



普通高等教育“十一五”规划教材

高等职业教育计算机技术系列教材



计算机专业英语

余芳 编著

HIGHER TECHNICAL
AND
VOCATIONAL
EDUCATION

冶金工业出版社

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北 京

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内 容 简 介

本书是根据普通高等教育“十一五”国家级规划教材的指导精神而编写的。

本书精选了计算机软件、硬件、网络、病毒与安全、专门领域与前沿等各个计算机基础知识方面的英语文章,使得读者在学会用英语表达计算机专业知识的同时,巩固已学知识,并可获得一些较深较新的内容。

通过本书的学习,读者应该能够记住、理解及掌握一定量的计算机专业词汇及基本概念,以及计算机英语的常用句式,为今后能够熟练地阅读计算机英语技术文献、资料及书籍打下良好的基础。

本书可作为高职高专计算机专业或各种培训班相关专业的英语教材,还可供计算机爱好者和自学人员使用。

图书在版编目(CIP)数据

计算机专业英语 / 余芳编著. —北京:冶金工业出版社, 2006.3

ISBN 7-5024-3944-7

I. 计... II. 余... III. 电子计算机—英语
IV. H31

中国版本图书馆 CIP 数据核字 (2006) 第 017198 号

出版人 曹胜利 (北京沙滩嵩祝院北巷 39 号, 邮编 100009)

责任编辑 戈兰

佛山市新粤中印刷有限公司印刷; 冶金工业出版社发行; 各地新华书店经销

2006 年 3 月第 1 版第 1 次印刷

787mm × 1092mm 1/16; 15.5 印张; 359 千字; 242 页

23.00 元

冶金工业出版社发行部 电话: (010) 64044283 传真: (010) 64027893

冶金书店 地址: 北京东四西大街 46 号 (100711) 电话: (010) 65289081

(本社图书如有印装质量问题, 本社发行部负责退换)

前 言

一、关于本书

本书是根据普通高等教育“十一五”国家级规划教材的指导精神而编写的。

目前,全国各地高职高专院校普遍扩招,高职高专学生人数迅速增长,这给他们的就业带来了巨大的压力。而当前高职高专学生的就业情况不容乐观,究其原因,所用教材与实际应用脱轨是一主要因素。针对现有教材质量较差、品种单一、版本陈旧、实用性和可操作性不强等原因,肩负着应用型人才培养的高职高专院校急需一系列符合当前教学改革需要的教材。

当前,计算机技术,尤其是互联网技术发展迅猛,计算机专业术语和概念层出不穷。新的技术和概念如各种软件都主要以英语为界面,这就要求计算机工作者必须具备良好的计算机和英语两方面的基础及能力。

本书为《计算机专业英语》课程的辅助教材。计算机专业英语属于科技英语的范畴。它首先建立在基础英语之上,即其中涉及到的各种词法及语法知识大都是基础英语的内容。但是基础英语也仅仅是基础,计算机专业英语的真正目的在于将英语与计算机知识结合,即探究如何用英语来表述计算机知识。因此大专学生在学习这门课程时,应注意其与基础英语的区别,把语言学习与计算机专业知识结合起来,从而达到能够独立熟练地阅读计算机专业资料及文献的目的。

二、本书结构

本书共六个单元分 17 章介绍计算机专业的基础知识,一章一个主题,内容为计算机专业的基础知识。每一章的正文部分一般由二到五个小节构成,为该章主题内容的细分;Key Words 部分强调了该章出现的重要专业词汇,Vocabulary 部分则给出读者可能未学过的单词,或是并不太重要的专业词汇;Translation Knowledge 中归纳了在阅读或翻译计算机文章时的知识,如怎样翻译长句或是如何进行时态的翻译等;接下来是正文部分的译文;每章的 Exercises 由三个练习组成,第 1 题考察重要词汇,第 2 题考察概念,第 3 题是一道综合题,给出一篇与该章主题有关的短文,要求读者完型填空;最后 Reading Materials 部分为 2~3 篇短文,是本章主题的扩展。读者可作为课后阅读材料,以掌握更多相关知识。

全书各部分内容安排如下:

第一单元 计算机入门

介绍有关计算机的基础知识,计算机的五大部件、数据在计算机内部的表示等内容。

第二单元 计算机硬件系统

介绍了计算机的外围输入/输出设备以及计算机使用的存储介质。

第三单元 计算机软件系统

介绍计算机操作系统和计算机语言、数据库、多媒体和多媒体计算机、常用应用软件。

第四单元 网络技术

介绍了计算机网络的概念及技术、互联网的起源、工作原理以及常用的互联网服务。

第五单元 病毒与安全

介绍了病毒的概念、特征、防范病毒的方法以及使你的计算机安全的一些保护性措施。

第六单元 计算机研究领域与技术前沿

介绍应用范围较广的几个计算机研究领域及对计算机发展影响较大的一些前沿技术。

三、本书特点

本书系统、全面地研究和借鉴了国外相关教材先进的教学方法,结合国内院校教学实际和先进的教学成果,根据教育部“十一五”国家级规划教材应用型高职高专教育的指导思想编写,具有实用性和可操作性,与时俱进,与当前就业市场结合得更加紧密。

本书内容丰富、实用性强。学生学后既能掌握一定的专业术语,又能提高英语的读、写、译的能力,从而能更好地适应信息社会对计算机人才的要求。本书适合作计算机英语教材和参考用书。

四、本书适用对象

本书是由暨南大学的余芳编写。

本书可作为高职高专计算机专业或各种培训班相关专业的教材,还可供计算机爱好者和自学人员使用。

本书中各章的正文部分选自一些专业网站,同时还参考了其它一些计算机专业英语书籍,在此一并向原作者表示感谢。

由于编写时间仓促、编者水平有限,书中不足之处在所难免,恳请广大读者朋友们批评指正。欢迎广大读者和专家对我们的工作提出宝贵建议,联系方式如下:

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网址: www.cnbook.net

本书电子教案及练习题参考答案可从该网站免费下载,此外,该网站还有一些其他相关书籍的介绍,可以方便读者选购参考。

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2005年11月

目 录

Unit 1 About Computer	1
Text 1 What is Computer.....	1
Text 2 Components of Computer	12
Text 3 Computer System	21
Unit 2 Hardware System of Computer.....	33
Text 1 Input and Output Device.....	33
Text 2 Storage Device	44
Unit 3 Software System of Computer.....	55
Text 1 Operating System	55
Text 2 Computer Languages	65
Text 3 Database	74
Text 4 Multimedia	83
Text 5 Common Application Software.....	92
Unit 4 Network Technique	105
Text 1 Computer Network	105
Text 2 Internet	115
Text 3 The Internet Technologies	127
Unit 5 Computer Virus and Security	140
Text 1 Computer Virus	140
Text 2 Securing Your Computer	148
Unit 6 Study Fields of Computer and Top Technologies	157
Text 1 Study Fields of Computer.....	157
Text 2 Top Technologies of Computer.....	168
参考译文	180
第 1 单元	180
第 2 单元	190
第 3 单元	196
第 4 单元	208
第 5 单元	218
第 6 单元	221

附录 A 计算机专业英语的特点	229
A.1 计算机专业英语词汇的特点	229
A.1.1 大量的专业词汇及半专业词汇	229
A.1.2 缩写词	230
A.1.3 合成词	230
A.1.4 派生词	230
A.2 专业英语句式的特点	231
A.3 Exercises	232
A.4 Reading Materials.....	233
附录 B 计算机专业英语名词常用前后缀	236
B.1 PREFIX (前缀)	236
B.2 SUFFIX (后缀)	236
附录 C 计算机专业英语名词解释	238
C.1 常见公司、组织名称.....	238
C.2 常见硬件名词	238
C.3 常见软件名词	239
C.4 程序设计语言	239
C.5 常见的计算机英语及其缩写	240
C.6 网络英语	241
参考文献	242

Unit 1 About Computer

Text 1 What is Computer

Computer is a machine that accepts and processes data into information under the control of a stored program. The two parts of a computer are:

The actual machinery——wires, transistors, and circuits——is called *hardware*;

The instructions and data are called *software*. With software, a computer can execute a prerecorded list of instructions (a program).

Figure 1-1 shows a computer in early times and a typical modern desktop computer. They are very different in appearance and volume.



Figure 1-1 Old computer and modern computer

Application Areas of Computers

The first digital computer, with their large size and cost, mainly performed scientific calculation. But now, Computer has been widely used in almost every field. These fields include:

Scientific Calculation and Research Computer technology successfully solves the problem in computing. For example, weather forecast. Without computer, manipulating weather data even for a small town is very difficult. Another example is data analysis for oil exploitation. At present, there is rapid development in the field of scientific calculation, as parallel computers are increasingly used. On these computers complicated calculations can be executed in ultra-short time, since their architecture supports many parallel calculations at the same time.

Data and information processing People in governments and large corporations often use computers to automate many of the data collection and processing tasks previously performed by human — for example, maintaining and updating accounts and inventories. Businesses and organizations also employ a large number of small computers to accomplish these kinds of tasks.

Process Control The field of Process Control covers a wide range of computer and automated systems, usually in manufacturing or production. These systems, including their sensor and control components, may be huge. Generally, these computer systems may be viewed as “fixed use” systems. They were designed and built to interface with specific equipment or to run specific application software. For example, heating up the temperature in a room is a

process that has the specific, desired outcome to reach and maintain a defined temperature (e.g. 20°C), kept constant over time.

Computer Aided Design A CAD system is a combination of hardware and software that enables engineers and architects to design everything from simple tools to buildings, aircraft, and molecules. Various CAD applications create objects in two or three dimensions, presenting the results as wire-frame "skeletons", or as solid objects. CAD programs rely on mathematics, often requiring the computing power of a high-performance workstation.

Family Use Computer is changing our family life by providing us with the functions of word processing, accounting management, amusement as well as the e-mail through Internet etc. Many parents like to buy personal computers for their kids in a hope that they start learning computer science at their tender age, to adapt to the developing society.

Four Kinds of Computers

There are four types of computers: microcomputers, minicomputers, mainframe computers, and supercomputers.

Microcomputers also known as personal computers. As shown in Figure 1-2, they are small single-user computers that can fit on a desktop. Microcomputer used in homes, schools and industry has increased dramatically in the past few years. Students use them to do homework or to write reports. Professionals and other business people use them for a wide range of tasks. These tasks range from calculating paychecks, to analyzing data, to communicating with others around the world. Workstation is a more powerful, single-user computer. A workstation likes a personal computer.



Figure 1-2 A microcomputer

Minicomputers are desk-sized machines. They fall in between microcomputers and mainframes in their processing speeds and data-storing capacities. Medium-size companies or departments of large companies typically use them for specific purposes. For example, they might use them to do research or to monitor a particular manufacturing process. Smaller-size companies typically use minicomputers for their general data processing needs, such as accounting. A typical earlier minicomputer is shown in Figure 1-3.



Figure 1-3 A minicomputer

Mainframe computers are large computers occupying specially wired, air-conditioned rooms and capable of great processing speed and data storage. They are used by large organizations—businesses, banks, universities, government agencies—to handle millions of transactions. For example, insurance companies use mainframes to process information about millions of policy-holders. We can see in Figure 1-4 that a mainframe is very large in volume.



Figure 1-4 A mainframe computer

Supercomputers are computers of huge volume usually held in a whole room as shown in Figure 1-5. They are special, high-capacity computers used by very large organizations principally for research purposes. Among their uses are oil exploration and worldwide weather forecasting.



Figure 1-5 A supercomputer

The Five Generations of Computers

The evolution of digital computing is often divided into generations. Each generation is characterized by a major technological development that fundamentally changed the way computers operate. This development results in increasingly smaller, cheaper, more powerful and more efficient and reliable devices of computers.

The First Generation of Computers The first programmable electronic computer was the Electronic Numerical Integrator And Computer (ENIAC), built at the University of Pennsylvania in 1946, was based on vacuum tubes (Figure 1-6) and were therefore very large. The vacuum tubes required great amounts of energy and generated much heat. The figure below is a typical vacuum tube.



Figure 1-6 vacuum tube

The Second Generation of Computers Second-generation computers, appearing in the early 1960s, were those in which transistors replaced vacuum tubes. The transistor was invented in 1947 but did not see widespread use in computers until the late 50s. A transistor and its internal structure are shown in figure 1-7. The transistor was far superior to the vacuum tube, allowing computers to become smaller, faster, cheaper, more energy-efficient and more reliable than their first-generation predecessors.



Figure 1-7 Transistor and its internal structure

The Third Generation of Computers Though transistors were clearly an improvement over the vacuum tube, they still generated a great deal of heat, which damaged the computer's sensitive internal parts. Jack Kilby, an engineer of Texas Instruments, developed the integrated circuit (IC) in 1958. IC is a kind of semiconductor device with several transistors built into one physical component. Because the use of integrated circuits, the third generation brought huge gains in computational power and the speed and efficiency of computers are also drastically increased. Figure 1-8 shows the appearance of integrated circuits.



Figure 1-8 Integrated circuit

The Fourth Generation of Computers After the integrated circuits, the only place to go was down—in size, that is. Large-scale integration (LSI) could fit hundreds of components onto one chip. What in the first generation filled an entire room could now fit in the palm of the hand. The Intel 4004 chip, developed in 1971, located all the components of the computer—from the CPU and memory to input/output controls—on a single chip.

The Fifth Generation of Computers By the 1980's, very large scale integration (VLSI) squeezed hundreds of thousands of components onto a chip. Ultra-large scale integration (ULSI) increased that number into the millions. The ability to fit so much onto a very small area helped diminish the size and price of computers. It also increased their power, efficiency and reliability. Fifth-generation computers are also expected to combine very-large-scale integration with sophisticated approaches to computing, including artificial intelligence and true distributed processing.

Fifth generation computing devices are still in development. Quantum computation and molecular and nanotechnology will radically change the face of computers in years to come. The goal of fifth-generation computers is to develop devices that respond to natural language input and are capable of learning and self-organization.

Key Words

hardware	software	program	CAD
microcomputer	minicomputer	mainframe	supercomputer
workstation	generation	ENIAC	IC
LSI	VLSI	ULSI	

Vocabulary

- exploitation [ˌeksplɔɪ'teɪʃən] n. 开发, 开采
transistor [træn'zɪstə] n. [电子] 晶体管
circuit ['sɜ:kɪt] n. 电路, 一圈
instruction [ɪn'strʌkʃən] n. 指示, 用法说明 (书), 指令
execute ['eksɪkjʊ:t] vt. 执行, 实行
digital ['dɪdʒɪtl] adj. 数字的, 数位的 n. 数字, 数字式
parallel ['pærəlel] adj. 平行的, 并联的
ultra ['ʌltrə] adj. 过激的, 极端的
architecture [ˈɑ:kɪ'tektʃə] n. 建筑, 体系结构
 architect [ˈɑ:kɪ'tekt] n. 建筑师
automate [ˈɔ:təmeɪt] v. 使自动化, 自动操作
inventory [ˈɪnventrɪ] n. 详细目录, 财产清册
sensor ['sensə] n. 传感器
component [kəm'pəʊnənt] n. 成分 adj. 组成的, 构成的
combine [kəm'baɪn] v. (使) 联合, (使) 结合
 combine...with 与...结合
aircraft ['eəkrɑ:ft] n. 飞行器, 太空飞船
molecule ['mɒlɪkjʊ:l, 'məʊ-] n. [化] 分子, 些微
dimension [di'menʃən] n. 尺寸, 维 (数), 度 (数)
skeleton ['skelɪtən] n. (动物之) 骨架, 基干, 纲要
performance [pə'fɔ:məns] n. 执行, 性能, 表演, 演奏
 perform [pə'fɔ:m] vt. 履行, 执行, 表演 v. 完成任务
amusement [ə'mju:zmənt] n. 娱乐, 消遣
tender age 幼年
fit on 装上, 试穿
desktop ['deskɒp] n. [计] 桌面
dramatically [drə'mætɪkli] adv. 戏剧地, 引人注目地

dramatic [drə'mætikli] adj.戏剧性的, 生动的
 paychecks n.付薪水的支票, 薪水
 capacity [kə'pæsiti] n.容量, 才能, 接受力
 account [ə'kaunt] n.计算, 帐目
 transaction [træn'zækʃən] n.交易, 事务
 policy-holder n.保险客户
 evolution [i:və'lu:ʃən] n.进展, 演变, 进化
 characterize ['kærɪktəraɪz] vt.表现...的特色, 刻画...的性格
 reliable [ri'laɪəbl] adj.可靠的
 reliability [ri'laɪəblɪti] n.可靠性
 vacuum tube 真空管
 superior [sju:'piəriə] n.高手, 上级 adj.较高的, 上级的
 predecessor [pri:'disesə] n.前辈, 前任, (被取代的)原有事物
 semiconductor ['semɪkən'daktə] n.[物]半导体
 physical ['fɪzɪkəl] adj.身体的, 物质的, 自然的, 物理的
 drastically ['dræstɪkəli] adv.激烈地, 彻底地
 chip [tʃɪp] n.芯片
 palm [pɑ:m] n.手掌, 棕榈
 squeeze [skwi:z] v.压榨, 挤
 diminish [dɪ'mɪnɪʃ] v.(使)减少, (使)变小
 artificial intelligence 人工智能
 distributed processing 分布式处理
 quantum ['kwɒntəm] n.量, 额, [物]量子, 量子论
 nanotechnology n.纳米技术
 radically ['rædɪkəli] adv.根本上, 以激进的方式
 self-organization 自组织, 自适应

Translation Knowledge

1. 概念与术语的定义

【基本形式】term + be / be defined as + 表示类属的名词 + that 或 which 引导的定语从句。

【翻译提示】一般译为 term 是一种...。当定语从句太长时, 注意调整语序。

e.g.

Computer is a machine that accepts and processes data into information under the control of a stored program.

计算机是一种在存储程序的控制之下, 接收数据, 并把其处理成信息的机器。

或译: 计算机是这样一种机器, 它接收数据, 并在存储程序的控制之下把其处理成信息。

【其他形式】

(1) term + be / be defined as + 表示类属的名词 + 现在(或过去)分词短语

e.g.

Mainframe computers are large computers occupying specially wired, air-conditioned rooms.
大型计算机是体积很大的计算机，需要安放在专门布线、装有空调的房间里。

(2) term + be / be defined as + 表示类属的名词 + used by sb (principally) for sth/doing sth

【翻译提示】一般译为 term 是...使用的..., (主要)用于...。

e.g.

Supercomputers **are** special, high-capacity computers used by very large organizations principally for research purposes.

超级计算机是超大型机构才使用的具有超高存储容量的专用的计算机，主要用于研究目的。

2. 定语从句的翻译

【基本形式】

限制性定语从句，非限制性定语从句。最常见的引导词是 that 和 which。此外还有介词+which 的形式。

【翻译提示】

(1) 如果定语从句比较短的话，直接把它放在修饰词的前面，在末尾加上“的”字即可。这样是最自然的译法。

e.g.

Central Processing Unit (CPU) is the component **that** actually executes instructions.

中央处理单元是实际执行指令的部件。

The numerical coding of the instruction tells the CPU which operation to perform and where the data **upon which** the operation is to take place is stored.

经过编码的指令告诉 CPU 应执行哪一种操作及作为操作对象的数据存储在什么地方。

(2) 如果定语从句较长的话，就必须把原句分为若干个短句，尤其是非限制性定语从句，应译为单独的一句。并在保持原意的基础上，使译文通畅。另外，有些限制性定语从句虽然不长，但译为一句却不通顺，因此也要进行断句。

e.g.

For example, every computer requires a bus **that** transmits data from one part of the computer to another.

例如，每台计算机都需要有总线把数据从计算机的某个部分传送到另一个部分。

In addition to these three types, there are also other types of printers such as LCD & LED, **which** similar to a laser printer but uses liquid crystals or light-emitting diodes rather than a laser to produce an image on the drum;

除了这三种打印机类型以外，还有其他打印机类型，如 LCD&LED——与激光式打印机相似，但使用液晶或发光二极管而不是激光在硒鼓上产生图像；

An audio amplifier drives a loudspeaker, **which** in turn produces sound waves.

音频放大器推动扬声器，从而使扬声器发出声音。

(3) “介词+which”的形式作为定语，译时可如第(1)种情况处理，也可适当添加词，以使译文通畅。

e.g.

The input device is the conduit *through which* data and instructions enter a computer.

输入设备是（使）数据及指令进入计算机的通道。

The standard ASCII code defines 128 character codes (from 0 to 127), *of which*, the first 32 are control codes (non-printable), and the other 96 are representable characters.

标准的 ASCII 编码定义了 128 个字符的编码（0 到 127），其中首 32 个是控制符（不可打印的），而其他 96 个是可表示出来的字符。

Exercises

1. Fill in the blanks with appropriate words or phrases.

- | | |
|---------------------------|------------------------------------|
| a. scientific calculation | b. data and information processing |
| c. generation | d. Game |
| e. data | f. Supercomputers |
| g. Personal computer | h. Mainframes |
| i. fifth-generation | j. fourth-generation |
| k. vacuum tube | l. transistor |
| m. Integrated Circuit | n. ENIAC |

(1) Computer is a machine that accepts and processes ____ into information under the control of a stored program.

(2) ____ are very large and expensive computers capable of supporting hundreds, or even thousands, of users simultaneously.

(3) ____ is a kind of semiconductor device with several transistors built into one physical component.

(4) Parallel computers are often used in the field of ____.

(5) ____, also called microcomputer, is a small, single-user computer based on a microprocessor.

(6) In governments and large corporations, computers usually are assigned tasks such as ____.

(7) Once used in most electronic devices, a ____ is a device generally used to amplify a signal.

(8) The first programmable electronic computer was the ____.

(9) ____ are often used in applications such as oil exploration and worldwide weather forecasting.

(10) Each ____ of computers is characterized by a major technological development that fundamentally changed the way computers operate.

(11) ____ is a family use of computers, it includes text-based adventure games and other interactive video games, etc.

(12) In the second generation of computers, the vacuum tube has been replaced by the much smaller and less expensive ____, a solid-state semiconductor device used for

amplification(放大)and switching(切换, 开关).

(13) The goal of ____ computers is to develop devices that respond to natural language input and are capable of learning and self-organization.

(14) In the ____, what in the first generation filled an entire room could now fit in the palm of the hand.

2. True or false:

(1) ____ A whole computer consists of hardware and software.

(2) ____ Workstations are more powerful than minicomputers.

(3) ____ The goal of fifth-generation computers is to develop devices that much smaller than ever before.

(4) ____ Parallel computers can increase the computing speed of computers.

(5) ____ Microcomputer is enough for daily application.

(6) ____ Minicomputer can easily do such work as oil exploration and worldwide weather forecasting.

(7) ____ The advantage of the very large scale integration (VLSI) over the large-scale integration (LSI) is that it can make computers smaller than before.

(8) ____ The heat generated by the vacuum tube or transistor has no damage to the components of computers.

(9) ____ The computers in the wash-machine is an example of process control applications.

(10) ____ Computers in the future might communicate with human being directly through voice.

3. Cloze test.

A computer is an electronic device that can automatically conduct(引导, 管理)accurate and fast data manipulation under the control of stored programs. Computer technology is the 1 of electronic technology and calculating technology. At its early years, computer was produced to do 2, but now it has been widely used in almost every field.

Microcomputer, minicomputer, mainframe computer, and supercomputer are four types of computer system. Microcomputer is the most common and familiar type to us. It can be a desktop model or 3 one. Microcomputers are widely used in offices, homes, schools, or companies. Minicomputer can support 2 to about 50 users at the same time and works much faster than microcomputer. They may be used to conduct accounting work or monitor a particular manufacture process. If you go to the airline, a bank, or a large insurance company, you may see a mainframe system. Mainframe computers offer 4 processing speed and greater storage capacity than minicomputer. They can support thousands of users, and their size can be either big or small. Supercomputers are 5 of the computer world. Their processing speed may be thousands of times faster than any other types of computers.

Since the first computer-like machine, named ENIAC, was produced in the 6 1940s, computer technology has evolved rapidly, undergoing(经历, 遭受)5 generations mainly based on the different electronic components adopted. Due to the primary 7 of the vacuum tubes, the

first generation of computers had the features of high cost and huge bulk. During the second generation of computers, a kind of new material, the 8, which is smaller and less expensive, was found to replace the vacuum tubes. It resulted in great decrease in the size and cost of computers, with operation speed increased greatly. Integrated Circuits, which are invented in late 1960s, caused the revolutionary evolution in hardware. It brought the computers into a new generation. Since then, scientists found way to put more and more transistors on a tiny 9 chip. In the fourth and fifth generations of computers, came the LSI, VLSI, and ULSI. They made the operating speed of computers reach millions or hundreds of millions times per second. In future computers, incredibly fast computer chips will be used, the computers will be able to do things which need 10 such as make decisions, understand everyday speech and voice recognition.

- (1) A. combination B. integration C. unite D. link
 (2) A. research B. process control
 C. family work D. scientific calculation
 (3) A. big B. portable (手持的)
 C. small D. huge
 (4) A. slower B. faster C. similar D. same
 (5) A. giants B. rareness
 C. scarcity D. homuncule (侏儒)
 (6) A. late B. mid C. early D. middle
 (7) A. advantage B. feature C. lack D. worse
 (8) A. circuit B. transistor C. tube D. electronic tube
 (9) A. electronic B. copper (铜)
 C. aluminum (铝) D. silicon
 (10) A. smart B. intelligence
 C. brightness D. cleverish

Reading Materials

The early history of computers

The history of computer starts out about 2000 years ago, at the birth of the abacus. Blaise Pascal, a French scientist, mathematician, and philosopher, is usually credited for building the first digital computer in 1642. It added numbers entered with dials and was made to help his father, a tax collector. In 1671, Gottfried Wilhelm von Leibniz invented a computer that was built in 1694. It could add, and, after changing some things around, multiply.

A lot of improved desktop calculators by many inventors followed the prototypes made by Pascal and Leibniz until a mathematics professor. Charles Babbage, worked out the principles of the modern digital computer. He conceived an automatic mechanical calculating machine, called Difference Engine, in 1820, and a fully program-controlled, automatic mechanical digital computer, called Analytical Engine, in 1833. The idea of the latter design showed a lot of foresight, although this couldn't be appreciated until a full century later.