



北京高等教育精品教材

BEIJING GAODENG JIAOYU JINGPIN JIAOCAI

高等学校公共课计算机教材

新编计算机英语教程 (第2版)

张 政 主编

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新编计算机英语教程 (第2版)

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内 容 简 介

本书为北京高等教育精品教材。全书共 6 章, 前 5 章包含 15 个单元, 每个单元都包含课文、摘要、单词、短语、注释、练习和阅读材料几个部分, 课文和阅读材料的素材取自英美原文, 内容涉及计算机技术相关的各个领域; 第 6 章详细阐述了科技文献, 特别是计算机文献撰写的知识和技巧; 附录中收录了计算机词汇的特征和各章练习的参考答案。

本书英文短文取材新颖, 涉及知识全面, 撰写科技文献的有关知识阐述细致, 实用性很强, 计算机词汇的特征也有较高的阅读价值。

本书可作为高等学校计算机及相关专业的专业英语课程的教材, 也可供计算机或英语爱好者学习和参考。

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第 2 版前言

北京市精品教材《新编计算机英语教程》自 2004 年出版后，得到众多读者的厚爱，已多次印刷。期间也收到不少读者中肯的建议，并对书中的个别不当之处也提出了宝贵的意见，加之计算机科学的新发展，这些都是促使我们进行修订的主要因素。修订后的教材除保留第一版中的优点外，还具备以下特点：

1. 文本遴选更偏重语言的权威性和趣味性：所有文本均选自英美原文，语言地道，文字优美，使人乐知、好知。

2. 注重文本的时效性：修订后的教程除保留了计算机科学发展中一些至今仍引人入胜的章节外，还增加了关于该领域发展中的部分最新内容，如在计算机及其种类一文中，增加了 DNA 计算机、光子计算机、量子计算机的相关知识，努力做到文献内容“引领潮流，高屋建瓴”。

3. 知识性、实用性为教程成功的关键之一：修订后的教材，更是力争覆盖计算机知识的关键领域，从早期的计算机的基本原理到 8 核处理器，使之俨然成为一部计算机英语的小百科；计算机知识、相对应的英语语言、所涉及的短语、词汇……力求“教程在手，应有尽有”。

4. 富含计算机文化：相关的文化知识是任何教材都不可或缺的内容之一，因此计算机文化部分在新教程中有所加强，旨在为使用者成为计算机文献中的“文化人”助上一臂之力。

由于作者水平、时间等诸多因素的限制，书中难免存在不当之处，敬请读者不吝赐教。

本书被评为北京高等教育精品教材，成书的全过程得到了北京市教委的大力支持和资助。在此，我们再次表示衷心感谢。

编者

第 1 版前言

自从人类发明了第一台计算机以来，计算机技术的发展日新月异。美国国家核安全管理处实验室和国际商用机器公司（IBM）合作开发的“蓝色基因/L”超级计算机，运算速度可达 200 万亿次/秒；一种由 DNA 分子和酶分子构成的微型“生物计算机”已经问世；光子计算机、量子计算机也已成了人们津津乐道的话题。

计算机与我们息息相关，无论是在工业、农业、国防、教育，还是在航天、材料、生化及遗传工程领域，它无处不在，几乎无所不能。要了解计算机的发展方向，掌握最新的计算机技术，充分发挥计算机的潜能，就要求我们具有较高的外语水平和较丰富的计算机知识。有专家断言，21 世纪是计算机和外语的世纪，这两方面能力的高低是决定人们今后成败的主要因素之一。而其中，英语是了解计算机技术的最直接、最便利的途径——新的计算机技术通过英语这个渠道流入和传播，谁掌握了计算机英语，谁就占有掌握最新技术的优势。

但是，面对浩如烟海的计算机英文文献及不断涌现的新术语，对大多数中国学生来说，要比较顺利地读懂读通并非易事。另一方面，使用英文撰写科技学术论文，把中国人创新发明的成果分享给世界，成为我国科技发展的迫切需要。为此，我们选编了这本《新编计算机英语教程》，旨在帮助读者提高计算机英语的阅读和写作能力。

本书中的英语短文均选自英美书刊原文，语言地道，文字优美，融知识性、趣味性、实用性为一体。全书共 6 章，前 5 章分 15 个单元，涵盖了计算机基础词汇、常用短语、常见句型和各种计算机文献的风格特点，每个单元由课文、词汇和短语、注释、练习与阅读材料组成。为提高读者对文章的归纳和总结能力，每个单元还增加了摘要。第 6 章分门别类地介绍了论文、学术报告的写作方法，有助于提高读者用英文撰写论文和学术报告的能力。书后附有计算机英语词汇的特征和各章练习的参考答案。

本书可作为大、中专学生计算机英语读写教材，也可供计算机爱好者和英语爱好者使用。书中个别单词或短语专业性较强，读者可酌情取舍。由于时间仓促，书中难免有不当之处，请读者不吝赐教。

本书被评为北京高等教育精品教材，从项目立项、实施到完成都得到了北京市教委的大力支持和资助。在此，我们表示衷心的感谢。

编者

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第 1 章

计算机硬件

Unit 1 Computer and Its Kind (计算机及其种类)

A computer is an electronic device that can receive a set of instructions, or program, and then carry out this program by performing calculations on numerical data or by compiling and correlating other forms of information.

The modern world of high technology could not have come about except for the development of the computer. Different types and sizes of computers find uses throughout society in the storage and handling of data, from secret governmental files to banking transactions to private household accounts^[1]. Computers have opened up a new era in manufacturing through the techniques of automation, and they have enhanced modern communication systems. They are essential tools in almost every field of research and applied technology, from constructing models of the universe to producing tomorrow's weather reports, and their use has in itself opened up new areas of conjecture. Database services and computer networks make available a great variety of information sources^[2]. The same advanced techniques also make the invasions of privacy and restricted information sources possible, and computer crime has become one of the many risks that society must face if it is to enjoy the benefits of modern technology.

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, which is usually regarded as the heart of a computer. 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 multiuser 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^[3] courses. Small businesses may purchase microcomputers for word processing, bookkeeping, the storage and handling of mailing lists and so on.

Desktop Computer

A **desktop computer** is a personal computer (PC) in a form intended for regular use at a single location, as opposed to a mobile laptop or portable computer. Prior to the wide spread of microprocessors a computer that could fit on a desk was considered remarkably small. Today the phrase usually indicates a particular style of computer case. Desktop computers come in a variety of styles ranging from large vertical tower cases to small form factor models that can be tucked behind an LCD^[4] monitor. In this sense, the term 'desktop' refers specifically to a horizontally-oriented case, usually intended to have the display screen placed on top to save space on the desk top. Most modern desktop computers have separate screens and keyboards. A specialized form of desktop case is used for home theater PC systems, incorporating front-panel mounted controls for audio and video.

Personal Digital Assistant (PDA)^[5]

A **personal digital assistant** (PDA) is a handheld computer, also known as a palmtop computer. Newer PDAs also have both color screens and audio capabilities, enabling them to be used as mobile phones, (smartphones), web browsers, or portable media players. Many PDAs can access the Internet, intranets or extranets via Wi-Fi^[6], or Wireless Wide-Area Networks (WWANs^[7]). Many PDAs employ touch screen technology.

Tablet^[8] PC

A **Tablet PC** is a laptop mobile computer, equipped with a touchscreen or graphics tablet/screen hybrid technology which allows the user to operate the computer with a stylus or digital pen, or a fingertip, instead of a keyboard or mouse. This form factor offers a more mobile way to interact with a computer. Tablet PCs are often used where normal notebooks are impractical or unwieldy, or do not provide the needed functionality.

Laptop^[9]

A **laptop** (also known as a notebook) is a personal computer designed for mobile use small enough to sit on one's lap. A laptop includes most of the typical components of a typical desktop computer, including a display, a keyboard, a pointing device (a touchpad, also known as a trackpad, or a pointing stick) as well as a battery, into a single small and light unit. The rechargeable battery required is charged from an AC/DC adapter and typically stores enough energy to run the laptop for several hours.

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. Others

Servers

A **Server** usually refers to a computer that is dedicated to providing a service. For example, a computer dedicated to a database may be called a "database server". "File servers" manage a large collection of computer files. "Web servers" process web pages and web applications. Many smaller servers are actually personal computers that have been dedicated to providing services for other computers.

A server is a computer program that provides services to other computer programs and their users in the same or other computer. The physical computer that runs a server program is also often referred to as server.

Services can be supplied centrally by the use of a server; in other cases all the machines on a network have the same status with no dedicated server, and services are supplied peer-to-peer^[10].

Workstation

Workstations are computers that are intended to serve one user and may contain special hardware enhancements not found on a personal computer.

It is a high-end microcomputer designed for technical or scientific applications. Intended primarily to be used by one person at a time, they are commonly connected to a local area network and run multi-user operating systems. The term workstation has also been used to refer to a mainframe computer terminal or a PC connected up to a network.

Historically, workstations had offered higher performance than personal computers, especially with respect to graphics and CPU power, memory capacity and multitasking ability. They are optimized for display and manipulation of different types of complex data such as 3D mechanical design, engineering simulation (e.g. computational fluid dynamics), animation and rendering of images, and mathematical plots. Consoles consist of a high resolution display, a keyboard and a mouse at a minimum, but also offer multiple displays, graphics tablets, SpaceBalls, etc. Workstations are the first segment of the computer market to present advanced accessories and collaboration tools.

Embedded computers

Embedded computers are computers that are a part of a machine or device. Embedded computers generally execute a program that is stored in non-volatile memory and is only intended to operate a specific machine or device. Embedded computers are very common. Embedded computers are typically required to operate continuously without being reset or rebooted, and once employed in their task the software usually cannot be modified. An automobile may contain a number of embedded computers; however, a washing machine and a DVD player would contain only one. The central processing units (CPUs) used in embedded computers are often sufficient only for the computational requirements of the specific application and may be slower and less expensive than CPUs found in a personal computer.

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^[11]. Supercomputers are also used for weather forecasting, large scale scientific modeling, and oil exploration and so on and so like.

Future Developments

One ongoing trend in computer development is microminiaturization, the effort to compress more circuit elements into smaller and smaller chip space. Researchers are also trying to speed up circuitry functions through the use of superconductivity, the phenomenon of decreased electrical resistance observed as objects exposed to very low temperatures become increasingly colder^[12]. The fifth generation computer effort to develop computers that can solve complex problems in what might eventually be called creative ways is another trend in computer development, the ideal goal being true artificial intelligence^[13].

1. Quantum Computer

A **quantum computer**^[14], quite different from classical (current) computers, is a device that harnesses physical phenomenon unique to quantum mechanics to realize a fundamentally new mode of information processing. In a quantum computer, the fundamental unit of information (called a quantum bit or *qubit*), is not binary but rather more quaternary in nature. A qubit can exist not only in a state corresponding to the logical state 0 or 1 as in a classical bit, but also in states corresponding to a blend or *superposition* of these classical states. In other words, a qubit can exist as a zero, a one, or simultaneously as both 0 and 1, with a numerical coefficient representing the probability for each state.

2. DNA Computer

DNA computing^[15] is a form of computing which uses DNA, biochemistry and molecular biology, instead of the traditional silicon-based computer technologies. DNA computing, or, more generally, molecular computing, is a fast developing interdisciplinary area and is fundamentally similar to parallel computing in that it takes advantage of the many different molecules of DNA to try many different possibilities at once. And DNA computers are faster and smaller than any other computer built so far.

3. An Optical Computer

An **optical computer**^[16] is a computer that uses light instead of electricity (i.e. photons rather than electrons) to manipulate, store and transmit data. Optical computer technology is still in the early stages: functional optical computers have been built in the laboratory, but none have progressed past the prototype stage.

4. A Molecule Computer

A **molecular computer** that uses enzymes to perform calculations has been built and it is believed enzyme-powered computers could eventually be implanted into the human body and used to, for example, tailor the release of drugs to a specific person's metabolism.