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面向21世纪
高职高专计算机类
专业新编系列教材

Professional English for
Computer Science

计算机专业英语

主编 李晓桓

武汉理工大学出版社
Wuhan University of Technology Press

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主 编 李晓桓

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内容提要

本书以简明的英语写作方式,编写了共计 24 篇与计算机技术相关的英语阅读文章。从纵向看,每一课的第一篇按照计算机文化的体系进行编写,顺序是:计算机的历史,信息系统,硬件-系统单元,硬件-输入/输出,系统软件,应用软件,编程语言,通讯系统,因特网,多媒体,隐私和安全,IT 组织。而每一课的第二篇则按照人们对 IT 界最关心的热门话题进行编写,顺序是:计算机对社会的冲击,在 IT 业中选择职业,如何购买个人电脑,如何升级你的个人电脑,病毒保护,绿色计算机,程序开发的过程,网上聊天,软件版权保护,电子学习,关注黑客,微软成功的秘密。从横向看,每一课的第一篇文章和第二篇文章又有联系。

这些文章内容新颖,实用性和趣味性强,并且通俗易懂,适合作为高职高专计算机专业学生的英语教材,也可以作为计算机爱好者的读物。

图书在版编目(CIP)数据

计算机专业英语/李晓桓主编. —武汉:武汉理工大学出版社,2004.8
(面向 21 世纪高职高专计算机类专业新编系列教材)
ISBN 7-5629-2072-9

I. 计... II. 李... III. 电子计算机-英语-高等学校-教材 IV. H31

中国版本图书馆 CIP 数据核字(2004)第 005336 号

出版发行:武汉理工大学出版社(武汉市洪山区珞狮路 122 号 邮编 430070)

HTTP://www.techbook.com.cn

E-mail:duanchao@mail.whut.edu.cn tiandq@mail.whut.edu.cn

经 销 者:各地新华书店

印 刷 者:安陆市鼎鑫印务有限责任公司

开 本:787×960 1/16

印 张:10

字 数:230 千字

版 次:2004 年 8 月第 1 版

印 次:2004 年 8 月第 1 次印刷

印 数:1—5000 册

定 价:14.00 元

凡购本书,如有缺页、倒页、脱页等印装质量问题,请向出版社发行部调换。本社购书热线电话:(027)87397097 87394412

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出版说明

面向新世纪,我国高等职业技术教育进入蓬勃发展的新时期。根据 IT 行业技术新、发展快的特点,高等专科学校、高等职业技术学院计算机类专业教育,按照社会主义市场经济规律的原则定位人才培养目标和调整教学方法,尽量按照新技术或新版本更新课程内容,加速各种新产品和新技术的推广应用,努力提升高等职业技术教育对国民经济发展的促进作用。

根据高等职业技术教育快速发展与教学改革对教材建设的需求,武汉理工大学出版社经过广泛调研,与国内近 30 所高等专科学校、高等职业技术学院的计算机教育专家进行探讨,决定组织编写一套适合于高等职业技术教育计算机类专业(涵盖计算机应用与维护、计算机网络技术、计算机软件技术等专业方向)人才培养和教学需要的具有特色的高质量教材——面向 21 世纪高职高专计算机类专业新编系列教材。

本套新编系列教材的编写具有以下特色:

1. 与时俱进,教材内容体现人才培养目标

本套教材的编写反映教育部制订的《高职高专教育基础课程教学基本要求》和《高职高专教育专业人才培养目标及规格》的文件精神,贯彻高等职业技术教育“要服务于社会主义现代化建设,要与生产劳动和社会实践相结合”的宗旨,以培养一大批满足生产第一线需要的高等技术应用型人才为目标,坚持以技术应用型为主线的原则来编写教材内容,加强应用能力的培养。

2. 紧跟教学改革步伐,体现教学改革阶段性成果

本套教材的编写反映高职高专学校教学改革的阶段性成果,在处理“基础理论”与“实践能力”之间的关系上,遵循“基础理论以够用、必需为度,突出应用”的原则。教材编写坚持“少而精”的原则,以培养从

事计算机应用与维护、网络建设与维护及软件开发与测试等方面的能力,并能够快速跟踪计算机新技术发展的高等技术应用型人才为目标。坚持理论与实际相结合,采用“提出问题—分析问题—设计任务—解决任务—总结规律”的编写方法,努力创造出高职高专教材新体系。

3. 实现立体化出版,适应教育方式的变革

本套教材努力使用和推广现代化的教学手段,凡有条件的课程都准备组织编写、制作和出版与教材配套使用的实验、习题、课件、电子教案及相应的程序设计素材库。

本套教材首批 26 种预计在 2004 年秋季至 2005 年春季全部出齐。我们的编审者、出版者决不敢稍有懈怠,一定高度重视,兢兢业业,按最高的质量标准工作。教材建设是我们共同的事业和追求,也是我们的共同的责任和义务,我们诚恳地希望大家积极选用本套教材,并在使用过程中给我们多提意见和建议,以便我们不断修订、完善全套教材。

武汉理工大学出版社

2004 年 1 月

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前 言

计算机技术是当今发展最迅速、更新最快的技术之一,并且正以其高强度的渗透力融入到各个科学技术领域之中。这也就要求从事计算机专业的技术人员,必须以最快的速度掌握计算机领域的新技术。因此,也就决定了计算机专业技术人员的英语水平,必须要比传统科学技术领域专业技术人员的英语水平有所提高,这样才能更快更好地掌握计算机领域的新技术。

本书概括地介绍了计算机信息技术的基本知识和大家共同关心的一些热门话题。全书共由 12 篇课文和 12 篇阅读材料组成。主要内容包括:计算机的历史,信息系统,硬件-系统单元,硬件-输入/输出部分,系统软件,应用软件,编程语言,通讯系统,因特网,多媒体,隐私和安全,IT 组织。而每一课的阅读材料则按照人们对 IT 界最关心的热门话题进行编写,顺序是:计算机对社会的冲击,在 IT 业中选择职业,如何购买个人电脑,如何升级你的个人电脑,病毒保护,绿色计算机,程序开发的过程,网上聊天,软件版权保护,电子学习,关注黑客,微软成功的秘密。每一课后面均附有重要词汇、练习题、参考文献及网站辅助学生学习。

本书内容丰富,比较全面地覆盖了计算机技术领域中的基本专业词汇。特别是课文和阅读材料,新颖实用,通俗易懂,文章内容均是目前广大计算机专业人士和对计算机信息技术感兴趣的人十分关心的热门话题。本书既可以帮助学生了解和掌握计算机信息技术基础知识,也可以帮助他们掌握相应的英语词汇,提高专业英语的阅读能力。

本书由昆明冶金高等专科学校李晓桓担任主编。李晓桓主持制定编写提纲,对全书进行了统稿和审定,并具体编写第 2 课、第 4 课和第 11 课。平顶山工学院范刚龙编写第 1 课和第 3 课,湖南商务职业技术学院赵敏之编写第 5 课和第 6 课,洛阳工业高等专科学校侯树静编写第 7 课和第 8 课,北京建筑材料工业学校杨印彬编写第 9 课和第 10 课,湖北城建职业技术学院高艳梅编写第 12 课。同时,本书还邀请来自加拿大的计算机专家 Ralph Findling 和英语语言专家 Karen Findling 担任主审,他们二人为本书的修改、审定和顺利出版,作出了杰出的贡献,在此表示感谢。

限于编者水平,不妥和错误之处在所难免,恳请读者给予批评指正。

编 者

2004 年 6 月

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LESSON ONE

The History of IT

COMPETENCIES

After you have read this lesson, you should be able to:

- Describe what is IT
- Describe the four historical stages of IT: pre-mechanical, mechanical, electromechanical, and the electronic age
- List the achievements of the pre-mechanical, mechanical, electromechanical, and electronic age
- Explain the distinct characteristics in each age

Throughout history, humanbeing has always sought ways to record important information. Whether it's primitive cave drawings, tying knots on a rope or etching symbols on bamboo, the desire to record things is evident in every culture. However, modern man is living in a new era, the era of Information Technology (IT). Not only is information recorded, but managing and using this information is as important to a nations economy as it's material and energy resources. The modern computer has played a very important role in the rise of Information Technology. Let's take a look at what IT is, and then let's take a brief look at the history of IT.

1. What is IT

Information Technology is a term that includes all forms of technology used to identify, gather, store, process, and deliver information. The wise use

of information not only increases one's knowledge and abilities, but also helps make the day to day running of a business or organization more efficiently.

Today most information technologies including the computer are all in a very significant way, but this has not always been the case. Other technologies can also be used as part of an IT system. Take the use of paper and pen to keep records for example, this continues to be the main way of keeping records in some parts of the world, even today. The computer, however, is an essential part of IT in today's modernized world. The terms "computer" and "IT" are often interchanged. For example, the computer department in many companies and universities, which is often called the "IT Department".

2. The History of IT

Information Technology goes back as far as recorded history. Although the technology has changed, the basic concept has not. Various methods have been used to record information. These methods can be categorized under the following headings: pre-mechanical, mechanical, electromechanical, and electronic.

(1) The Pre-Mechanical Age: 3000 B. C. ~1450 A. D.

The earliest records were probably written in sand or carved onto bones. As time went on, the need to record more accurate information led to the use of alphabets (3000 B. C.) and standardized symbols (2000 B. C.). The materials used to record this information evolved from animal skins to papyrus plants (Egypt, 2000 B. C.), and eventually to paper made from rags (China, 100 A. D.), which is the basis for the paper making industry today. Paper was eventually organized into books and then into libraries. The ability to read and write information is really the birth of IT. Perhaps the most significant mechanical advancement during this era was the abacus, a device used for addition, subtraction, multiplication and division.

(2) The Mechanical Age: 1450~1840

The mechanical age began with the invention of the printing press in Germany (1450 A. D.). This greatly increased the spread of knowledge through the mass production of books. The first real calculating machines were invented in the 1600's. In 1642 Blaise Pascal invented, a mechanical device that could add and subtract through the use of a set of wheels linked together by gears. In the early 1670's this design was improved to add the ability to divide

and multiply.

In 1801, Joseph Jacquard invented a loom, which used a system of punch cards to create a pattern. Holes in a card were used to allow certain needles to pass through. In this way complex patterns could be created on a mechanical weaving loom. This inspired Charles Babbage in the 1830's to create a mechanical computer, which he called the "Analytical Engine". He worked on it for 40 years, but lacked the funding to build a working model. The design had all the functions of a modern computer: input, output, storage, working memory and the ability to move data between the different types of memory.

(3) The Electromechanical Age: 1840~1940

The ability to harness electricity was the most significant discovery in the electromechanical age. The invention of the Voltaic battery (late 1700's), the telegraph (early 1800's), morse code (1835) and eventually the telephone (1876) resulted in the beginning of telecommunications. This eventually resulted in the spread of worldwide communication, allowing new ideas to spread very rapidly.

In 1888, an American inventor and businessman, Herman Hollerith, created a punch card system for tabulating the results of the U. S. census. He used punch cards combined with electrically charged nails that completed a circuit when passed through a hole in the punch card. With 56 of these machines, he was able to tabulate the 1890 U. S. census in just one day, making it the fastest and most economical census to that date.

(4) The Electronic Age: 1940 ~ Present

The first special purpose electronic computer was built in 1939. In 1946, the first general purpose computer was built, it was called the ENIAC (Electronic Numerical Integrator And Computer), which contained about 18,000 vacuum tubes and took about 140m² of floor space. When in operation, it required about 150 kilowatts of electricity.

The computer has since continued to evolve at a very rapid pace. With the invention of integrated circuits (ICs), vacuum tubes are no longer required. In fact, with ULSI (Ultra Large Scale Integration) technology, one IC can contain the equivalent of over 1 million vacuum tubes. This means that the first generation digital computers which took up several rooms can be replaced with a hand held computer that can perform operation much faster.

Without these significant advances in technology, computers would not be

affordable for the average person or business. These changes have all contributed to the technology we all take for granted today.

KEY TERMS

1. cave drawing	洞穴画
2. tying knot	打结
3. etching	蚀刻术, 铜板画
4. identify information	识别信息
5. gather information	收集信息
6. store information	存储信息
7. process information	处理信息
8. deliver information	转换信息
9. categorize	分类
10. pre-mechanical	前机械的
11. mechanical	机械的
12. electromechanical	电子机械
13. standardized	标准的
14. alphabet	字母表
15. papyrus	纸草, 草制成的纸
16. abacus	算盘
17. addition/subtraction/ multiplication/division	加法/减法/乘法/除法
18. printing press	印刷机
19. loom	织布机
20. morse code	莫尔斯码
21. telecommunication	电信, 无线电通讯
22. punch card	穿孔卡片
23. vacuum tube	真空管
24. integrated circuit	集成电路
25. digital computer	数字计算机
26. take for granted	认为……理所应当

NOTES

- [1] Whether it's primitive cave drawings, tying knots on a rope or etching symbols on bamboo, the desire to record things is evident in every culture.

无论是最原始的洞穴绘画,在绳子上打结还是在竹子上刻标记,每种文化都明显地期望能将所发生的事件记录下来。

- [2] Not only is information recorded, but managing and using this information is as important to a nation's economy as its material and energy resources. 不仅仅是记录信息,管理和使用信息也是与国家经济密切相关的材料和能源同等重要。
- [3] Today most information technologies including the computer are all in a very significant way, but this has not always been the case. 当今包括计算机在内的信息技术都非常有意义,但是也不总是这种情形。
- [4] He used punch cards combined with electrically charged nails that completed a circuit when passed through a hole in the punch card. 他使用了一种连接带电钉子的穿孔卡片,每当这些钉子在穿孔卡片上穿过一个孔时,就完成一个循环。
- [5] This means that the first generation digital computers that took up several rooms can be replaced with a hand held computer that can perform operation much, much faster. 这意味着需要占几个房间的第一代数字计算机,能被一台可以更多更快地执行命令的手提计算机所代替。

EXERCISES

1. Circle the letter or fill in the correct answer

- (1) According to the article, man has always looked for ways to _____.
a. go to the moon
b. conquer other nations
c. fly
d. record information
- (2) IT is a general term that includes _____.
a. gathering information
b. storing information
c. all forms of technology
d. interaction
- (3) The computer is _____ IT.
a. not related to
b. an essential part of
c. often mistaken for
d. the same as

- (4) The history of IT can be summarized into these 4 categories:
- a. Pre-mechanical, Mechanical, Electromechanical, and Electronic
 - b. Pre-civilized, Civilized, Modern, and Post-modern
 - c. Stone Age, Bronze Age, Iron Age, and the Industrial Age
 - d. Song Dynasty, Yuan Dynasty, Ming Dynasty, and Qing Dynasty
- (5) Perhaps one of the first mechanical information processing machines was the ____.
- a. IBM PC
 - b. ENIAC
 - c. slide rule
 - d. abacus

2. Match each numbered item with the most closely related lettered item.

Write your answers in the spaces provided

- | | |
|-------------------------|---|
| a. IT | (1) A machine used for weaving thread into cloth. |
| b. alphabets | (2) Communicating using electric or electronic technology like the radio, telephone, telegraph, etc. |
| c. standardized symbols | (3) A system of letters arranged in a certain order. These letters are used to form words that represent objects, ideas, etc. |
| d. loom | (4) An alphabet consisting of a series of dots and dashes, often used by when sending a telegraph. |
| e. computer | (5) A programmable machine that takes input, performs calculations and provides some kind of output. |
| f. morse code | (6) Standardized shapes or characters used to represent words. |
| g. telecommunications | (7) A board term that includes all forms of technology used to identify, gather, store, process, and deliver information. |

3. On a separate sheet of paper, respond to each question or statement

- (1) List the 4 categories of IT history and give examples of some of the inventions for each period.
- (2) An IT device is able to gather, store, process and deliver information.

Demonstrate each of these things using the abacus.

(3) Discuss the history of the computer. Compare a modern computer with one of the first computers invented.

Reading Material

The Impact of IT on Society

The advances in Information Technology (IT) have affected every area of life. These advances in technology have left their impact on everything from the things we buy, to the jobs we have, or even to what we do in our spare time. Consider for a moment, a person's daily activities today in comparison with someone who lived 100 years ago. A lot of the changes can be directly or indirectly related to advances in information technology.

The impact of Information Technology has had positive as well as negative consequences. Let's take a closer look at the impact of Information Technology on the following areas: people, communities, nationally, and globally.

1. Impact of IT on People

For most people in developed areas, life is much more convenient. The information age has resulted in changes designed to make life easier. For example, one no longer needs to go to the bank or a company to pay bills. This can be done automatically through electronic transfers. Banks are connected to one another, so a person can go to any branch of a bank to withdraw money. The telephone and the Internet have made contact with people easier than ever before. Automation and robotics has meant that many of the boring, repetitive jobs have been replaced by computer-controlled equipment. The result has been less physical work and a lot more free time.

The negative side, however, is that life has become more complex. Many

“time saving” tools need to be learned, used and maintained. The process for doing something is more complex and changes more often as a better way of performing a task is found. We may have more time, but we also have more responsibilities. If one does not manage his time well, the conveniences can quickly add up to more time and stress, rather than less.

2. Impact of IT on Communities

One just needs to look around to see how IT has transformed our communities. The purchasing of products has been automated. This has resulted in bigger and better equipped stores. The quality of products has also increased with the help of automated processes and strict quality control procedures.

There has been an increased awareness of safety and security. Many homes and offices now have built in security systems. Video cameras record the movements of people in stores and even on busy streets. Radio and television is often used to warn people of dangers, whether it's an approaching storm or a dangerous criminal in the community. The emergency hotline 911 (119 in China) can also be used to quickly get help when needed.

Another important area of influence has been education. With the increase of information, there is a constant need to keep learning. The way we learn has also changed. Now it's possible to learn through the use of multimedia software, videos, live radio talk shows, night school, etc.

With all these changes, have our communities become better places to live? Automation and high tech communication is often less personal. We get the information and services we need much faster, but we often need to sacrifice personal contact. A super store is much less personal than the local family run corner store. A bank machine treats each person the same, but will only recognize your bankcard, not your face. Though communities become more efficient, they also tend to become less personal.

3. Impact of IT Nationally

Managing a nation has always been a challenge. The age of IT has provided many tools to make this task much easier. Computer databases are able to store information on people, governmental departments, projects, etc. Advances in