



21世纪普通高等学校规划教材

计算机英语

吴 冰 主编

航空工业出版社

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北京

内容简介

本书在参考国内外最近几年计算机科学各个领域的教材、专著、论文和网络信息的基础上，按照“基础性、实用性、新颖性”的原则，并根据计算机知识的结构层次来精心安排课文的内容。

本书共九章，包括：计算机的发展及总体介绍，计算机硬件，计算机操作系统，数据库系统，软件工程，计算机网络和因特网，办公自动化系统，多媒体技术以及计算机安全。每个章节都配有正文的参考译文，帮助读者更加方便地学习和理解。每章的后面配有练习题并附参考答案，以利于对本单元内容进行巩固。课后的附录包含了单词表，词组表，计算机英语语法及科技英语写作要点，全方位地给读者提供丰富的相关知识。

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编者的话

计算机技术是当今社会最具生命力的技术之一，而英语是了解国外科技发展动向和进行国际学术交流的重要工具。因此，对计算机技术人员的外语水平就有较高的要求。而对计算机英语这门学科也就要求涵盖学科越来越多，更新速度越来越快。

本书在参考国内外最近几年计算机科学各个领域的教材、专著、论文和网络信息的基础上，按照“基础性、实用性、新颖性”的原则，并根据计算机知识结构层次来精心安排课文的内容。

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本书由吴冰主编。在编写过程中，参阅了许多国内外文献，编者谨向这些文献的作者表示衷心的感谢。

由于编者水平有限，书中不足之处在所难免，敬请各位读者和专家指正。

编·者
2007年6月

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Unit 1 Introduction of Computer

1.1 History of Computer Development

Nothing epitomizes modern life better than the computer. For better or worse, computers have infiltrated every aspect of our society. Today computers do much more than simply compute: computerized telephone switching centers play traffic cop to millions of calls and keep lines of communication untangled; and automatic teller machines (ATM) let us conduct banking transactions from virtually anywhere in the world. But where did all this technology come from and where is it heading? To fully understand and appreciate the impact computers have on our lives and promises they hold for the future, it is important to understand their evolution. The advancement in computer technology is divided into four time periods called generations.

First Generation Computers

The first generation of computers lasted from 1951 until 1958. They were large, costly to buy, expensive to power, and often unreliable. It was during this period that symbolic language was developed. Symbolic language uses symbols made up of letters and numbers to stand for the 0s and 1s of machine languages. For example, ADD may stand for addition. Computer instructions written in symbolic languages were easier for people to use than machine languages.

Second Generation Computers

The second generation of computers spanned the years from 1959 to 1964. The most notable change was that transistors replaced vacuum tubes. As a result, computers became much smaller, faster, and more reliable and efficient. Next, second generation computers were given auxiliary storage, sometimes called external or secondary storage, which ended the limitation on how much data the computer could store and reduced the use of punched cards. Using magnetic tapes for input and output operations increased the speed of the computer. Finally, improvements were made in the symbolic programming languages. New languages were more like English than the earlier ones, making programming the computer much easier.

Third Generation Computers

The third generation of computers lasted from 1965 to 1970. During this time, technology continued to improve and computers became even smaller, while their memory capacities became larger. The third generation is marked chiefly by the development of integrated circuits, which replaced transistors. With integrated circuits, hundreds of electronic components could be included on one silicon chip less than one eighth inch square. A number of other developments characterized this period. For example, minicomputers were introduced. These machines had many of the same capabilities as large computers, but they were much smaller, had more storage space, and cost less. Another development was the use of remote terminals, so input/output devices can be electronically linked to a main computer but located at some distance from it.

Fourth Generation Computers

The period for the fourth generation of computers is given from 1971 to the present. Chip circuit has become increasingly miniaturized in fourth generation machines circuits. Large scale integration (LSI) circuits, featuring thousands of electronic components on a single silicon chip, became common during the 1970s. From large scale integration (LSI) technology, comes the microprocessor, the small "computer on a chip". Microprocessor chips can manage the functions of the computer, perform calculations, and control other devices just as large computers can. The combination of the microprocessor and other densely packed chips used for storage and input/output operations forms a microcomputer. Modern microcomputers have more powers than the large computers of earlier generations. LSI has already progressed into VLSI (very large scale integration), which means even more capabilities in even smaller packages.

【Vocabulary】

epitomize	vt. 摘要, 概括, 称为...缩影
infiltrate	vt. 渗透
computerize	vt. 用计算机处理, 使计算机化
electronic	adj. 电子的
evolution	n. 发展, 进化, 演变
generation	n. 代
auxiliary	adj. 辅助的, 补助的

install	vt. 安装, 安置
instruction	n. 指示, 指令, 用法说明书
span	vt. 跨越 n. 跨度, 范围
efficient	adj. 高效率的
media	n. 媒体, 媒介
capacity	n. 容量
program	n. 程序 vt. 编程序
silicon chip	n. 硅片
characterize	n. 表现…的特色, 展现个性
minicomputer	n. 小型计算机
microcomputer	n. 微型计算机
memory	n. 内存, 存储器
dense	adj. 密集的, 浓厚的
package	n. 组件, 包裹
miniaturize	vt. 使小型化
integrated circuit	集成电路
vacuum tube	真空管
remote terminal	远程终端
LSI (large scale integration)	n. 大规模集成电路
VLSI (very large scale integration)	n. 超大规模集成电路

【参考译文】

计算机发展历史

没有任何东西比计算机更能够称为现代生活的缩影了。不论好与坏, 计算机渗透在我们社会的每一个方面。今天的计算机并不是一台机器那么简单: 计算机电话转换中心对数以百万的电话起着交通中转的作用, 并且维持交流线路的畅通; 自动取款机让我们在任何地方进行银行交易操作。可是所有的这些技术从何而来, 又将怎样发展? 为了充分认识和理解计算机对我们生活的影响, 和它们所预示的未来, 了解计算机的发展是重要的。计算机技术的发展进程被划分为四个时代。

第一代计算机

第一代计算机从 1951 年发展到 1958 年。这一代计算机的体积大、价格昂贵、耗电量大而且可靠性差。在这个时期, 符号语言得到了发展。用字母和数

字组成的符号语言来代表机器语言的 0 和 1 状态。例如, ADD 代表加法。用符号语言写的计算机指令比用机器语言写的指令对人们来说要方便得多。

第二代计算机

第二代计算机经过了 1959 年到 1964 年。最显著的变化是晶体管代替了真空管。其结果使计算机变得更小、更快、更可靠、更有效了。其次, 第二代计算机有了辅助存储器, 有的时候也叫做外存或二级存储器。辅助存储器的使用结束了在计算机上存储数据量的限制并减少了使用穿孔卡的次数。用磁带来进行输入和输出的方式提高了计算机的运行速度。后来, 符号程序设计语言也得到了改善。新的语言比以前任何一种都更像英语, 从而用计算机进行程序设计就变得更加容易了。

第三代计算机

第三代计算机从 1965 年到 1970 年。在此期间, 技术继续得到改善, 同时计算机体积变得更小了, 而其存储容量变得更大了。第三代计算机的主要标志是集成电路的发展, 集成电路取代了晶体管。集成电路使成百上千的电子元件可以被集成在一块不到 1/8 平方英寸的硅片上。一些其他的发展也称为这个时期的特色。例如, 产生了小型计算机, 这些机器与大型机相比有着许多相同的功能, 但是它的体积更小, 存储容量更大而且更便宜。另外一个发展是远程终端的使用, 即把一些远离主机的输入输出设备通过电子线路与主机连接在一起。

第四代计算机

第四代计算机所处的阶段是从 1971 年至今。在第四代计算机中, 芯片电路已日益小型化。20 世纪 70 年代, 在单个硅片上集成成百上千个电子元件的大规模集成电路已变得很普及了。由大规模集成技术而产生了微处理机, 即“在一块芯片上的小型计算机”。微处理器芯片能像大型机那样管理计算机的操作, 执行运算, 控制其他设备。微处理器和其他用于存储和输入输出操作的高密组件组成了微机。现在的微机比早期的大型机有更强的功能。大规模集成电路已发展成了超大规模集成电路, 这意味着在更小的组件里有更强大的能力。

【Reading Materials】

Types of Computers

1. Microcomputer

A microcomputer is a desktop or notebook size computing device that uses a microprocessor as its Central Processing Unit, or CPU. Microcomputers are also called Personal Computers (PCs), home computers, small business computers, and

micros. The smallest, most compact are called laptops. When they first appeared, they were considered single user devices, and they were capable of handling only four, eight, or 16 bits of information at one time. More recently the distinction between microcomputers and large, mainframe computers (as well as the smaller mainframe type systems called minicomputers) has become blurred, as newer microcomputer models have increased the speed and data handling capabilities of their CPUs into the 256 bit, or even much more bit multi-user range.

Microcomputers are designed for use in homes, schools, and office settings. Within the home, they can serve both as a tool for home management (balancing the family checkbook, structuring the family budget, indexing recipes) and as a recreational device (playing computer games, cataloging records and books). School children can use microcomputers for doing their homework, and in fact many public schools now employ the devices for programmed learning and computer literacy courses. Small business may purchase microcomputers for word processing, bookkeeping, the storage and handling of mailing lists and so on.

2. Minicomputer

A minicomputer is a mid-level computer built to perform complex computations while dealing efficiently with a high level of input and output from users connected via terminals. Minicomputers also frequently connect to other minicomputers on a network and distribute processing among all the attached machines. Minicomputers are used heavily in transaction processing applications and as interfaces between mainframe computer systems and wide area networks.

3. Mainframe Computer

A mainframe computer is a high level computer designed for the most intensive computational tasks. Mainframe computers are often shared by multiple users connected to the computer via terminals. The most powerful mainframes, called supercomputers, perform highly complex and time consuming computations and are used heavily in both pure and applied research by scientists, large businesses, and the military.

4. Supercomputer

In computer science, supercomputers are large, extremely fast, and expensive computers used for complex or sophisticated calculations, typically, machines capable of pipelining instruction execution and providing vector instructions. A supercomputer can, for example, perform the enormous number of calculations

required to draw and animate a moving spaceship in a motion picture. Supercomputers are also used for weather forecasting, large scale scientific modeling, and oil exploration and so on and so like.

【New Words】

minicomputer 小型机 recreational 修养的, 娱乐的
sophisticate 诡辩的, 久经世故的人 calculation 计算, 考虑

1.2 Computer in Action

Today we are witnessing one of the most dramatic technologies ever developed—the computer.

Computers are used in large and small business, government, education, health care, and almost all other profession.

Computers are used in almost every field of business. In investment, computers are used to get-up-to-the minute information on stocks and bonds and to make split-second buy and sell decisions. In real estate and finance, computers are used to investigate cash flow, return on investment, and depreciation. Banks use computer to process the huge amount of checks and credit card transactions that take place daily. Without computers, today's banks couldn't handle the large number of transactions that take place every second. In manufacturing, computers are used to design new products, control manufacturing equipment, and regulate inventory and other raw materials. Computers are used to automatically place orders, alert customers when there are possible stock outs, and help managers control every aspect of a manufacturing operation. Computerized robots are used to paint, weld, fasten, and attach parts along the assembly line. Computers are also used at the retail and wholesale level. At the retail level, computers are used to check out customers quickly at grocery stores, hardware stores, and department stores. They are also used to determine where to locate retail and wholesale facilities. The best shipping pattern between factories, warehouse, wholesale outlets, and retail establishments can also be determined quickly and efficiently.

The computer has had a profound effect on office procedures. With word processing, companies can electronically store key paragraphs. Then these key paragraphs can be called up on a screen, rearranged in every conceivable manner,

and printed. Some word processing programs have dictionaries with over 100,000 words, which automatically check spelling and grammar. Electronic mail (E-mail) is another exciting innovation in office automation. Acting like mailboxes and postal service, the computer quickly and efficiently routs messages to the appropriate individuals. With voice storage and forwarding, people can use the telephone to dial up a computer to leave instructions or messages for other people. Once stored, these verbal messages can be transcribed and printed electronically, they can be stored for future reference and action, and they can be forwarded using electronic mail to locations throughout the world. Think of a facsimile machine as a copy machine where the original document is placed in the FAX machine at one location and a copy of the original document appears on another FAX machine at another location.

Most of the technology for teleconferencing already exists. Key components are terminals connected to computer systems and a video system that allows pictures to be transmitted from one spot to another. Local area networks are unifying much of the traditional equipment found in the office. The purpose of a local area network is to electronically connect word processing, electronic mail, voice storage and forwarding, dictation, and even coping machines together.

Computers are now helping us in almost every area of science and engineering. Over half of the world's scientific knowledge has been obtained since the construction of the first electronic computer. While business applications require the handling of a large number of documents, the scientific community requires speed and accuracy in making complex computations. The average individual can make from 5 to 10 simple computations per minute. The average computer can make 10,000 complex computations per second, and fast computers can make millions of complex calculations per second. Computations that would take a computer a few seconds would take you a few months or even a few years.

Computers can be used to help astronomers test physics theories. They are also needed to help forecast complicated and unpredictable weather patterns.

Computers can also process and enhance images or pictures. This is called image processing. Image processing is using the computer to enhance and gain a better understanding of images or pictures. It can be used to develop cartoons, touch up photographs, and generate movies. Digitized images are sent to earth receiving stations, and the images are processed. Satellites like Landsat are able to locate oil fields, help farmers determine what to plant, locate mineral deposits, locate ships,