高职高专计算机系列教材
Gaozhi Gaozhuan Jisuanji Xilie Jiaocai

计算机英语

程　刚　主编
程　刚　余国良　李学斌
黄翠兰　李小海　宋加涛　编

高等教育出版社
HIGHER EDUCATION PRESS

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内容提要

《计算机英语》按照“广、浅、用、新”原则，主要介绍了有关计算机软硬件的基础知识；结合计算机专业基础课程和专业课程教学，选取了计算机科技文献、硬件产品说明书、应用软件的帮助文件等；介绍了计算机发展的现状和趋势。教学重点是扩大学生的计算机专业英文词汇和术语，使学生掌握计算机应用中常用英文提示信息的阅读理解和正确运用，并学会从产品说明书、应用软件的帮助文件以及从 Internet 上获得硬件或软件应用方法，使学生提高计算机科技文献的阅读理解水平并掌握初步的翻译技巧，为进一步学习计算机知识打下基础。

本教材适合作为高职高专院校计算机及相关专业的英语教材，也可作为广大计算机应用技术人员和其他专业人员的参考用书。

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前　　言

计算机技术的飞速发展使计算机的应用更加广泛和普及，计算机应用的普及又促进了计算机技术的发展，这对计算机学科的教材建设提出了更高的要求。高等职业教育要面向市场经济建设，培养第一线工程技术专业人员，而计算机高职层次教材短缺，已经成为高等职业教育发展的主要问题之一。全国高职院校计算机教材建设协作组于 1998 年开始组织编写计算机高等职业教育系列教材，得到了高等教育出版社的大力支持和热情指导。《计算机英语》由宁波高等专科学校牵头组织编写，厦门鹭江大学、天津职业大学和运城高等专科学校参加了编写。

计算机英语是计算机应用专业的一门重要工具课，本书力求反映当前计算机软硬件发展的形势和应用现状，尽量选用计算机应用中较新的计算机专业词汇和文章。介绍有益于学生今后工作、学习的实用性知识，强调计算机屏幕英语的应用，使学生掌握软硬件常用说明书的阅读理解。本书充分考虑高职学生的实际情况，起点低、要求适中，尽可能深入浅出并系统地介绍科技英语中常见的语法，突出重点和难点，词汇不局限在计算机领域，同时也为学生今后的拓展打下良好基础。

本书分 14 单元，分别介绍计算机基本组成、程序设计语言、操作系统、数据结构、办公自动化、输入输出接口、数据库管理系统、软件工具、计算机安装调式、计算机病毒、计算机网络、计算机图像处理软件、多媒体技术和计算机系统安全性。各个单元的内容包括：一篇主修文章、词汇表、语法知识、练习和 1~2 篇阅读资料。

本书由程刚主编，第一、二、三课由李学斌编写，第四、八课由黄翠兰编写，第五、十、十二、十四课由宋加涛编写，第六、九课由李小海编写，第七、十一、十三课由程刚编写，所有语法知识内容由余国良编写，全书由程刚标注音标、统稿。宁波高专的吴国良教授审阅了全书手稿，提出了许多宝贵的意见。多所高职院校的教师对本书的编写提出了许多宝贵的意见，编者在此对在本书编写和出版过程中给予支持的同仁表示衷心的感谢。

由于时间短促、编者水平和经验有限，难免会有错误和不足之处，望读者和专家指正。

编者

2000 年 3 月

目　　录

Lesson 1

PC Concept……1

Words & Expressions……3

Grammar 科技英语词汇及句法特点……4

Exercises……5

Reading Material 1　CPU Chips……6

Reading Material 2　Memory Introduction……8

Lesson 2

Programming Languages……11

Words & Expressions……12

Grammar 科技英语词汇中一些常用的词缀……13

Exercises……15

Reading Material 1　Turbo C Readme File (Extract)……16

Reading Material 2　Object-oriented　Programming……17

Lesson 3

The Operating System……20

Words & Expressions……21

Grammar 不定式(一)……23

Exercises……24

Reading Material 1　MS DOS……25

Reading Material 2　Windows 95……27

Lesson 4

Data Structure: Stacks, Queues and Linked Lists……30

Words & Expressions……33

Grammar 不定式（二）……34

Exercises……35

Reading Material 1　The Array Type……37

Reading Material 2　Trees……38

Lesson 5

Office Automation……41

Words & Expressions……43

Grammar 不定式（三）……44

Exercises……45

Reading Material The Microsoft Office Word Processor......46
Lesson 6
Understanding SCSI Device......50
Words & Expressions......54
Grammar 分词（一）......54
Exercises......55
Reading Material Mouse......56
Lesson 7
Database Management System......60
Words & Expressions......62
Grammar 分词（二）......63
Exercises......65
Reading Material 1 Access 2000......66
Reading Material 2 Creating for the Web with FrontPage 2000......68
Lesson 8
Software Tools: WinBench, Winzip , Ghost......71
Words & Expressions......73
Grammar 动名词......74
Exercises......75
Reading Material 1 WinBench: Minimum Requirements and WinBench 99's Enhancement......77
Reading Material 2 Compression Software：WinRAR......78
Lesson 9
Introduction PII-100B Processor......80
Words & Expressions......81
Grammar 被动语态......82
Exercises......84
Reading Material MachOne EV1935 — PCI Sound Card Configuration and Hardware User Manual......85
Lesson 10
Computer Viruses......90
Words & Expressions......92
Grammar as 的用法及汉译(一)......93
Exercises......94
Reading Material What's New in McAfee VirusScan v4.0.2 for Windows 95 and Windows 98......96
Lesson 11
Computer Network......99
Words & Expressions......101

Grammar as 的用法及汉译(二)……103
Exercises……105
Reading Material 1　How to Search the Internet?……107
Reading Material 2　All about E-mail……109

Lesson 12

Adobe Photoshop 5.0……112
Words & Expressions……114
Grammar 科技英语翻译方法举要(一)……114
Exercises……117
Reading Material　How to Use AutoCAD Release 14……118

Lesson 13

Multimedia……121
Words & Expressions……122
Grammar 科技英语翻译方法举要(二)……123
Exercises……124
Reading Material　Multimedia on the Web……125

Lesson 14

Internet Security……129
Words & Expressions……131
Grammar 科技英语翻译方法举要(三)……132
Exercises……134
Reading Material WinGate……136

附录 1　总词汇表……138
附录 2　参考译文……153
附录 3　练习参考答案……173

Lesson 1　PC Concept

Personal computer systems not only come in a variety of shapes, sizes, and colors, but, most importantly, they provide a wide range of options. Depending on the peripherals that the user installs, a PC can be used to run a business; to do homework; to help a corporation with its business needs; to collect data; to create graphics, etc.

Although PCs have many different functions, they all essentially work in the same way. This is because what they are really doing is processing and moving data at increasing faster speeds.

Figure 1.1 shows a simplified but formal structure of a PC system. It includes four logical blocks: CPU, Input, Output, and Memory. The communication path called system bus organizes these blocks around.

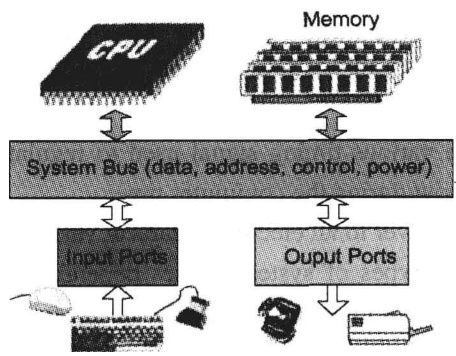

Figure　1.1

Input Port: Is a conduit used for transferring data into the computer from the input devices, such as the keyboard, mouse, scanner, to the system bus.

CPU: The Central Processing Unit, sometimes called the microprocessor or simply the processor. The CPU is the "brain" of the computer system. It accepts data from input devices, processes data as instructed and sends to output port.　Megahertz (MHz) is a measure of the clock speed of the CPU, a CPU with 200 MHz means that the CPU clock ticks 200 million cycles (or 200 MegaCycles) per second.

Output Port: Accepts data from the CPU and converted it into a recognizable format. The output port connects output devices such as a printer, monitor, or speakers.

Memory: This is where the computer stores not only programs that can be executed when required, but also stores data. Computer memory is organized into various memory locations. Each location is identified by an address. Normally the size of each memory location is measured in bytes, or 8 bits of data which equals a byte, translating to about one character of memory space.

System Bus: The main purpose of the system bus is to move data around, like street built to move traffic quickly and efficiently. The streets link address to address, and provide traffic lights to regulate the traffic. The same idea applies to the PC system bus which links PC logical blocks, i.e. input ports, output ports, memory, and the CPU. It is made up of a number of parallel conductors, which can be broken down into four bus categories:

Data Bus: Carries data, all data passes through this bus whether it is going to or from memory or through input/output devices. The data bus consists of a number of bi-directional conductors. Each conductor represents binary digits (either 0 or 1). These binary digits are called bits. The data bus can be an 8 bit-bus, 16 bit-bus, 32 bit-bus, 64 bit-bus or more. This is known as the data bus bandwidth, and deals with the amount of data that the computer can handle at any one time. Obviously, a 64-bit bus handles considerably more data than an 8-bit bus does per any instant time.

Address Bus : Locates data stores in the memory, input port, or output port. The location of a particular byte of program/data in memory is called an address. The address is transmitted to the memory through a set of parallel wires called an address bus. A 16-bit address bus can locate 64K (2^{16}) or 65 536 memory locations. A 32-bit address bus can locate 4 Gigas (2^{32}) of different memory locations.

Control Bus : Carries the various timing signal used to regulate and sequence operations, like traffic signals regulate traffic flow during the commuter time.

Power Bus : Provides DC power to all electronic parts at various voltage levels.

There are several different types of systems buses depending on what they are connected to. They include the memory bus which connects the CPU to the memory. The PCI buses and ISA buses are used to connect the CPU to input ports and/or output ports. The PCI and ISA buses are designed into the motherboard as expansion slots. A motherboard is a printed-circuit board (PCB) with system buses, and some edge connectors, known as expansion slots, are built into the PCB.

Normally the speed of the memory bus is a ratio of the CPU speed. This ratio is referred to as the clock ratio, or CPU to bus frequency ratio. For example, the Pentium CPU 200 MHz has a memory bus that run at 66 MHz — the clock ratio is 3.

You have probably figured out that the computers' capability lies in the speed at which the data is being processed and moved around through the system bus. It is measured as the data transfer rate. Theoretically, system memory bus with a speed of 66 MHz and a 64-bit data bus bandwidth can move 528 megabytes (MB) of data per second maximum (66 megacycle/sec × 64 bits × 1 byte/8 bits = 528 MB/sec).

Words & Expressions

bandwidth['bændwɪtθ]	*n.*	带宽
bi-directional[bi-dɪ'rekʃən(ə)l]	*a.*	双向的
bit[bɪt]	*n.*	二进制位，比特
break down		破坏；中断
bus[bʌs]	*n.*	总线
byte[baɪt]	*n.*	字节，8 位元组
category['kætɪgərɪ]	*n.*	种类；类型
character['kærɪktə(r)]	*n.*	字符；特性
conductor[kən'dʌktə(r)]	*n.*	导体
conduit['kɔndɪt; (*US*) 'kɑndwɪt]	*n.*	管道；导管；水管
corporation[kɔːpə'reɪʃ(ə)n]	*n.*	社团；法人；股份有限公司
CPU（Central Processing Unit）		中央处理器
deal with		处理；关于；有关
execute['eksɪkjuːt]	*v.*	执行；履行；运行
expansion slot		扩展槽
figure out		算出；想出；理解
format['fɔːmæt]	*n.*	格式
	v.	格式化(磁盘)
graphic['græfɪk]	*a.*	绘画的；图解的
	n.	(pl.) 图表；文字
input['ɪnput]	*n.*	输入
install[ɪn'stɔːl]	*v.*	安装；设置；任命
instruct[ɪn'strʌkt]	*v.*	命令；通知；指示
instruction[ɪn'strʌkʃ(ə)n]	*n.*	用法说明(书)；指令；指导
keyboard['kiːbɔːd]	*n.*	键盘
locate[ləu'keɪt; (*US*) 'ləukeɪt]	*v.*	定位，位于
location[ləu'keɪʃ(ə)n]	*n.*	场所，定位
logical['lɔdʒɪk(ə)l]	*a.*	逻辑的
maximum['mæksɪməm]	*n.*	最大限度；最大数
megahertz['megəhɜːts]	*n.*	兆赫兹(MHz)
memory['memərɪ]	*n.*	记忆；存储器（尤指内存）
microprocessor[maɪkrəu'prəusesə(r)]	*n.*	微处理器
monitor['mɔnɪtə(r)]	*n.*	监视器
	v.	监听；监视
motherboard['mʌðəbɔːd]	*n.*	底板；母板；主板

mouse[maus]	*n.*	鼠标器
output['autput]	*n.*	输出
parallel['pærəlel]	*a.*	并行的
PC (Personal Computer)		个人计算机
peripheral[pə'rifər(ə)l]	*a.*	外围的
	n.	外围设备
port [pɔ:t]	*n.*	端口；港口
printer['prɪntə(r)]	*n.*	打印机；印刷机
processor['prəusesə(r)]	*n.*	处理机；处理器
recognizable['rekəgnaɪzəb(ə)l]	*a.*	可认识的，可辨认的
scanner['skænə(r)]	*n.*	扫描器；扫描仪
sequence['si:kwəns]	*n.*	序列，排序
serial['sɪərɪəl]	*a.*	串行的；顺次的；连续的
slot[slɔt]	*n.*	槽；狭孔
speaker['spi:kə(r)]	*n.*	扬声器，喇叭
tick[tɪk]	*n.*	滴答声，记号
	v.	滴答地响，标以记号
voltage['vəultɪdʒ]	*n.*	电压

Grammar 科技英语词汇及句法特点

一、科技英语词汇有 7 个特点：

1. 专业性强

同一个普通词在不同专业中词义迥异。在翻译波音 737 服务通报时，碰到一个词 observer，词典上有观察员、观测员、侦察员、见证人、评论员、观测仪等词义，若懂专业知识，则会译成“观测员”。

同一专业中，不同的词搭配，其词义也不同。如：line 线，line driver 总线驱动器，assembly line 流水线，line of business 业务范围，party line 共用电话线。

2. 动词词义专一

科技英语中常用“确切”、“正规”的单个动词代替普通英语中的短语动词，如：reciprocate 往复运动，相当于 move backwards and forwards in a straight line。

3. 再生新词多

词的前后缀、缩写及复合都是再生新词的主要方法。

科技英语中有大量的再生词缀，如：auto-，hydro-等前缀；医学科技英语中也不乏其例，如：CT 即 Computerized Tomography （计算机横断层摄影术）中的-graphy （…摄影术），及 -oma（…瘤）等后缀。

英语科技文章中缩略词比比皆是，如：

VCD 即 Video Compact Disc 视盘、影碟。

CAD 即 Computer-Aided Design 计算机辅助设计。此外还有像 e.g.（例如），i.e.（即），vs.（与…相对）这样的缩略词。

复合词形式很多，有复合名词，如：higher-than-average 高于平均值；复合动词如：shortcircuit 使…短路；复合形容词如：shock-observer 减震器，等等。

4. 希腊、拉丁词素多

科技英语词汇 46%源于拉丁语，7.2%源于希腊语。如：antenna（天线）、thesis（论文）、symposium（专题讨论会）等等。

5. 名词群增多

名词群，即用一个以上的名词作定语修饰名词，在科技文章中与汉语语序相似，其发展趋于流行。如：

数字通信系统直接译成：digit communication system。

6. “旧”词“新”义多

这里，“旧词”是指常用的普通词。如：

baby 婴儿 - 小型物（baby car 是微型汽车，不是婴儿车）

go 走 - 一切正常（All system is go 系统情况良好）

7. 反义词多

英语科技文章要反映矛盾世界中的矛盾现象，必然用到大量反义词，如：positive-negative（正 - 负）；removal-installation（拆 - 装），等，还出现很多带有 anti-、de-、non-等否定词缀的反义词。

二、英语科技文章在句子结构上的特点可归纳为“八多”：

1. 陈述句多（其中主系表结构占较大比重）
2. 祈使句多（科技文章可操作性强，有时无需指明主语）
3. 复合句多（并列关系、多种主从关系和非谓语动词构成的长句多）
4. 虚拟语气多（因科技文章中常涉及各种条件）
5. 被动语态多（主动语态也有渐增趋势）
6. 三种基本时态多（即一般现在时、一般过去时、现在完成时多）
7. As 引出的句式多（如：as shown in figure 2, as stated above 等）
8. “It be + 形容词或分词+ that…”句型多

此外，非语言符号系统（公式、符号、图形、表格等）具有简明、形象、直观的特点，承担着语言符号的信息功能，在科技文章中也得到了广泛的运用。

Exercises

一、判断下列叙述是否正确

1. PC systems differ with each other only in shapes, sizes and colors.
2. PC can be used to do homework.

3. PCs made by different companies work in different ways.
4. Keyboards and monitors are input devises, printers are output devises.
5. System bus is the brain of the computer system.
6. Normally the size of each memory location is measured in bits.
7. A byte can hold a character.
8. Data can be transmitted through the address bus when the data bus is too busy.
9. A 8-bit address bus can locate 256 memory locations.
10. A motherboard is a printed-circuit board with system buses.

二、单项选择

1. The keyboard is a(n) ____ of a computer.
   A. conduit　　B. instruction
   C. peripheral　　D. location
2. The ____ is not one of a PC's logical blocks.
   A. CPU　　B. memory
   C. input　　D. bus
3. A ____ is not an input device.
   A. mouse　　B. monitor
   C. keyboard　　D. scanner
4. The ____ buses are used to connect the CPU to input ports and/or output ports.
   A. PCB　　B. address
   C. PCI　　D. power
5. The ISA buses are designed into the ____.
   A. motherboard　　B. slot
   C. conductor　　D. byte

Reading Material 1

CPU Chips

The 8086, 80286(1982), 80386(1985), 80486(1989) all were Intel's successful products. The Pentium was the name Intel gave the 80586 version because it could not legally protect the name "586" to prevent other companies from using it — and in fact, the Pentium compatible CPU from NexGen is called the Nx586 (early 1995). Due to its popularity, the 80x86 line has been the most widely cloned processors, from the NEC V20/V30 (slightly faster clones of the 8088/8086 (could also run 8085 code)), AMD and Cyrix clones of the 80386 and 80486, to versions of the Pentium within less than two years of its introduction.

MMX (initially reported as MultiMedia eXtension, but later said by Intel to mean Matrix Math eXtension) is very similar to the earlier SPARC VIS or HP-PA MAX, or later MIPS MDMX instructions — they perform integer operations on vectors of 8, 16, or 32 bit words, using the 80 bit FPU stack elements as eight 64 bit registers (switching between FPU and MMX modes as needed — it's very difficult to use them as a stack and as MMX registers at the same time). The P55C Pentium version (January 1997) is the first Intel CPU to include MMX instructions, followed by the AMD K6, and Pentium II. Cyrix also added these instructions in its M2 CPU (6x86M M X, June 1997), as well as IDT with its C6.

Interestingly, the old architecture is such a barrier to improvements that most of the Pentium compatible CPUs (NexGen Nx586/Nx686, AMD K5, IDT-C6), and even the "Pentium Pro" (Pentium's successor, late 1995) don't clone the Pentium, but emulate it with specialized hardware decoders like those introduced in the National Semiconductor Swordfish, which convert Pentium instructions to RISC-like instructions which are executed on specially designed superscalar RISC-style cores faster than the Pentium itself. Intel also used BiCMOS in the Pentium and Pentium Pro to achieve clock rates competitive with CMOS load-store processors (the Pentium P55C (early 1997) version is a pure CMOS design).

The Cyrix 6x86 (early 1996), initially manufactured by IBM before Cyrix merged with National Semiconductor, still directly executes 80x86 instructions in two pipelines, but partly out of order, making it faster than a Pentium. Cyrix also sells an integrated version with graphics and audio on-chip called the MediaGX. MMX instructions were added to the 6x86MX, and 3-D graphics instructions to the 6x86MXi.

The Pentium Pro (code named "P6") is a 1 or 2-chip (CPU plus 256 KB or 512 KB L2 cache - I/D L1 cache (8 KB each) is on the CPU), 14-stage superpipelined processor. The Pentium II (April 1997) version of the Pentium Pro added MMX instructions, doubled cache to 32 KB, and was packaged in a processor card instead of an IC package.

The AMD K5 translates 80x86 code to ROPs (RISC OPerations), which execute on a RISC-style core based on the superscalar AMD 29KB. Up to four ROPs can be dispatched to six units (two integer, one FPU, two load/store, one branch unit), and five can be retired at a time. The complexity led to low clock speeds for the K5, prompting AMD to buy NexGen and integrate its designs for the next generation K6.

The NexGen/AMD Nx586 (early 1995) is unique by being able to execute its micro-ops (called RISC86 code) directly, allowing optimised RISC86 programs to be written which are faster than an equivalent x86 program would be, but this feature is seldom used. It also features two 16K I/D L1 caches, a dedicated L2 cache bus (like that in the Pentium Pro 2-chip module) and an off-chip FPU (either separate chip, or later as in 2-chip module).

The Nx586 successor, the K6 (April 1997) actually has three caches — 32 KB each for data and instructions, and a half-size 16 KB cache containing instruction decode information. It also brings the FPU on-chip and eliminates the dedicated cache bus of the Nx586, allowing it to be pin-compatible with the P54C model Pentium. Another decoder is added (two complex decoders, compared to the Pentium Pro's one complex and two simple decoders) producing up to four micro-ops and issuing up to six (to seven units — load, store, complex/simple integer, FPU, branch, multimedia) and retiring four per cycle. It includes MMX instructions, licensed from Intel, and AMD has designed and added 3DNow! graphics extensions without waiting for Intel's 3D MMX extensions.

Intel, with partner Hewlett-Packard, has begun development of a next generation 64-bit processor (code named Merced or IA-64). It is expected to be a variable length instruction group (VLIG or what HP/Intel call EPIC (Explicit Parallel Instruction Computing)) with instruction dependencies grouped from 1 to 9+, in 128 bit bundles of three instructions plus three "template bits" which indicate dependancies. Most instructions are predicated, a design very similar to the TI 320C6x DSP, but with 128 general 64-bit and 128 floating point registers, and 64 predicate bits (a type of condition code).

***Questions*:**

1. Whose product is the 8086 ?
2. Why did Intel name the 80586 Pentium ?
3. What does MMX mean ?
4. Which type of CPU uses MMX instructions first ?
5. Does Pentium II use MMX instructions ?

Reading Material 2

Memory Introduction

These days no matter how much memory your computer has it never seems quite enough. Not long ago, it was unheard of for a personal computer, or PC, to have more than 1 or 2 MB of memory. Today, you need at least 4 MB of memory just to boot up a system; using more than one application at a time requires at least 16 MB, and maximum performance today calls for 32~64 MB or more.

To get an idea of how much things have changed over the last decade, an excerpt from inside the IBM PC, written by Peter Norton in 1983, describes the merits of IBM's new XT computer:

> "So IBM has equipped all XTs with what it considers to be the minimum gear for a serious personal computer. Now the 10-MB disk and the 128KB (one eighth of a MB) of memory are naturals for a serious machine."

For some, the memory equation is simple: more is good; less is bad.

However, for those who want to know more, this reference guide provides a general overview of what memory is and how it works.

What is memory?

People in the computer industry commonly use the term memory to refer to Random Access Memory, or RAM. A computer uses RAM to hold temporary instructions and data needed to complete tasks. This enables the computer's Central Processing Unit, or CPU, to access instructions and data stored in memory very quickly.

A good example of this is when the CPU loads an application program — such as a word processor or page layout program — into memory, thereby allowing the application program to run as quickly as possible. In practical terms, this means you can get more work done with less time spent waiting for the computer to perform tasks.

When you enter a command from the keyboard, it calls for data to be copied from a storage device (such as a hard disk drive or CD-ROM drive) into memory, which can provide data to the CPU more quickly than storage devices.

This "putting things the CPU needs in a place where it can get at them more quickly" process is similar to placing various electronic files and documents you're using on the computer into a single file folder or directory. By doing so, you keep them handy and avoid searching in several places every time you need those documents.

The difference between memory and storage

People often confuse the terms memory and storage, especially when describing the amount they have of each. The term memory refers to the amount of RAM installed in the computer, whereas the term storage refers to the available amount of hard disk capacity.

To clarify this common mix-up, it helps to compare your computer to an office that contains a work table and a set of file cabinets. The file cabinets represent the computer's hard disk, which provides high-capacity storage. The work table represents memory, which offers quick and easy access to the files you're working on at the moment.

Another important difference between memory and storage is that the information stored on a hard disk remains intact even when the computer is turned off. However, any data held in memory is cleared when the computer is turned off. (It's like saying that any files left on the work table at closing time will be thrown away.)

It's important to save frequently while working on a computer. The computer memory holds any changes you make to a document until you save the changes to a disk. If anything interrupts the computer's operation — such as a power outage or system error — any changes made, but not saved, will be lost.

How much memory is enough?

The right amount of memory varies according to the type of work you do and the type of software applications you're using. Today's word processing and spreadsheet work requires as little as 12 MB. However, systems equipped with 32 MB have become the low-end assumption by software and operating system developers. Systems used for graphic arts, publishing, and multimedia call for at least 64 MB of memory and it's common for such systems to have 128 MB or more.

Perhaps you already know what it's like to work on a system that doesn't have quite enough memory. Things run a little more slowly at times, memory errors can occur more frequently, and sometimes you can't launch an application or a file without first closing or quitting another. On a system with sufficient memory, however, you can do multiple tasks at once — such as printing one document while working on another — and you can keep multiple applications open simultaneously.

What memory looks like?

The Integrated Circuits, or ICs, that make up your computer's memory configuration are referred to as Dynamic Random Access Memory, or DRAM. DRAM is by far the most common type of memory chip. The quality of DRAM chips used in a memory module is the most important component in determining the overall quality and reliability of the module.

A common memory product is the Single In-line Memory Module, or SIMM. As you can see inside your computer, a typical SIMM consists of a number of DRAM chips on a small Printed Circuit Board, or PCB, which fits into a SIMM socket on a computer's system board.

Questions:

1. How much memory at least do you need today when using more than one application at a time ?
2. What do computer professionals commonly use the term memory to refer to ?
3. What is the difference between memory and storage ?
4. What will happen on a system that doesn't have quite enough memory ?
5. What does DRAM mean ?