云南省高校教材审定委员会审定

计算机专业英语

PROFESSIONAL COMPUTER ENGLISH

主编 王震江 张志鸿
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Preface

本书是在我们的《计算机专业英语》讲义的基础上修改成型的。该讲义使用了 5 年，在这段时间里，我们对原讲义中出现的一些问题进行了修改，并增加了 Language Points 部分。

全书包括正文 30 篇和阅读材料 30 篇共 60 篇文章，内容从计算机基础开始，一直延续到最近期的计算机技术。30 课正文的内容是：计算机的发展，计算机数据单位，PC 机字符集，文件，计算机程序，操作系统，编程语言，逻辑电路，中断，显示技术，通用串行总线，处理器，TCP/IP 协议，网络计算机，网络计算机会淘汰 PC 机吗？快速局域网技术，因特网访问技术，企业内联网，千兆以太网，Unix、NT 和 Linux，防火墙和代理服务，因特网安全性，因特网的编程语言，分组交换网络的有效性，现代加密技术，基于组件的对象开发，分布式计算和客户/服务器计算，新的网络管理工具，知识管理，下一代 Web 编程语言——XML。

本书全部文章的选编和编辑工作由王震江同志完成；Words and Expressions 的注解以及 Exercises 由王震江和邱莎同志完成，第 1 课至第 13 课的 Language Points 由张志红同志完成，第 14 课到 30 课

的 Language Points 由申浩如同志完成。王震江对全文进行了审核。

在本书的编辑工作中，昆明学院计算机系的黄凯、洪娜、和星海、邱宇翔、刘美凤、柴云霞、王雪云等同志完成了本书的音标标注工作。云南大学出版社对本书的出版给予了大力支持，在此一并表示感谢！

由于编者水平有限，错误在所难免，请读者给予批评指正。

编著者

2005 年 8 月于昆明

Contents

Lesson One *The Development of Computers*

Para01 A computer is a fast and accurate symbol manipulating system that is organized to accept, and process data and produce output results under the direction of a stored program of instructions.

Para02 A complete computer set is a system that basically includes the following five key parts: the processor, the memory, the input/output (I/O, for short), disk storage, and the programs.

Para03 The processor is the "brain" of the computer that has the ability to carry out our instructions or programs given to the computer. The processor is the part that knows how to add and subtract and to carry out simple logical operations. In a big mainframe computer the processor is called s Central Processing Unit, or CPU, while in a microcomputer, it is usually known as microprocessor.

Para04 The memory is the computer's work area with nothing like our own memory, so the term can be misleading, the computer's memory is where all activities take place. The size of a computer's memory sets a practical limit on the kinds of work that the computer can undertake.

Para05 I/O is all the means that the computer uses to take in or spit out data. It includes input that we type in on the keyboard and output that the computer shows on the video display screen or prints on the printer. Every time the computer is taking in or putting out data, it's doing I/O devices, which is called periphery devices.

Para06 Disk storage, in fact, is a very important kind of I/O where the computer keeps its data when it's not in use inside the computer's memory.

Para07 Programs are the sets of instructions that make the computer go. Programs are the hardest part of computer work as only programs will bring a computer to life and turn it into a powerful working equipment.

Para08 Computers are currently classified into three kinds: digital, analog, and hybrid.

Para09 A digital computer is a counting device that operates on discrete data. It operates directly on counting numbers (or digits) that represented numerical numbers, letters, or other special symbols. Digital processors count discrete values in the form of numbers to achieve the desired output results.

Para10 An analog computer, however, deals with variables that are measured on a continuous scale and are recorded to some predetermined degree of accuracy. Analog computer system are frequently used to control processes.

Para11 A hybrid computer is created with the combination of desirable features of analog and digital machines.

Para12 Both analog and hybrid processors obviously perform important specialized tasks. But the overwhelming majority of all computers currently in use are digital ones.

Para13 Modern computers vary in physical size from those that are so large so that they can fill rooms to those with CPUs the size of dime.

Para14 Microcomputers are the smallest general-purpose systems. But they may perform the same operations and use the same program instructions as those of much larger computers. Minicomputers also being small general-purpose systems, are typically more powerful than micros. With the size increasing, Mainframe computers are systems that offer faster processing speed and greater storage capacity. Finally come the supercomputers that are designed to process complex scientific applications, and they are the largest and fastest systems.

Para15 It has been more than half of century since the first computer was built in 1946, There were four generations for developing of computers in the last half of the 20th century.

Para16 The first generation of Computers was from 1946 through 1958.

Para17 The first generation of Computers started with the birth of ENIAC (Electronic Numerical Integrator and Calculator) in 1946. Developed in the Pennsylvania University, ENIAC was characterized by the most prominent feature of 18,000 vacuum tubes. The arithmetic calculation speed of the ENIAC was 5000 per second.

Soon after the ENIAC's birth, several other notable computers were built, each contributing significant advancement to the development of computers, such as binary arithmetic, random access, and the concept of stored programs, these concepts are common in today's computer systems.

Para18 The second generation of Computers was from 1958 through 1964.

Para19 The first transistor came to the world was developed by Bell Laboratory in December 23,1947. The first computer set built with transistor was made in 1958, it signaled the beginning of the second generation of computer. The application of transistors meant more powerful, more reliable and less expensive computers that would occupy less space and consume less power. Enormous increases in computer performance and substantial reductions in price formed the trend that continues today. The arithmetic calculation speed of computer was about to several 100,000 per second in the time.

Para20 The third generation of Computers was from 1964 to 1971.

Para21 The Integrated Circuit (IC for short) made first time in the world was in 1957, The IBM's first use of ICs with their computer systems in 1964 ushered in the third generation of computers. The third-generation computers worked so fast that they provided the capability to run more than one programs concurrently (For example, at any given time the computer might be printing payroll checks, accepting orders, and testing programs.) , and that was the beginning of multiprogramming design. The third-generation computers differed radically from all the previous types of computers, the change was revolutionary, not evolutionary. The arithmetic calculation speed of computers was up to thousand millions per second at this time.

Para22 The fourth generation of Computers was from 1971 to now.

Para23 In 1970, Intel Company integrated 2,500 transistors successfully on a silicon chip of which the areas was 0.6×0.8 square inches, It was a sign of beginning the times of large-scale IC. In 1971, a single silicon chip of central processing unit (briefly called CPU) and microprocessor MCS-4 were made, that meant the start of the fourth generation of computers. Since then, with developing of micro-electronic technology,

computer has been developing in two opposite directions. One is micro-mini-computer, for instance, the notebook computers, pocket computers and even calculator. Another is supercomputer designed to process complex scientific problems, and they are the largest and fastest systems.

Para24 Nowadays, in the fourth-generation computers, since the first IBM-PC that equipped with Intel 8086 was developed by IMB Company in 1981, microcomputers using Intel x86 as CPU have been being prevalent over the world in two decades. The more advanced of micro-electronic technology, the higher of ratio between performance and price.

Words and Expressions

manipulate [mə'nipjuleit] *vt.* 操作，操纵
under the direction of 在……指挥下
instruction [in'strʌkʃən] *n.* 指令
processor ['prəusesə] *n.* 处理器
subtract [səb'trækt] *n.* 减法
mainframe ['meinfreim] *n.* 大型机
microcomputer [maikrəukəm'pju:tə] *n.* 微型机
term [tə:m] *n.* 术语，学期
undertake [ʌndə'teik] *vt.* 从事，承揽
take in 接受
keyboard ['kibɔ:d] *n.* 键盘
periphery [pə'rifəri] *a.* 周围的，周边的
turn...into... *vt.* 把……转变成……
equipment [i'kwipmənt] *n.* 配置,设备
be classified into 划分成……
analog ['ænəlɔg] *n.* 模拟
discrete [dis'kri:t] *a.* 分离的,不连续的
in the form of... *prep.* 以……的形式
organize ['ɔ:gənaiz] *vt.* 组织，构成
program ['prəugræm] *n.* 程序，节目
set [set] *n.* 装置，设置，集合
memory ['meməri] *n.* 存储器
logical ['lɔdʒikəl] *a.* 逻辑的
Central Processing Unit 中央处理器
microprocessor [maikrəu'prɔsesə] *n.* 微处理器
misleading [mis'li:diŋ] *a.* 易引起误解的
mean [mi:n] *vt.* 意味着，*n.* 方法
spit out 放出,释放
screen [skri:n] *n.* 屏幕
in fact 事实上
powerful ['pauəful] *a.* 有力的,强大的
currently ['kʌrəntli] *ad.* 当前地
digit ['didʒit] *n.* 数字
hybrid ['haibrid] *n. a.* 混合
numerical [nju'merikəl] *a.* 数字的
desire [di'zaiə] *vt.* 希望

deal [di:l] *vi.* 处理(with)

measure ['meʒə] *vt.* 测量

scale [skeil] *n.* 规模,尺度,比例

frequently ['fri:kwəntli] *ad.* 频繁地

overwhelming [əuvə'hwelmiŋ]

a. 压倒的,势不可挡的

dime [daim] *n.* 硬币

typically ['tipikəli] *ad.* 典型的

complex ['kɔmpleks] *a.* 复杂的

integrate ['intigreit] *vt.* 积分，集成

generation [dʒenə'reiʃən] *n.* 代，一代

for short 简称

usher ['ʌʃə] *vi.* 引入，宣告(in)

integrator ['intigreitə] *n.* 积分

calculator ['kælkjuleitə] *n.* 计算器

multiprogramming [ˌmʌltiˈprəugræmiŋ]

n. 多道程序设计

be characterized by *v.* 以……为特点

radical ['rædikəl] *a.* 根本的

tube [tju:b] *n.* 管,电子管

revolutionary [revə'lu:ʃənəri] *a.* 革命的

notable ['nəutəbl] *a.* 值得注意的,著名的

silicon chip 硅片

advancement [əd'vɑ:nsmənt] *n.* 推进,进展

large-scale [lɑ:dʒskeil] *n.* 大规模

access ['ækses] *vt* 访问,接近

transistor [træn'sistə] *n.* 晶体管,三极管

for instance 例如,举例说明

variable ['veəriəbl] *n.* 变量

continuous [kən'tinjuəs] *a.* 连续的

predetermine ['pri:di'tə:min] *vt.* 预先决定

combination [kɔmbi'neiʃən] *n.* 组合,结合

modern ['mɔdən] *a.* 当代的,现代的

general-purpose ['dʒenərəl'pə:pəs] *a.* 通用的

capacity [kə'pæsiti] *n.* 能力,容量

application [æpli'keiʃən] *n.* 应用

circuit ['sə:kit] *n.* 电路

Integrated Circuit *n.* 集成电路

electronic [ilek'trɔnik] *a.* 电子的

capability [keipə'biliti] *n.* 能力,本领

concurrently [kən'kʌrəntli] *ad.* 同时地

payroll checks 工资单

characterize ['kæriktəraiz] *vt.* 表示……的特点

prominent ['prɔminənt] *a.* 著名的,显著的

vacuum ['vækjuəm] *n. a.* 真空,真空的

arithmetic [ə'riθmətik] *n.* 算术

evolutionary[ˌi:və'lu:ʃənəri] *a.* 渐进的,演化的

contribute [kən'tribju(:)t] *vt.* 对……贡献,投(稿)

significant [sig'nifikənt] *a.* 有意义的,重要的

binary ['bainəri] *n.* 二进制，二进制的

random ['rændəm] *a.* 随机的,任意的

briefly called 简单地称为

micro-mini-computer['maikrəu'minikəm'pju:tə]

n. 微计算机

reliable [ri'laiəbl] *a.* 可靠的,稳定的

note-book [nəutbuk] *n.* 笔记本

consume [kən'sju:m] *vt.* 消耗,消费

performance [pə'fɔ:məns] *n.* 表现,表演,性能

substantial [səb'stænʃəl] *a.* 本质的,显著的

the more... the more 越……越……

supercomputer[,sju:pəkəm'pju:tə]*n.* 超级计算机

enormous [i'nɔ:məs] *a.* 巨大的

prevalent ['prevələnt] *a.* 流行的

decade ['dekeid] *n.* 十年

ratio ['reiʃiəu] *n.* 比,比例

Language Points

1. **A computer is a fast and accurate symbol manipulating system that is organized to accept, and process data and produce output results under the direction of a stored program of instructions.** (***lines 1-3,para.1***) 计算机是一种快速准确的符号处理系统，它在所储存程序的指挥下实现接收数据、处理数据和输出结果。本句是包含定语从句的单句，句子的主干情况是 **A computer** 作主语，系动词是 **is**，表语是 **system**。表语 **system** 前后各有一个定语，前面的定语是形容词性短语 **a fast and accurate symbol manipulating**，其后的定语则是由 **that** 引导的直到段落结束的限定性定语从句。这种说明定义的方法在科技英语文献中使用较多，在本篇文章中就出现了多次。
2. **manipulating** (***lines 1-3,para.1***) manipulate 的动名词形式，这里作“处理”解释。英语中，为避免用词上的单调乏味，在同一篇文章中，不重复使用同一个词，而往往使用该词的多个同义词。本篇课文中的“处理”一词就使用了多个同义词，如课文中接下来的：process，operate，deal with，work with……试试看，您还能找到其他的吗？
3. **while** (***lines 4,para.3***) 这里作“而”（转折连词）解释，引导并列句。
4. **nothing like** (***line1,para.4***) （内存）比不上（无法和人的相比）。
5. **set a practical limit on sth** (***line3,para.4***) 对 sth 设置了（明确的）、实际的限制。
6. **means** (***line1,para.5***) 这里作“设备、装置”（device，set，equipment）解释。
7. **hardest** (***lines 2,para.7***) *adj.* 在本文中，非“坚硬的，困难的”等含义，这里作“最重要的”（**foremost, the most important**），“最关键的”（**the most crucial, the most pivotal**），“最决定性的”（**the most decisive**）。**所以，单词的含义要在语篇环境中才能明确！**
8. **as** (***lines 2,para.7***) 这里作“因为”（because），引导原因状语从句。
9. **control processes** (***lines 3,para.10***) 这里作“过程控制”解释或翻译。在科技英语的

阅读中，相应的专业背景知识对正确理解原文、准确进行翻译是必不可少的（科技英语翻译的三原则：信、达、雅）。若照书面直译，该词组应译为“控制过程、控制处理”，但同学们是否还记得：在《计算机基础》课程中对有关计算机功能的（经典习惯）描述，如人工智能、科学计算、过程控制、事务处理等等。若再回忆有关世界上第一台电子计算机 ENIAC 的专业背景知识：18000 个电子管、占地 170 平方米、耗电 150 千瓦、每秒运算速度 5000 次……及其他相关专业知识，则不难理解该词组及像“**fill rooms**”（***lines 2,para.13***）等词（组）所涉及到的专业知识的理解和翻译。

10. **The more advanced of micro-electronic technology, the higher of ratio between performance and price.** （***lines 3-5,para.24***） 微电子技术越发达，计算机的性能价格比就越高。这种并列对比的比较级结构是“The more...the more...”，表示“越……，则越……”**e.g. The more intensive you understand the principle of the experiment, the better result you will achieve.** 你对实验原理理解得越透彻，你取得的（实验）结果就越好！

Exercises

Ⅰ.Translate the Following Sentences into Chinese

1. A general-purpose computer is one that can store different programs and can thus be used in countless applications.
2. All computers perform basic machine operations under the direction of stored programs.
3. Digital computers are made for both special and general uses.
4. In contrast to digital processor, the analog computers do not compute directly with the numbers.
5. The first generation of Computers was the vacuum-tube computes.
6. The second generation of Computers was the transistor computes.
7. The third generation of Computers was the small-scale IC computes.
8. The fourth generation of Computers was the computers of large-scale and ultra large-scale IC.
9. The more advanced of micro-electronic technology, the higher ratio of performance

to price.

10. Workstations differ from conventional computer systems.

Ⅱ.Multiple Choice

1. There were _____ generations for developing of computers since the first computer was built.

   a. three　　b. two　　c. four　　d. five

2. The first Computer was developed in the Pennsylvania _____.

   a. university　　b. institute　　c. college　　d. school

3. The third-generation computers provided the capability to run more than one _____. concurrently.

   a. information　　b. message　　c. code　　d. program

4. A _____ is a fast and accurate symbol manipulating system.

   a. CPU　　b. calculator　　c. computer　　d. memory

5. The input/output and secondary storage units are sometimes called _____ devices.

   a. main　　b. internal　　c. external　　d. peripheral

6. Large scale general purpose computers are called _____ .

   a. microcomputer　　b. maincomputer

   c. minicomputer　　d. personal computer

7. The third-generation computers differed radically from all the previous type of computers, the change was _____ .

   a. revolutionary　　b. evolutionary　　c. substantial　　d. important

8. The forth-generation computers are made of _____ .

   a. IC　　b. small-scale IC　　c. vacuum-tube　　d. large-scale IC

9. A computer instruction is a _____ that specifies a sequence of micro-operations for the computer.

   a. binary code　　b. decimal code　　c. hex code　　d. octal code

10. The 80486 computers are of _____ systems.

    a. 8-bit　　b. 16-bit　　c. 32-bit　　d. 64-bit

Ⅲ. Reading Material

Next Generation Input/Output Architecture

The Need for faster server input/output will be crucial in the next few years because of the increased use of the Internet, intranets and extranets. As a result, Intel Corp. is advancing an I/O architecture called Next Generation I/O, or NGIO. It promises improved reliability, scalability and performance. Other supporting vendors include Dell Computer Corp. and Sun Microsystems Inc.

Last month the NGIO steering committee approved the release of the NGIO1.0 spec. This release allows members of the NGIO Forum to start implementing, developing and releasing products that support NGIO. But users won' t see complete systems supporting NGIO until 2001 or 2002.

A competing standard, Future I/O, is being backed by IBM, Compaq Computer Corp., Hewlett—Packard Co., 3Com Corp., Adaptec Inc. and Cisco Systems Inc.

NGIO claims speeds of 2.5G bit/sec. in both directions. That means there are four wires—two for input, two for output; Future I/O claims 10G bit/sec. over 40 wires.

The cost of NGIO for the end user will be "roughly $20 per machine, " says Charles Andres, chairman of marketing at the NGIO Forum and Group Manager for I/O at Sun Microsystems. "Over time the cost will come down."

NGIO will benefit several key applications. It would aid e-commerce by simplifying the data transmission infrastructure and increasing speed, help e-mail by handling more users per server and reducing downtime and improve online transaction processing by enabling the addition of processors and memory as the number of users increases.

NGIO works by disconnecting the processor from the I/O, meaning the processor wouldn't stop what it's doing each time when there's a new request for data processing. Instead, an I/O engine connected to the server's memory would talk to peripherals.

The following are the three major differences between other technology and NGIO for the way data travels:

- The creation of multiple I/O channels (today there's one channel for data traveling to the processor).
- A change in the kind of signaling over those channels (data would be sent along one wire,

a serial connection, instead of being sent simultaneously along many wires, a parallel connection).

- A "switched fabric" approach, in which a collection of switches will let data take many pathways instead of one.

Those changes give NGIO better performance, reliability and scalability.

Today's parallel connections generate a certain amount of electronic noise that interferes with the server' s operations. With the higher transmission speeds needed in the future, that electronic noise will become a bigger problem. By changing to serial protocols, less noise will be generated, and reliability will be improved.

Scalability would improve because more processors could be added without adding more internal data channels, or buses, connected directly to the processors. Directly connected channels increase time lags, or latency, and reduce performance.

There are other advantages. With NGIO, the server is split so the processor and memory are in one location and the I/O is in another. The I/O might be placed in a networking closet, while the processor and memory could reside in the data center.