计算机专业英语

扈　畅　张晨霞　等编著

21 世纪高职高专教育统编教材

计算机专业英语

扈 畅 张晨霞 等编著

内 容 提 要

本书是一本面向 21 世纪的计算机专业英语教材，涉及了计算机基础知识、硬件结构、程序设计、软件工程、应用开发、网络通信、多媒体技术以及其他影响我们生活的信息技术。全书以计算机和 IT 领域的最新英语时文和经典原版教材为基础，同时以积累专业英语基础知识和提高专业英语基本语言运用技能为目的。每个单元围绕一个专业知识主题，编选课文和设计专业口语技巧、科技写作方法、科技翻译技巧及阅读综合技能训练项目，并配有相应练习，使读者能够快速掌握计算机英语的特点，提高专业英语综合技能和交际能力。

本书可供大专院校计算机及 IT 相关专业的学生使用，也可供参加计算机水平考试的学生、IT 行业的工程技术人员以及谋求出国发展的计算机人才学习参考。

前　言

计算机是当今最具有生命力的技术领域之一，其极高的发展速度、强劲的渗透能力、高附加值的经济价值使计算机技术进入了日新月异的发展时期。这也就决定了计算机领域中的新技术有着更短的周期，要求计算机行业的从业人员必须更快地掌握最新的技术。英语作为计算机及 IT 的行业语言，有着其他语言所不能替代的功能，无论是学习最新的计算机技术，还是使用最新的计算机软硬件产品，都离不了对计算机英语的熟练掌握。可以毫不夸张地说，英语水平的高低是决定计算机技术人员成就大小的因素之一。

本书是按照最新《大学英语教学大纲》对专业英语的要求，为开设计算机专业英语课程而编写的。作者用一种比较全面的语言观研究大学专业英语教学，设计教材编写框架，旨在切实提高学生实际使用英语的能力，立足实用。本书内容涉及计算机基础知识、硬件结构、程序设计、软件工程、应用开发、网络通信、信息安全、多媒体技术应用等。同时，以积累专业英语基础知识和提高专业英语基本语言运用技能为目的，让学生从语音、词汇、句式、功能意念、语段、篇章、思维方式等 7 个层面上学习和积累专业英语知识，全面训练并提高读、听、说、写、译 5 种专业英语综合技能和交际能力。

本书编写以单元形式，每个单元围绕一个专业知识主题，编选课文和设计读、听、说、写、译综合技能训练项目。全书各单元专业口语技巧、写作方法、科技翻译技巧具有系统性，自成体系，并在综合技能介绍后面设计了具有针对性的练习、实践和交际项目。这些项目的语言内容和课文为同一主题，有利于学生通过这些循环、往复、交叉、叠加的练习与实践项目，掌握技巧，形成能力。

本书编写分工如下：Unit1～2 课文、阅读，Unit1～5 口语技巧、写作方法、科技翻译技巧及配套练习，由扈畅编写。Unit 3～5 课文、阅读，Unit 6～10 口语技巧、写作方法、科技翻译技巧及配套练习，由张晨霞编写。Unit 6～8 课文、阅读及配套练习，由王静文编写。Unit9～11 课文、阅读及配套练习，由郭晓燕编写。Unit12～14 课文、阅读、配套练习和附录 1，由陈嘉编写。Unit11～12 口语技巧及配套练习、附录 2 的部分内容，由张胜敏、周美玲编写。Unit13～14 口语技巧及配套练习、附录 2 的部分内容，由李响编写。Unit11～12 写作方法、科技翻译技巧及配套练习、附录 2 的部分内容，由李静、郝静静编写。Unit13～14 写作方法、科技翻译技巧及配套练习、附录 2 的部分内容，由郭晓磊、曹萌萌编写。全书最终由扈畅统稿。

本书为了让读者学到纯正的专业英语，所有材料的"原型"均选自国外原版英文教科书、著作、实用文件和国外英文网站。在此谨向原作者、出版社和有关网站致谢。

由于编者水平有限，且编写时间仓促，书中难免存在疏漏及不当之处，敬请广大读者批评指正。

编　者

2007 年 6 月

Contents

Unit 1　Introdnction to Computers

Part Ⅰ　Text

```
What Is a Computer ?
```

The basic job of computers is the processing of information. For this reason, computers can be defined as very-high-speed electronic device which accept information in the form of instructions called a program and characters called data, perform mathematical and /or logical operations on the information, and then supply results of these operations. The program, or part of it, which tells the computers what to do and the data, which provide the information needed to solve the problems, are kept inside the computer in a place called memory.

Computers are thought to have many remarkable powers. However, most computers, whether large or small, have three basic capabilities. First, computers have circuits for performing arithmetic operations, such as eddition, subtraction, multiplication, division and exponentiation. Second, computers have a means of communicating with the user. After all, if we couldn't feed information in and get results back, these machines wouldn't be of much use. However, certain computers (commonly minicomputers and microcomputers) are used to control directly things such as robots, aircraft navigation systems, medical instruments, etc.

Some of the most common methods of inputting information are to use magnetic tape, disks and terminals. The computer's input device (which might be a keyboard, a tape drive or disk drive, depending on the medium used in inputting information) reads the information into the computer. For outputting information, two common devices used are a printer which prints the new information on paper, or a CRT display screen which shows the results on a TV-like screen.

Third, computers have circuits which can make decisions. The kinds of decisions which computer circuits can make are not of the type: "Who would win a war between two countries?" or "Who is the richest person in the world?" Unfortunately, the computer can only decide three things, namely: Is one number less than another? Are two numbers equal? and Is one number greater than another?

The numbers, letters and images input to a computer are called data. The instructions that carry out the processing are called computer programs or software. The output, intended for

use and interpretation by people, is called information.

A computer can solve a series of problems and make hundreds, even thousands , of logical decisions without becoming tired or bored. It can find the solution to a problem in a fraction of the time it takes a human being to do the job. A computer can replace people in dull, routine tasks, but it has no originality; it works according to the instructions given to it and cannot exercise any value judgments. There are times when a computer seems to operate like a mechanical "brain", but its achievements are limited by the minds of human beings. A computer cannot do anything unless a person tells it what to do and gives it the appropriate information; but because electric pulses can move at the speed of light, a computer can carry out vast numbers of arithmetic-logical operations almost instantaneously.

It's hard to assign a worthwhile definition to each type of computer because definitions can get bogged down in potentially confusing technical jargon.[1] Nevertheless, the following definitions can suffice:

(1)A supercomputer can handle gigantic amounts of scientific computation. It's usually maintained in a special room or environment, and may be about 50 000 times faster than a micro-computer. As a user in business, you probably would not have contact with a supercomputer. However, you might if you worked in the areas of defense and weaponry, weather forecasting, scientific research, at one of several large universities, or for the National Aeronautics and Space Administration.[2]

(2)A mainframe computer is a large computer, usually housed in a controlled environment, that can support the processing requirements of hundreds and often thousands of users and computer professionals.[3] If you go to work for an airline, a bank, a large insurance company, a large accounting company, a large university, or the Social Security Administration, you will likely have contact, through your individual workstation, with a mainframe computer.

(3)A minicomputer, also known as a midsize or low-end mainframe computer, is similar to but less powerful than a mainframe computer. It can support 2 to about 50 users and computer professionals. Minicomputers and mainframe computers can work much faster than microcomputers and have many more storage locations in main memory. Many small and medium-sized companies today use minicomputers, so if you go into the business world, chances are good that you will have contact with a minicomputer.

(4)The microcomputer is the type of computer that you undoubtedly will be dealing with as a user. Many readers are probably already familiar with the microcomputer, also known as a personal computer (PC). They vary in size from small portables, and laptop computers that you can carry around like a briefcase, to powerful desktop workstations, such as those used by engineers and scientists. A microcomputer-generally used by only one person at a time-uses a microprocessor chip as its CPU. As small as one quarter of an inch square, a chip is made of silicon, a material made from sand. Silicon is referred to as a semiconductor because it

sometimes conducts electricity and sometimes does not (semi means "partly"), depending on applied voltages and added chemical impurities("dopants").

In general, a computer's type is determined by the following seven factors:

(1)The type of CPU. As noted, microcomputers use microprocessors.[4] The larger computers tend to use CPUs made up of separate, high-speed, sophisticated components.

(2)The amount of main memory the CPU can use. A computer equipped with a large amount of main memory can support more sophisticated programs and can even hold several different programs in memory at the same time.

(3)The capacity of the storage devices. The larger computer systems tend to be equipped with higher capacity storage devices.

(4)The speed of the output devices. The speed of microcomputer output devices tends to be rated in terms of the number of characters per second (cps) that can be printed-usually in tens and hundreds of cps. Larger computers' output devices are faster and are usually rated at speeds of hundreds or thousands of lines that can be printed per minute.

(5)The processing speed in millions of instructions per second (mips). The term instruction is used here to describe a basic task the software asks the computer to perform while also identifying the data to be affected. The processing speed of the smaller computers ranges from 7 to 40 mips. The speed of large computers can be 30 to 150 mips or more, and supercomputers can process more than 200 mips. In other words, a mainframe computer can process your data a great deal faster than a microcomputer can.

(6)The number of users that can access the computer at one time. Most small computers can support only a single user; some can support as many as two or three at a time. Large computers can support hundreds of users simultaneously.

(7)The cost of the computer system. Business systems can cost as little as $500 (for a microcomputer) or as much as $10 million (for a mainframe) and much more for a supercomputer.

New Words

access	n. 存取，访问，选取；接近
accounting	adj. 会计的，财务的，账户的
administration	n. 管理，行政；主要部门
aeronautics	n. 航空术，航空学
assign	vi. 分配，赋值，指定，分派
bit	n. 位
bog(down)	vi. 陷入
briefcase	n. 箱子
capability	n. 能力
chip	n. 芯片

customer	*n.* 顾客，客户，用户
definition	*n.* 概念，定义
exponentiation	*n.* 取幂
fundamental	*adj.* 基本的
gigantic	*adj.* 巨大的
house	*vt.* 安置
identify	*vt.* 确实，识别，辨认，标记，标识
impurity	*n.* 不纯，不清洁
invoice	*n.* 发票
jargon	*n.* 术语，难懂的话，行话 *vt.* 说行话
laptop	*n.* 膝盖，膝面，膝上；笔记本(便携式)电脑
mainframe	*n.* 主机，大型计算机
memory	*n.* 存储器
microcomputer	*n.* 微型计算机，微机
microprocessor	*n.* 微处理器
minicomputer	*n.* 小型计算机
misconception	*n.* 误解
portable	*adj.* 便携式的
potential	*adj.* 可能的，潜在的，大概的
process	*v.* 处理(数据)
professional	*adj.* 职业的，专业的
rack	*n.* 机柜
security	*n.* 安全，防护
semiconductor	*n.* 半导体
silicon	*n.* 硅
simultaneously	*adv.* 同时
sophisticated	*adj.* 复杂的
suffice	*vi.* 足够 *vt.* 使满足
supercomputer	*n.* 巨型计算机
angible	*adj.* 有形的
technological	*adj.* 工艺的，工艺学上的
technology	*n.* 工艺，技术
terminal	*n.* 终端
threshold	*n.* 开始
voltage	*n.* 电压
weaponry	*n.* (总称)武器
workstation	*n.* 工作站

Phrases & Expressions

computer component	计算机部件
in terms of	以……名义
integrated circuit	集成电路
mainframe computer	大型计算机
output device	输出设备
personal computer	个人计算机
processing capability	处理能力
storage device	存储设备
storage location	存储地址
tape drive	磁带机

Abbreviations

CRT (Cathode Ray Tube)	阴极射线管
CPU (Central Processing Unit)	中央处理器
ROM (Read Only Memory)	只读存储器
RAM (Random Access Memory)	随机存取存储器
cps (characters per second)	每秒钟字符数
mips (millions of instructions per second)	每秒钟百万指令
PC (Personal Computer)	个人计算机

Notes

1. It's hard to assign a worthwhile definition to each type of computer...

   assign... to...为"将……赋予……"; assign a worthwhile definition to each type of computer 即 "给每一种类型的计算机赋予一个有价值的定义"。另外，如：assign an attribute to a file 表示 "给某个文件赋予一种属性"。

2. However, you might if you worked in the areas of defense and ...

   句中 you might 后省去了前句中已经提到的谓语部分，即：have contact with a supercomputer 。

3. A mainframe computer is a large computer, usually housed in a controlled environment, that can support the processing...

   句中的 that 从句仍然是限制性定语从句，只不过前面有一个插入语，这才用逗号跟主句分开。

4. As noted, microcomputers use microprocessor.

   句中的 As noted 是一个省略从句，省掉了 "主语+ be"，说全应是：As it is noted。类似的有：If necessary; When possible 等。

Exercises

I. Decide whether the following statements are true (T) or false (F) in relation to the information in the text:

1. Technologies have made the computer smaller and smaller.

2. Almost every one working in business can have contact with the supercomputer.

3. A mainframe computer can meet the needs of the processing requirements of hundreds of and thousands of users and computer professionals.

4. A minicomputer, just like a microcomputer, is so popular that you always have chance to have contact with it.

5. Microcomputers can be used as powerful desktop workstations.

6. The larger the computer is, the faster it can process the data.

7. The microcomputer can be used to access information from the mainframe; it can also perform some specialized tasks.

8. The cost of computer itself is not a factor determining a computer's type.

II. Match each of the following terms to the phrase or definition that is most closely related:

A. portable computer	B. device	C. workstation	D. read only memory (ROM)
E. semiconductor	F. voltage	G. capacity	H. laptop computer
I. silicon		J. random access memory (RAM)	

1. a powerful single-user computer, usually attached to a network

2. the generic term for any microcomputer that is designed to be carried around

3. a kind of portable computer which can be put on the lap

4. a non-metallic element with semiconductor characteristics

5. a material whose electrical conductivity increases with temperature and is intermadiate between metals and insulators

6. electrical force measured in volts

7. the amount of space in a storage device

8. a piece of hardware that is usually attached to a computer and is not part of the main central processor (CPU)

Ⅲ. Fill in the blanks with the words or terms given below. Change the forms if necessary:

> computation   portable   access   instruction   processing capabilities
> computer professional   main memory   sophisticated programs

1. In order to save space, the keyboards on _____ and notebook PCs have largely different layouts from that of standard keyboards.
2. Before you can _____ any data on the diskette, you must insert the disk into the disk drive.
3. A computer cannot execute a program stored on disk unless part of it is first copied into_____.
4. A computer with a large memory is more capable of holding thousands of instructions that are contained in the more_____.
5. The size and number of the registers can dramatically affect the _____ of a computer system.
6. In general, a ROM chip stores _____ necessary to tell a computer what to do when it is first turned on.
7. Oigantic amounts of scientific _____ can be handled by a supercomputer.
8. When you meet difficulties in using Windows NT, you'd better ask a _____ for help.

Ⅳ. Read the following passage carefully and then fill in each blank with one suitable word or expression selected from the list:

> compile   existence   electric power   improvements
> multiply   calculator   add   electric calculator
> simplified   abacus   types   computing device
> mathematicians   form   the slide rule

There are two basic__1__of computing devices. A simple example of the first type is __2__, which the__3__and scientists have been using for generations. This kind of computer changes information from one__4__to another, so that the computation is__5__. The second type of__6__changes information into a number of simplest codes. The simplest example of this type is__7__, which has been used in many parts of the world since ancient time. For centuries very little progress was made in improving this type of__8__. But about 1642, Pascal developed a machine that could__9__and subtract. Thirty years later, Von Leibnitz developed a machine that could__10__and divide as well. During the next two hundred years __11__were very slow, but in 1887__12__was added to this type of machine and the first __13__came into__14__. It could record__15__and tabulate information.

V. Translate the following passage from English into Chinese:

A computer system includes a computer, peripheral devices and software. The electric, electronic and mechanical devices used for processing data are referred to as hardware. In addition to the computer itself, the term "hardware" refers to the components called peripheral devices that expand the computer's input, output and storage capabilities. Computer hardware in and of itself does not provide a particularly useful mind tool. To be useful, a computer requires a set of instructions, called software or a computer program, which tells the computer how to perform a particular task. Computers become even more effective when connected to other computers in a network so users can share information.

Part Ⅱ   Speaking Skills

突破语音关、坚持"三说法"
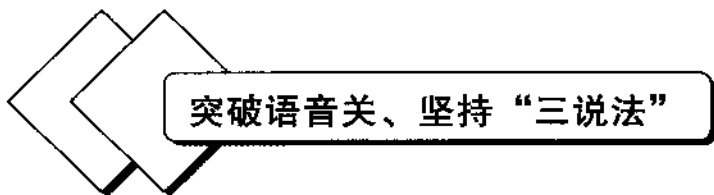
英语口语的好坏，或者说能否达到用英语顺利进行口头交际的目的，其发音正确与否相当关键。正如语言教育研究专家 William Acton 所说"发音障碍和错误轻则使人感觉不佳，影响学习的积极性和自信心，重则造成信息传递错误"，在讲英语时，要特别注意以下几个方面。

一、元音不同

汉语无长、短音之分，但练习英语发音时容易出现长音不长、短音不短的现象，造成辨音与发音错误。另外，英语中的双元音与汉语的复韵母相近，都是复合元音，但英语的复合元音动程长，而汉语的复韵母则短。如：ai(爱)与/ ai /→/ a→i /。所以，在讲英语时，要注意长元音与双元音发音饱满，短元音要尽量发音短促。

二、辅音不同

英语的辅音，清浊对应分明。发清辅音时声带不振动，发浊辅音时声带一定要充分振动。而汉语中，许多辅音的特征主要是送气和不送气。所以，在发与汉语相似的英语浊辅音时，一定要注意克服汉语的影响，声带一定要振动。此外，汉语中的音节多为开音节，而英语中闭音节是普遍现象。因此，不要把英语中连缀着的每一个辅音都念成一个音节，也不要在英语闭音节后面添上个/ ə / 音。如 bed 不要读成/ bedə / 。

三、咬舌音

英语中有一对咬舌辅音 / θ / 和 / ð /，而汉语中没有。所以，较好的办法是对着镜子练习这一对辅音，以使能自然熟练地发出这对咬舌音。

四、避免吞音

在学习英语发音的过程中，学生常常会犯吞音的错误。应注意元音和辅音的吞音常出现在[ə, ə u]; [t , d , s , l , r , m , k , w , z , v , b , p] 音素。音节吞音不是对音素发音掌握不好引起的，而是由以下5个因素造成的:

(1)对单词记忆不准，如: citi [zen] (方括号内为单词中省去部分,下同)，[en] vironmental , cele[brate], ent [er] tainment ,admi[ni] stration, import [ant], adver [ti]sing, holi [day] 等;

(2)词法变换错误，如: develop [ment] ,experi[ment] ,communi[cation]等;

(3)词法变换过程中其他音的错误，如: authori[ta]tive, e[du]cation, mo[tiva]tion, partici[pa]ting 等;

(4)思维的跳跃出现，即只说了单词的前半部分，如: concen[trate];

(5)口误，如: far [ther]。

五、坚持"三说法"

树立信心是提高英语口语能力的前提，练口语首先必须克服和消除腼腆和怕说错的心理障碍，并积极主动地创造条件，抓住一切机会去演练。其具体作法是:

(1)大胆独自说:大胆说、不怕错才能使情绪保持镇定，保证发音器官正常工作、口语流畅，从而收到良好的训练效果。根据自己所处的地点、场合、环境，所见所闻的人、事、物，独自选定自练口语主题，用英语表达，自言自语训练。

(2)寻机积极主动说:充分利用课余时间,参加一些 "English Corner", "English Day", "English salon"之类的活动。这类活动具有一定的强制性，在规定的时间或地点内只许用英语交谈。在此类活动中，一定要主动上前搭话、养成用英语答话的口语习惯。

遇上有外国人在场或举行外事活动的场合，就不应错过这种宝贵的机会，在有关部门准许和不妨碍公务的情况下，只要有可能进入英语环境，就应积极争取，一旦进入英语环境，就应积极说、主动练。

(3)即景生情发挥说:根据不同的场合、地点、时间、活动等情景，借题发挥，用英语表达和描述所见情景。用英语即景描述时，扩展发挥的内容越多越好。

Exercises

I . **Complete the following passage with the words given below. Then raise a conversation with your partner based on the passage, with the following key points being covered. Practice the two techniques you have just learnt in your conversation.**

Technologies for Exploiting Energy Sources

• Technologies: In the early start of this century; in recent years

- Energy Sources: Gaseous and liquid fossil fuels; coal
- The Challenges: Limited reservoirs; the demand for energy; the population increases

easier   utilizing   inexhaustible   limitless   cleaner

Technologies for Exploiting Energy Sources

In the early start of this century, technologies were developed for exploiting apparently __1__ reservoirs of gaseous and liquid fossil fuels. Because these fuels are __2__ to handle and __3__ than coal, they made great inroads on the use of coal as a primary energy source. However, in recent years, it has become accessible that high-quality reservoirs of gaseous and liquid fossil fuels are not __4__. Moreover, the demand for energy continues to increase as the population increases and labor-sparing machines are developed.

It is a basic premise that this challenge can best be met by developing technologies for more efficient use of existing resources and for __5__ previously untapped sources of energy. A number of approaches to these goals appear to hold promise for success in the next few decades.

Ⅱ. Answer the following questions:

A: What is a microprocessor ?

B: It's a very small __1__, manufactured on a single integrated circuit (IC)chip in a microcomputer.

A: What is the CPU ?

B: The CPU is _____ 2 _____.

A: Can you tell me something about the CPU ?

B: I can give you a general idea of what's inside it. First there's __3__. Its task is to interpret program instructions and direct the rest of the unit to execute the instruction. The second part of the CPU is _____ 4 _____.

A: Does this part of the CPU perform the logic operations ?

B: _____5_____, and _____ 6 _____, also.

A: Can a microprocessor do the same operations that a larger CPU does ?

B: __7__, but on a much slower scale. The microprocessor has the __8__ architecture as a large __9__ and, therefore, similar capabilities. However, larger systems can process more data into information in less time, as well as perform more complicated operations.

A: What do you mean by architecture ?

B: In computer jargon, it refers to _____ 10 _____.

Part Ⅲ   Writing Skills

引言与焦点
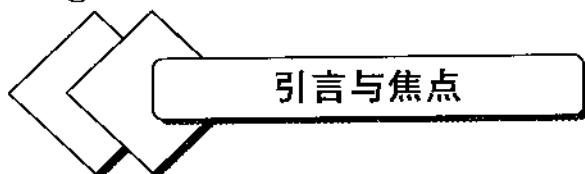
众所周知，凡是要写作，脑子里都有一个目的：想通过书面写作的方式告诉某个或