



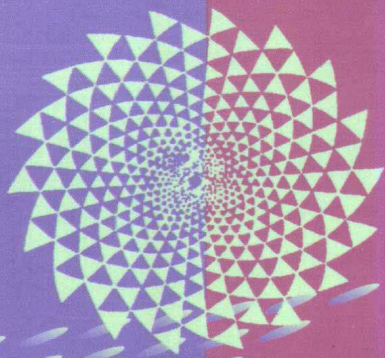
大学专业英语系列教程

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*Selected Readings
in Computer*

张 政 主编
张 力 编

计算机 专业英语教程



北京大学出版社

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总 序

辜正坤

西学东渐给东方的外语出版界造成一种奇特的景观：在相当短的时间内，外语出版物的数量扶摇直上，使它种民族语出版物相对汗颜，这是可以理解的。日本明治维新之后，就出现过类似的情形，外语（尤其是英语）原著注释读物动辄一套就是数百本，洋洋大观。毫无疑问，这对推进日本的外语教学起到了非常重要的作用。时至今日，其效应已经明显昭示出来：当今的中国各大学发表的论文为 SCI 所收录者，最多者一年达 500 篇，而东京大学一年就达 40000 篇，两者相距 80 倍！如果以为日本的论文数量必与其科学水平成正比，因而中国大学的科学研究水平就落后了东大 80 倍的话，恐怕是一种很大的误解。其中的奥妙之一，就在于日本学者的英语水平普遍较高，许多论文是直接用英文写成，因此容易被世界各地的媒体注意到，其入选 SCI 的机会也就相对增多。反观中国学者的论文，绝大多数用汉语写成，少量靠懂英语的学者翻译，只有极少量的学者能够自己用英文直接写作。因此，大多数的中国论文是难以进入西方学者的视野的。当然入选 SCI 的机会也就相对少得多了。当然，这并非是说，中国的科研水平就反过来比日本高，而是说，由于中国学者英语写作水平普遍偏低的原因，其实际的科研水平未能在英语世界的文献中充分显示出来。由此可以明白，提高中国学者的英语能力（尤其是阅读文献与用英语写作的能力）是一件非常迫切的事。

然而，改革开放二十多年来的英语学习大潮虽然使许多中国人在英语学习方面获得了较高的造诣，上了一个较为理想的台阶，但是有更多的人却老在一个水平上徘徊不前：要学的教材已经学了，该考

的科目已经通过了,但是,面对英语的殿堂,人们并没有登堂入室的感觉。听说能力未能应付裕如或者情有可原,因为学习者可以抱怨没有相应的可以一试身手的客观条件,但是在阅读方面,例如阅读文史哲数理化的专业文献方面,却仍是磕磕绊绊、跋前疐后,字典不离手,冷汗不离身。这种处于瓶颈地带,欲罢不可、欲进不能的促迫感,源于一个关键的原因:缺乏专业外语文献阅读训练。学校里使用的基础英语教材编得再好,也只能解决基础问题,不能解决超过基础的专业阅读问题。正如要做游泳健儿的人只在游泳池里按照游泳要领奋力拨拉了一阵池水,自觉亦有劈波斩浪之感,但与真正的河涛海潮相比,终究属于两重洞天。

于是,就产生了这一整套专业英语阅读教程。

它的目标非常明确,无非是要把英语知识与技能的培训和高层次系统知识的灌输二者有机结合起来,达到既学语言又学知识的目的;既温故,又知新。照我看来,这是最有效率的学习与巩固方略。

如前所述可以明白,这套教程不只是对一般想要提高英语实际水平的人有用,对于专家学者或研究人员,也有很大的好处。一个人无论多么博学多才,也不太可能对各个专业的英语经典文献和地道表达都了然于胸,因此,当需要在尽可能短的时间内对某专业的英语经典文献或概念有所把握时,这一整套书无疑不会使人们失望。

这套书的编选思路最初萌发于1991年,当时称作《注释本英文世界文化简明百科文库》。编者当时曾会同北京大学英语系大学英语教研室教师和北京大学出版社若干编辑共商过具体编选事宜,并由北京大学出版社出版。尔后还进行过多次类似的讨论。文库分上、中、下三编,每编含精选名著一百种左右。在编选思路,力求达到雅俗共赏,深入浅出,系统全面。在系统性方面,注意参照《大英百科全书》和《中国大百科全书》的知识框架,用英文把更为完备的知识系统介绍给读者。在实用性方面,亦注意选材的内容与词汇量与现行的英语教材、实际英语教学水平相呼应。

本编为上编,除可供大学英语分科专业阅读选用教材之用外,亦可供社会上一般读者提高英语水平、直接经由阅读原著而掌握某一专业知识之用。基本的编辑方针是 1) 选目必须系统、广泛,尽可能把大学的重要专业都包容进去(包括人文社会科学和理工科专业); 2) 选目可大致分三类: A. 简史类; B. 名篇、名著类; C. 比较规范的或经典的西方专业教材类; 3) 每册书的字数最好在 20 万字上下(个别可以例外)。至于其他具体事项,则随书说明。

教育部在 1999 年亦强调大学英语教学不能停留在基础英语教学上,而要逐步过渡到教授专业分科英语,使学生尽可能进入阅读专业英语文献的水平。因此这套教材的产生是适得其时的。

当然,它的具体效果如何,还有待检验。好在这套教材的编注与出版都是一个较长的过程,这期间可望获得有关方面的建议与批评,以期使它精益求精,日臻完善。

是为序。

2001 年于北京大学英语系

前 言

自 20 世纪 40 年代第一台计算机问世以来,其发展速度史无前例,硬件每三年更新一次,而软件大约一年更新一次版本。昨天还是陌生的 E-mail“伊妹儿”、Internet“互联网”、Speech Recognition“语音识别”,今天已进入寻常百姓家。无论是在工业、农业、国防和人们的日常生活,还是航天、材料、生化及遗传工程中,计算机无处不在。可以说 21 世纪是计算机的世纪,没有计算机,人们将一事无成。因此,要了解计算机的发展方向,掌握最新的计算机技术,积极发挥计算机的功能,充分利用计算机,就要求人们有较高的外语水平和较强的计算机操作能力,可以毫不夸张地说,外语水平的高低是决定着人们今后成败的因素之一。

为了提高读者的实际使用计算机英语的阅读和表达能力,我们选编了这本《计算机专业英语教程》。选文均出自英美原文,语言地道、规范、新颖,涵盖了计算机基础词汇。全书共分 24 个单元,每单元由课文、注释和练习组成,练习的编写主要是检查读者对课文的理解和掌握,书后附有词汇表和练习参考答案可供读者查阅。

本书可供计算机爱好者和英语爱好者使用,也可作为大、中专学生高年级阶段的英语阅读。极个别单元专业性较强,读者可酌情取舍。由于时间仓促,在编写过程中难免有不当之处,请读者不吝赐教。

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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 possible the invasions of privacy and restricted information sources, 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. 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 32 bit, or even 64 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, and the storage and handling of mailing lists.

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^[4]. Supercomputers are also used for weather forecasting, large scale scientific modeling, and oil exploration.

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^[5]. Computer networks have become increasingly important in the development of computer technology. Networks are groups of computers that are interconnected by communications facilities. The public Internet is an example of a global network of computers. Networks enable connected computers to rapidly exchange information and in some cases, to share a workload, so that many computers may cooperate in performing a task. New software and hardware technology is being developed that will accelerate both of these processes.

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^[6]. One path actively being explored is the parallel processing computer^[7], which uses many chips to perform several different tasks at the same time. Parallel processing may eventually be able to duplicate to some degree the complex feedback, approximating, and assessing functions of human thought. Another form of parallel processing that is being investigated is the use of molecular computers. In these computers, logical symbols are expressed by chemical units of DNA instead of by the flow of electrons in regular computers. Molecular computers could potentially solve complicated problems much faster than current supercomputers and would use much less energy.

Basic Principle of the Computer

Everything that a computer does is based on one operation: the ability to determine if a switch, or gate, is opened or closed. That is, the computer can recognize only two states in any of its microscopic circuits: on or off, high voltage or low voltage, or in the case of numbers, 0 or 1. The speed at which the computer performs this simple act, however, is what makes it a marvel of modern technology. Computer speeds are measured in megaHertz, or millions of cycles per second. A computer with a clock speed of 33 MHz is capable of executing 33 million discrete operations each second. Business microcomputers can perform 60 to 100 million operations per second or more, and supercomputers used in research and defense applications attain speeds of billions of cycles per second.

Computer speed and calculating power are further enhanced by the amount of data handled during each cycle. If a computer checks only one switch at a time, that switch can represent only two commands or numbers; thus ON would symbolize one operation or number, and OFF would symbolize another. By checking groups of switches linked as a unit, however, the computer increases the number of operations it can recognize at each cycle. For example, a computer that checks two switches at one time can represent four numbers (0 to 3) or can execute one of four instructions at each cycle, one for each of the following switch patterns: OFF OFF (0); OFF ON (1); ON OFF (2); or ON ON (3).

Computer Family

The computer family, in computer science, is a term commonly used to indicate a group of computers that are built around the same microprocessor or around a series of related microprocessors and that share significant design features. For example, the Apple Macintosh computers^[8], from the original Macintosh to the Macintosh II, represent a family designed by Apple^[9] around the Motorola^[10] 68000, 68020, and 68030 microprocessors. Similarly, the IBM PC computers^[11] and the second generation PS/2 models can be considered the IBM PC family of computers, all built IBM^[12] around the Intel^[13] iAPx86^[14] series of microprocessors. Depending on point of view, however, a computer family can also be considered as encompassing any machines that share the same microprocessor. In this sense, the IBM models and compatible machines built by other manufacturers can be considered part of a larger grouping, the iAPx86 family of computers. Currently, members of different microcomputer families are not particularly compatible.

Notes

[1] from secret governmental files to banking transactions to private household accounts.

1. from...to: 从...到;

2. banking transactions to: 对...的金融交易(此处指银行转账),大意为:从政府的秘密文件到银行对私人家庭账户的账目往来。

[2] make available a great variety of information sources; 本句和下一

句均为宾语和宾补语序互换,在宾语过长而其补语太短的情况下,常使用这一结构。原结构应为“to make sth. available/possible”。

- [3] computer literacy: 计算机扫盲。literacy 原义为“识字”、“扫盲”、“有读和写的能力”,这里引申为“(使用)计算机的基本能力”。
- [4] motion picture: 电影。
- [5] the phenomenon of decreased electrical resistance observed as objects exposed to very low temperatures become increasingly colder: 此处,过去分词“observed”用做定语,修饰名词“the phenomenon”,它所带的状语从句中的过去分词短语“exposed to”修饰名词“objects”。整句译文为:研究人员还试图通过使用超导来提高整机线路速度,因为当暴露于超低温的物体的温度愈来愈低时,即可观察到电阻降低的现象。
- [6] the ideal goal being true artificial intelligence: 分词独立结构,句中做说明。
- [7] One path actively being explored is the parallel processing computer. 并行处理计算机是正在积极探索的一个途径。actively being explored 是现在分词短语的被动式修饰名词 path,再如 The machine being built is costly. (正在被修的机器很贵。)
- [8] the Apple Macintosh computers: 苹果 Macintosh 计算机。
- [9] Apple: Apple Computer, Inc., 苹果计算机公司,美国微机制造商,总部设在 California 的 Cupertino。
- [10] Motorola: Motorola Inc., 美国摩托罗拉公司,以生产移动电话出名。
- [11] the IBM PC computers: IBM 个人计算机。
- [12] IBM (International Business Machines Corporation): 国际商用机器公司,美国计算机制造商,总部设在纽约的 Armonk。
- [13] Intel(the Integrated Electronics): Intel Corporation, 英特尔公