics and biochemistry, among other things. IBM expects to complete the machine in 2002.

The Power4 combines various IBM chip-making tricks with two 1GHz or faster processor cores in the same chip, effectively doubling processor power. The chip is due later this year. IBM will also offer the chip in its 32-processor Regatta servers, this fall.

The Finnish Ministry of Education also has purchased a Power4-based supercomputer, an IBM representative said.

1.3 COMPUTER CODES

Computers only understand and store one language-machine language, which is composed of strings of binary digits 1s and 0s. An instruction consists of digits, characters, or symbols. A program is made up of numbers, characters, and instructions. How can numbers, letters and symbols be represented by strings of 1s and 0s? The sophisticated way should be learnt a little.

Any numbers, letters or symbols stored in computers need coded forms despite their differences. Only in certain forms, the computers can really understand them. How are they encoded? The popular way is the binary coded decimal (BCD) approach. The approach can convert a decimal number into its binary equivalent but not into a pure binary form. We show the BCD equivalent of some symbols in Fig.1.2. To show 8 and 9 needs 4 bits, so all 10 decimal digits are presented in the BCD by 4 bits. Now, we can use BCD to express a decimal number:

389 = 0011 1000 1001 or 001110001001

decimal number BCD form

1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
8	1	0	0	0
9	1	0	0	1

Fig.1.2 BCD form

Character	ASCII	
	Zone Bits	Numeric Bits
0	011	0000
1	011	0001
2	011	0010
A	100	0001
B	100	0010

Fig.1.3 Selected characters

4 bits BCD is a good approach but can only express16 possible different characters, it is not sufficient for the use on a keyboard. There are 10 decimal digits, 26 lower-case letters, 26 capital letters and tens of other characters as well as control keys, totally more than 100 keys on a PC keyboard for input. So, 7 or 8 bits BCD codes are introduced. The 7-bit American Standard Code for Information Interchange (ASCII) is widely used in PC and data communication. Fig.1.3 shows you the ASCII format and the coding used to represent chosen characters. Here, an ASCII code is divided into two parts: the zone bit part and the numeric bit part. The zone bit part has three zone bits positions; the numeric bit part contains 4 numeric bit positions. The zone bit part indicates the category of a represented character, digit, letter or other symbol; the latter means the ordinal number or the binary equivalent of the character or digit in the related category. For example, the ASCII code of 3 is separated into two parts: 011 and 0011. 011 is zone bit part and 0011 is the binary equivalent of 3. The ASCII code of B is 100 0010. 100 is its zone bit part, the 0010 is its ordinal number in English letter category. In a mainframe or supercomputer system, 8 bits BCD code is accepted.

Because of dust particles on storage media or improper humidity levels around the computer,

one bit in a string of 7 bits may be lost during data input, processing or output. An incorrect character code is produced. The designers have to find a method to detect such errors. The method is adding an extra check bit or parity bit to the 7-bit code. So really 8 bits may be stored. See the following:

Character	ASCII code with a check bit		
	Check bit	Zone bits	Numeric bits
B	0	100	0010

The principle of check or parity is that the computers use the check bit to confirm that every valid character code should always have an even number of bit 1s. This is called an even-parity format. But some computers employ an odd-parity format.

NEW WORDS

be composed of	由…组成
strings of	串
binary number	二进制数
encode	编码
be represented by	由…代表
decimal number	十进制数
approach	方法
convert…into	把…转变成
zone bit position	标志位
numeric bit position	数字位
category	目录，类别
particle	质点
improper humidity level	不合适的湿度
confirm	确认
even parity	偶校验
format	格式

EXERCISE

1. Translate the following into English.

(1) 把一个二进制数变成十进制数。

(2) 不适当的温度

(3) 说明标志位的作用。

(4) 检验错误

(5) 确认有效

2. Anwer the following questions in English.

(1) What are a binary number?

(2) What are a decimal number?