21世纪高等院校教材

English For Scientific Purpose

计算机专业英语

内蒙古自治区计算机教材编委会　组编

叶新铭 主编　马浩海　李　华　徐宝清　段满福　编著

内蒙古大学出版社

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内 容 提 要

本书是内蒙古自治区计算机教材编辑委员会组织出版的计算机基础知识系列教材之一，是掌握计算机专业英语的必备教材。

本书所选文章都以计算机技术及其应用领域为专题进行分类，基本上涉及到了计算机发展的各个方面。对计算机概况、程序设计语言、操作系统、应用软件和各种硬软件平台、数字系统及体系结构、数据库系统、计算机网络、多媒体、人工智能、软件工程、Internet 应用、系统安全、计算机文化冲击等都有所取材。此外，为了更好的辅助课堂教学和学生自学，我们给出了精读文章的语法难点解析、课堂练习以及参考译文和练习答案。

本书内容的组织侧重于提高学生计算机相关英文文章的阅读理解能力训练。内容选材精练、通俗易懂，知识结构新颖、实用性强。适用于高等院校计算机专业英语教学使用，也可以作为广大计算机和英语爱好者的自学用书。

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序

内蒙古自治区的高等教育事业起步于20世纪50年代初。经过近50年的发展，我区的高等教育无论从规模上，还是质量上都取得了长足的发展。特别是近些年来，全区高等院校的招生数量成倍增长，部分院校的合并使得一些高校的办学规模迅速壮大，形成了几所万人大学。与此同时，各高校对各自的专业及课程设置都做了较大的调整，以适应当今日益发展变化的高等教育事业。面向21世纪，在科学技术日新月异，社会对人才的知识结构、层次要求越来越高的新形势下，我们的高等教育的教学水平，特别是教材建设都应有一个更新更高的要求。

回顾50年来的发展，虽然我区高等教育的教学科研水平有了较大的提高，但与之相应的教材建设的现状还不尽如人意，绝大多数主干课程的教材还沿用一些传统教材，有些甚至是20世纪七八十年代的版本。有些院校的教材选用则有一定的随机性，在几种版本的教材之中换来换去。其间，虽然部分院校也组织力量编写了一些基础课及专业课教材，但大都是各成体系，缺乏院校间的协作与交流，形不成规模，质量亦无法保证，常常滞后于学科的发展与课程的变化。这都与我区高等教育的发展极不协调。诚然，区外部分地区高校的教学科研水平比我区要高，一些教材的质量好，我们可以直接利用，但这并不能成为我们不搞教材建设的理由。好的教材还需要相应的教育资源条件与之相对应才能取得良好的教学效果，从而达到促进教学质量提高之目的。应当承认，由于经济发展的相对落后，我区高校所招学生的基础和学校的教学条件比起全国重点名牌大学相对要差一些。因而，我们高校的教材也应从实际出发，结合自己学校和学生的特点，逐步探索、建立一套适合自治区教育资源条件的教材体系，促进自治区高校教学科研水平的提高，多出人才，出好人才。

值得欣喜的是，随着自治区教育科学水平的提高，我区高校教育领域的一些有识之士逐渐认识到，面向21世纪，未来高校之间的竞争就是学校的产品——学生质量的竞争。要想培养出高水平、高素质的学生，使我区的高校在这种竞争中立于不败之地，除各高校应努力提高自身的教学组织管理水平、提高教师的素质外，还应积极主动地加强与区内外高校的协作、交流，取长补短，走联合发展的道路，使我区高等教育的整体水平能够在较短的时间内得到提高。为此，在有利于规范高校教材体系，促进高校教育质量的提高，加强各高校教学科研人员之间的协作与交流的原则下，由自治区教育厅牵头，内蒙古大学出版社组办、资助，联合全区高等院校的有关专家、学者共同组建成立一些相关专业的教材编委会，以求编写适合我区高等教育特点的教材，逐步建立、完善自治区高等教育的教学、教材体系，并开展一些与教学相关的科研工作。我们希望，通过教材编委会这种工作模式，建设一批高质量的教材，带出一支高水平的师资队伍，培养出大批高素质的人才。

我坚信，在自治区教育厅的指导下，在编委会各位专家、学者的辛勤工作下，在各院校的相互理解、相互协作、相互支持下，我们一定能够克服发展过程中的困难，逐步推出一批高质量、高水平的教材，为推进内蒙古自治区高等教育事业做出重要的贡献。

2002年3月19日

内蒙古自治区计算机教材编委会

前　言

在计算机技术、产品及其应用领域的新名词、新技术纷呈的今天，人们一方面感觉到原有的知识迅速老化；另一方面又希望准确理解这些新术语和新技术的含义，从而全面把握各种计算机应用的特点和概貌。为此，编者从当今英文原版教材、因特网、报刊杂志中，精选出一组介绍计算机最新发展应用的文章，奉献给读者，以帮助读者不仅提高计算机及相关领域英语资料的阅读能力，而且可以把握计算机世界日新月异的变化脉搏。

本书主要是为计算机本专科学生学习专业英语课程编写的。全书收集了近 60 篇英文文章或概述，并以计算机技术及其应用领域为专题进行分类，基本上涉及了计算机发展的各个方面。从计算机技术的基本介绍——计算机概况、程序设计语言、操作系统、应用软件和各种硬软件平台、数字系统及体系结构，到计算机应用和拓展的各种热门领域——数据库系统、计算机网络、多媒体、人工智能、软件工程、Internet 应用、系统安全、计算机文化冲击等。每个专题的编排采取精读课文和课后阅读材料相结合的方式，既方便课堂讲授、又便于学生课后阅读自习。所选文章中既有相关专题的概念和标准的定义说明，又有应用示例帮助分析理解。每篇精读课文之后附有文章中重点语法难点解析，所附练习还可以促进学生提高阅读理解能力和应对英语测试的能力。在所有阅读材料之后都有相关问题的提出，帮助启发学生的英语思维能力和计算机专业知识的应用能力。此外，书后附录给出了所有精读文章的参考译文和练习答案。

本书由叶新铭教授主编，并负责全书的修改定稿。参加编写的人员有马浩海（第 2、3、6、7、11 课）、李华（第 8、9、12、13、14 课），和徐宝清（第 1、4、5、10 课）。段满福负责全书精读课文的注释。叶冬薇参与了部分编写和审定，对于她在成书过程中做出的辛勤工作表示感谢！

此外，在本书的编写过程中，内蒙古大学出版社编辑部主任呼和副编审和责任编辑李继东做了许多工作。内蒙古大学的张大力、王玉峰、吴铁楠、郝松霞、刘芝、孟磊、翟成郡等研究生审阅和校对了部分书稿。内蒙古自治区计算机教材编辑委员会的各位领导、专家对本书的编写也给予了热情的帮助和支持。在此一并表示感谢！

可以说，本书是一本融普及性和专业性为一体的计算机专业英语参考书，它适用于直接或间接与计算机应用相关的各类人员阅读和学习。书中内容翔实、丰富、新颖，具有很高的参考价值。当然，本书自然难以囊括计算机技术的方方面面，书中名词、术语在尽量参照已颁标准和流行译法的同时，也难免有所纰漏。囿于我们的计算机知识水平和英语能力，书中疏漏之处望请计算机专家和英语爱好者点评指正。

编　者

2002 年 8 月 30 日于内蒙古大学计算机学院

Preface

Nothing symbolizes modern life better than the advancement in computer technology. Due to the rapid technological progress in computer technology and a diversified range of computer products, people are constantly faced with a plethora of new terms and jargons associate with computer and it's applications. As previous knowledge on the subject soon become obsolete, people are trying to keep up on the latest development in computer applications. As a result, the demand for a better and accurate understanding on these new terms and jargons grow ever higher. We have chosen a number of articles covering the latest development on computer applications from English medium textbooks, Internet, newspapers and magazines. The book should help readers to improve their English comprehension on computer and computer related articles, and this book can also be used as a relevant handbook for the readers to gain an understanding on the changes in the computer world.

Our intent is that the book should serve as the text for computer English courses, at undergraduate or two-year college level. We collect nearly 60 English medium articles and the articles are organized into 14 Lessons covering the developments of computer technology: from introduction—overview of the computer, programming language, application software and various hardware platforms, digital systems and architecture, to advanced computer applications: database system, computer network, multimedia, artificial intelligence, software engineering, Internet application, system safety and computer culture. The book contains intensive reading articles followed by further reading materials for self-study. The articles in the textbook explain the concepts and definitions of related topics, give many examples that allow students to understand how the concepts relate to practice. Each passage is followed by the notes explaining key and difficult points. Students can also use the exercise to improve reading comprehension and testing skills. We also provide questions for each reading materials, aiding students to think in English and to exercise. Translations for the intensive reading articles and answers to the questions are included in the Appendix.

The book's focus on computer technology should be appealing to the computer professionals at all levels who want to update their knowledge on the latest developments. It also serves as an excellent reference book. Every effort has been made by us to accurately describe the latest development in computer technology. The English terms and jargons appear in the book are translated into Chinese according to published articles and standard industry practice. We apologize for any mistakes and omissions found in the book. Please inform us for any errors, and we will endeavor to correct them in future printings.

Professor Xinming Ye is the editor in chief for the book. This book was compiled by Haohai Ma (Lesson 2,3,6,7 and 11), Hua Li (Lesson 8,9,12,13 and 14) and Baoqing Xu(Lesson 1,4,5 and

10), while Manfu Duan reviewed all the notes for intensive reading articles.

This book would not have been possible without the help of many people. We would like to thank them for their efforts in improving the end result. We would like to thank Dongwei Ye who proofread articles and contributed ideas. Special thanks go to Huhe, Director of Newsroom, and Jidong Li, our editor, Inner Mongolia University Publisher. Acknowledgement to graduate students who helped in many ways. We would like to single out Dali Zhang, Yufeng Wang, Tienan Wu, Songxia Hao, Zhi Liu, Lei Meng and Chengjun Zhai, for their assistance. Finally, we wish to thank managers and specialists from the Computer Textbook Editing Committee of Inner Mongolia, for their invaluable advices throughout.

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Lesson 1 OVERVIEW OF THE COMPUTER

Passage Origin of the Computer

Para 1 Nothing epitomizes modern life better than the computer. From the first generation computer was built in the late of 1940's, it has been nearly 50 years. Now we can see computers in many places, such as banks, schools, offices and shops. Obviously computers make our day life and work easier and more interesting. For better or worse, computers have infiltrated every aspect of our society. Today computers do much more than simply compute: supermarket scanners calculate our grocery bill while keeping store inventory; 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 was 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.

Para 2 The abacus, which emerged about 5,000 years ago in Asia Minor and is still in use today, may be considered the first computer. This device allows users to make computations using a system of sliding beads arranged on a rack. Early merchants used the abacus to keep trading transactions. But as the use of paper and pencil spread, particularly in Europe, the abacus lost its importance. It took nearly 12 centuries, however, for the next significant advance in computing devices to emerge. In 1642, Blaise Pascal (1623-1662), the 18-year-old son of a French tax collector, invented what he called a numerical wheel calculator to help his father with his duties. This brass rectangular box, also called a Pascaline, used eight movable dials to add sums up to eight figures long. Pascal's device used a base of ten to accomplish this. For example, as one dial moved ten notches, or one complete revolution, it moved the next dial - which represented the ten's column - one place. When the ten's dial moved one revolution, the dial representing the hundred's place moved one notch and so on. The drawback to the Pascaline, of course, was its limitation to addition.

Para 3 In 1694, a German mathematician and philosopher, Gottfried Wilhem von Leibniz (1646-1716), improved the Pascaline by creating a machine that could also multiply. Like its predecessor, Leibniz's mechanical multiplier worked by a system of gears and dials. Partly by studying Pascal's original notes and drawings, Leibniz was able to refine his machine. The centerpiece of the machine was its stepped-drum gear design, which offered an elongated version of the simple flat gear. It wasn't until 1820, however, that mechanical calculators gained widespread use. Charles Xavier Thomas de Colmar, a Frenchman, invented a machine that could

perform the four basic arithmetic functions. Colmar's mechanical calculator, the arithmetic, presented a more practical approach to computing because it could add, subtracts, multiply and divide. With its enhanced versatility, the arithmetic was widely used up until the First World War. Although later inventors refined Colmar's calculator, together with fellow inventors Pascal and Leibniz, he helped define the age of mechanical computation.

Para 4 The real beginnings of computers as we know them today, however, lay with an English mathematics professor, Charles Babbage (1791-1871). Frustrated at the many errors he found while examining calculations for the Royal Astronomical Society, Babbage declared, "I wish to God these calculations had been performed by steam!" With those words, the automation of computers had begun. By 1812, Babbage noticed a natural harmony between machines and mathematics: machines were best at performing tasks repeatedly without mistake; while mathematics, particularly the production of mathematic tables, often required the simple repetition of steps. The problem centered on applying the ability of machines to meet the needs of mathematics. Babbage's first attempt at solving this problem was in 1822 when he proposed a machine to perform differential equations, called a Difference Engine. Powered by steam and large as a locomotive, the machine would have a stored program and could perform calculations and print the results automatically. After working on the Difference Engine for 10 years, Babbage was suddenly inspired to begin work on the first general-purpose computer, which he called the Analytical Engine. Babbage's assistant, Augusta Ada King, (1815-1842) and daughter of English poet Lord Byron, was instrumental in the machine's design. One of the few people who understood the Engine's design as well as Babbage, she helped revise plans, secure funding from the British government, and communicate the specifics of the Analytical Engine to the public. Also, Lady Ada's fine understanding of the machine allowed her to create the instruction routines to be fed into the computer, making her the first female computer programmer. In the 1980's, the U.S. Defense Department named a programming language ADA in her honor.

Para 5 Babbage's steam-powered Engine, although ultimately never constructed, may seem primitive by today's standards. However, it outlined the basic elements of a modern general-purpose computer and was a breakthrough concept. Consisting of over 50,000 components, the basic design of the Analytical Engine included input devices in the form of perforated cards containing operating instructions and a "store" for memory of 1,000 numbers of up to 50 decimal digits long. It also contained a "mill" with a control unit that allowed processing instructions in any sequence, and output devices to produce printed results. Babbage borrowed the idea of punch cards to encode the machine's instructions from the Jacquard loom. The loom, produced in 1820 and named after its inventor, Joseph-Marie Jacquard, used punched boards that controlled the patterns to be woven.

Para 6 In 1889, an American inventor, Herman Hollerith (1860-1929), also applied the Jacquard loom concept to computing. His first task was to find a faster way to compute the U.S.