



内附光盘

高等院校规划教材
计算机科学与技术系列

计算机专业英语

第2版

杨 嵘 主编



机械工业出版社
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全书共分 10 章,涉及了计算机主要知识领域的英文内容,具体包括计算机基础、计算机软硬件、计算机网络以及计算机的新发展等。

本书结构合理、内容丰富,每节专题都配有必要的内容和关键词注释,各章都配有一定数量的练习题、习题的参考答案和参考译文,并将相关的分类专业词汇、常用数学符号、英语中常用的前缀和后缀等知识分别融入到各章的学习中。在随书光盘中配有部分课文的原声朗读、教学课件以及针对各章的阅读材料。

本书选材新颖、活泼,将知识性、趣味性、实用性有机结合,既可作为大专院校计算机专业英语课程的教材,也可作为计算机专业学生、技术人员和相关专业人员的参考书籍。

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出版说明

计算机技术的发展极大地促进了现代科学技术的发展，明显地加快了社会发展的进程。因此，各国都非常重视计算机教育。

近年来，随着我国信息化建设的全面推进和高等教育的蓬勃发展，高等院校的计算机教育模式也在不断改革，计算机学科的课程体系和教学内容趋于更加科学和合理，计算机教材建设逐渐成熟。在“十五”期间，机械工业出版社组织出版了大量计算机教材，包括“21世纪高等院校计算机教材系列”、“21世纪重点大学规划教材”、“高等院校计算机科学与技术‘十五’规划教材”、“21世纪高等院校应用型规划教材”等，均取得了可喜成果，其中多个品种的教材被评为国家级、省部级的精品教材。

为了进一步满足计算机教育的需求，机械工业出版社策划开发了“高等院校规划教材”。这套教材是在总结我社以往计算机教材出版经验的基础上策划的，同时借鉴了其他出版社同类教材的优点，对我社已有的计算机教材资源进行整合，旨在大幅提高教材质量。我们邀请多所高校的计算机专家、教师及教务部门针对此次计算机教材建设进行了充分的研讨，达成了许多共识，并由此形成了“高等院校规划教材”的体系架构与编写原则，以保证本套教材与各高等院校的办学层次、学科设置和人才培养模式等相匹配，满足其计算机教学的需要。

本套教材包括计算机科学与技术、软件工程、网络工程、信息管理与信息系统、计算机应用技术以及计算机基础教育等系列。其中，计算机科学与技术系列、软件工程系列、网络工程系列和信息管理与信息系统系列是针对高校相应专业方向的课程设置而组织编写的，体系完整，讲解透彻；计算机应用技术系列是针对计算机应用类课程而组织编写的，着重培养学生利用计算机技术解决实际问题的能力；计算机基础教育系列是为大学公共基础课层面的计算机基础教学而设计的，采用通俗易懂的方法讲解计算机的基础理论、常用技术及应用。

本套教材的内容源自致力于教学与科研一线的骨干教师与资深专家的实践经验和研究成果，融合了先进的教学理念，涵盖了计算机领域的核心理论和最新的应用技术，真正在教材体系、内容和方法上做到了创新。同时本套教材根据实际需要配有电子教案、实验指导或多媒体光盘等教学资源，实现了教材的“立体化”建设。本套教材将随着计算机技术的进步和计算机应用领域的扩展而及时改版，并及时吸纳新兴课程和特色课程的教材。我们将努力把这套教材打造成为国家级或省部级精品教材，为高等院校的计算机教育提供更好的服务。

对于本套教材的组织出版工作，希望计算机教育界的专家和老师们能提出宝贵的意见和建议。衷心感谢计算机教育工作者和广大读者的支持与帮助！

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前 言

计算机的应用日趋普及，计算机的发展日新月异，能熟练地阅读相关英文文献、资料，对于从事计算机学科研究与开发的人员以及计算机应用人员来说都是非常重要的。本书旨在使读者熟悉基本的科技英语阅读技巧，掌握一定量的计算机专业词汇，最终具备以英语作为工具获取新知识的能力。

本书共 10 章，涉及了计算机基础、计算机软硬件、计算机网络以及计算机的新发展等内容。本书选材新颖活泼、语言浅显易懂，将知识性、趣味性、实用性有机结合，增强了课文的可读性，有助于激发读者的学习兴趣；本书内容丰富、选材合理、比较全面地覆盖了计算机专业常用词汇，较好地反映了计算机发展的动态。

书中每篇课文都配有必要的内容和关键词注释以及参考译文，各章都配有一定数量的练习题和习题的参考答案，既适合教学使用，又适合读者自学。同时将相关的分类专业词汇、常用数学符号、英语中常用前缀和后缀、科技英文文献的特点等知识也分别融入到各章的学习助手中，这些内容都将有助于提高学习者的词汇量及对科技英文文献的阅读能力。

本书是 2004 年出版的《计算机专业英语》的第 2 版。由于计算机技术飞速发展，新课题、新内容不断涌现，本书对原书一些章节进行了删改，增加了课后练习题的种类和数量，在学习助手中增加了科技英文阅读和翻译技巧等内容的介绍，并在随书光盘中配有部分课文的原声朗读、教学课件以及针对各章的阅读材料。

参与编写的各位教师都具有多年的教学经验，了解学生的实际需要，因此本书在编排上，吸取了国内许多计算机专业英语教材中的优点和长处，使教材设计得既适于教学使用、又适于学生自学。例如，提供参考译文，增加段落前的编号等，都是出于方便教学和学生使用的双重目的。

本书可作为大专院校学生学习计算机专业英语的教材，也可作为计算机及其相关专业人员学习计算机知识的参考书籍。

本书由杨嵘主编，其中杨嵘负责编写第 1、6~10 章，裴伟东负责编写第 2~5 章，李响负责教学课件的制作。

由于编者水平有限，书中的疏漏、不足与错误在所难免，敬请广大读者不吝赐教。

编 者

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Chapter 1 Introduction to Computer

Part A

1.1 Computer Components—What's in a PC?

- 1 **What's in a PC^[1]?** The essential components of a PC are the mainboard, processor and memory. The memory stores the computer program the processor is running and the data the program needs. The mainboard is the printed circuit board that the processor and memory is mounted on. It connects the processor and memory together. Let's look at these in more detail.
- 2 Remember, a computer can only work with numbers. The processor does all the calculations with the numbers, obeying the instructions in the computer program.
- 3 The memory consists of tiny circuits called a memory cell. Each circuit can store a zero or a one. To make a byte of memory, you need eight of these circuits. So when you buy a 128Meg memory strip (128 million bytes of memory), it contains $128,000,000 \times 8$ memory cells—that is, 1,000,000,000 memory cells. Yet a 128Meg memory strip is not much bigger than your finger!
- 4 A memory strip actually contains other circuitry as well. This circuitry allows the processor to select which memory cell it wants to get data from, or to store data into. The processor can jump directly from the first memory cell to the last, then to a cell in the middle, or to anywhere else to get or store data. That's why this kind of computer memory is called Random Access Memory, or RAM for short.
- 5 RAM needs electricity to be able to remember data. When you switch off your computer, all the data stored in RAM is lost. For this reason, computers need some kind of permanent storage. That's why computers have disk drives. Computer people call disk drives, magnetic tape, CD^[2]s, DVDs^[3] and so on secondary storage.
- 6 The mainboard (it used to be called the motherboard) connects all the components of the computer together. It has electrically conducting tracks which allows electricity to flow from one component to another—for example, from the processor to the RAM.
- 7 **Input, Process, Output** A computer takes some kind of input, processes it in some way, then outputs the result. For example, you scan a picture into your PC. This is the input. You then modify the graphic—you adjust the colour balance, the contrast and the brightness. This is the processing. Finally, you print the graphic. This is the output.
- 8 **Peripheral Devices** The heart of a computer is the mainboard, processor and RAM. However, you know that a computer has many other components too—the keyboard, the mouse, the screen, disk drives, sound card, graphics card and so on. These are called peripheral devices, or

peripherals for short. Computer people classify peripherals as being input devices, output devices or storage devices. Some peripherals can belong in two, or even all three categories—for example, a sound card can both input and output sound. A hard drive is a storage device, and it inputs and outputs data. A CD-ROM^[4] is a storage device, and can input data, but you can't store data onto it, so it's not an output device.

- 9 **Ports** A port, or seaport, is a place where cargo can be brought into a country or taken from it. That is, you import or export cargo at a port. In a computer, a port is a socket (usually on the back of the computer) which you plug a peripheral into. You can then input data from, or output data to, the peripheral. The ports you will usually find on every PC are the parallel port (for a printer), a serial port (for the mouse), a second serial port (for the modem), a keyboard port and a monitor (screen) port, which is attached to the graphics card. Examine a PC carefully so that you can recognize them. Another name for the parallel port is Line Printer Port (LPT1). Another name for the serial ports is Communication ports—COM1 and COM2.
- 10 The keyboard port is the only port that outputs power. This is because the keyboard actually has its own computer inside to process your keystrokes, and it needs a 5 volt power supply. Peripheral manufacturers have taken advantage of this by drawing power from the keyboard port to power their peripherals—examples are graphics tablets and video cameras. Be careful! The keyboard port was only designed to power the keyboard. If you daisy-chain too many peripherals to the keyboard port, you will overload it, burn out the port circuitry, and have to replace your mainboard! For safety, you should limit yourself to the keyboard and just ONE other device.
- 11 A computer may also have PS/2 ports for the keyboard and mouse. PS/2 is a port designed by IBM for their PS/2 range of computers in the 1980s. The computers have long gone to the scrapheap; only the PS/2 port has survived. These ports work better than the standard keyboard port and serial port for the mouse. If you have PS/2 ports for the keyboard and mouse, you must buy PS/2 keyboards and mice if you need to replace or upgrade your keyboard or mouse. In fact, Microsoft will no longer make serial port mice. All their new mice will be PS/2 only. Microsoft keyboards are already PS/2 only. If you want one, but have only a standard keyboard port, you can buy a PS/2 adaptor plug for your standard port.
- 12 A soundcard will have audio sockets for line in, mic in, line out, speaker out, and a joystick/MIDI^[5] port. It may also have an optical fibre based digital audio port.
- 13 The parallel port was originally developed for printers; it is the fastest port on the PC. For this reason, peripheral developers have also designed video cameras, scanners, ZIP drives and other devices to use the parallel port. The extra device daisy-chains with your printer, so that both peripherals share the same port. This can cause problems, especially with your printer. You can buy a plug-in card with a second parallel port to solve such problems. The cards cost about \$20. (I have set up a PC with three parallel ports—LPT1, LPT2 and LPT3. It was a struggle to get Win95 to recognise all three ports, but in the end, it all worked.) To obtain more speed, the parallel port circuitry on a modern computer mainboard has been enhanced. You can run the parallel port as a standard parallel port (original speed), an Enhanced Parallel Port (EPP), or an Extended Capability Port (ECP). These settings are changed in the

CMOS^[6] RAM.

- 14 Modern PCs will have two USB (Universal Serial Bus) ports. These are much faster than even the parallel port. You can plug the latest generation of USB peripherals into these. These include video cameras, digital cameras, scanners, mice and loudspeakers. More USB devices are being developed all the time. USB ports can supply power to the peripherals plugged into them, so the peripherals don't need a power point. USB ports are plug and play, and you can plug and unplug peripherals while the computer is running—that is, USB devices are hot swap-able. When you plug a peripheral in, the computer will recognize it immediately. No need to reboot! You can daisy-chain up to 255 peripherals on one USB port. USB runs at around 20 Mbps (roughly 2 megabytes per second). A new, faster version of USB is due out soon, which will run at 200 ~ 300 Mbps, which is fast enough for hard drives.
- 15 FireWire is an optical fibre port which is ultra-fast and used for transferring digital video to and from a PC and a digital video camera. You will find these on upmarket digital video capture cards. Firewire runs at up to 400 Mbps.
- 16 **Other Components** A special device in a computer usually isn't classified as a peripheral. This is the power supply. This converts the mains 240 Volt electricity into the voltages the computer circuitry needs—in today's PCs, 5 Volts and 12 Volts. The power supply is dangerous, so it is enclosed in its own box. Never open this box! If the power supply breaks down, buy a new one. The only thing to worry about is whether the power supply produces enough low voltage electricity to power all your peripherals. As a general rule, the bigger the computer case, the more powerful the power supply will be, because you can fit more peripherals into the case (When you buy a computer case, this always includes the power supply). A 300 to 400 Watt power supply should meet all your needs.
- 17 A computer will often have one or more cooling fans. You just need to make sure that they are working, and can spin freely. If they can't, your PC will overheat. Some components could be damaged and have to be replaced, and this could be expensive!
- 18 Connecting some of the peripherals to the mainboard will be electrical cables of various kinds. You just have to make sure that the right cable goes to the right place.
- 19 Other peripherals (for example, the graphics card) plug into the slots on the mainboard. A mainboard usually has three different kinds of slot—EISA^[7], PCI⁽⁸⁾ and AGP^[9].



Notes

- [1] PC: Personal Computer, 个人计算机。
- [2] CD: Compact Disc, 光盘。
- [3] DVD: Digital Video Disc, 数字化视频光盘。
- [4] CD-ROM: Compact Disc Read-Only Memory, 光盘只读存储器。
- [5] MIDI: Musical Instrument Data Interface, 乐器数字界面。
- [6] COMS: Complementary metal-oxide semiconductor, 互补金属氧化物半导体。
- [7] EISA: Extended Industry Standard Architecture, 扩展工业标准结构。
- [8] PCI: Peripheral Controller Interface, 外围控制器接口。

[9] AGP: Accelerated Graphics Port, 加速图形接口。



Key Words

add-on	附件
bit	二进制位, 比特
brightness	亮度
byte	字节
color balance	彩色平衡
conducting	导电的
contrast	对比度
cooling fan	冷却风扇
disk drive	磁盘驱动器
display screen	显示屏
electricity/ilek'trisəti/	电流
Enhanced Parallel Port (EPP)	增强型并行端口
graphic tablet	图形输入板
joystick/'dʒɔɪstɪk/	操作杆
keyboard	键盘
keystroke/'ki:stɹəuk/	键击
mainboard	主板
megabits per second (Mbps)	兆比特每秒
microphone (mic)	麦克风
monitor	监视器, 显示器
motherboard	主板
optical fibre	光纤
parallel port	并行端口
peripheral/pə'rifərəl/	外设, 外部设备
permanent/'pɜ:mənənt/	永久的
Plug and Play (PnP)	即插即用
plug into	把插头插入……
port	端口, 通信口
power supply	电源
printed circuit board	印刷电路板
processor	处理器
Random Access Memory (RAM)	随机存储器
Read Only Memory (ROM)	只读存储器
reboot	重新启动
resolution/,rezə'lu:ʃn/	分辨率
scanner	扫描仪

semiconductor/ˌsemikənˈdʌktə/	半导体
serial port	串行端口
slot	插槽
socket/ˈsɒkɪt/	插座, 插槽
sound card	声卡
speaker	扬声器
Universal Serial Bus(USB)	通用串行总线
volt/vɒlt/	伏特
watt/wɒt/	瓦特

1.2 CPU

- 1 The most common used phrase to specify a computer type is determined by its processor (Also known as CPU; Central Processing Unit). This chip takes care of all communication in the computer between the hardware and software. In every step you take, the processor is involved. This introduction will learn you more about this chip, its functions and the companies that produce them. Finally you will be updated with the latest information about modern computer types.
- 2 A CPU is a large chip inside the computer. It is settled at the computers motherboard, together with all other components (like sound cards, graphic cards, etc). Small electronic wires provide the communication between the processor and other hardware. Any movement will result in action from the processor. If you move the mouse, the processor makes sure the mouse is also moving on the screen, by contacting the graphic card and the monitor. If you start a program (like “Word”), the processor contacts the hard drive, which locates the program and loads it into active memory (known as RAM chips). As you see, there would be no communication if the processor weren't there!
- 3 There are various types of processors. New and faster types are released every year. Each processor type also has several different subtypes, referred with a number representing the speed. The higher this number, the faster the processor is able to communicate (and do mathematics). Nowadays we have a Pentium “450”. This number is also referred to as Megahertz (MHz).
- 4 There are several companies that produce these CPU chips. The most known (and oldest) is Intel^[1]. This company created the “8086” processor in 1981. All Pentium class processors still are compatible with this chip. After the introduction of the “Pentium” in 1993, a successor was released in 1997, called the “Pentium II” (also known as the sixth generation of x86; the 686). Every new type has more advanced features and new capabilities. And upon that, more power!
- 5 Another company that produces processors is AMD^[2] (Advanced Micro Devices). This company started producing x86 compatible processors in the early nineties. These CPUs have a different name (as the name “Pentium” is owned by Intel) such as K5 and K6. Other processor manufacturers are Cyrix^[3] (6x86MX, M II), Centaur (WinChip) and Rise (mP6). There are also other computer systems, with other CPU producers, like the G3 (in Apple PowerPC) and Alpha (in high-end server stations).

- 6 As each individual producer has its own design, the processor is also different on the outside. Mostly a CPU processor is quadrangle (a square) and is connected with its bottom to the motherboard. Since 1997 there is another technique that places the processor on a card, that is horizontally connected to the motherboard. This is very similar with the way graphic cards and sound cards are connected. More CPU types in this form probably will be released in the future, as other chips can be added to this card.
- 7 While using your computer, all active programs (like documents, spreadsheets, games) are stored in active memory (RAM). The more RAM you have, more and more programs can be used synchronically. Little actions that have to be handled quickly (like mathematic procedures or just like starting a file) are handled by cache RAM. These are memory chips that have less space but are very fast. Such instructions are first dispatched to cache memory before going to the regular RAM. It has been proved that this form of handling improves performance quite a bit.
- 8 Figure 1-1 shows the communication between the heart of the processor (Kernel) to the active memory.

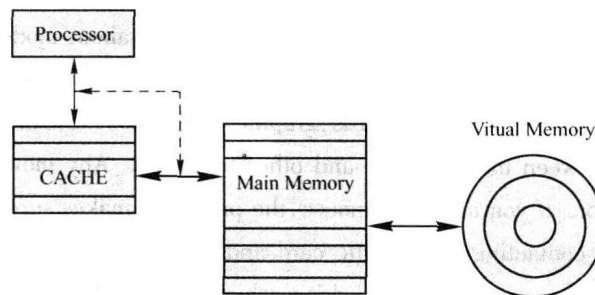


Figure 1-1 Communication Between The Processor And Memory

- 9 Short instructions are sent to the first level of cache memory, also referred to as "Level 1". This L1 cache is inside the CPU chip itself, making it as fast as possible. More extended instructions are executed in the second level of cache that usually has more kilobytes (Kb) of memory. This works at half the speed of the L1 cache.
- 10 Finally everything will be stored in active memory. It will stay there as long as the power of the computer is on or when a certain program is terminated. Even as there is various type of RAM (EDO-RAM, SDRAM) it is still slower than cache. But it does not really matter because it is mainly used to store active applications (and cache is for executions).
- 11 If you buy a new computer system, the CPU type does only slightly matter. All CPUs are compatible, have MMX (multimedia) instructions, are quite fast (300 MHz and above) and are capable of current software requirements. If you require a standard computer any type will do. Only if you desire a special configuration, like using 3D rendering programs, the latest games you should select the type that is specialized in that need.
- 12 More and more new processor generations integrate other computer hardware. Like the cache, that was added inside the chip. There are also CPUs with integrated sound cards and