教育部高职高专规划教材

高职高专现代信息技术系列教材

计算机英语教程
（第二版）

司爱侠　张强华　编

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内 容 提 要

本书为高职高专计算机相关专业的英语教材。所选内容软件、硬件和网络并重，同时兼顾发展热点。书中提供了适当的开放性练习，以培养学生的创造性学习能力。

本书体例上以 Unit **为单位，每一** Unit **由以下几部分组成：课文——这些课文选材广泛、风格多样、切合实际；单词——给出课文中出现的新词，读者由此可以积累计算机专业的基本词汇；词组——给出课文中的常用词组；缩略语——给出课文中出现的、业内人士必须掌握的缩略语；难句讲解——讲解课文中出现的疑难句子，培养读者的阅读理解能力；习题——既有针对课文的练习，也有一些开放性的练习；阅读材料——进一步扩大读者的视野。**

本书旨在切实提高读者实际使用计算机英语的能力，帮助读者学到目前最常用的、最新的计算机专业英语知识。

本书作为高等专科院校、高等职业院校的专业英语教材，也可供优秀的中等专科学校和职业高中选用。

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- **编　　司爱侠　张强华**
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丛 书 前 言

近年来我国十分重视高等职业教育，把高等职业教育作为高等教育的重要组成部分，并以法律形式加以约束与保证。高等职业教育由此进入了蓬勃发展时期，驶入了高速发展的快车道。

高等职业教育有其自身的特点。正如教育部“面向 21 世纪教育振兴行动计划”所指出的那样，“高等职业教育必须面向地区经济建设和社会发展，适应就业市场的实际需要，培养生产、管理、服务第一线需要的实用人才，真正办出特色。”因此，不能以本科压缩和变形的形式组织高等职业教育，必须按照高等职业教育的自身规律组织教学体系。为此，我们根据高等职业教育的特点及社会对教材的普遍需求，组织高等职业学校有丰富教学经验的老师，编写了这套《高职高专现代信息技术系列教材》。本套书已纳入教育部高职高专规划教材。

本套教材充分考虑了高等职业教育的培养目标、教学现状和发展方向，在编写中突出了实用性。本套教材重点讲述目前在信息技术行业实践中不可缺少的、广泛使用的、从业人员必须掌握的实用技术。即便是必要的理论基础，也从实用的角度、结合具体实践加以讲述。大量具体操作步骤、许多实践应用技巧、接近实际的实训材料保证了本套教材的实用性。

在本套教材编写大纲的制定过程中，广泛收集了高等职业学院的教学计划，调研了多个省市高等职业教育的实际，反复讨论和修改，使得编写大纲能最大限度地符合我国高等职业教育的要求，切合高等职业教育实际。

在选择作者时，我们特意挑选了在高等职业教育一线的优秀骨干教师。他们熟悉高等职业教育的教学实际，并有多年的教学经验；其中许多是“双师型”教师，既是教授、副教授，同时又是高级工程师、认证高级设计师；他们既有坚实的理论知识，很强的实践能力，又有较多的写作经验及较好的文字水平。

目前我国许多行业开始实行劳动准入制度和职业资格制度，为此，本套教材也兼顾了一些证书考试（如计算机等级考试），并提供了一些具有较强针对性的训练题目。

对于本套教材我们将提供教学支持（如提供电子教案等），同时注意收集本套教材的使用情况，不断修改和完善。

本套教材是高等职业学院、高等技术学院、高等专科学院教材。适用于信息技术的相关专业，如计算机应用、计算机网络、信息管理、电子商务、计算机科学技术、会计电算化等。也可供优秀职高学校选作教材。对于那些要提高自己应用技能或参加一些证书考试的读者，本套教材也不失为一套较好的参考书。

最后，恳请广大读者将本套教材的使用情况及各种意见、建议及时反馈给我们，以便我们在今后的工作中，不断改进和完善。

编 者 的 话

计算机行业是当今发展最快的领域之一，其极高的发展速度要求从业人员必须快速掌握最新技术，因此，对计算机从业人员的英语能力要求更高。英语水平已经成为决定工作能力的因素之一。要提高专业英语水平，就必须进行针对性的专门学习。本书的目的就在于切实提高读者实际使用计算机英语的能力。

本书具有突出的实用性，选材新颖，包括大量实用的内容，让读者可以学习到目前最常用的、最新的计算机专业英语知识，以便学以致用。

本书内容比较全面，软件、硬件和网络并重，同时兼顾发展热点。

本书遵循“ E-learn ”教学理念，有适当的开放性练习，以培养学生的创造性学习能力，提高学生素质。

本书作者已经出版了 5 部计算机英语教材（其中两部获奖），有 10 年的相关教学经验。作为专门为高等职业学校编写的教材，本书充分考虑了高等职业教育的特点、学生情况、学生毕业后的就业环境、未来工作的实际要求等因素，相信教师和学生在使用本书时，尤其与其他同类教材比较后，一定有所体会。

我们愿意给使用本书的教师和学生提供帮助（如提供练习答案、参考试卷等）。在使用本书过程中，有任何问题，都可以通过电子邮件与我们交流，我们一定会给予答复。邮件标题请注明姓名及“ 索取计算机英语参考资料 ”字样，也可通过出版社与我们联系。并可以到人民邮电出版社网站下载区（www.ptpress.com.cn/download/）免费下载课件。

我们的 E-mail 地址如下：zqh3882355@sina.com；zqh3882355@163.com

也望大家不吝赐教。让我们共同努力，使本书成为一部“ 符合学生实际、切合行业实况、知识实用丰富、严谨开放创新 ”的优秀教材。

修 订 说 明

本书出版后被许多学校选为教材，也收到大量读者反馈信息，在此表示诚挚的感谢！

我们根据读者要求和英语教学的新形势，做了如下修订：

（1）提供课文的参考译文。为方便老师教学和学生自学，本次修订我们把参考译文放在书的附录中。

（2）改正原书中的一些错误，对文字叙述做进一步的加工和润色，使书中内容更加完善、线条更加流畅。

为保证教学需要，练习答案一般仅向教师提供。请教师来 E-mail：zqh3882355@sina.com 索取。

编者

2006 年 8 月

目　　录

Unit 1

Text

The Elementary Components of PC (1)

1. Processor

Your processor is the brain of your computer. It is also referred to as the microprocessor or CPU. It interprets all the instructions that it receives from various devices and then executes those instructions, such as telling your printer to print. The faster the processor, generally the faster the computer will usually be able to perform those instructions and tasks, thus games can play more smoothly and spreadsheets can calculate more quickly.

(1) Intel Pentium® 4

The new Pentium® 4 is Intel's most powerful processor for the desktop, it improves performance on today's high-end applications and emerging Internet demands.

(2) Intel Pentium® 4 Processor-M

Based on the same technology as the popular desktop Pentium 4 processor, the Mobile Pentium 4 processor features similar architecture optimized for battery life and other mobile computing needs. The highest-performance processors are available in the mobile space, Mobile Pentium 4 processor-based systems help provide the same powerful computing experience desktop users have come to expect. Unequaled in 3D tasks, Mobile Pentium 4 processor also offers increased performance for emerging web-based activities and multitask oriented users. Mobile Pentium 4 processors also boast a 400 MHz Processor Support Bus!

(3) Intel Pentium® III Processor-M

Intel's latest, fastest, and most efficient processors recommended for mobile users who demand the highest performance available at reasonable prices. Pentium III processors-M offer higher bin speeds and better battery life as a result of a "die shrink" which utilizes a 0.13 micron manufacturing process compared to the 0.18 micron process used on previous Pentium III processors. Platforms using these processors deliver the highest, fastest and

most efficient performance of any mobile platforms in the business environment.

（4）Intel Celeron®

With an Intel Celeron® processor-based desktop PC, you get a useful tool for the most common applications — from finance management to the Internet and interactive games — at a terrific value.

2．Memory

Random Access Memory (RAM) is the workhorse behind the performance of your computer. Working as a foot soldier for your processor, RAM temporarily stores information from your operating system, applications, and data in current use. This gives your processor easy access to the critical information that makes your programs run. The amount of RAM you have determines how many programs can be executed at one time and how much data can be readily available to a program. It also determines how quickly your applications perform and how many applications you can easily toggle between at one time. Simply put, the more RAM you have, the more programs you can run smoothly and simultaneously.

3．Hard Drive

The hard drive is the primary storage unit of the computer. It is where the operating system, applications, files and data are kept. If you use your computer for digital video, audio file storage or you like to work with intense applications, you should consider buying a larger size hard drive.

There are three primary considerations when choosing hard drives.

- **Storage Capacity:** Hard drive storage capacity is measured in GigaBytes. One GigaByte (GB) equals one thousand MegaBytes (MB). When calculating hard drive needs, consider the size and number of applications, whether you use your computer to edit video files or to store large audio files. The larger the hard drive capacity, the more you′ll be able to store on your hard drive.
- **Rotational Speed:** Rotational speed is a major factor in hard drive selection as it determines how quickly data can be retrieved. Typical rotational speeds are 5400 RPM (Revolutions Per Minute) or 7200 RPM. The higher the RPM, the less time you′ll spend waiting for your computer to access files.
- **Interface:** The interface is the link between the hard drive and the computer used to transfer data. Most hard drives support either ATA-66 or Ultra ATA-100. Advanced Technology Attachment (ATA) is an industry standard interface. An Ultra ATA-100 hard drive is a faster interface than an ATA-66 hard drive.

4．Video Card

A video card is the part of your computer that transforms video data into the visual display you see on your monitor. The video solution plugs into your computer′s motherboard, and is responsible for decoding and processing the video signal. The quality of video you see on your monitor depends on both the video card and the monitor you choose. More video card memory and faster

graphics processors can result in more stunning and enjoyable visual effects when running games and programs with detailed graphic design.

Today′s video cards provide all the capabilities and features you need for basic home and home office use. A high quality video card will further enhance the images you see in games, video, and movies, and will provide smooth, life-like reproductions of actual characters and scenes. If you′re a serious gamer or a graphics designer, you′ll need the 3D enhancements and higher refresh rates that an Nvidia Geforce3 video card will provide.

The following specs should be considered when deciding which video card is best for your needs.

（1） Memory

Video cards have their own memory, which is reserved for storing graphical images. Video memory frees the computer′s RAM, so the computer′s memory does not have to store graphics. Video memory is available in standard sizes: 16MB, 32MB, 64MB and 128MB. The size of video memory determines the amount of resolution and the number of colors that can be displayed by your monitor. Typically, a card with a higher memory capacity will be capable of more advanced rendering and support for 2-D and 3-D graphics. Video cards can be either SDR (Single Data Rate) or DDR (Double Data Rate) memory based. DDR memory provides twice the memory bandwidth of SDR memory video card. The amount of memory is the first item you see in the description of your video card:

eg. 128MB DDR NVIDIA® Geforce4 Ti 4600

The type of memory usually follows:

eg. 128MB DDR NVIDIA® Geforce4 Ti 4600

（2） Processor

In addition to memory, video cards have their own graphics processor for creating images.

A graphics processor is specially designed for computing graphical transformations, and it achieves faster graphics results than the general-purpose CPU used by the computer. Our integrated graphics solution uses the CPU of your computer to create graphics, so it will not render pictures as quickly as a video card with its own processor. It takes thousands of calculations to produce even basic images on your monitor. The video card processor is also known as the controller or graphics engine. The video card manufacturer follows the amount of memory in the title of your video card:

eg. 128MB NVIDIA® Geforce4 Ti 4600. NVIDIA is the company that produces the video card.

The video card controller (or processor) usually follows:

eg. 128MB NVIDIA® Geforce4 Ti 4600.

Another common feature of video cards is the register width or data width. The wider the register, the more data the processor can manipulate with each instruction. Larger registers make a video card faster. Most of mid and high end video cards have 128-bit accelerators. 16MB ATI Rage Ultra video card has a 64-bit accelerator. Please see the Details page for the specifications of each of our video cards.

5．Monitors

When purchasing a monitor, there are several things to consider.

（1）Sizes

Monitors are measured in inches and refer to the diagonal length from one corner of the monitor box to the other. The actual viewable area (or screen measurement) is the measurement in parentheses and labeled VIS (Viewable Image Size). So you will see monitors listed like this: 17" (16.0 VIS).

Keep in mind that most monitors are as deep as they are wide so if space is a limitation, you should consider purchasing a flat panel monitor.

（2）Quality

Monitor quality is measured in dot pitch or strip pitch. The lower the number of pitch, the sharper the images. A measurement of 0.27mm is average for dot pitch. Monitor quality can also be measured in pixels referring to the resolution. The higher the resolution, the more that can fit onto the screen.

（3）Design

Most monitors are shadow mask or aperture grille in design. If a monitor doesn′t say what kind it is, it′s probably a shadow mask. Shadow mask monitors clearly display text and graphics. The other kind of monitor, an aperture grille, is also known as a Trinitron. It′s known for displaying richer colors and clearer images. Some monitors may also be referenced as having flat screens. Flat screens will appear different than traditional monitors because they are not slightly rounded and typically don′t distort the display as much.

（4）Benefits

Monitors with Trinitron Technology can give you:

- An exceptionally crisp picture.
- A high-phosphor surface for bright images.
- Increased contrast due to darker glass.
- Reduced reflection.
- Enhanced color purity.

6．Sound Card

In order to hear sound playback from your computer, your system must contain an integrated audio solution or a sound card, as well as speakers. A sound card or integrated audio solution gives your computer the ability to send sound through speakers, record sound from a microphone connected to your computer, or even manipulate sound stored on a disk. A high quality sound card can turn your computer into an exciting multimedia entertainment system. When choosing which audio solution is right for you, consider the impact sound will have on your overall computing experience.

Sound cards allow you to listen to music CD′s, enjoy the intense sound effects in your DVD

movies, and record & edit audio files. Our higher-end sound cards also support 3D sound enhancements and joystick/MIDI support for the ultimate gaming adventure. Your choice of sound card and speaker system can greatly enhance your computer′s sound quality and your overall audio experience.

When selecting your audio solution, please consider the following attributes.

（1）Polyphony

Polyphony is the number of discrete instrument“ voices ”or sounds you can hear when listening to a MIDI file. The more voices, the less chance that a note will be missed when playing a song in MIDI format. Sound on your PC is also produced by digital audio streams, such as music files produced by MP3, WAV and WMA audio sources.

The number of discrete MIDI instrument voices on the Turtle Beach Santa Cruz DSP Sound Card is limited only by the PC processor speed. Combined with the ability to play up to 96 discrete digital audio streams, Santa Cruz can reproduce a virtually unlimited number of sounds on your PC for optimum sound depth, clarity and detail. The SoundBlaster Live! Sound card offers 1024 software voices.

（2）Environmental Audio (EA)

Environmental Audio adds intense audio realism to your movies and crisp sound effects to your games. EA′s powerful effects create a real-world audio experience for gamers. Hear monsters creeping up behind you in your games. Record and enjoy your favorite MP3 songs with a “ concert hall, ”“ jazz club, ” or other environment effects. Enjoy cinematic 5.1 audio with your movies. You′ll be amazed at the difference EA makes to your sound. Both the SoundBlaster Live! Digital Sound card and the Turtle Beach Santa Cruz DSP Sound card support EA 3D sound.

（3）Other Features

Both the SoundBlaster Live! and the Turtle Beach Santa Cruz DSP Sound cards support Joysticks and MIDI (Musical Instrument Digital Interface)devices. MIDI is a standard for representing music electronically, and computers that have a MIDI interface can record sounds created by a synthesizer and manipulate the data to produce new sounds.

The Turtle Beach Santa Cruz DSP Sound Card is the only card in our lineup with the prestigious THX certification from Lucas Films. THX is a set of technical standards established by the engineers at the world-renowned production company, Lucasfilm Ltd. For more information on THX certified Dimension systems, click here:

http://www.dell.com/us/en/dhs/topics/segtopic_thx.htm.

New Words

processor [□□❒☜◆♦♏♦☜] *n.*	**处理器**
microprocessor [❍❍♋♓&❒☯◆□□❒✍♦♏♦☯] *n.*	**微处理器**
interpret [♓■□♦☯💻□❒♓♦] *vt.*	**解释**
instruction [♓■□♦♦❒✈&☞☯■] *n.*	**指令**
device [♎♓□❖♋♓♦] *n.*	**设备**

execute [ɪgˈzɛkjʊt] *vt.*	执行
print [prɪnt] *vi.*& *vt.*	打印
printer [ˈprɪntə] *n.*	打印机
perform [pəˈfɔːm] *vt.*& *vi.*	执行
spreadsheet [ˈspredʃiːt] *n.*	电子表格
Pentium [ˈpentɪəm] *n.*	奔腾
desktop [ˈdesktɔp] *n.*	计算机桌面
mobile [ˈməʊbaɪl] *a.*	可移动的；轻便的
multitask [ˈmʌltɪtɑːsk] *n.*	多任务
boast [bəʊst] *vi.*& *vt.*	自夸，以有……而自豪
bus [bʌs] *n.*	总线
micron [ˈmaɪkrɒn] *n.*	微米
workhorse [ˈwɜːkhɔːs]	广为应用的设备
platform [ˈplætfɔːm] *n.*	平台
Celeron [ˈselərɒn] *n.*	赛扬
access [ˈækses] *n.*	访问，存取
storage [ˈstɔːrɪdʒ] *n.*	存储器
interface [ˈɪntəfeɪs] *n.*	接口，界面
motherboard [ˈmʌðəbɔːd]	主板
decode [ˌdiːˈkəʊd] *vt.*	解码
monitor [ˈmɒnɪtə] *n.*	显示器，监视器
image [ˈɪmɪdʒ] *n.*	图像
bandwidth [ˈbændwɪdθ] *n.*	带宽
picture [ˈpɪktʃə] *n.*	图片
bit [bɪt] *n.*	位；比特
trinitron [ˈtrɪnɪtrɒn] *n.*	单枪三束式彩色显像管
audio [ˈɔːdɪəʊ] *a.*	音频的，声音的
n.	声音
microphone [ˈmaɪkrəfəʊn] *n.*	麦克风，扩音器
joystick [ˈdʒɔɪstɪk] *n.*	操纵杆
polyphony [pəˈlɪfənɪ] *n.*	复调音乐，多音
high-end [ˈhaɪend] *a.*	高端的
resolution [ˌrezəˈluːʃn] *n.*	分辨率

Phrases

be referred to as…	被称为……
interactive game	交互式游戏
operating system	操作系统
at one time	同时
rotational speed	转速
video card	视频卡
refresh rate	刷新速率
flat panel monitor	平板显示器

dot pitch	**点距**
shadow mask	**荫罩式，彩色显示器荫罩**
sound card	**声卡**
digital audio stream	**数字音频流**

Abbreviations

CPU (Central Process Unit)	**中央处理器**
3D (3 Dimension)	**三维**
MHz (MegaHertz)	**兆赫**
PC (Personal Computer)	**个人计算机**
RAM (Random Access Memory)	**随机存储器**
MB (MegaByte)	**兆字节**
SDR (Single Data Rate)	**单精度数据速率**
DDR (Double Data Rate)	**双精度数据速率**
VIS (Viewable Image Size)	**可视图像尺寸**
MIDI (Musical Instrument Digital Interface)	**乐器的数字化接口**
MP3 (MPEGlayer 3)	**一种音频压缩规格**
WAV (Wave)	**波形**
DSP (Digital Signal Processing)	**数字信号处理**
EA (Environmental Audio)	**环境音频，环境声频**

Notes

[1] The faster the processor, generally the faster the computer will usually be able to perform those instructions and tasks, thus games can play more smoothly and spreadsheets can calculate more quickly.

本句用比较级 The faster…the faster…**表示“……越快，……越快”。**

本句意为：

一般来讲，处理器的速度越快，计算机能够执行指令和任务的速度就越快。这样，游戏可以玩得更顺畅，电子表格的运算可以进行得更快。

英语中常用比较级来表示递进关系“越……越……”。例如本文中的句子：

Simply put, the more RAM you have, the more programs you can run smoothly and simultaneously. **（简而言之，你的** RAM **越大，你能够顺利且同时运行的程序就越多。）**

The larger the hard drive capacity, the more you'll be able to store on your hard drive. **（硬盘驱动器的容量越大，其中可以存储的信息就越多。）**

[2] Based on the same technology as the popular desktop Pentium 4 processor, the Mobile Pentium 4 processor features similar architecture optimized for battery life and other mobile computing needs.

本句中，Based on **的意思是“基于”，等于“**Built on **”；谓语动词是** features**，意思是“具有……的特点”；**optimized for battery life and other mobile computing needs **是一过去分词短**

语，修饰和限定 similar architecture。

本句意为：

基于与流行的桌面 Pentium 4 处理器的相同技术，Mobile Pentium 4 处理器具有类似的体系结构，它延长了电池寿命并满足了其他移动计算的需求。

[3] Hard drive storage capacity is measured in GigaBytes.

be measured in 的意思是“用……来度量，以……来计算”。

本句意为：

硬盘存储器的容量以 GB 来度量。

[4] Working as a foot soldier for your processor, RAM temporarily stores information from your operating system, applications, and data in current use.

本句中 as 等于“in the capacity or character of”，意思是“作为……；当作……；视为……”。

本句意为：

对处理器而言，RAM 就像步兵，它临时储存来自操作系统的信息、应用程序及当前正在使用的数据。

like 也可以像 as 一样，后面跟名词，但意思不同。like 等于“in the manner of”，意思是“以……方式；像……”。请看下例：

He works as a programmer. (= He is a programmer.)

He works like a programmer. (= He works in the manner of a programmer, but he is not a programmer.)

[5] A video card is the part of your computer that transforms video data into the visual display you see on your monitor.

本句中 transforms…into…的意思是“把……转换成……”；that transforms video data into the visual display you see on your monitor.是一个定语从句，修饰和限定 the part of your computer，在这个定语从句中，又有一个定语从句 you see on your monitor，修饰和限定 the visual display。

本句意为：

视频卡是计算机的一部分，它把视频数据转换成你在显示器上能看到的可视信息。

[6] Video cards have their own memory, which is reserved for storing graphical images.

本句中 which is reserved for storing graphical images 是一个非限定性定语从句，修饰和限定 their own memory。

本句意为：

视频卡有自己的存储器，该存储器专门用于储存图形图像。

[7] It takes thousands of calculations to produce even basic images on your monitor.

本句的句型是“It takes … to do sth.”，It 是形式主语，真正的主语是动词不定式 to do sth. 意思是“花费……做某事”。

本句意为：

即使要在显示器上产生基本的图像，也需要数千次的计算。

[8] Polyphony is the number of discrete instrument“voices”or sounds you can hear when listening to a MIDI file.

本句中 the number of **的意思是“……数”。**

本句意为：

复调音乐是听一个 MIDI **文件时你能听到的不同乐器“声音”或其他声音的数。**

注意：a number of **与** the number of **的区别。**a number of **的意思是“若干的；许多的”。**

请看下例：

A number of students attended the lecture on the development of computers.

许多学生听了那个关于计算机发展的报告。

The number of students who attended the lecture on the development of computers was up to two hundreds.

听那个关于计算机发展的报告的学生人数多达两百。

Exercises

1．根据课文内容，回答以下问题

（1）How many kinds of CPUs are mentioned in this text? What characteristics do they have?

（2）What are the primary considerations when choosing hard drives?

（3）What influences the capabilities and features of video card?

（4）What are the primary considerations when choosing monitors?

（5）What are the primary functions of sound card?

2．根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）

英 文 解 释	词　汇
A processor whose elements have been miniaturized into one or a few integrated circuits, it is usually used in PC	
An output unit that produces a hard copy record of data	
A program that organizes numbers, labels, and formulas in rows and columns for calculating results	
An electrical connection between the components of a computer system along which the signals or power is transmitted	
The manner in which files or data sets are referred to by the computer	
A computer section used primarily for storing information in electrostatic, ferroelectric, magnetic, acoustic, optical, chemical, electronic, electrical, mechanical, etc. form	
A shared logical boundary between two software components	

续表

英 文 解 释	词　汇
The main circuit board containing the primary components of a computer system: the processor, main memory, support circuitry, and the controller and connector	
The smallest unit of information capacity of a storage device	
The display image of an area on a document	

3．**把下列句子翻译为中文**

（1）The new Pentium® 4 is Intel′s most powerful processor for the desktop, it improves performance on today′s high-end applications and emerging Internet demands.

（2）Random Access Memory (RAM) is the workhorse behind the performance of your computer.

（3）The hard drive is the primary storage unit of the computer.

（4）The amount of RAM you have determines how many programs can be executed at one time and how much data can be readily available to a program.

（5）One GigaByte (GB) equals one thousand MegaBytes (MB).

（6）The interface is the link between the hard drive and the computer used to transfer data.

（7）The more voices, the less chance that a note will be missed when playing a song in MIDI format.

（8）Monitors are measured in inches and refer to the diagonal length from one corner of the monitor box to the other.

（9）Monitor quality is measured in dot pitch or strip pitch.

（10）Sound cards allow you to listen to music CD′s, enjoy the intense sound effects in your DVD movies, and record & edit audio files.

4．**上机实践**

通过 Internet **查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过** E-mail **发送给老师，并附上你收集资料的网址。**

（1）Intel **最新** CPU **的发展状况及性能评述。**

（2）**目前** PC **中所用最大容量的硬盘是什么？**

（3）**描述你认为目前功能最强大的** video card**。**

（4）**你所知道的性价比最高的** sound card **是哪一种？陈述你的理由。**

Reading Material

Scanner

Spring brings people out of the woodwork for graduations, barbecues, and other camera-friendly events. Two new scanners from Microtek and Mustek are equipped to help you digitize these memorable moments without costing you an arm and a leg. Both scanners sell for $99 and offer 48-bit color, convenient scan buttons, and respectable image-editing applications. The companies even include attachments for scanning film and slides — extras usually reserved for more expensive machines. But an attachment doesn′t guarantee good photo scans; while the Microtek and Mustek products are adequate for casual home users, camera hobbyists or serious photographers should look to higher-end models that can achieve a consistently higher standard of output.

1．Microtek ScanMaker 4800

The low-cost Microtek ScanMaker 4800 promises a big return on a small investment. It features 48-bit color, a 2400×1200dpi (dots per inch) maximum resolution, and a film/slide attachment. But a quick run through our labs revealed that while some of the Microtek′s features are exceptional, others are just for show.

（1）Simple Setup

The $99 ScanMaker 4800′s descriptive poster makes setup easy. The scanner connects via USB and supports Windows 98, 2000, Me, and XP, as well as Mac OS 8.6 through 9.*x* . Installation of the Microtek ScanWizard 5 driver and additional applications — ABBYY FineReader for optical character recognition; Ulead PhotoExplorer for Windows Explorer — like file searching; Adobe PhotoDeluxe 4.0 (PC) or Photoshop LE 5.0 (Mac) for image editing; and Adobe Acrobat Reader — was also fairly painless, but Microtek offers novices no guidance for deciding which ones to load.

The ScanMaker 4800 is also easy to use, thanks to the five buttons lining its face. The Scan button generates a preview of your image in the ScanWizard 5 driver that you can then tweak, scan as-is, or send to another image-editing app. Three other buttons scan the image and transfer it automatically to your printer, your E-mail program, or your word processor. A fifth button sends your scan directly to a Web site of your choice. Microtek includes a glossy handout promoting the use of the photo-sharing site iMira, but you can read about other services in our software roundup of four online photo managers.

The ScanWizard 5 driver itself has a host of satisfying features, including a pared-down control panel that lets you set the brightness, the contrast, and the saturation; an Advanced panel extends these capabilities considerably. Unfortunately, you cannot switch between panel modes while working on the same prescanned image.

（2）Documentation Is Plentiful But Scattered

We usually ding products for having insufficient documentation, but in the case of the ScanMaker 4800, it was just the opposite; its mélange of brochures and CD-based material actually left us more confused. One brochure guides you through ScanWizard 5, while another walks you through the included LightLid attachment for 35mm film and slide scanning, and the full-blown user manual is available in electronic format only. Microtek should collect all of this errant documentation into one convenient guide.

（3）Fine Color Scans And Grayscale Speeds

The ScanMaker 4800 displayed mixed results in our labs′ tests. The scanner′s sigma-6 CCD (charge-coupled device) scanning mechanism, with six instead of the usual three rows of light sensors, produced good color scans, but it took 43.7 seconds per scan, making the ScanMaker 4800 among the slowest models we′ve tested. Its 16.4-second grayscale speed was a lot better, but scans looked slightly overexposed. Quality took a drastic dive with film and slide scanning using the LightLid attachment. You can′t expect professional-level film/slide output from a $99 scanner, but the particularly poor film scans looked like they were made inside a fish tank.

The ScanMaker 4800′s support was nearly as bad. While we′ve come to expect one-year warranties with low-cost products, Microtek deepens our disappointment with its skimpy support. You make a toll call to reach technicians, and help is available on weekdays only from 7 a.m. to 5 p.m. PT; on Wednesdays, the lines close at 3 p.m. And if you try the company′s Web site for off-hours assistance, good luck; all you′ll find there is a short, random list of FAQs.

If you′re on a really tight budget, the easy-to-use ScanMaker 4800 delivers good-quality color and grayscale scans for the price. But if you have a box of memories that you want to digitize, plan on spending more money to get a scanner with a decent film/slide attachment. And the consumers that Microtek targets will want better support than the company offers.

2．Mustek BearPaw 1200TA

The Mustek BearPaw 1200TA has identity issues. Its ultrasimple scan buttons, so-so image quality, standard software bundle, and included games make the Mustek a scanner for casual users. But only an expert can untangle the mystery of this machine′s user manuals and TWAIN driver.

（1）It′s So Easy

The $99 BearPaw 1200TA is easy to install using the included setup poster. It connects via USB and works with Windows 98, 2000, Me, and XP but not Macs. In addition to drivers, the installation CD bundles ABBYY FineReader for optical character recognition, Adobe Active Share for image transfers, and a couple of very simplistic games that let you incorporate your scanned images. The BearPaw 1200TA also comes with the Ulead Photo Express image editor on a separate CD.

In keeping with its name, the scanner′s front edge contains five buttons in the shape of a bear paw. Hit the center button to scan and save an image immediately to your hard drive. Three smaller buttons automatically scan your image at an adequate 600×1200dpi (dots per inch) maximum resolution and send it to your printer, fax machine, or E-mail app. The fourth button launches an onscreen panel for controlling the scanner′s functions, where you can also change an extremely limited list of scan settings such as color/grayscale mode.

（2）Mystifying Manuals

It is possible to edit the BearPaw 1200TA′s images before the final scan — with a whole lot of patience. The machine includes a decently intuitive TWAIN driver that lets you preview the image and perform the usual edits, including brightness, contrast, cropping, and more. But the setup poster explains only how to access the driver; it doesn′t describe the driver′s purpose. Oddly, the electronic QuickGuide also fails to discuss anything but the scan buttons and the onscreen panel. A second electronic user manual makes small-print mention of the preview capabilities, but it doesn′t deal with the scan buttons at all. This inefficient smattering of information is sure to exasperate inexperienced users.

（3）So-so Scan Quality and Speed

The BearPaw 1200TA scanned at average speeds in our labs′ tests, but quality varied. Color scans looked fair, with clear black-to-white gradients, accurate geometries, and saturated colors, but the latter also appeared somewhat dingy, dark, and flat. Grayscale images looked a bit underexposed but showed overall accurate shades. The machine′s included film/slide/transparency adapter produced some surprisingly solid slide scans, including fairly crisp colors and lines. But film scans were an entirely different story; grainy and distorted, they were hardly worth the bother.

Mustek′s support is minimal. The company offers a typical one-year warranty and toll-based tech support. Technicians are available Monday through Friday from 9 a.m. to 4:45 p.m. PT. You can also E-mail a tech-support rep, but don′t rely too heavily on the short list of obscure Web-site FAQs for help.

Down to its teddy bear icon, the Mustek BearPaw 1200TA targets kids and casual users who might be satisfied by simply pressing a button and accepting an automatic scan. But the

mediocre-to-worse scan quality, confusing documentation, and skimpy support are not worth the trouble.

New Words

digitize	数字化
hobbyist	业余爱好者；沉溺于某种癖好者，嗜某爱好成癖的人
higher-end	更高端的
low-cost	低成本
microtek	（台湾）全友公司
roundup	综述，摘要
pared-down	削减的
control panel	控制面板
brightness	亮度，光亮度
contrast	反差；对比（度）
saturation	饱和度；纯色度
prescanned image	预扫描图像
grayscale	灰度级
labs′ test	实验室测试
overexpose	使感光过度
fax machine	传真机
onscreen	在屏幕上的
inexperienced user	缺乏经验的用户，不熟练的用户
so-so	马马虎虎
flat	压板，平面
grainy	粒状的，多粒的，木纹状
distorted	畸变的，失真的；变形的
tech-support rep	技术支持人员

Unit 2

Text

The Elementary Components of PC (2)

1. Keyboard

Your desktop is equipped with a keyboard to suit your personal needs. All keyboards are designed for comfort and productivity, and you can choose from space-saver, standard, or wireless models.

Select your keyboard based upon the features that are the most important to you.

(1) Dell Key

- Soft rubber dome for soft, quiet key response.
- 3 adjustable typing angles for comfort and relaxed posture.

(2) Dell QuietKey

- Space-saving design perfect for office environment.
- PS2 compatible.
- Soft rubber dome creates soft touch and quiet key response.
- Adjustable typing angles for comfort and relaxed posture.

(3) Dell Enhanced Performance

- 7 programmable keys.
- Built-in 2-port USB hub.
- Soft rubber dome creates soft touch and quiet key response.
- Adjustable typing angles for comfort and relaxed posture.
- Removable palm rest.

(4) Logitech Wireless Keyboard and Mouse

- One-touch controls for most common Internet and multimedia commands.
- Latest-generation radio technology works in a six-foot range.
- Detachable palm rest for improved comfort can be removed for extra desk space.

2. Mouse

Select your mouse based upon the features that are the most important to you.

（1）Logitech Optical USB Mouse

- Latest optical sensor technology records motion more precisely than a traditional mouse.
- Ease of use and better reliability because there are no moving parts to wear out or collect dirt and dust, so the mouse always stays precise. The optical sensor replaces the need for a mouse ball allowing it to work on more surfaces than ever. No mouse pad is needed to operate this component.
- Three programmable buttons. The wheel acts as a third button in addition to the top two buttons on the left and right.
- Convenient, faster scrolling through documents without clicking on scroll bar. It reacts to how quickly the user scrolls the wheel, increasing scroll control.
- Ergonomic design created for both right and left handed users, and fits a wide range of hand sizes.
- USB receiver connects with USB port leaving PS/2 ports open for other peripherals.

（2）Microsoft® Intellimouse

- Automatic scroll feature frees your hands to take notes and make calls.
- Fast zooming wheel provides close-up or big-picture views without menus or toolbars (in compatible applications).
- Easy grip design with raised back conforms to your palm, with the wheel between two buttons.
- Logitech MouseMan Wheel.
- Textured grips enhance comfortable design.
- Scroll wheel provides easy scrolling.
- Thumb button performs the Windows® Explorer back function.

（3）Dell Standard Mouse

- Comfortable shape fits both left and right hands.
- Easy to install, with no software required.
- Second button accesses convenient shortcuts on Windows menus.

3．Optical Drives

You can customize your Dell PC′s optical media drives, depending upon the model you choose. Most come with a CD-ROM or DVD-ROM drive as standard equipment and many also have a second drive bay for additional media. These media drives can be used to store and transport data, to play music and movies and to create music CDs.

（1）CD-ROM

A CD-ROM provides a low cost way to read data files and load software onto your computer. Dell CD-ROMs are modified to support the highest quality readability. Dell CD firmware is specially modified to allow extraction of high quality audio and data files even from CDs that have become dirty or scratched.

（2）DVD-ROM

A DVD-ROM allows you to enjoy the crystal clear color, picture and sound clarity of DVD

video on your notebook. It will also prepare you for future software and large data files that will be released on DVD-ROM. A DVD-ROM drive can also read CD-ROM disks effectively providing users with full optical read capability in one device. The firmware has also been specially modified to allow for the best quality Digital Audio Extraction even when discs have become somewhat scratched or dirty.

（3）CD-RW

A CD-RW will allow users to easily create their own custom data CDs for data back-up or data transfer purposes. It will also allow you to store and share video files, large data files, digital photos, and other large files with other people that have access to a CD-ROM drive. This drive will also do anything your CD-ROM will do. It reads all your existing CD-ROMs, Audio CDs and CDs that you have created with your CD burner.

（4）DVD/CD-RW Combination Drive

The Dell DVD/CD-RW Combination Drive brings all the advantages of DVD-ROM, a CD-RW and a CD-ROM to a single drive. This allows you to save valuable bay space in your C800/C810 notebook media bay for an additional battery or a second Hard Drive. With a DVD/CD-RW combo drive, users can read DVD-ROM disks, read CD-ROM disks and create their own custom data CDs on discs that cost less than $1 each and hold 650 MB of data.

（5）DVD+RW/CD-RW Combination Drive

The Dell DVD+RW/CD-RW Combination Drive brings you the leading-edge rewritable DVD solution, built around the emerging DVD+RW standard. Use it to store your favorite original video (with Sonic′s MyDVD or DVDIt SE) or to archive up to 4.7GB of your personal data (with Roxio′s Direct CD) to a DVD+RW disk.

（6）Floppy Drive

A floppy disk drive is standard on all Dell™ Dimension™ systems and provides one of the most common and convenient devices for reading and writing data on removable media. Floppy drives record up to 1.44MB of data on a rugged 3.5" removable magnetic media diskette.

（7）Iomega® Zip® Drives

An Iomega Zip 250MB Drive can handle massive documents, video, audio and miscellaneous multimedia files. Store files just like you would on your hard drive, but the Zip Drive′s capacity is only limited by the number of Zip disks you own. Just pick up more Zip disks to safely and conveniently store, back up and share important files up to 250 MB (per disk).

4．Speakers

Speakers connect to your computer and allow you to hear sound from your computer. The combination of a quality sound card with high-end speakers will turn your computer into a multimedia powerhouse and allow you to make the most of your sound experience. If you′re looking for a premium quality sound experience, opt for a speaker system with satellite speakers and a separate subwoofer.

When selecting speakers to accompany your computer system, consider the following

attributes.

（1）Type of Speaker System

Our entry-level speaker offerings include 2 speakers, or channels, that can be placed on the left and right side of your monitor for basic sound. Two speakers will give you a quality stereo sound experience, but provide little to no support for low tones or bass. To further enhance your audio experience, you should consider adding a subwoofer to your speakers. A subwoofer intensifies the sound produced by your computer by increasing overall system power and enabling lower sound tones. Our high-end and ultra high-end speaker systems include subwoofers. A speaker system with a subwoofer can greatly enhance your audio experience, and is recommended if you plan to listen to music or play DVDs on your computer.

（2）Wattage (W)

The higher the wattage on your speaker system, the more overall audio power it can deliver. Wattage also determines the maximum volume your speakers can output. When evaluating a speaker offering, consider the total wattage the system can deliver by adding the watts for each satellite and the subwoofer. Our basic Harman Kardon speaker system includes 2 satellites, each satellite puts out 3W of power. For more volume and richer sound, our high-end speakers run from 6W to 20W of power per speaker, and 18W to 100W of power in the subwoofer. Our Altec Lansing ADA995 Speakers includes five satellites (20W each) and a subwoofer for intense surround-sound (100W), and provides 200W of continuous power.

（3）Frequency Range

Higher rates of frequency response can improve sound reproduction accuracy. Frequency response is measured as a range in Hertz (Hz). Entry-level speakers have a range of 90Hz to 20kHz, which limits the amount of bass (low tones) you will hear in your music, movies, and games. High-end speakers with a subwoofer will cover 29Hz to 24kHz, which will yield greater depth of tone and resonance.

（4）Controls

Entry-level speakers include power and volume controls for basic sound adjustments. As you move to higher-end speakers, you will be able to experience finer definition of your audio by controlling both bass & treble levels. The ultra high performing Altec Lansing ADA995 THX Certified Speaker system is fully integrated into your computer system, and all volume controls can be adjusted through the Enhanced Performance keyboard.

5．Modems

A modem is required to access the Internet or for E-mail use. Modem technology utilizes the phone line to connect your computer to an Internet Service Provider (ISP) and the World Wide Web.

In addition to Internet access and E-mail, modems can be used to send faxes from the computer, turn the computer into a personalized answering machine, and play games through the Internet or for video teleconferencing.

Dell recommends purchasing a modem with your computer. Modems are essential for customers who use their computer to:

- Connect to the Internet;
- Send and receive E-mail;
- Send and receive faxes;
- Conduct video teleconferencing.

Data/Fax/Voice modems, also known as telephony modems, provide an inexpensive way to use the computer for speakerphone capability as well as to set up a personalized answering machine.

Modem technology utilizes phone lines to transmit data from the computer, whether on the road or at home. Customers must choose an Internet Service Provider (ISP) to connect to the Internet.

New Words

wireless [ˈwaɪələs] *a.* 无线的
model [ˈmɒdl] *n.* 模型，样机，型号
feature [ˈfiːtʃə(r)] *n.* 特征，特性，特点；功能部件
compatible [kəmˈpætəbl] *a.* 兼容的
adjustable [əˈdʒʌstəbl] *a.* 可调整的；可调节的
port [pɔːt] *n.* 端口，通信口，进出口
hub [hʌb] *n.* 网络集线器；插孔，插座
removable [rɪˈmuːvəbl] *a.* 可移动的，抽取式的
Logitech [ˈlɒdʒɪtek] *n.* 罗技公司
optical [ˈɒptɪkl] *a.* 光学的
sensor [ˈsensə(r)] *n.* 传感器；灵敏元件
dirt [dɜːt] *n.* 灰尘，污垢
dust [dʌst] *n.* 尘埃；灰尘
programmable [ˈprəʊgræməbl] *a.* 可编程序的
scroll [skrəʊl] *vt.* 滚动，卷屏，卷动
n. 滚动，卷屏，卷动
modify [ˈmɒdɪfaɪ] *vt.* 修改，改变；变址
wheel [wiːl] *n.* 轮，轮子
ergonomic [ˌɜːgəˈnɒmɪk] *n.* 人机工程学
peripheral [pəˈrɪfərəl] *a.* 外围的；外部的
n. 外围设备
shortcut [ˈʃɔːtkʌt] *n.* 快捷方式，捷径
customize [ˈkʌstəmaɪz] *vt.* 定制，定做；专用化，用户化
readability [ˌriːdəˈbɪlətɪ] *n.* 可读性
disc [dɪsk] *n.* 磁盘；盘
powerhouse [ˈpaʊəhaʊs] *n.* 电源（房）间
subwoofer [ˈsʌbwʊfə(r)] *n.* 亚低音扬声器

accompany [☯▯&✈❍◘☯■ℋ] *vt.*	**陪伴，伴随**
attribute [▯✌♦❒ℋ♌ℯ𝓇◆💻♦] *n.*	**属性，特征**
channel [▯♦☞✌■☯●] *n.*	**频道，通道；信道**
ultra [▯✈●♦❒☜] *a.*	**过的，超的**
frequency [▯➚❒ℋ💻&⬧☯■⬧ℋ] *n.*	**频率，周率，发生次数**
response [❒ℋ▯⬧◘👌■⬧] *n.*	**响应，应答，反应**
tone [♦☯◆■] *n.*	**音调，色调；双音频**
adjust [☯▯♎✞✈⬧♦] *vt.*	**调整，调节**
fax [➚✌&⬧] *n.*	**传真**
teleconferencing [♦ℳ●ℋ▯&👌■➚☜❒☜■⬧ℋ☠] *n.*	**电话会议；远程会议**
transmit [♦❒✌■⌘▯❍ℋ♦] *vt.*	**传输，转送**
recommend [❒ℳ&☯▯❍ℳ■♎] *vt.*	**推荐**
built-in [▯♌ℋ●♦ℋ■] *a.*	**内置的，固定的，嵌入的**

Phrases

be equipped with	**配备有**
be based upon	**基于，根据**
react to	**反应**
take notes	**做笔记**
conform to	**符合；顺应；相配**
back up	**后备，备份，后援**

Abbreviations

USB (Universal Serial Bus)	Intel **公司开发的通用串行总线架构**
GB (GigaByte)	**吉字节**
ISP (Internet Service Provider)	**因特网服务提供商**
WWW (World Wide Web)	**万维网**

Notes

[1] The optical sensor replaces the need for a mouse ball，allowing it to work on more surfaces than ever.

本句中的 allowing it to work on more surfaces than ever **是一个现在分词短语，作结果状语，修饰它前面的句子。**it **代替** the mouth**。**

本句意为：

光传感器代替了鼠标球，这就使鼠标能在比以往更多的表面上使用。

[2] Most come with a CD-ROM or DVD-ROM drive as standard equipment and many also have a second drive bay for additional media.

本句中 Most **和** many **后面省略了** PCs**，**as **的意思是“作为”。**

本句意为：

大部分 PC **机都带有一个** CD-ROM **或** DVD-ROM **驱动器作为标准部件，许多** PC **机还另有一个驱动器来播放其他介质。**

[3] Dell CD firmware is specially modified to allow extraction of high quality audio and data files even from CDs that have become dirty or scratched.

本句中，that have become dirty or scratched **是一个定语从句，修饰和限定** CDs**。**

本句意为：

Dell **的** CD **固件经过专门修改，它甚至可以从已经被弄脏的或划伤的** CD **中提取高质量的音频文件和数据文件。**

[4] A subwoofer intensifies the sound produced by your computer by increasing overall system power and enabling lower sound tones.

本句中，produced by your computer **是一个过去分词短语，做定语，修饰和限定** the sound**，介词短语** by increasing overall system power and enabling lower sound tones **做方式状语，修饰谓语** intensifies**。**

本句意为：

亚低音扬声器通过增加整个系统的功率及降低音调来强化计算机所产生的声音。

[5] Entry-level speakers have a range of 90Hz to 20kHz, which limits the amount of bass (low tones) you will hear in your music, movies, and games.

本句中，which limits the amount of bass (low tones) you will hear in your music, movies, and games **是一个非限定性定语从句，修饰和限定** a range of 90Hz to 20kHz**。在该从句中，**you will hear in your music, movies, and games **是一个定语从句，修饰和限定** the amount of bass (low tones)**。**

本句意为：

入门级扬声器的频率范围是 90Hz～20kHz**，它限制了你在音乐、电影，以及游戏中将听到的低音量（低音）。**

Exercises

1．根据课文内容，回答以下问题

（1）How many kinds of keyboards are mentioned from the technological point of view?

（2）What considerations should be taken when choosing a good mouse?

（3）What are the characteristics of Zip Drive?

（4）What attributes should be considered when selecting speakers to accompany your computer system?

（5）What are the functions of modems?

2．**根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）**

英 文 解 释	词　汇
Without the use of wire(s)	
To send data from one place for reception elsewhere	
Being able to work with equipment or software designed by other manufacturers	
A device used to provide connectivity between DTEs(**数据终端设备**), it performs the basic functions of restoring signal amplitude and timing, collision detection and notification, and signal broadcast to DTEs	
An interface by which data enters or leaves a functional unit	
A device that converts measurable elements of a physical process into data meaningful to computer	
A company which is very famous for manufacturing mouse	
A device to perform an auxiliary action in the system, e.g. input/output, backing store and communications devices (modems), etc	
Rate of signal oscillation in hertz	
To make additional copies of documents or software for safekeeping, in case the original copy is accidentally damaged or destroyed	

3．**把下列句子翻译为中文**

（1）All keyboards are designed for comfort and productivity, and you can choose from space-saver, standard or wireless models.

（2）Ergonomic design created for both right and left handed users, and fits a wide range of hand sizes.

（3）A CD-ROM provides a low cost way to read data files and load software onto your computer.

（4）A DVD-ROM drive can also read CD-ROM disks effectively providing users with full optical read capability in one device.

（5）The Dell DVD/CD-RW Combination Drive brings all the advantages of DVD-ROM, a CD-RW, and a CD-ROM to a single drive.

（6）Floppy drives record up to 1.44MB of data on a rugged 3.5" removable magnetic media

diskette.

（7）Speakers connect to your computer and allow you to hear sound from your computer.

（8）Wattage also determines the maximum volume your speakers can output.

（9）The firmware has also been specially modified to allow for the best quality Digital Audio Extraction even when discs have become somewhat scratched or dirty.

（10）Modem technology utilizes the phone line to connect your computer to an Internet Service Provider (ISP) and the World Wide Web.

4．上机实践

通过 Internet **查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过** E-mail **发送给老师，并附上你收集资料的网址。**

（1）目前无线键盘的发展状况及性能评述。

（2）简述鼠标发展过程及未来趋势。

（3）描述你认为目前功能最强大的便携存储设备。

（4）你所知道的性价比最高的 DVD **是哪一种？陈述你的理由。**

（5）简述计算机所用的声音系统的最新研究进展。

Reading Material

The HP DVD-Writer DVD100i

If speed were the only measure, HP (Hewlett Packard)′s DVD-Writer DVD100i would have a clear lead among the emerging DVD-storage technologies: DVD-RAM, DVD-R, DVD-RW, and DVD+RW. This jack-of-all-trades DVD+RW HP drive handily outperforms its rivals, such as QPS′s DVD burner and Pioneer′s DVR-A03 (a.k.a. Apple′s or LaCie′s SuperDrive). It also functions as a 12X/10X/32X CD-R/RW drive and an 8X DVD-ROM.

At $599 retail, the DVD100i debuts at a far lower price point than the $999 Pioneer DVR-A03 did last spring. However,

thanks to a series of price drops, the DVR-A03 is now available for about $450 on the street, compared to $525 for the DVD100i. Thus, the DVD100i is both costlier and less compatible than its DVD-R competition. However, as we already mentioned, its performance trounces that of its rivals. Based on specs, the HP DVD100i writes to its native DVD+RW discs at a whopping 3.32MB per second (2.4X) compared to the QPS′s 1.38MB per second. Our labs′ tests showed that for backing up data or writing movie files, the DVD100i was nearly twice as fast as the Que DVD burner; HP′s product was also slightly faster when reading data from DVD. And it should easily outpace the slower DVR-A03 (a mere 8X/4X/32X drive) at CD-related tasks.

The DVD100i seems better suited to savvier users than novices. The multilingual installation guide is barely enough to get you started, but there′s a setup video on the software CD, and the software installation itself is painless. An IDE cord, a drive-to-sound-card cable, and a single DVD+RW disc also come with the drive. Additional DVD+RW media is available for a reasonable $10 to $16 a pop.

（1）Through A mirror Darkly

The trouble with DVD+RW is compatibility. The media has low reflectivity; thus, it′s not nearly as compatible with legacy DVD-ROM drives and DVD movie players as the high-reflectivity DVD-R media supported by the SuperDrive and other DVD-RAM/R drives. This makes sharing data or movies with friends via DVD+RW potentially problematic. The DVD+RW developers group will be introducing a high-reflectivity DVD+R media that should be readable by more drives and players. However, the DVD100i won′t be able to write to DVD+R without a firmware upgrade, which HP doesn′t plan on providing. At least the company doesn′t try to whitewash the compatibility issue — it lists all the current drives and players that can read DVD+RW media on its Web site.

（2）A Well-rounded Bundle

Unless you′re planning on producing professional videos, the DVD100i′s software bundle should take care of all of your video-capture and disc-creation needs. Sonic′s MyDVD is provided for easy creation of DVD-movie discs. The program lets you storyboard your masterpiece by importing and converting files, capturing video, and the like. It even lets you record directly to a DVD+RW disc from a DV source such as a camera. One warning: MyDVD requires an 800MHz or better CPU.

HP provides RecordNow to take care of audio and data CD-mastering chores, while the company′s Simple Backup program adds backup and disaster-recovery capabilities. The DLA (Drive Letter Access) program lets you use DVD+RW discs like floppies, randomly copying and erasing files via the standard Windows interface. PowerDVD is included to play DVD movies.

HP offers the industry standard one-year warranty on the DVD100i, and tech support is available from 5 a.m. to 5 p.m. PT. However, tech-support calls are on your dime, though HP claims an average hold time of five minutes or less. You can also get help via the company′s well-organized support pages. Because the drive is new, there are few upgrades or patches, but you can find the usual drivers, applications, product manuals, and troubleshooting information there.

（3）To Buy or Not to Buy

If you don't care about compatibility with older DVD hardware, then the DVD100i is a great drive for backing up your system or creating DVD movies. But if you want to author DVDs for Aunt Jenny and her year-old drive or DVD player, you might want to opt for a DVD-RW drive or wait for the next generation of DVD+RW drives that have DVD+R capability.

（4）Device Type and Formats Supported

The floppy drive is dead. Its successor, the CD-R/RW (CD-Recordable/ReWritable) drive, reads standard CD-ROMs and lets you write to 530MB CD-RWs as you would a hard disk. Or, if your prefer, you can write in sessions to cheaper 650MB CD-Rs, which — unlike CD-RWs — can be ready by almost all CD and CD-ROM players. Those who need greater storage capacity have four DVD-based options, all of which can play standard DVDs: DVD+RW, DVD-RW, DVD-R, and DVD-RAM. The first three formats are suitable for both archival purposes and distribution but vary in terms of cost, capacity, capabilities (DVD-R is write-once), and compatibility with standard DVD players. DVD-RAM drives, which use discs in compact cartridges that can't easily be played in other DVD players, are really for archival purposes only.

（5）Maximum Formatted Capacity

CD-Rs come in 650MB or 700MB formatted capacities, and virtually every CD burner can handle either. Because they use special formatting, CD-RWs top out at 530MB. Today's DVD burners generally write up to 4.7GB on a single-sided DVD-R or DVD-RW and up to 9.4GB on a double-sided disc. DVD+RW currently uses single-sided 4.7GB discs. DVD-RAM drives work with only cartridges that hold double-sided discs capable of storing up to 9.4GB.

（6）Write Speed

How fast a drive can burn a disc in a single session — usually in CD-R or DVD-R formats for drives that support them. For example, a 24X/10X/40X CD-RW drive writes to a CD-R at 24 times the original read speed of the first CD-ROM drive, 3.6MB per second, enabling you to burn an entire CD-R in about three minutes.

（7）Rewrite Speed

How fast a drive can write to a CD-RW, a DVD+RW, aDVD-RW, or a DVD-RAM. With a 24X/10X/40X CD-R/RW drive, for example, you can write to a CD-RW at 1.5MB per second, 10 times the speed of the first CD-ROM drive. With a 2.4X/2.4X/8X DVD+RW drive, you can write to a DVD+RW at 3.3MB per second, 2.4 times the read speed of the first DVD-ROM drive. Remember to buy certified high-speed CD-RWs for use in CD-R/RW drives rated at 4X or faster.

（8）Read Speed

How fast a drive reads from disc. A fast read speed won't improve video or music playback because such content is written to disc in a format compatible with old, slow drives. Fast read speeds can, however, accelerate software installation or anything that involves copying huge contiguous data files from a CD-ROM or DVD-ROM disc. A 24X/10X/40X CD-R/RW drive, for example, can read 6MB per second, or 40 times the data the first CD-ROM drive could read per second.

（9）Enclosure

Internal drives require an open drive bay in your PC. External drives are more or less portable depending on their size and weight, but they cost more and tend to be slower.

（10）Interface

The connection between the drive and the computer. Just about every internal drive uses an EIDE (Enhanced Integrated Drive Electronics) interface; stay away from SCSI (Small Computer System Interface) drives unless your system already has a SCSI card. External drives, designed to be portable, rely on USB, IEEE 1394 (also known as FireWire), and most recently USB 2.0. If you plan to use one drive with many PCs, get a USB drive because nearly all PCs have USB ports. Otherwise, get a drive that supports IEEE 1394 or USB 2.0, which offer significantly faster throughput. You might have to add a PCI card to your PC, but it′s worth it.

（11）Software

A CD-R/RW drive should come with CD-burning software. Adaptec Easy CD Creator is generally regarded as one of the best, but Nero Burning ROM and NTI CD-Maker work well, too. Also look for protection from fatal "buffer underrun" errors, provided by such software as Burn-Proof or Just-Link. With recordable DVD drives, you have few models to choose from, so just make sure the drive comes with some sort of MPEG-2 encoding software.

（12）Warranty and Support

Optical storage devices almost always come with a one-year warranty. Burning optical media can be complicated, so phone support, although never toll-free, should be available. Fee-based support for out-of-warranty products is also welcome. Before calling, always check online troubleshooting guides, where you′ll find answers to most common problems.

New Words

Hewlett Packard	**惠普公司**
jack-of-all-trade	**王牌的**
8X	8 **倍速**
IDE (Integrated Drive Electronic)	**集成驱动电路**
reflectivity	**反射率**
video-capture	**视频捕捉**
disc-creation	**光盘刻录**
software bundle	**软件包**
chore	**家务杂事**
one-year warranty	**一年质保，一年保单，一年保修**
tech support	**技术支持**
upgrade	**升级**
patch	**修补程序，补丁；修补，打补丁**
troubleshooting	**故障诊断；故障查找；故障检修**
opt for	**选择**
CD-R/RW (CD-Recordable/ReWritable) drive	**可改写** CD **驱动器**

burner	**刻录机**
single-side	**单面**
double-side	**双面**
cartridge	**盒式光盘**
burn a disc	**刻录光盘，刻录磁盘**
EIDE (Enhanced Integrated Drive Electronics)	**增强型集成驱动电路**
SCSI (Small Computer System Interface)	**小型计算机系统接口**
out-of-warranty	**保修之外**
online troubleshooting guide	**在线维修指南；在线故障查找指南**

Unit 3

Text

The Notebook

Most Sony notebooks are like European roadsters: compact and lightweight eye candy. But the company′s latest desktop-replacement system, the VAIO PCG-GRX570, is more all-American muscle car. The first notebook we′ve tested with a screen larger than 16 inches, this VAIO is very big and heavy. But with its powerful engine, it still gets off the line quickly.

1. Heavy Hitter

The PCG-GRX570 weighs about as much as three Sony CIMV2 Picturebooks, or 8.4 pounds. Throw in the enormous, 1.4-pound AC adapter, and the total travel weight rises to a ponderous 9.7 pounds. The 1.9×13.9×11.5-inch case is a throwback to a time when huge notebooks were commonplace. In fact, this behemoth barely squeezed into a standard notebook bag.

For some, the size and weight will be offset by the purple and black PCG-GRX570′s top-shelf components. The only minor exception is the notebook′s 1.6GHz Intel Pentium 4-M processor; although technically it isn′t the fastest mobile processor available, it′s darn close (two versions of the GRX series come with the 1.7GHz processor). Packed with 512MB of RAM, a 40GB hard drive and a combination DVD/CD-RW drive, the $2 699 PCG-GRX570 defines the desktop-replacement category today.

2. More Than Most

This notebook′s most distinctive feature is its expansive, 16.1-inch screen. The largest laptop screen to date, it offers 20 percent more viewable space than the 15-inch displays found on most desktop replacements. The PCG-GRX570 relies on the highly capable ATI Mobility Radeon 7500 graphics accelerator with 32MB of video memory to drive this big screen at UXGA resolution (1600×1200). While that leaves lots of room for working in two or more programs, fonts and

graphics sometimes appear quite small.

The VAIO PCG-GRX570 offers three USB slots; an iLink (FireWire) port; connectors for a modem, Ethernet, an external monitor, and a printer; jacks for audio-out, a microphone, and headphones; two Type Ⅱ (one Type Ⅲ) PC Card slots; and the obligatory MagicGate Memory Stick slot. The only thing missing is a serial connection, which is provided on the system′s optional port replicator ($200). The notebook also lacks an internal 802.11b (Wi-Fi) or Bluetooth option, although Sony sells a wireless PC Card (the PCWA-C100) separately for $150.

The VAIO PCG-GRX570 has room for a comfortable keyboard with full-sized keys (19.5mm), but they′re annoyingly loud. The touchpad is nothing special, either. Below it is a handy jog dial with a Back button, which you can use for both scrolling and clicking.

3．At the Head of the Pack

In our labs′ tests, the PCG-GRX570′s overall score of 157 was 7 points behind that of the current pacesetter in this class, Toshiba′s Satellite 5105-S607, which uses the 1.7GHz mobile Pentium 4-M. On the other hand, the GRX570 Internet-content-creation score of 193 is the second highest to date.

A system this large leaves lots of room for a big battery, so it′s not surprising that the VAIO′s battery life was also good on our tests. The 4000MAHR lithium-ion cell lasted 2 hours and 26 minutes, far ahead of the Satellite 5105-S607 but off the pace set by Micron′s Pentium 4-M powered TransPort GX3. Unfortunately, the VAIO′s battery requires that you remove a cover before replacing it, and it lacks a charge gauge.

4．The Softer Side of Sony

The PCG-GRX570 features a great assortment of software, including loads of audio, video, and digital-photo titles. You get Microsoft Word 2002, but you′ll have to upgrade it if you want the rest of Office XP. While Sony includes a brief setup booklet, it′s not the kind of in-depth user manual we′d expect to see with a system of this caliber. Fortunately, additional help is a click away. The Notebook Setup utility consolidates many notebook settings, and a separate applet links to the company′s online support center. Sony offers 24/7 phone support, but the one-year warranty on parts and labor is too short; we encourage buyers to extend it to three years for $199.

The Sony VAIO PCG-GRX570 is clearly not intended for frequent travelers, and once you get past its size and weight, it is a strong desktop replacement with a beautiful display. Only a few missteps, such as a lack of built-in wireless networking, a noisy keyboard, and a short warranty, kept it a couple of paces behind the current forerunners in this category.

5．What to Look For: Notebooks

（1）Processor

The most important chip, the processor or CPU (Central Processing Unit), in a notebook has power management features that extend battery life. As in desktops, the primary measure of a

processor is its clock speed, measured in MegaHertz (MHz) or GigaHertz (GHz). Notebooks always perform more slowly and cost more than desktops containing an equivalent CPU. AMD Duron and Intel Celeron chips appear in budget notebooks; the AMD Athlon 4 and Intel Pentium III-M are for performance notebooks. A third manufacturer, Transmeta, offers Crusoe CPUs that perform like Celerons and Durons but draw very little power, making them suitable for ultraportables. The Apple iBook and Titanium offer the PowerPC G3 and G4 processors, respectively.

（2）Memory

In notebooks, memory is a lot simpler than it is in desktops because most notebooks use SDRAM. They also use Small Outline (SO) memory modules, which cost a little more than standard desktop modules. How much you′ll need really depends on your operating system and the applications you plan to use. A general rule of thumb: 256MB for Windows XP or Mac OS X; 128MB for all other Windows and Mac operating systems.

（3）Hard Drive

Because they must be smaller, use less power, and are designed to absorb shocks, notebook hard drives are slower and more expensive than their desktop counterparts. Notebook models top out at 48GB—at a price hundreds of dollars higher than the default 20GB notebook drive. A 5400r/min notebook hard drive delivers significantly faster performance than a 4200r/min model. Mobile hard drive failure rates run much higher than those for desktop drives, so look for Self-Monitoring, Analysis, and Reporting Technology (SMART) for early warning of impending problems.

（4）Optical Drives

You need to spin CD-ROMs to install software, of course. But unless you′re buying a budget model, don′t settle for anything less than a CD-RW drive. With the ability to read CD-ROMs as well as burn CD-R or CD-RW discs, you can avoid the added bulk of a floppy drive. For movies and monster games on the road, consider a CD-RW drive that doubles as a DVD drive. The least expensive notebooks include fixed drives, but a swappable drive bay gives you optimum flexibility. The smallest and lightest models may include neither, relying instead on external drives.

（5）Display

Notebooks use color Liquid Crystal Displays (LCDs) that range in size from 12.1 inches to 15 inches. For most people, an LCD screen must be 14 inches or larger to be viewed comfortably at 1024×768, the preferred Windows resolution. Notebook LCDs once varied widely in brightness, color, and sharpness, but today, quality has risen across the board, and differences tend to be subtle. Unfortunately, specs reveal little, so if you′re picky about screens, compare some at your local dealer.

（6）Dimensions and Weight

Like boxers, notebooks have weight classes. With some exceptions, nearly all notebooks fall into one of four classes. Ultraportables weigh less than four pounds, measure between 1 and 1.5 inches thick, have 12.1-inch or smaller screens, no internal drives, and slower CPUs and hard

drives, which draw less power. Thin-and-light models, which are just slightly larger and heavier, have screens 14.1 to 15 inches, a single drive bay, and faster CPUs and hard drives. Mainstream notebooks, which aim to strike a balance of size, weight, features, and power, are heavier and may include fixed drives but typically offer the best value for tight budgets. Finally, desktop replacements are for those who care less about size, weight, or price. These systems can weigh as much as 10 pounds but offer top performance, the largest displays, and the most features.

（7）Video

Like desktops, most notebooks have processors and memory dedicated specifically to video. The amount of video memory depends on the class of notebook; smaller notebooks may top out at 8MB, while desktop replacements offer the same 32MB or 64MB found in desktops. Although notebook video does better with movies, games, and color than it ever has, thanks to innovations from companies such as Nvidia, it can′t match the performance of a cheaper desktop graphics card driving a standard CRT monitor. Gamers should look for 4X as opposed to 2X AGP (Accelerated Graphics Port) and explicit support for 3D graphics. For presentations and desktop use, make sure the VGA port supports monitor resolutions of at least 1280×1024 with 24-bit color.

（8）Communications

Virtually all notebooks come with a built-in 56kbit/s modem. A built-in Ethernet connection is also rapidly becoming a standard feature. These connectors are often integrated on an internal mini-PCI card, leaving your PC Card slots available for other peripherals. Many notebooks also include built-in antennas for wireless networking (802.11b), but the receiver is typically optional and costs about $150.

（9）Ports and Expansion

Nearly all notebooks have a printer port, a VGA port for an external monitor, and at least one USB port for peripherals. Most also have two PC Card slots, though they′re no longer as essential for notebooks with built-in modem and Ethernet connectors. External keyboard and mouse ports serve those who use a notebook as their primary machine. Look for a multimedia jack (combined stereo and video out) if you plan to use your notebook as a DVD player or for presentations. For home use, stereo input, a game port, a MIDI connector, and an IEEE 1394 port (to capture and edit digital video or hook up external storage) are all desirable. If anything is lacking, you can usually buy a port replicator or a docking station that adds connectors, room for more drives and cards, and the convenience of leaving cables plugged in whenever you walk away from your desk. Notebook expansion options tend to be pricey, so you′re generally better off buying a notebook that has everything you need out of the box.

（10）Battery

Notebooks now universally use Lithium Ion (Li Ion) batteries. Notebooks with greater performance and features require bigger, bulkier batteries to keep things running. The manufacturer′s battery life ratings tell you what to expect with power-saving features enabled (dimmed screen, slowed CPU, dormant drives, no Internet connection); our own battery performance tests reported with all reviews are based on standard usage. Some notebooks can

accommodate dual batteries or a slice (an attachable base) that provides enough juice for cross-country flights.

（11）Service and Support

Most manufacturers provide at least a one-year warranty on parts and labor (a few still include warranties as long as three years). Most also include one year of onsite service — a technician shows up at your door — and toll-free technical support. If you are not an advanced user, it is worth paying a little extra to extend the warranty to three years.

New Words

notebook [n.] 笔记本电脑，笔记本
roadster [n.] 跑车
behemoth [n.] 巨兽，庞然大物
category [n.] 种类；范畴，分类，类别，类型
slot [n.] 插槽，存储槽，槽
Ethernet [n.] 以太网
jack [n.] 插座，插孔
headphone [n.] 耳机；听筒
touchpad [n.] 触感衰减器
caliber [n.] 口径，尺寸
charge [n.] 负荷
vt. 充电，装满
gauge [n.] 量规，量表，计量器
vt. 测量，度量
booklet [n.] 小册子
Duron [n.] 毒龙，AMD 公司生产的一种 CPU
misstep [n.] 误解
ultraportable [*a.*] 极轻便的，超轻便的
counterpart [n.] 相似的人或物，配对物
forerunner [n.] 先驱，先行者
consolidate [*vt.*] 巩固，加强
impending [*a.*] 紧迫的
swappable [*a.*] 可交换的
sharpness [n.] 清晰度
picky [*a.*] 吹毛求疵的，好挑剔的，过分讲究的
thick [*a.*] 厚
mainstream [n.] 主流
dedicate [*vt.*] 指定，用于
dedicated [*a*] 专用的
cheap [*a.*] 便宜的；廉价的
antenna [n.] 天线
receiver [n.] 接收器
capture [*vt.*] 捕获，捕捉

dormant [dɔ:mənt] *a.* 休眠的；固定的，不活动的
bulky [bʌlki] *a.* 大的，容量大的，体积大的
cross-country [krɔs'kʌntri] *a.* 跨国

Phrases

viewable space 可视空间
graphics accelerator 图形加速器
external monitor 外部显示器，外置显示器
memory stick 内存棒
handy jog dial 轻便转盘
online support center 在线支持中心
24/7 phone support 每周 7 天，每天 24 小时的电话服务
rule of thumb 凭经验的方法
absorb shock 减震
be picky about sth. 对……吹毛求疵，对……好挑剔
对……过分讲究
weight class 重量级
thin-and-light 轻便的
mini-PCI card 迷你 PCI 卡
power-saving 节电的，省电的

Abbreviations

AC (Alternating Current) 交流电
MAHR (MiuiAmpere HouR) 毫安小时，毫安时
r/min (revolutions per minute) 转数/分
bit/s (bits per second) 比特/秒，位/秒
SMART (Self-Monitoring, Analysis, And Reporting Technology) 自检测、分析及报告技术
PCI (Peripheral Component Interconnection) 外设部件互连（标准，技术）
IEEE (Institute of Electrical & Electronic Engineers) （美国）电气和电子工程师学会

Notes

[1] Throw in the enormous 1.4-pound AC adapter, and the total travel weight rises to a ponderous 9.7 pounds.

本句所用的句型是：祈使句+and+**句子。可改写为** if **引导的复合句。本句可改写为：**If we throw in the enormous 1.4-pound AC adapter, the total travel weight will rise to a ponderous 9.7 pounds.

本句意为：

如果装入这个巨大的重 1.4 **磅的交流电适配器，其旅行总重量将高达** 9.7 **磅。**

[2] In our labs′ tests, the PCG-GRX570′s overall score of 157 was 7 points behind that of the current pacesetter in this class, Toshiba′s Satellite 5105-S607, which uses the 1.7GHz mobile Pentium 4-M.

本句中，that **指代的是** overall score**， 非限定性定语从句** which uses the 1.7GHz mobile Pentium 4-M **修饰** Toshiba′s Satellite 5105-S607, Toshiba′s Satellite 5105-S607 **是** the current pacesetter **的同位语。**

本句意为：

我们的实验测试表明，PCG-GRX570′**的总分为** 157**，比当前同类产品的先导者日本东芝公司的** Satellite 5105-S607 **落后** 7 **个点。日本东芝公司的** Satellite 5105-S607 **使用** 1.7GHz **移动** Pentium 4-M**。**

[3] Although notebook video does better with movies, games, and color than it ever has, thanks to innovations from companies such as Nvidia, it can′t match the performance of a cheaper desktop graphics card driving a standard CRT monitor.

本句中，Although **引导了一个让步状语从句，**thanks to innovations from companies such as Nvidia **是一原因状语，修饰让步状语从句的谓语** does better with.

本句意为：

由于 Nvidia **等公司的创新，笔记本电脑的视频卡比以往任何时候都能更好地显示电影、游戏和色彩。尽管这样，其性能仍不能与一个较便宜的驱动标准** CRT **显示器的桌面图形卡相比。**

[4] These connectors are often integrated on an internal mini-PCI card, leaving your PC Card slots available for other peripherals.

本句中，现在分词短语 leaving your PC Card slots available for other peripherals **作结果状语。**

本句意为：

这些连接器经常被整合在一个内部迷你 PCI **卡上，这样就可以使** PC **卡槽用于其他外围设备。**

[5] If you are not an advanced user, it is worth paying a little extra to extend the warranty to three years.

本句所用的句型是 be worth doing sth.**，意思是“ 值得做某事 ”。**

本句意为：

如果你不是一个高水平的用户，则值得多花一点钱把保修期延长到三年。

Exercises

1．根据课文内容，回答以下问题

（1）What is the VAIO PCG-GRX570 notebook′s most distinctive feature?

（2）Is the Sony VAIO PCG-GRX570 is clearly intended for frequent travelers?

（3）What are the missteps that kept VAIO PCG-GRX570 a couple of paces behind the current forerunners in this category?

（4）How many classes can notebooks fall into? What are they?

（5）What kind of displays do notebooks use? And what kind of batteries do notebooks now universally use?

2．根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）

英 文 解 释	词　汇
A local data communications network under development by Xerox, Digital Equipment Corporation, and Intel	
A connecting device to which a wire or wires of a circuit may be attached and which is arranged for the insertion of a plug	
The clarity of an image	
Receivers fitting over the head	
A kind of portable computer	
A program that is loaded in main storage but is not being executed	
A hole into which an expansion card is plugged	
A device used to accelerate the speed of processing graphics	
A monitor usually used in notebook computers	

3．把下列句子翻译为中文

（1）The largest laptop screen to date, it offers 20 percent more viewable space than the 15-inch displays found on most desktop replacements.

（2）As in desktops, the primary measure of a processor in a notebook is its clock speed, measured in MegaHertz (MHz) or GigaHertz (GHz).

（3）In notebooks, memory is a lot simpler than it is in desktops because most notebooks use SDRAM.

（4）The amount of video memory depends on the class of notebook; smaller notebooks may top out at 8MB, while desktop replacements offer the same 32MB or 64MB found in desktops.

（5）Virtually all notebooks come with a built-in 56kbit/s modem.

（6）Nearly all notebooks have a printer port, a VGA port for an external monitor, and at least one USB port for peripherals.

（7）Notebooks use color Liquid Crystal Displays (LCDs) that range in size from 12.1 inches to 15 inches.

（8）For presentations and desktop use, make sure the VGA port supports monitor resolutions of at least 1280×1024 with 24-bit color.

（9）Notebooks with greater performance and features require bigger, bulkier batteries to keep things running.

（10）Notebook expansion options tend to be pricey, so you′re generally better off buying a notebook that has everything you need out of the box.

4．上机实践

通过 Internet **查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过** E-mail **发送给老师，并附上你收集资料的网址。**

（1）目前笔记本电脑的发展状况及性能评述。

（2）简述笔记本电脑发展过程及未来趋势。

（3）简述你对移动 PC **的看法，它对笔记本电脑和台式电脑有什么影响？**

（4）你所知道的性价比最高的数码相机是哪一种？陈述你的理由。

（5）简述数码相机的最新研究进展。

Reading Material

The Digital Camera

Nikon′s Coolpix 2500 is practically guaranteed to draw attention from friends and passersby who, after commenting on its coolness, will ask you how the heck it′s supposed to work. But

once its hidden swivel lens is revealed, operating this 2-megapixel camera is fairly straightforward. If a stylish, pocketable digicam is what you′re looking for, you′ll enjoy toting this Coolpix around.

1. Your Inner Swivel

The 2500 is the first low-priced, consumer-oriented Coolpix to feature the swivel lens used by the more expensive 900 series—but with an error additional twist. Nikon calls it the inner-swivel lens design: the lens half of the camera twists, but the outer frame of the camera doesn′t. So while the 2500 offers the benefits of the non-protruding, easily positioned 3X zoom lens, you won′t be able to shoot with the lens in a vertical position. You can, however, shoot with it angled anywhere from 130 degrees forward to 90 degrees backward (minus the width of the frame in between). There are also advantages to having the frame: the lens won′t inadvertently twist in your bag, you don′t need a lens cap, and the overall construction of the camera is solid. Unfortunately, the ultracompact, lightweight design—7.5 ounces with battery and media installed—left no room for an optical viewfinder.

You can access frequently used functions such as the self-timer, the movie mode, and the flash settings via multifunctional buttons on the 2500. There′s also an Image Transfer button that speeds up the process of downloading pictures to your computer, and a press of the camera′s unique Small Pic button automatically creates a tiny, highly compressed version of one of your shots, which is suitable for E-mailing. We′d love to see dedicated buttons for exposure compensation and white balance, but given the limited real estate on the camera′s body, Nikon has made efficient use of what′s available. The aforementioned settings and a host of others are accessed through menus on the 1.5-inch LCD and are clearly labeled with text rather than cryptic icons.

2. The Basics

The Coolpix 2500 has a useful set of features, though there are few manual overrides. Preset scene modes may be selected by pushing the Scene button, then choosing 1 of 12 icons. Among the settings available through LCD menus are Nikon′s Best Shot Selector, a continuous shooting mode, and image sharpening. The camera′s 3X zoom lens is sharp, and the close-up setting proved especially effective, capturing ample detail and focusing as close as 1.6 inches away from the subject. There′s also a fun but not all that functional movie mode, which shoots 15-second QuickTime clips of soundless motion.

Shooting performance can be sluggish with this camera, a point that will frustrate the decisive-moment photographers out there. Start-up time is a little slow—about five seconds with the included 16MB Lexar CompactFlash card and, rather inexplicably, twice that with a Nikon-approved 128MB SanDisk CompactFlash card. We also experienced noticeable shutter lag. On the other hand, the diminutive, rechargeable lithium-ion battery that comes with the 2500 packs a good amount of power into its small case, lasting 50 to 60 shots in our tests.

3．Bring Noise

In general, the Coolpix 2500 produced well-exposed images with pleasing color. Its automatic white-balance setting worked well in naturally lit situations, though it wasn′t as effective indoors, and color balance tended to be a bit warm. The amount of image detail that the camera was able to capture was about average for its class, although we did notice greater loss of detail in highlights. The 2500 didn′t fare well with image noise and artifacts, which were very noticeable in most of our low-light shots, sometimes giving pictures a yellowish cast. Purple and yellow-green artifacts also appeared along the edges of highlight areas in a few of our test images, though this wasn′t a major problem. Another minor issue was barrel distortion, which gave our pictures a distinct curve when we zoomed the lens out to its widest setting.

For a stylish 2-megapixel pocket camera, the Coolpix 2500 is a good value at $350 (list). But if you′ll be shooting in a lot of low-light situations, you might want to check out the Minolta Dimage X, a tiny camera that′s also strong on design and produces less image noise.

4．Digital Camera Spec Definitions

（1）35mm Equivalent

The focal length of the lens and the dimensions of the“ film ”frame determine the amount of a scene (angle of view) that a camera can capture from a given distance. Because CCDs vary in size, and tend to be smaller than those of 35mm film frames, the focal lengths used by a digital camera to capture a similarly framed 35mm picture are much smaller. For convenience, the industry uses the convention of quoting the camera′s angle of view in terms of its 35mm focal-length counterpart.

（2）Aperture

The opening through which light passes to make a photographic exposure. The range of sizes to which the aperture can be set is described by the f-stop numbers. Lower numbers indicate larger aperture sizes; the larger the aperture, the more light enters the camera.

（3）CCD

Abbreviation for charge-coupled device. A chip with an array of sensors (pixels) that absorb light and convert the intensity of the light hitting each pixel to a series of electric signals. Those signals are then sent to an analog-to-digital converter, which turns them into computer-readable bits. In a digital camera, the CCD acts as the“ film. ”

（4）Sensor Resolution

The number of sensors, in the horizontal and vertical directions of the CCD array, which can capture image information.

（5）Compression

Compressing pictures, usually using the JPEG file format, increases the number of images that you can store in a given amount of memory. Most image compression schemes cause some data to be lost from the image file; thus, the more an image is compressed, the more its quality degrades. Cameras that can output uncompressed images allow you to save images as TIFF files, which take up substantially more memory but do not introduce artifacts into the pictures and therefore produce

sharper prints at larger sizes.

（6）Depth of Field

The range of distances from the camera for which objects will appear in focus. A higher aperture provides greater depth of field. The broader the aperture range, the greater the camera's flexibility. Cameras with aperture priority automatic exposure allow you to set the f-stop you desire, to achieve a particular depth of field, and then adjust the shutter speed to obtain the correct exposure.

（7）Diopter

Diopters allow you to fine-tune the viewfinder image to adjust for imperfect eyesight, much like prescription glasses.

（8）DPOF

DPOF stands for Digital Print Order Format, a standard specification that provides a simple mechanism for requesting prints from digital cameras. A DPOF-compliant camera can create a print order file that describes which shots should be printed, the quantity of prints desired, which thumbnails should be output as index prints, cropping and rotation settings, and user and picture information (names, descriptions, date stamp, etc.). The DPOF file is stored on the removable memory, which allows you to stick the card directly in a DPOF-compatible printer or send the files to a digital printing service.

（9）Exposure Compensation

Exposure compensation allows you to intentionally under — or over — expose a shot to achieve a particular effect by altering the overall exposure of the shot relative to the metered ideal exposure.

（10）Focal Length

The distance from the lens to the film plane — or in this case, the CCD plane. The longer the focal length, the larger an object will appear in the picture. Wide-angle lenses (less than 50mm in 35mm equivalent) offer a wider angle of view and greater depth of field, while telephoto focal lengths (greater than 50mm in 35mm equivalent) are suited for shooting subjects at long distances. A fixed-focal length lens can capture at only a single angle of view, while a zoom lens can capture at a range of them.

（11）Hot Shoe

The standard connector for mounting an external flash on the camera.

（12）Interface

The type of connection a digital camera uses to link to a computer for the purpose of image downloading. Many cameras use a serial port or a USB (Universal Serial Bus) connection; the latter is faster and doesn't require a separate power source. More expensive models may offer an even faster SCSI or IEEE 1394 (Firewire) connection, and infrared ports are available on a limited number of cameras. NTSC/PAL connections let you display images on a television screen.

（13）ISO Speed Equivalence

Because most people are familiar with the ISO speed ratings used to describe the

light-sensitivity of film, ISO equivalencies are sometimes provided to describe the sensitivity of a digital camera′s CCD. These are usually determined automatically by the digital camera, but when a camera provides user-selectable settings, you can change the sensitivity characteristics of the CCD. For example, by raising the ISO speed from 100 to 400, you can capture a low-light scene (without flash) that the camera might otherwise not have exposed properly. The tradeoff is that higher ISO speeds decrease the signal-to-noise ratio of the images, which degrades the quality.

（14）LCD

An LCD (Liquid Crystal Display) is a screen, usually found on the back of a digital camera, that permits the user to view the full range of settings offered by the camera and to review the pictures in the camera. It can also serve as a viewfinder to preview the image before capture.

（15）Lens

The glass or plastic material through which a camera receives light. Many inexpensive cameras only allow you to use the lens which is integrated to the body of the camera. Some have threads onto which you can screw alternative industry-standard lenses, or adapters which in turn accept industry-standard lenses. More expensive SLR-body based cameras support interchangeable lenses which you can remove and replace with other lenses.

（16）Macro Mode

A setting that allows a camera to focus on objects that are very near and shoot images with a high level of magnification. We refer to the closest distance at which the camera′s lens can focus when in macro mode as the "closest macro focus distance." This distance usually differs from the closest distance it can focus in telephoto mode.

（17）Metering Modes

Cameras have any number of ways of measuring the amount of light in a scene, referred to as metering. Each will provide you with a different exposure and therefore will change the aesthetic quality of the photograph. The most common default modes, matrix and multi-pattern metering, take an average of a fixed number of points in the scene. In contrast, spot metering measures the light around the focal point of the scene, and center-weighted metering combines spot and matrix to provide an average value that emphasizes the light reflecting from the subject.

（18）Recycle Time

The amount of time it takes the camera to prepare to take another shot.

（19）Removable Memory

A removable card that stores digital images and can be swapped in and out of digital cameras. CompactFlash (CF) is a type of PC Card that′s been reduced to a fraction of its original size; with an adapter, you can use them in standard PC Card slots. Type 1 CompactFlash is the "standard" type accepted by digital cameras; Type 2 CompactFlash is larger and comes in higher capacities, and digital camera manufacturers will state explicitly if the camera supports it. SmartMedia cards are smaller and lighter than CompactFlash cards, though their capacities are generally less than those of CompactFlash. Less common forms of removable memory include the Sony Memory Stick and

the Iomega Clik.

（20）Resolution

Resolution measures a digital camera′s ability to record detail in a scene; higher resolution (more pixels) equals more image information. Optical resolution is the number of sensors on a camera′s CCD which capture image data; Interpolated resolution is the number of pixels the camera′s software can " make up " by using known values to guess at intermediate ones.

（21）Scene Modes

Manufacturer-supplied exposure presets that are optimized for specific types of scenes. For instance, a sports mode sets the camera to a fast shutter speed and wide aperture in order to capture action shots, which a landscape mode will set it to a slower shutter speed and wide aperture in order to get the greatest depth-of-field.

（22）Shutter Speed

A shutter is the device — mechanical, electronic, or a combination of both — that opens and closes to allow light to fall on a light-sensitive element (the CCD in a digital camera, film in a film-based camera). The shutter speed is the length of time of that exposure. Shutter speed is measured in seconds and fractions of seconds. Thus, if a camera′s shutter speed is set at 1/16, it means that the CCD is exposed to the light entering the camera through the lens for one-sixteenth of a second. The slower the shutter speed, the more light enters the lens. Too low a shutter speed can pick up even barely perceptible movements on the part of the photographer, which causes camera shake. Lower shutter speeds will also capture more movement in the subject, so if you want a sharp shot of a subject in motion, it′s better to use a faster shutter speed. Cameras with shutter priority automatic exposure allow you to set the shutter speed you desire, and then adjust the aperture to obtain the correct exposure.

（23）Slow Sync

A technique for using flash with slow shutter speeds, which, by varying the shutter speed, enables control of the exposure for different lighting effects.

（24）Weight

This refers to the manufacturer′s reported weight, usually without batteries or media installed.

（25）White Balance

Light — no matter how " white " it looks, has a color. A camera′s white-balance algorithms compensates for colors inherent in different lighting conditions by guessing what′s white in the scene and compensating. Most digital cameras feature automatic white balance but also allow you to manually override the automatic setting by allowing you to pick the white point of the scene in one of two ways; by selecting a preset for daylight, indoor light (tungsten), flash, or other standard environment, or by allowing you to manually choose a white point in the scene and program the camera to base its adjustments off that.

（26）Zoom Range

A lens which offers a variety of focal lengths is referred to as a zoom lens; the maximum and minimum focal lengths determine the optical zoom range, and therefore the range of magnification

provided by the camera. Some digital cameras offer the option of allowing you to focus the entire image onto a fraction of the CCD; this combination of a smaller film plane with the original focal length — referred to as digital zoom — effectively produces a greater magnification of the scene, but at a lower resolution than an optical zoom would produce.

New Words

lens	透镜，镜头
megapixel	兆像素
pocketable	可放在口袋的，袖珍的
digicam	数码相机
zoom	变焦
shoot	拍摄
self-timer	自拍定时器
suitable	合适的
exposure compensation	曝光补偿
white balance	白平衡
preset	预先设置
clip	剪辑
shutter	快门
rechargeable	可再充电的
lithium-ion	锂离子
spec definition	规格说明
aperture	光圈
CCD (Charge Coupled Device)	电荷耦合器件；电荷耦合装置
analog-to-digital converter	模数转换器
JPEG (Joint Photographic Experts Group)	联合图像专家组，一种压缩标准
f-stop	光圈数
diopter	照准器；屈光度
fine-tune	调好
Digital Print Order Format	数字打印规格
date stamp	日期戳，日期标记
focal length	焦距
external flash	外接闪光灯
USB (Universal Serial Bus)	Intel 公司开发的通用串行总线架构
infrared	红外线
NTSC (National Television System Committee)	（美）国家电视制式委员会
PAL	逐行倒相制式
light-sensitivity	光敏度

low-light	**低光**
signal-to-noise ratio	**信噪比**
viewfinder	**取景器**
SLR (Single Lens Reflex)	**单镜头照相机**
telephoto	**远距离摄影照片**
magnification	**扩大，放大倍数**

Unit 4

Text

The Personal Printers

Cost-conscious families, students and home-office users often buy sub-$100 inkjets as an economical way to get basic printing capabilities. These supercheap machines traditionally sacrifice a lot of features to keep their prices low, but the three models in this text offered at least a few surprises: some impressive output; print speeds that were, in certain cases, astonishing; and useful features from novice-friendly setup tutorials to sophisticated photo-enhancement controls. Just keep an eye out for hidden long-term trade-offs, such as having to buy an interface cable (none of the machines we tested came with one), shelling out for pricey inks, or fiddling with flimsy paper trays that won′t stand up to rough family use.

The Epson Stylus C60′s trade-offs are tolerable ones. The inkjet prints text quickly but not perfectly, and it produces breathtaking photos—but very slowly. Add to this tricky balance some very novice-friendly documentation and inexpensive inks, however, and the C60 becomes a solid choice for home users or students, as well as for digital shutterbugs on a budget.

1. Kind and Gentle to Newbies

New users will appreciate the $79 Epson Stylus C60′s user-friendly approach. The printer comes with a big colorful Start Here card that walks you through connecting the printer, installing the ink and the paper and setting up the drivers. A Printer Basics booklet gives you more detailed advice on troubleshooting and even packing the printer for transport. The included CD-ROM has a more detailed Reference Guide, Epson Print Show movies (animated movies that demonstrate basic printing and usage) and drivers (for parallel connection—Windows 95, 98, Me, 2000 and XP; for USB—Windows 98, Me, 2000 and XP, plus Mac OS 8.5.1 to 9.1; OS X drivers are available online). You also get Epson Film Factory Lite, a program that lets you collect, edit and store all kinds of digital images. The only thing not included is a USB or parallel cable, so you may need to buy one.

The Stylus C60′s compact design should fit comfortably on most desktops. The input tray, which holds 100 sheets of plain paper, is vertically attached to the top back of the printer, adding about one foot in height. The output tray extends from the front base and adds about six inches in

depth. Still, the printer supports various paper types including envelopes, photo paper, cards, transparencies, and stickers.

The Stylus C60 drivers are sophisticated but still approachable, even for new users. In addition to basic functions such as Paper Type and Orientation, a plethora of preset and customizable image, color-management settings, such as Photo Enhance, let you adjust the printer′s palette for people, nature images and more.

2. Consistently Good Output

But these perks would be nothing without fast, good-quality output, and the C60 meets you at least halfway. In our labs′ tests, the Stylus C60 printed text at 5.9 pages per minute — faster than many more-expensive inkjets. Letters looked good on both plain paper and Epson′s Photo Quality Inkjet paper. We noticed some jaggedness and fine horizontal striping, but overall, the type was dense and well saturated. Photo printing was quite a bit slower, at 6.2 minutes per 8×10 photo, but the results were worth the wait; skin tones on our test photo looked smooth and natural, and colors were rich and accurately rendered. Graphics on plain paper had good color matching and smooth shading. On Epson′s inkjet paper, colors were accurate — if a little bright — and photo elements looked smooth.

Many inkjets look cheap until you have to buy replacement inks — but not the Stylus C60. Prints will cost you a reasonable 6 cents per page of text and 26 cents per color page.

Epson backs the Stylus C60 with a typical service and support plan. You can extend the one-year warranty to two years for $14.95; a three-year plan costs $24.95. Free phone support is available for the life of the product, Monday through Friday from 6 a.m. to 8 p.m. and Saturdays from 7 a.m. to 4 p.m. PT. The Epson Web site offers useful resources such as the latest drivers (including one for Mac OS X), FAQs, and manuals.

No sub-$100 printer is going to be perfect, but the Epson Stylus C60 balances its good and not-so-good points skillfully. Students will like the inkjet′s fast-printing, decent-looking text; amateur photographers will love the beautiful prints, even though they emerge slowly; and pretty much anyone will appreciate the affordable price.

3. What to Look For: Printers

(1) Printer Type

Three technologies dominate personal printers: inkjet, laser, and to a lesser extent, LED (Light-Emitting Diode). Using replaceable cartridges that spray fine droplets of ink, personal inkjet printers cost the least, print slowly, and often produce impressive color output. Laser and LED printers use a process similar to that of a photocopier, where a light-sensitive drum rolls charged black toner particles onto paper — producing crisp, fast printouts. Almost all workgroup models employ laser or LED technology due to higher print speeds and easier maintenance.

(2) Output Type

Want to print lots of monochrome pages? Buy a laser or LED printer for its speed and low cost

of consumables. Need affordable color? Get an inkjet printer. Photo-quality inkjets generally produce the best homemade color photos, but be forewarned that they usually print slower than your average inkjets (which are slow to begin with). Don′t buy an inkjet just to save money: the price up front will be lower than that of a laser, but the cost of an inkjet′s color cartridges and coated paper add up quickly. Businesses that need color output quick and in high volume tend to choose color lasers or LEDs, which are reasonably fast and quite expensive. Graphics pros should also explore special-purpose color printers, which employ such alternative technologies as solid ink, dye sublimation, thermal autochrome, thermal wax, and more.

（3）Maximum Resolution

Personal laser printers produce 600 dots per inch (dpi) — sufficient resolution to create crisp monochrome output. Some expensive workgroup lasers deliver 1200dpi or even 2400dpi. Inkjet printers typically claim output resolutions of 1200dpi or 2400dpi, but the sharpness isn′t comparable to that of lasers because inkjet print heads lay down tiny splotches of liquid ink line by line, a far less precise process. Generally, you should ignore inkjet dpi claims and compare actual printouts (or the image quality results in our reviews) when possible.

（4）Installed Memory

Personal printers typically need little memory. Inkjets require a tiny amount; just enough to hold the row of dots being printed and maybe a little more. Laser and LED printers are page printers, which means that they must render an entire page in memory before printing. However some personal models are host-based printers and cut costs by using the processing power and memory of your PC to manage print jobs. Top-of-the-line workgroup printers that plug directly into a local network may hold multiple pages, letterhead graphics, forms, special fonts, and more, so expect between 32MB and 128MB of memory out of the box (expandable to 256MB or 384MB).

（5）Maximum Speed

Measured in pages per minute (ppm), this specification is always exaggerated. Laser printers generally print text pages only slightly slower than the manufacturers′ claims. But the claims for inkjets are typically at low-quality settings using very simple text pages — in other words, a speed you′ll never see in real life. Reality check: Printing a single 8×10 color photo on an inkjet may take anywhere from 2 to 15 minutes.

（6）Monthly Duty Cycle

A manufacturer specification that suggests the maximum number of pages a printer should handle per month. This is primarily a concern for small-office and workgroup printers, not personal printers. Here′s a rule of thumb often used by IT departments: To avoid breakdowns, buy a printer with a monthly duty cycle approximately four times the number of pages you think that you′ll actually print per month.

（7）Interface

Almost all personal printers now come with a Universal Serial Bus (USB) port, which is much faster than the old-fashioned parallel port. Only antiquated computers lack USB support. For larger workgroups, you′ll want a printer that hooks directly to the network via Ethernet port.

（8）OS Support

A bigger issue than you might imagine. A few printers lack Mac support entirely, and a number of manufacturers take their time before offering drivers that are fully compatible with the latest version of Windows. Companies that shy away from producing new drivers in a timely fashion may arbitrarily shorten the useful life of your printer.

（9）Warranty and Support

Printers typically come with warranties of one or, at most, two years. Some manufacturers also offer extra-cost, extended warranties for workgroup models.

New Words

sub-$100	低于 100 美元
inkjet [ˈɪŋkˌdʒɛt] *a.*	喷墨的
n.	喷墨打印机
supercheap [ˈsuːpəˌtʃiːp] *a.*	特别廉价的
novice-friendly [ˈnɒvɪs ˈfrɛndlɪ] *a.*	对初学者友好的
long-term [ˈlɒŋˌtɜːm] *a.*	长期的
ink [ɪŋk] *n.*	墨水
inexpensive [ˌɪnɪkˈspɛnsɪv] *a.*	便宜的
animated [ˈænɪmeɪtɪd] *a.*	活生生的，动画的
demonstrate [ˈdɛmənstreɪt] *vt.*	示范
usage [ˈjuːsɪdʒ] *n.*	使用，用法
parallel [ˈpærəlɛl] *a.*	平行的，并列的，并联的
collect [kəˈlɛkt] *vt.*	收集
compact [kəmˈpækt] *a.*	紧致的，压缩的；小型的
vt.	压缩
tray [treɪ] *n.*	盘，碟
transparency [trænsˈpɛərənsɪ] *n.*	幻灯片
sticker [ˈstɪkə] *n.*	不干胶标签；不干胶贴
sophisticate [səˈfɪstɪkeɪt] *vt.*	改进
approachable [əˈprəʊtʃəbl] *a.*	容易接近的
palette [ˈpælɪt] *n.*	调色板，选项板，选用区
perk [pɜːk] *n.*	好处，便利，优点
jaggedness [ˈdʒæɡɪdnɪs] *n.*	有锯齿，参差不齐
stripe [straɪp] *n.*	条纹
saturated [ˈsætʃəreɪtɪd] *a.*	饱和的
smooth [smuːð] *adj.*	平滑的
render [ˈrɛndə] *vt.*	着色
match [mætʃ] *n.*	匹配，对比，符合
vt. & *vi.*	使匹配，匹配
matching [ˈmætʃɪŋ] *n.*	匹配，微调，调整，对比
shade [ʃeɪd] *n.*	阴影，底纹
v.	加阴影

shading [☞♏♓♎♓☠] *n.*	加阴影，留下阴影
cartridge [⍰♋♋💻♦❒♓♎✞] *n.*	墨水盒，墨粉盒
droplet [⍰♎❒☝◘●♓♦] *n.*	小滴
photocopier [⍰➚☜◆♦☜◆❧♋☝◘♓☯] *n.*	光复制机，影印机，照相复印机
drum [♎❒✈❍] *n.*	鼓；滚筒
charged [♦☞✌💻♎✞♎] *a.*	带电荷的
particle [⍰◘♋💻♦♓♋●] *n.*	粒子
printout [⍰◘❒♓■♦❧♋◆♦] *n.*	打印输出，打印结果
type [♦♋♓◘] *n.*	字形；输入
monochrome [⍰❍☝■☜◆♋❒☜◆❍] *a.*	单色
homemade [⍰♒☜◆❍⍰❍♏♓♎] *a.*	自制的
dot [♎☝♦] *n.*	点
splotch [⍰⬧◘●☝♦☞] *n.*	斑点
host-based [⍰♒☜◆⬧♦♌♏♓⬧♦] *a.*	基于主机的
expandable [♓♋⬧⍰◘✌■♎☜♌●] *a.*	可扩展的
old-fashioned [❧☜◆●♎⍰➚✌☞☜■♎] *a.*	老式的
extra-cost [⍰♏♋⬧♦❒☜♋☝⬧♦] *a.*	额外花费
pro [◘❒☜◆] *n.*	能手，内行
sublimation [❧⬧✈♌●♓⍰❍♏♓☞☜■] *n.*	升华，升华物

Phrases

keep on eye out for	当心，警惕
shell out	交付，支付
black toner	墨粉
save money	省钱
high volume	大量
thermal autochrome	热片
thermal wax	热腊（转印）
shy away from	躲避
parallel port	并口
compatible with …	与……兼容
take one's time	不慌不忙，从容不迫

Abbreviations

dpi (dots per inch)	每英寸点数
ppm (pages per minute)	每分钟页数
FAQ (Frequently Asked Question)	频繁问到的问题，常见问题解答

Notes

[1] Add to this tricky balance some very novice-friendly documentation and inexpensive inks,

however, and the C60 becomes a solid choice for home users or students, as well as for digital shutterbugs on a budget.

本句可改写为：If we add some very novice-friendly documentation and inexpensive inks to this tricky balance, however, the C60 will become a solid choice for home users or students, as well as for digital shutterbugs on a budget.

本句意为：

然而，如果增加一些对新手友好的文档和便宜的墨水，C60 **打印机就会成为家庭用户或学生以及手头拮据的数字摄影爱好者的一致选择。**

[2] The printer comes with a big, colorful Start Here card that walks you through connecting the printer, installing the ink and the paper, and setting up the drivers.

本句中，that walks you through connecting the printer, installing the ink and the paper, and setting up the drivers **是一个定语从句，修饰和限定** Start Here card.

本句意为：

该打印机带有一个大的彩色 Start Here **卡，这个卡可以使你很容易地连接打印机、安装墨水和纸张以及设置驱动程序。**

[3] Laser and LED printers use a process similar to that of a photocopier, where a light-sensitive drum rolls charged black toner particles onto paper — producing crisp, fast printouts.

本句中，similar to that of a photocopier **是一个形容词短语，修饰和限定** a process，that **指代** the process. **非限定性定语从句** where a light-sensitive drum rolls charged black toner particles onto paper — producing crisp, fast printouts **也修饰** a process.

本句意为：

激光打印机和发光二极管打印机应用了与光复印机相似的处理过程。在这个过程中感光鼓把装好的墨粉粒滚到纸上，这样很快打印出清晰的打印品。

[4] Inkjet printers typically claim output resolutions of 1200dpi or 2400dpi, but the sharpness isn′t comparable to that of lasers because inkjet print heads lay down tiny splotches of liquid ink line by line, a far less precise process.

本句中，that **指代** the sharpness；a far less precise process **是对** inkjet print heads lay down tiny splotches of liquid ink line by line **的补充说明。**

本句意为：

典型的喷墨打印机声称其输出分辨率为 1200 dpi **或** 2400dpi**，但是，其清晰度不能与激光打印机相比。因为，喷墨打印头逐行打印出微小的墨点，这是一个远远不精确的过程。**

[5] A few printers lack Mac support entirely, and a number of manufacturers take their time before offering drivers that are fully compatible with the latest version of Windows.

本句中，before **引导了一个时间状语。定语从句** that are fully compatible with the latest version of Windows **修饰和限定** drivers.take their time **的意思是“不慌不忙”、“从容不迫”。**the latest **的意思是“最新的”。**

本句意为：

一些打印机完全不支持 Mac **计算机，而且许多厂商在提供与** Windows **最新版本完全兼容的驱动程序之前，从容不迫。**

Exercises

1．根据课文内容，回答以下问题

（1）What do supercheap machines traditionally do to keep their prices low?

（2）What are the surprises the three models in this text offered?

（3）What are the three technologies that dominate personal printers?

（4）What is the rule of thumb often used by IT departments?

（5）What do almost all personal printers now come with?

2．根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）

英 文 解 释	词　汇
a printer which uses ink as its media	
a jack on the back of your computer that you can plug something into, especially a printer	
a range of colors used to support the color look-up table	
test whether two data items are identical or find a data item that is identical to a key	
having no colour, only black, white or gray tones	
a picture element; the smallest displayable unit on the screen	
to enter information by means of the keyboard	
a rotating cylinder used with some printers and plotters	
a kind of film used in the slide projector	
the black powder used in laser printers	

3．把下列句子翻译为中文

（1）The Epson Stylus C60′s trade-offs are tolerable ones. The inkjet prints text quickly but not perfectly, and it produces breathtaking photos — but very slowly.

（2）A Printer Basics booklet gives you more detailed advice on troubleshooting and even packing the printer for transport.

（3）You also get Epson Film Factory Lite, a program that lets you collect, edit, and store all kinds of digital images.

（4）Many inkjets look cheap until you have to buy replacement inks — but not the Stylus C60.

（5）No sub-$100 printer is going to be perfect, but the Epson Stylus C60 balances its good and not-so-good points skillfully.

（6）Using replaceable cartridges that spray fine droplets of ink, personal inkjet printers cost the least, print slowly, and often produce impressive color output.

（7）Almost all workgroup models employ laser or LED technology due to higher print speeds and easier maintenance.

（8）Businesses that need color output quick and in high volume tend to choose color lasers or LEDs, which are reasonably fast and quite expensive.

（9）Personal printers typically need little memory.

（10）Companies that shy away from producing new drivers in a timely fashion may arbitrarily shorten the useful life of your printer.

4．上机实践

通过 Internet **查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过** E-mail **发送给老师，并附上你收集资料的网址。**

（1）简述目前激光打印机的发展状况及性能评述。

（2）对现在所谓的“一体机”（打印机、传真机、复印机、扫描仪的结合）做一个简明评价。

（3）描述你认为目前功能最强大的 PDA**。**

（4）你所知道的性价比最高的喷墨打印机是哪一种？陈述你的理由。

（5）简述 PDA **的未来发展。**

Reading Material

The PDA

If you're wondering why the Maestro PDA-1032 looks a lot like Toshiba's Pocket PC e570, it's because this PDA is basically Toshiba's device — minus 32MB of RAM — with Audiovox's name slapped on it. The Toshiba is one of our favorite Pocket PCs, so it's not surprising that we're also quite fond of this one. Its slim size and dual card slots make it very appealing, but because it has less RAM, it's not the right choice for everyone.

1. Look-alike

The $499 Maestro looks identical to Toshiba's $570 e570 except for the logo. At 4.9×3.0×0.7 inches, it's slightly smaller than Compaq's iPaq H3760. However, you'll find both CompactFlash Type II and Secure Digital (SD) card slots crammed into that compact case. That means that you can add a big SD card for storing media files and applications as well as plug an Ethernet, a Wi-Fi, or a Bluetooth card into the CompactFlash slot to keep your device connected.

Inside, the Maestro has the same 206MHz Intel StrongARM processor and 32MB of ROM as other Pocket PC 2002 devices we've tested. Since MultiMedia Memory cards (MMC) also work in the SD slot, we added a 32MB MMC (purchased online for $24) to get a PDA with essentially the same abilities as the e570. We tried it with music, Word documents, Excel files, and a number of games, finding no significant difference in the user experience, whether we put the files on the storage card or in the system RAM. However, with the graphically intense game Chopper Alley, loading times were noticeably longer when using the storage card than when using the system memory.

No matter what sort of applications you run, they look good on the Maestro's 3.5-inch reflective LCD. The screen is 0.25 inches smaller than that of the iPaq, but that helps keep size and weight down. We found the 320×240-pixel, 65 000-color display to be bright, sharp, and readable in all lighting conditions. Below the screen are the de rigueur four application buttons and a small but exceptionally finger-friendly directional pad. A Record button for taking voice notes rests on the Maestro's side, but it's well recessed so that you don't start recording accidentally. The whole package feels nice and solid in your hand. Fashion-conscious souls can opt for replacement rubber grips, which are available in assorted colors. To protect the Maestro, Audiovox includes only a faux-leather case.

2. Better Connected

The Maestro is better connected than the Toshiba. Even though it comes with the same USB cradle to sync with your PC, it also has a cable and a preinstalled modem driver to link it to the Audiovox CDM-9100. You can then surf the Internet wirelessly via the phone. Sprint and Verizon also sell a $649 package that includes both the Maestro and the aforementioned phone. However, be forewarned: The cable is awkward, and the connection is pretty slow (14.4kbit/s maximum).

A built-in lithium-polymer battery powers the Maestro. While rated for eight hours of use, the

battery ran for just more than two hours in our tests. That′s about the same as other Pocket PCs that we′ve tested.

Audiovox backs the Maestro with a one-year warranty. We weren′t able to find much helpful support information for the PDA on the company′s Web site, but you can check Toshiba′s site if you run into trouble. If you need to speak to real person, you can call Audiovox at 800/229-1235 Monday through Friday during East Coast business hours. But if you′re really concerned about the quality of the support, we had a better experience dealing with Toshiba on the phone. We waited for a shorter length of time, and the person who answered was capable of helping us through our simple problem.

Many users will find the $499 Maestro to be an excellent value, especially since you can pick up a 128MB SD card for less than $70. Such a purchase will allow you to store lots of music, games, and business files, all at the same price you′d pay for the e570 alone. However, if you plan to run very sophisticated applications on your Pocket PC, having more system RAM will be advantageous.

3．PDA Spec Definitions

（1）Backlight display

A source of light behind the LCD display that makes it easier to read.

（2）Batteries rechargeable

Certain types of batteries can be recharged using the docking cradle or directly with an AC adapter.

（3）Battery Amount

The physical number of batteries required to operate the unit.

（4）Battery Type

Some handheld PCs use standard alkaline batteries; others have built-in rechargeable batteries. The most common type of rechargeable battery is lithium-ion, which is ideal for portable devices because its lightness and high energy density. Lithium-polymer is a newer battery type that theoretically delivers longer battery life ounce-for-ounce.

（5）Computer Interface

All handheld PCs offer one of two types of interfaces for making a physical connection with a host PC to synchronize data and upload programs: serial or USB (Universal Serial Bus). An older standard, the serial interface transmits only 1 bit at a time. Nearly all PCs with the exception of some of the newest“ legacy-free ”models, include serial ports. USB is a more recent standard that is significantly faster. It supports data transfer rates of 12 Mbit/s (12 million bits per second). A single USB port can be used to string together multiple devices, and USB is generally plug-and-play making installation easier.

（6）Display

Short for display screen. Handheld PCs use a thin display screen known as an LCD (Liquid Crystal Display). There are several types of LCD displays.

（7）Display Size (diagonal)

Refers to the length of display in inches from one corner to the opposite corner.

（8）Dimensions

This refers to the physical dimensions of the unit — the height, width, and depth as held in your hand — measured in inches.

（9）Docking Cradle Included

Some handheld PCs include a cradle into which you can insert the device to synchronize data and upload programs from a host PC and/or recharge the batteries. Less-costly models only include a data cable, not a full cradle.

（10）Expansion Slots

Refers to the physical slots found on some handheld PCs that can accept certain types of media such as CompactFlash, MMC (MultiMedia Card), Sony′s Memory Stick, and Handspring′s Springboard modules. Depending on the type, these cards may be used for additional storage, peripherals such as modems and network adapters, or third-party programs such as games.

（11）Flash Memory (ROM)

In contrast to RAM, ROM (acronym for read-only memory) is a type of memory on which data has been prerecorded. Generally, once data has been written onto a ROM chip, it cannot be removed and can only be read. Unlike main memory (RAM), ROM is non-volatile, meaning it retains its contents even when the computer is turned off. All handheld PCs include a small amount of ROM where critical programs such as the operating system are stored. The amount of ROM on a handheld PC is also measured in megabytes — typically anywhere from 2 to 16MB depending on the operating system. Some handheld PCs, but not all, have upgradeable ROM, which means that you can upgrade to new versions of the operating system as they become available.

（12）Handwriting Recognition Software

An application that understands your handwriting and transforms it into digital data. Different handheld PCs take different approaches. Palm-based organizers use Graffiti, a shorthand alphabet that is relatively easy to use but takes time to learn. Other handheld PCs attempt to recognize your natural handwriting.

（13）Host PC Platform

The host PC is the desktop or notebook PC that you attach to your handheld PC via a cable, cradle, or infrared to synchronize data and upload programs. The term platform refers to the operating systems on the host PC with which the handheld PC is compatible.

（14）Infrared Port

Often referred to as IrDA after the organization that runs the specification (Infrared Data Association), infrared is a standard for transmitting data via infrared light waves. Most handheld PCs come with an infrared port that can be used to synchronize data with a host PC or to exchange data such as electronic business cards with other handheld PCs. IrDA ports support roughly the same transmission rates as traditional parallel ports, and the two devices must be within a few feet of each other and there must be a clear line of sight between them.

（15）Internal Memory (RAM)

All PCs including handhelds have internal storage in the form of computer chips. The main memory is known as RAM, an abbreviation for RAM (Random-Access Memory). The term RAM refers to read and write memory; that is, you can both write data into RAM and read data from RAM. Known as volatile memory, RAM requires a steady flow of electricity to maintain its contents. As soon as the power is turned off, whatever data was in RAM is lost. RAM is measured in megabytes and the amount in handheld PCs varies widely (currently anywhere from 2 to 32MB) depending on the operating system and applications.

（16）LCD Type

There are two basic types of color LCD displays. Thin Film Transistor (TFT) or active-matrix displays produce color images that are as sharp as traditional CRT displays (your desktop PC′s monitor), but the technology is expensive. Passive matrix is less expensive, but images are not as crisp and bright. Newer passive matrix technologies such CSTN and DSTN are closing the gap with active matrix displays.

（17）MP3 Player

It derives from the file extension for audio files that use MPEG, audio layer 3 compression. Since this is the most common format, it has become shorthand for digital audio. Some handheld PCs, specifically Pocket PC, include a player program that can play both MP3 and Windows Media audio files.

（18）Number of Colors Displayed

Technically, the color display capability of a display is measured by the number of bits used to represent each dot on the screen. To simplify things, this can be converted into the total number of colors that can be reproduced: a 1-bit image is monochrome; an 8-bit image supports 256 colors or grayscales; a 12-bit image supports 4096 colors, and a 16-bit image has 65 536. True color (24 or 32-bit graphics) is currently not supported by any of the major handheld PCs.

（19）Number of Gray Shades Displayed

The terms monochrome and gray-scale are now used interchangeably to refer to screen displays that can only display shades of gray, not color. Most Palm-based organizers are gray scale and typically display anywhere from 4 to 16 shades of gray depending on the model.

（20）Operating System

The most important program that runs on a handheld PC, the Operating System (OS) performs basic tasks such as recognizing data input, sending output to the display, keeping track of files and directories on the disk, and controlling peripheral devices expansion cards. The operating system also runs all of the other programs on your handheld. The two most common handheld operating systems are Palm OS and Pocket PC.

（21）Operating System Manufacturer

Refers to the company that develops the operating system.

（22）Operating System Version

Refers to the version number of the operating system. Generally, the higher the number, the more recent the operating system was released. You can upgrade the operating system on some, but

not all, handheld PCs.

（23）Processor

Short for microprocessor or CPU, the silicon chip that is at the core of all personal computers including handhelds. Processors are classified based on several features including the set of instructions that the microprocessor can execute, the number of bits of data that they can process at one time, and most commonly the clock speed.

（24）Processor Speed

Also called the clock speed, this refers to the speed at which the processor executes instructions. The processor requires a fixed number of clock ticks (or clock cycles) to execute each instruction. The faster the clock, the more instructions the processor can execute per second. Clock speeds are expressed in MegaHertz (MHz), 1 MHz being equal to 1 million cycles per second. The clock speeds of processors in handheld PCs vary widely depending on the operating system. In general, the higher the value, the more powerful the processor. However, the internal architecture of the processor also affects performance.

（25）Rated Battery Life

Refers to the manufacturer′s estimated battery life under normal usage conditions.

（26）Resolution

Refers to the sharpness and clarity of an image. For screen displays, the resolution signifies the number of dots (pixels) on the entire screen. For example, a 640-by-480 pixel screen is capable of displaying 640 distinct dots on each of 480 lines, or about 300 000 pixels.

（27）Touchscreen

Refers to display screens that have a clear overlay that is pressure-sensitive so that you can enter instructions and data by touching the screen. Though these are less common on notebook PCs, they are virtually a requirement on handheld PCs where you use a stylus, rather than a keyboard, to enter data.

（28）Weight

This refers to the manufacturer′s reported weight including batteries measured in ounces.

Wireless Internet Access: Supports some type of wireless access, ranging from a full-blown Internet experience, to the ability to view handheld-optimized content, such as Web clippings.

New Words

PDA (Personal Digital Assistant)	**个人数字助理**
Secure Digital (SD) card	**安全数字卡**
Multimedia Memory Cards (MMC)	**多媒体存储卡**
finger-friendly	**便于手指操作的**
sync	**同步**
forewarn	**预先警告**
lithium-polymer battery	**锂聚合电池**
backlight	**背后照明的**

docking cradle	**充电座**
alkaline battery	**碱性电池**
high energy density	**高能量**
ounce-for-ounce	**一点点，差不多**
handheld	**手持式**
legacy-free	**无传统的**
opposite corner	**对角**
MMC (Multimedia Card)	**多媒体卡**
third-party	**第三方**
flash memory	**闪存，闪速存储器**
non-volatile	**非易失的**
upgradeable	**可升级的，可更新的**
thin film	**薄膜**
shorthand	**速记**
silicon	**硅**
clock speed	**时钟速率**
clock cycle	**时钟周期**
touchscreen	**触摸屏**
pressure-sensitive	**压敏**

Unit 5

Text

VIA P4X333 with DDR333 and AGP 8x

1. USB, AGP 8x, DDR333, ATA/133: The Perfect P4 Chipset

The new chipsets that are introduced from time to time usually lack innovation. Not this time. VIA, formerly" just a chipset maker, "has become the number two in the global chipset market, and now it is putting all its efforts into extending the good reputation that it achieved through a series of successful chipsets. As numerous tests have revealed, the Pentium 4 lacks the bandwidth that's needed to take advantage of its full potential. Is the P4X333 platform to remedy this grievance?

It looks that VIA should be able to continue this success story — the new chipset does implement a bunch of features for which most of us have been impatiently waiting. USB 2.0 will be the most important external interface for all kind of computers, and obviously, VIA wouldn't do without it. The new Southbridge chip VT8235 not only offers USB 2.0, but also includes an IDE interface with support for UltraATA/133. Even though Maxtor is the only manufacturer that ships such drives, there's certainly nothing wrong in having this most advanced interface. Finally, VIA emphasizes that the bandwidth of their bus between the Northbridge and Southbridge has been doubled, now delivering 533 MB/s (just as fast as SiS, twice as fast as the Intel Hub architecture).

Last but not least, there is a question that this article won't be able to answer: What about AGP 8x? According to the specs, VIA has implemented the new graphics card interface that finally also doubles the bandwidth between the graphics adapter and the Northbridge. In the past, upgrading from AGP 1x to 2x and 4x always raised graphics performance. A separate article will discuss this topic later. Here, it's not a primary factor in evaluating the performance of the P4X333 and the new memory interface in particular. Instead, we stick to known factors, such as GeForce 4 TI4600 512 MB DDR333 SDRAM

(CL2.0) and a fast hard drive from Maxtor. Let's see what this chipset is all about.

2. VIA vs. Intel: A Quick Summary

VIA is dipping its toes into a market that has always been dominated by the chip giant Intel. Intel's advantage is that it supplies chipsets for their own processors, thus offering a platform that is both fast and reliable.

The only setback that Intel ever had to suffer was the disaster with the Pentium III chipset "i820" and the so-called "Memory Translator Hub" (or MTH), which was supposed to enable the use of conventional SDRAM memory on a chipset that was designed for Rambus DRAM. Unfortunately, this MTH chip had some bugs that could not been eliminated, and this whole affair was dubbed "Caminogate" — an allusion to the code-name that was used for i820.

A first look at the Northbridge, cooled by a small heat sink

As a result of this disaster, Intel phased out the 820 chipset and released the 815 in order to replace the aged BX. A modified version of this chipset (815T) is used today for Celeron and Pentium III CPUs, but through Intel's mistake, VIA finally gained a strong hold in the market by providing the Apollo Pro 133A chipset which, due to the failure of i820 + MTH, managed to become the fastest PIII chipset at the time.

Since then, products from the Taiwanese company are steadily improving in terms of consistency and performance. Today, VIA is strong enough to push their own technological developments (such as the C3, Eden and now, the first chipset with AGP 8x).

3. Another Competitors: SIS

However, there is also another competitor that is not dormant — Silicon Integrated Systems

(SIS), who has managed to get rid of its "very-low-cost" image within the last months. The first product to surprise us was the 735 chipset for Athlon; today, SIS delivers various chipsets for all of the common PC architectures. The 645DX is their current flagship for the Pentium 4, also supporting DDR333 and 533 MHz FSB, but it lacks support for ATA/133, USB 2.0 and AGP 8x. While VIA is still fighting for the Pentium 4 bus license, SIS is officially allowed to sell P4 chipsets. This issue could decide whether the P4X333 will be successful or not. In Europe, for example, it's not quite as easy to get motherboards based on the P4X266A (except for the VIA brands), so it looks that the big motherboard players are still cautious.

4．Ready For Graphics: AGP 8x Support

The P4X333 is the first Pentium 4 chipset to support AGP 8x (or AGP 3.0, to be more precise). Though the standard has been defined since late 2000, it is not yet introduced through the industry. The upcoming Intel chipsets i845E and i845G both do not support AGP 8x, neither does the just released 850E version. In addition, there are no AGP 8x graphics cards available now, so this may not even be so tragic.

You may wonder why it could ever be necessary to have such a huge bandwidth between the graphics card and the system. On the one hand, the graphics adapter always has the possibility to swap textures and other graphic data to the main memory. Most BIOSes have an item called "aperture size"; here you can define the maximum memory capacity that can be used by the graphics adapter. Machines running with on-board graphics and unified memory architecture (no dedicated video memory available) obviously will benefit tremendously from the bandwidth doubling. But there is quite a lot of traffic on the AGP bus anyway, so we should expect a performance gain in most benchmarks.

The bandwidth doubling from AGP 4x to AGP 8x was mainly achieved by running the AGP at octuple-pumped 66 MHz (resulting in effective 533 MHz) rather than quad-pumping. Doesn't that sound familiar? Yes, the Pentium 4 does pretty much the same with its system bus. So far, it has been running at 100 MHz quad-pumped (= 400 MHz), while the latest chipsets (850E, 845E) raised the clock speed to 133 MHz. Thanks to this, the FSB and the AGP keep running pseudo-synchronous.

The following table shows the differences between all AGP standards:

	AGP 1.0	AGP 2.0	AGP 3.0
Name	AGP, AGP 2x	AGP 4x	AGP 8x
Signaling	3.3 V	1.5 V	0.8 V
Clock Speed	66 MHz double-pumped	66 MHz quad-pumped	66 MHz octuple-pumped
Bus Width	32 Bits	32 Bits	32 Bits
Bandwidth	533 MB/s	1066 MB/s	2133 MB/s
Backwards Compatible	yes	yes	only to AGP 4x

AGP 8x uses the same connector as AGP 4x, the only difference is that some pins have been reassigned in order to support the new signaling. As a result, you will be able to run all AGP 8x and

AGP 4x graphics cards (at 0.8 V and 1.5 V) — but not AGP 2x! This means that you won't be able to use graphics adapters that were made before mid-1999. So once again, you will have to sacrifice backwards compatibility in order to get a faster platform.

5. The Answer to Bandwidth Questions: DDR333

Even though the ATA/133 interface, USB 2.0 and AGP 8x are very important as well as desirable, they each have less influence on overall performance than the memory controller plus the memory combined. With the clock speed increased from 133 to 166 MHz (double-pumped), the maximum bandwidth of DDR-SDRAM climbed from 2.1 GB/s to 2.7 GB/s (which is why the standards are also called PC2100 and PC2700).

PC2700 DDR-DIMM from Corsair Microsystems. Such memory was specifically designed to run clock speeds of 166 MHz

This is still lower than the bandwidth of dual-channel RDRAM (3.2 GB/s), but conventional SDRAM can live with only a fraction of the latencies of RDRAM, thus resulting in equal or better performance.

This is also the main reason why the memory clock of RDRAM was increased from 400 to 533 MHz as well (PC1066 RDRAM). By the way, the test setup that we used there is the same one that we used to review the new VIA chipset.

When talking about DDR333 memory, we should not forget that there are two types of RAM available: CL 2.0 and CL 2.5 modules. Only a few days ago we published an article showing the difference between fast (CL2) and slow (CL2.5) memory setups. Basically, shorter latencies and thus CL2 memory should always be preferred.

Many THG readers have been asking about the performance difference between DDR266 at CL2 and DDR333 at CL2.5. Well, the difference is quite significant, or in other words: DDR333 is always faster than DDR266, no matter which timings you are running. Still, we recommend that you go for the faster DIMMs if possible.

6. Chipset Architecture: On-board Flexibility

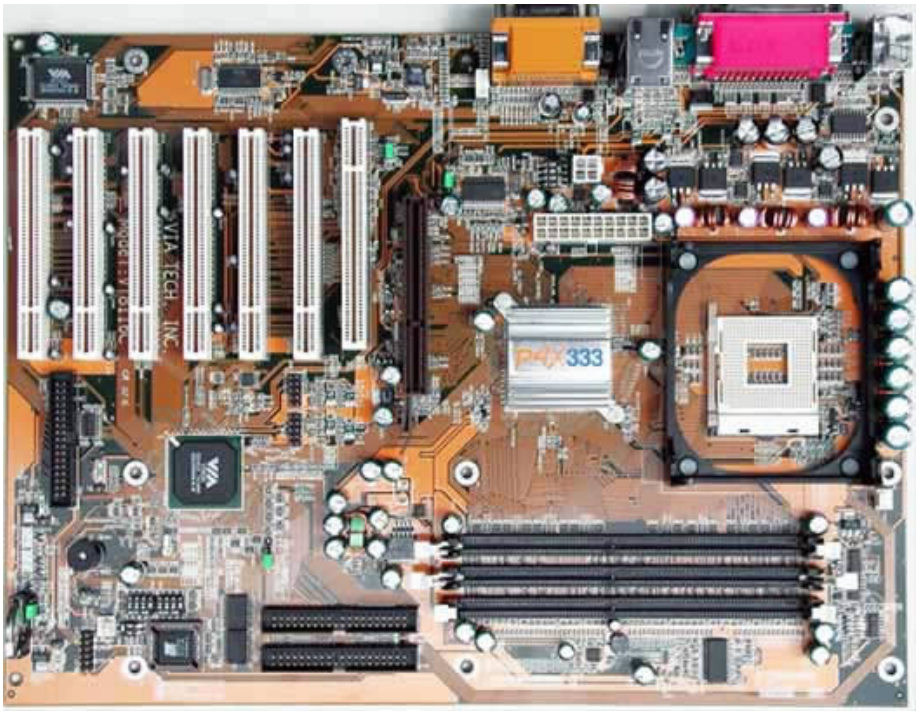
Apart from the technical specs and the performance evaluation, the P4X333 introduces a new Southbridge, the VT8235. In addition to the standard features (AC97 sound, serial and parallel ports, IR port, keyboard and mouse controller, PCI bridge), this chip introduces USB 2.0 and UltraATA/133 to the VIA chipset family. Note that both the P4X333 and the VT8235 are pin-compatible with their predecessors P4X266/A and VT8233A, thus making them easily

interchangeable.

As a result, motherboard manufacturers can quickly switch their production to accommodate P4X333 without having to make expensive modifications to the production process or to the motherboard layout.

7．The VIA P4X333 Reference Board

The reference motherboard is equipped with the maximum hardware features that are directly supported by the chipset. That is six PCI slots, an ACR slot, three DIMM sockets for DDR266 or DDR333 DIMMs, AC97 sound system, 100 Mbit/s network adapter and the UltraATA/133 interface. It′s very likely that this motherboard will be available soon with only a few modifications, if any.



8．Benchmark Results

We ran a total of 25 benchmarks in order to give you a balanced, overall picture of how the P4X333s perform. Please note that all benchmarks were performed with Intel′s latest Pentium 4, the 2.53 GHz model, running at 133 MHz FSB. Due to time limitations, we were not able to re-test all other chipsets for this review, so we chose one main competitor instead.

We chose to pit the i850E against P4X333 for three reasons: First, neither its predecessor P4X266A nor the Intel 845D can run DDR333 at the same pace. Secondly, none of them is able to run the Pentium 4 at 133 MHz FSB, and thirdly, Intel is going to release the renewed 845 chipset with support for DDR333 and FSB133 next week anyway.

New Words

lack [●✌&] *vt.*	缺少，缺乏，需要
n.	缺少，缺乏，需要
reveal [❒ℋ❖ℋ💻●] *vt.*	展现，显示，揭示，暴露
remedy [❒ℳ❍ℋ♎ℋ] *vt.*	修正，修理；矫正，补救
grievance [♈❒ℋ💻❖☯■♦] *n.*	不满，抱怨，怨言
VIA	威盛公司
chipset [♦☞ℋ◘♦ℳ♦] *n.*	芯片组
implement [ℋ❍◘●ℋ❍☯■♦] *vt.*	执行，实现
impatiently [ℋ❍◘◘ℳℋ☞☜■♦●ℋ] *a.*	不耐烦地，没有耐心地，无耐性地
conventional [&☯■❖ℳ■☞☯■●] *a.*	惯例的，常规的，习俗的，传统的
eliminate [ℋ●ℋ❍ℋ■ℳℋ♦] *vt.*	消除，删去，排除；切断
evaluate [ℋ❖✌●ℯ𝓇◆ℳℋ♦] *vt.*	评价，估计，估算，估计
license [●♋ℋ♦☯■♦] *n.*	许可，特许
brand [♌❒✌■♎] *n.*	商标，品牌，印记
industry [ℋ■♎☯♦♦❒ℋ] *n.*	行业
upcoming [✈◘♋&✈❍ℋ☠] *a.*	即将发生的；即将到来的
unified [ℯ𝓇◆💻■ℋ↗♋ℋ♎]	统一的
unify [ℯ𝓇◆💻■ℋ↗♋ℋ]*vt.*	统一
benchmark [♌ℳ■♦☞❍✍💻&]	基准；基准测试，基准程序
octuple-pumped [✍&♦ℯ𝓇◆◘●♋◘✈❍◘♦] *a.*	八倍震荡的
quad-pump [&♦☼♎◘✈❍◘] *vi.*	四倍震荡
pseudo-synchronous [◘♦ℯ𝓇◆💻♎☜◆♦ℋ☠&❒☜■☜♦]*a.*	伪同步
double-pumped [♎✈♌●◘✈❍◘♦] *a.*	双倍震荡
dual-channel[♎ℯ𝓇◆☜●♋♦☞✌■●] *a.*	双通道的
latency [●ℳℋ♦☜■♦ℋ] *n.*	潜伏时间，等待时间；执行时间；潜伏状态
interchangeable [♋ℋ■♦☯♦☞ℳℋ■♎✞☯♌●] *a.*	转换的；可交换的
predecessor [◘◘❒ℋ💻♎ℋ♦ℳ♦☯] *n.*	（被取代的）原有事物
Athlon [✍💻✟●✍■] *n.*	速龙（芯片）
layout [●ℳℋ♋◆♦] *n.*	布局
renewed [❒ℋ■ℯ𝓇✞💻♎] *a.*	更新的
Rambus [❒✌❍♌✈♦] *n.*	公司名

Phrases

a series of	一系列
a bunch of	一簇，一串；一群
last but not least	最后但并不是最不重要的
phase out	逐步停止采用，逐步退出
in terms of	以……的观点；就……而说

in particular	特别地
primary factor	主要因素
aperture size	口径尺寸
dip one′s toes into	涉足
get rid of	摆脱，除去
graphics adapter	图形适配器
on-board graphics	板上图形
clock speed	时钟速率
backwards compatible	向后兼容
have influence on	对……有影响
live with	忍受，忍耐
a fraction of	一小部分
by the way	顺便说说；顺便提起；顺便问一下
apart from	除……之外
pit…against	使……与……抗争；对抗

Abbreviations

AGP (Accelerated Graphics Port)	加速图形端口
ATA (Advanced Technology Attachment)	高级技术附件
BIOS (Basic Input/Output System)	基本输入/输出系统
DRAM (Dynamic RAM)	动态存储器
SDRAM (Synchronous Dynamic RAM)	同步动态存储器
DDR (Double Data Rate)	双（倍）速率
RDRAM (Rambus DRAM)	Rambus 公司生产的动态存储器
SIS (Silicon Integrated Systems)	矽统科技公司
FSB (Front Side Bus)	前面总线
DIMM (Dual Inline Memory Module)	双内联内存模块
IR (Infra-Red)	红外线

Notes

[1] VIA, formerly“ just a chipset maker, ”has become the number two in the global chipset market, and now it is putting all its efforts into extending the good reputation that it achieved through a series of successful chipsets.

本句中，formerly“ just a chipset maker, ”**是一个插入语，对** VIA **做补充说明。**put all one′s efforts into sth.**的意思是“ 竭尽全力做某事 ”、“ 把所有精力都投入到某事 ”。**that it achieved through a series of successful chipsets **是一个定语从句，修饰和限定** the good reputation**。**

本句意为：

VIA **以前“ 只是一个芯片组制造者 ”。现在已排行全球芯片组市场的第二。它在竭尽全力扩展通过制造一系列成功的芯片组而得到的良好声誉。**

[2] It looks that VIA should be able to continue this story successfully— the new chipset does

implement a bunch of features for which most of us have been impatiently waiting.

本句中，the new chipset does implement a bunch of features for which most of us have been impatiently waiting **是对** this success story **的进一步补充说明。“** does **”表示强调，意思是“的确，确实”。**for which most of us have been impatiently waiting **是一个介词前置的定语从句，修饰和限定** features**。**

本句意为：

看起来好像 VIA **应该能够继续成功地完成这个事情——这个新的芯片组确实实现了一些功能，而这些功能正是我们中的大部分人一直在迫不及待地等待着的。**

[3] Intel's advantage is that it supplies chipsets for their own processors, thus offering a platform that is both fast and reliable.

本句中，that it supplies chipsets for their own processors **是一个表语从句。**thus offering a platform that is both fast and reliable **是现在分词短语做结果状语。**that is both fast and reliable **是一个定语从句，修饰和限定** a platform**。**

本句意为：

Intel **的优势是它为自己的处理器提供芯片组，这样，就提供了一个迅速而可靠的平台。**

[4] The only setback that Intel ever had to suffer was the disaster with the Pentium III chipset "i820" and the so-called "Memory Translator Hub" (or MTH), which was supposed to enable the use of conventional SDRAM memory on a chipset that was designed for Rambus DRAM.

本句中，that Intel ever had to suffer **是一个定语从句，修饰和限定** setback. which was supposed to enable the use of conventional SDRAM memory on a chipset that was designed for Rambus DRAM **是一个非限定性定语从句，修饰和限定“** Memory Translator Hub **”，在这个非限定性定语从句中，**that was designed for Rambus DRAM **是一个定语从句，修饰和限定** a chipset**。**

本句意为：

Intel **惟一的失败是** Pentium III **芯片组“** i820 **”及所谓的“内存转换中心”（或** MTH**）带来的灾难。**MTH **应该能够在为** Rambus DRAM **设计的芯片组上使用常规的** SDRAM **内存。**

[5] Even though the ATA/133 interface, USB 2.0 and AGP 8x are very important as well as desirable, they each have less influence on overall performance than the memory controller plus the memory combined.

even though **等于** even if**，意思是“即使”，本句中，**each **做** they **的同位语。**

本句意为：

即使 ATA/133 **接口、**USB 2.0 **和** AGP 8x **都非常重要，而且也令人满意，但与内存控制器加上组合内存相比，它们对总体性能的影响要小得多。**

Exercises

1．根据课文内容，回答以下问题

（1）How many kinds of chip sets are mentioned in the text? What characteristics do they have?

（2）What is the author′s idea about VIA and Intel?

（3）What position is SiS in the field of chipset?

（4）Describe the differences between all AGP standards.

（5）What is the performance difference between DDR266 at CL2 and DDR333 at CL2.5?

2．根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）

英 文 解 释	词　汇
A bus which allows the graphics controller to directly access texture map data from the main memory rather than having to move it to the graphic controllers′ local memory first	
A routine or program used to evaluate the performance of computer hardware and software in a given configuration	
A delay between the instant a request is made for a record and the instant the transfer starts	
A collection of chips designed to functions as a unit in the performance of some common task	
A type of SDRAM in which data is sent on both the rising and falling edges of clock cycles in a data burst	
A type of memory component used to store information in a computer system.“ Dynamic ”means the DRAMs need a constant“ refresh ”(pulse of current through all of the memory cells) to keep the stored information	
It delivers bursts of data at high speeds using a synchronous interface. It is actually SDR SDRAM (single data rate SDRAM)	
It is a revolutionary type of DRAM that uses a 16-18 bit data path and is designed to operate with FSB speed of 800MHz, producing a burst transfer rate of 1.6 GHz	
The main highway for data in a PC. It connects the processor, chip set, DRAM, and AGP socket. FSB is described in terms of its width in bits and its speed in MHz	
A module with signal and power pins on both sides of the board (front and back)	

3．把下列句子翻译为中文

（1）The new Southbridge chip VT8235 not only offers USB 2.0, but also includes an IDE interface with support for UltraATA/133.

（2）VIA is dipping its toes into a market that has always been dominated by the chip giant Intel.

（3）As a result of this disaster, Intel phased out the 820 chipset and released the 815 in order to replace the aged BX.

（4）Today, VIA is strong enough to push their own technological developments.

（5）The first product to surprise us was the 735 chipset for Athlon.

（6）The P4X333 is the first Pentium 4 chipset to support AGP 8x.

（7）So once again, you will have to sacrifice backwards compatibility in order to get a faster platform.

（8）The reference motherboard is equipped with the maximum hardware features that are directly supported by the chipset.

（9）We ran a total of 25 benchmarks in order to give you a balanced, overall picture of how the P4X333s perform.

（10）Please note that all benchmarks were performed with Intel′s latest Pentium 4, the 2.53 GHz model, running at 133 MHz FSB.

4．上机实践

通过 Internet **查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过** E-mail **发送给老师，并附上你收集资料的网址。**

（1）了解 VIA、Intel **及** SIS **的公司概况。**

（2）以上三个公司最新的芯片组产品有哪些？简单比较其性能。

（3）简单描述最高版本 AGP **标准的要点。**

（4）目前提供 BIOS **相关产品的厂家有哪些？它们所生产的最新产品是什么？**

Reading Material

BIOS Tuning: Maximum Power

Overclocking fans know where it's at: To push state-of-the-art motherboards to their limit in conjunction with the CPU and memory, a touch of manual fine-tuning to the BIOS settings is called for. It often happens that one setting or the other proves to be too" progressive ", with the effect that the board does not boot up afterwards. If this happens, deleting the CMOS settings is frequently the only option available if the board does not automatically boot with the slow default values. However, most users require a fair amount of explanation to optimize the performance of their systems to the fullest. Understandably, quite a number of PC enthusiasts who deal with hardware on a daily basis tend to avoid tinkering with the BIOS settings.

Using the well-known motherboard Asus CUSL2 as an example, we will show you step by step how it is possible to speed up a relatively sluggish board with digressive settings (mostly also factory settings) by a fair amount. Our example is typical for most boards and is based on an Intel (Socket 370) or AMD platform (Socket 462). For the sake of completeness, we have also taken a look at the BIOS from the Asus P4T for the Intel Pentium 4 to briefly highlight the special features of the Rambus memory.

1. BIOS: Control Center for Enhanced Performance, Continued

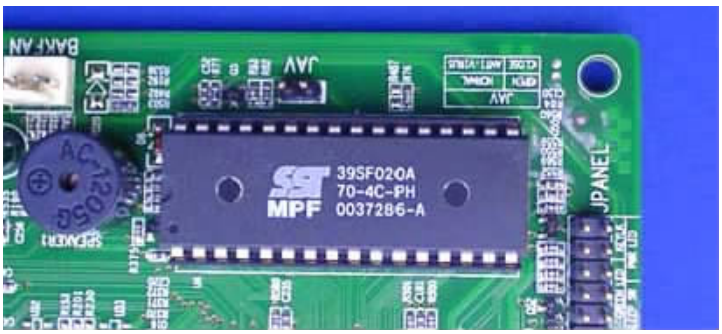
The BIOS is located inside an EPROM chip, which in turn is accommodated in a socket on the mainboard. The picture shows a later variant of a chip that stores up to 512 KB

Following the merger of Award and Phoenix, both the traditional Award BIOS and the Award BIOS with a Phoenix look are now available. AMI also supplies BIOS software, but this is extremely rare and found only in very few mainboards. Our experience shows that the BIOS from Award (with the Phoenix look) is not very user-friendly — unlike the traditional Award BIOS, which is very logically structured and simple to use.

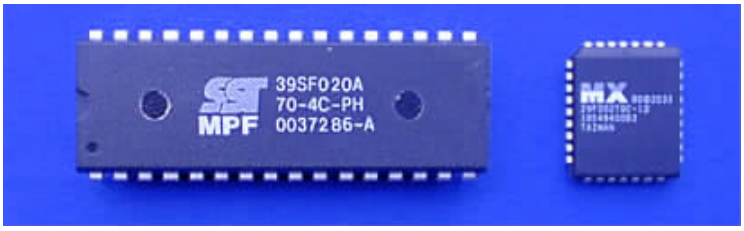
2. Requirements for BIOS Tuning

Before we get down to the actual business, it is advisable to check whether or not the motherboard already has the latest BIOS version. To do this, the version shown in the bottom left-hand corner during boot-up should display the latest date. The best way to obtain the latest

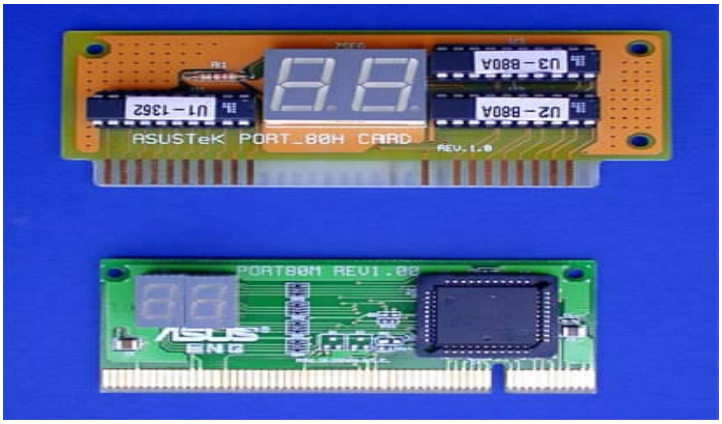
BIOS version is from the FTP server of the respective motherboard manufacturer.



This EPROM chip represents an even older model. It stores up to 256 KB BIOS data



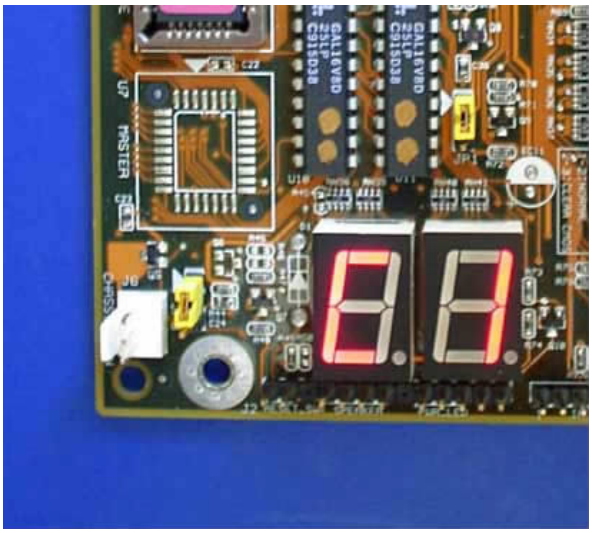
Both chips when removed: The future belongs to the smaller chip on the right. Technically speaking, it was possible to store up to 1 MB in the small chip



The pictures show two different port 80 cards. The model above is designed for an ISA slot, whereas the card below it fits into a PCI slot

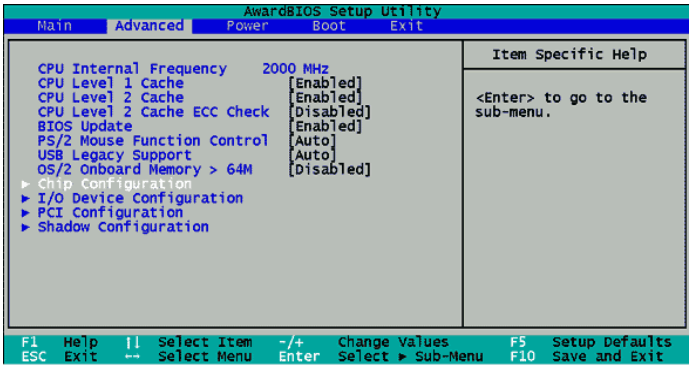
On numerous motherboards, the BIOS is write-protected. This protection has to be disabled prior to burning, by jumpers on the motherboard, or in the BIOS itself.

The port 80 card can be a very helpful tool for tuning a motherboard. It costs only very little and basically displays the status on boot-up. If a computer hangs at a certain point while booting up, the port 80 card can give a good idea which component is responsible for the fault. For this reason, a port 80 card is an absolute must for every experienced hardcore overclocker and fans of system tuning. Otherwise, it can be very difficult to determine the exact cause if the PC crashes or hangs.

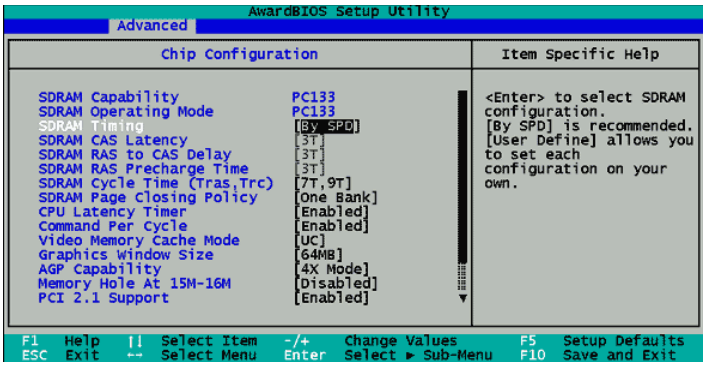


Some boards are equipped with an integral port 80 card

3．Memory Tuning: There's 5% More Power In There



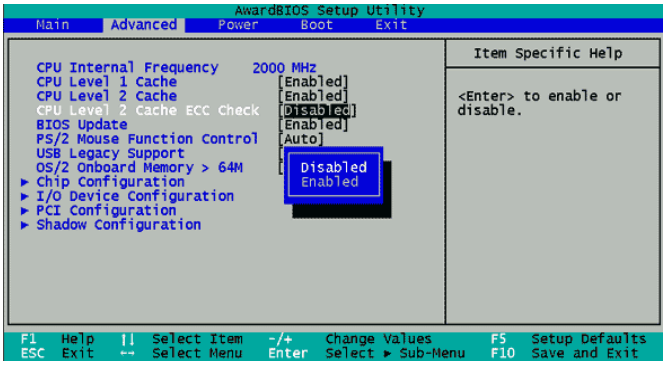
You need to select this menu in the BIOS if the settings for the memory are to be changed.



Default settings for memory timing ex works: All the adjustments are made automatically and are read by the EEPROM of the memory module.

Most PCs are supplied with highly conservative factory settings for memory access, with the result that vast amounts of power are either squandered or lie dormant. In the following pictures, we show how it is possible to change the settings for memory timing step by step.

4．Releasing the Brake — ECC Checking

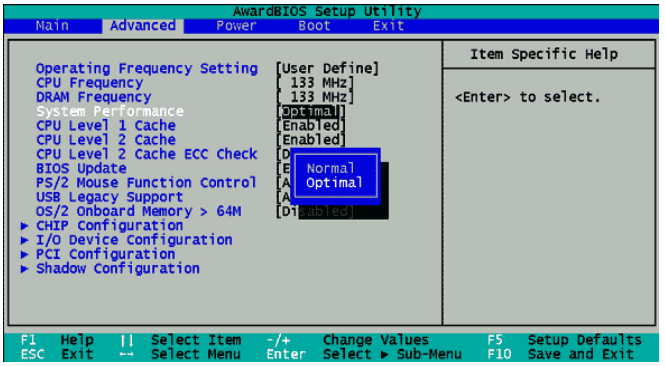


Brake: The “ ECC Checking ” feature should always be disabled.

It is possible to boost performance by a whole 1 percent by disabling the “ ECC Checking ” switch in the BIOS. In doing so, the data flow is no longer permanently supplemented with a checksum, whose function costs additional time.

Some boards offer the“ Optimal System Performance ”function, which essentially implies fast memory timing.

The picture above shows a function that is not featured in all motherboards.

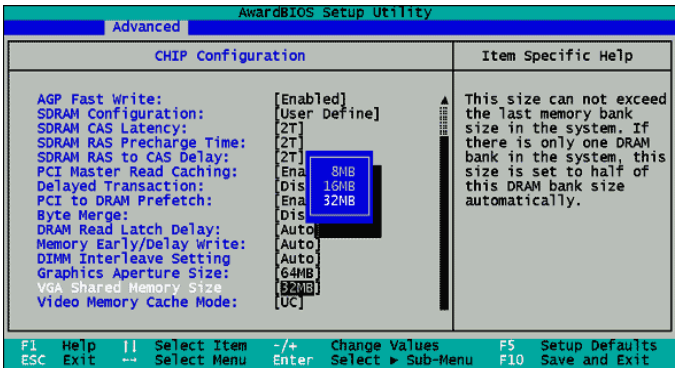


5．Optional Feature: Onboard Graphics

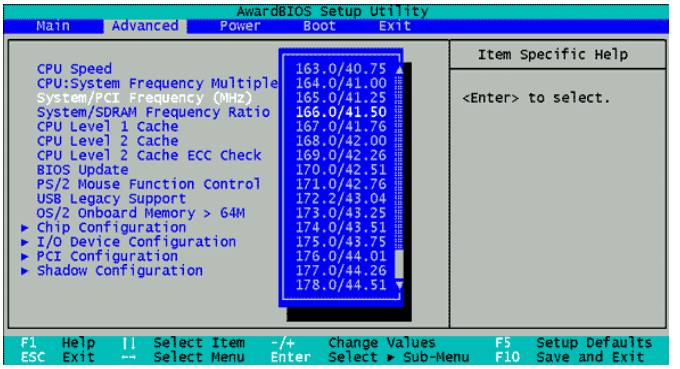
For boards featuring onboard graphics (e.g. Intel 815 chipset), a portion of the RAM is used as the graphics memory. The picture shows that 32 MB are used as graphics memory.

Boards with onboard graphics such as an Intel 815E chipset use a portion of the RAM for storing graphics data. To do this, however, the onboard graphics function must be enabled, as otherwise the external graphics card is addressed via the AGP port. When onboard graphics are

used, it is possible to adjust the size of the graphics memory via the BIOS, with 32 MB constituting the maximum limit for boards currently available.



6. Overclocking: Increasing the AGP/PCI and CPU Clock Rate



Overclocking: Increasing the FSB and memory speed to 166 MHz. However, problems may occur with individual devices.

The most distinctive increase in speed is achieved by overclocking. To this end, most mainboards offer a variety of methods via the BIOS: On the one hand, it is possible to increase the clock multiplier (on boards with Socket 462 for AMD Athlon), so that the processor runs with a higher clock rate. On the other hand, it is also possible to increase the front-side-bus and the memory speed, which also produces a vast boost in performance. Since Intel processors are equipped with a multiplier lock, the only way to raise the clock speed is by increasing the front-side-bus.

7. Summary: Enhanced Performance Through Targeted Fine-Tuning

The BIOS of every motherboard offers the best options for making a board faster. Using the Asus CUSL2 (board with Intel 815E chipset) as an example, we have shown the individual menus in detail to explain how it is possible to optimize the settings for memory, graphics, AGP/PCI and so on. More aggressive memory timing alone produces up to 5 percent more performance.

Fine-tuning helps users to eke out a further 5 percent, provided that the board supports these features in the BIOS in the first place. There are numerous PC systems where the BIOS supports very few functions for influencing the system performance. As a general rule, motherboards from Abit, Asus, Gigabyte, Epox, Elitegroup and DFI offer excellent facilities for tuning. In any case, users should take a closer look at their BIOS and the functions available and compare these with our illustrations.

You will always find that a percentage of your system′s performance is unused! And you can always accelerate the boot-up procedure and eliminate any conflicts. We are always grateful to receive your suggestions and hear about your experiences!

New Words

Award	公司名
Phoenix	公司名
AMI	公司名
EPROM (Electrically Programmable Read-Only Memory)	电可编程只读存储器
boot-up	引导
write-protected	写保护的
disable	禁止，停用，使无效
fan	迷，狂热者，爱好者
lie dormant	潜伏，冬眠，休止
squander	浪费
step by step	一步一步
ECC(Error Correction Code)	纠错码
onboard	板上的
multiplier lock	倍数锁定，倍频锁定
illustration	举例说明；插图，图
for the sake of …	为了……好处，为……着想，为了……的缘故
eke out	补偿不足，弥补……不足

Unit 6

Text

The TFT Guide

The current development of the market for flat panel displays will almost certainly remind some vendors of bygone days when profit margins and demand were still attractive. A rapid rise in demand, lacking investments in production capacities and persistently high production reject rates lead to an ideal situation for vendors. A potential customer is obliged to pay a lot for a flat panel display in order to save desktop space and energy. However, this is a situation that will only prevail for a limited time as the market changes its direction and prices are subject to the usual dynamic market forces.

Part 1 of the TFT Guide provides you with an overview of the market situation, prices and trends concerning the TFT market. Newcomers and professionals alike will find something useful in this article. We will cover topics such as functionality, the most important characteristics of flat panel displays and technologies in detail here. The article is rounded off with useful tips for buyers.

Parts 2 and 3 are dedicated to the technically-minded readers. We'll report on current technologies used to increase the viewing angle, the latest digital interfaces (DFP and DVI) and on the relationship of pixel spacing and the maximum possible diagonal dimensions of a display.

At a later point in time we will report on the most important companies in the field and will showcase various models. We'll keep an eye on prices and will report on changes as they occur.

1. What is a TFT — Getting to Know the Technology

Modern display technologies are currently classified as either cathode ray tube monitors (CRTs) or flat panel displays. Tube devices are large and take up a lot of space, while flat panel displays — i.e. devices without a tube — as the name states, are flat and space-saving. The flat panel display category itself encompasses a number of very different technologies such as LCDs (Liquid Crystal Displays), plasma displays, LEDs (Light Emitting Diode) and various other devices. Within these technologies, one can distinguish between flat panel displays that emit light and those that use back light that passes through them.

We will discuss those flat panel displays that, from the current point of view, seem to be the

most purposeful; so-called TFT-LCDs. These devices belong to the group of displays that use back light passing through them. STN and DSTN (passive matrix LCDs) are also used, but nowadays only in very low-priced notebooks.

2. How TFTs Work

TFT stands for "Thin Film Transistor" and describes the control elements that actively control the individual pixels. For this reason, one speaks of so-called "active matrix TFTs". How are images produced? The basic matrix is quite simple: a panel with many pixels is used whereby each pixel can emit any color. To this purpose, a backlight is used which is normally comprised of a number of flourescent tubes. In order to light a single pixel, all that needs to be done is for a small "door" or "shutter" to open to let the light pass through. The technology that makes this possible is of course more complicated and involved than the simple explanation above. LCD stands for monitors that are based on liquid crystals. Liquid crystals can change their molecular structure and therefore allow varying levels of light to pass through them (or they can block the light). Two polarizer filters, color filters and two alignment layers determine exactly how much light is allowed to pass and which colors are created. The layers are positioned between the two glass panels. A specific voltage is applied to the alignment layer, creating an electric field, which then aligns the liquid crystals. Each dot on the screen (pixel) therefore requires three components, one for red, green and blue, just as for the tubes within cathode ray tube devices.

The most common devices are Twisted Nematic TFTs. The following sections explain the way in which such TFTs work. A number of different technologies obviously exist.

When no voltage is applied, the molecule structures are in their natural state and twisted by 90 degrees. The light emitted by the backlight can then pass through the structure.

If a voltage is applied, i.e. an electric field is created, the liquid crystals are twisted so that they are vertically aligned. The polarized light is then absorbed by the second polarizer. Light can therefore not leave the TFT display at this location.

3. Architecture of a TFT Pixel

The color filters for red, green and blue are integrated on to the glass substrate next to each other. Each pixel (dot) is comprised of three of these color cells or sub-pixel elements. This means that with a resolution of 1280×1024 pixels, exactly 3840×1024 transistors and pixel elements exist. The dot or pixel pitch for a 15.1 inch TFT (1024×768 pixels) is about 0.0188 inch (or 0.30 mm) and for an 18.1 inch TFT (1280×1024 pixels) it's about 0.011 inch (or 0.28 mm).

The pixels are decisive and the smaller their spacing, the higher the maximum possible resolution. However, TFTs are also subject to physical limitations due to the maximum display area. With a diagonal of 15 inch (or about 38 cm) and a dot pitch of 0.0117 inch (0.297 mm), it makes little sense to have a resolution of 1280×1024. Part 4 of this report covers the relationship between dot pitch and diagonal dimensions in more detail.

4．Advantages and Disadvantages of TFT Displays

As you′ll almost certainly be familiar with the characteristics of a classical tube monitor, we′d like to emphasize the most important differences between TFTs and CRTs at this point:

TFTs offer very good focus characteristics due to the active control of pixels by transistors. Another advantage compared with CRTS is the absence of geometry and convergence errors due to the technical nature of TFTs. Why don′t TFTs flicker? It′s simple. They don′t use an electron beam that has to scan left-to-right on each line of the screen. The lights are effectively turned off for a short time on CRTs when the electron beam flies back from the bottom right to the top left corner of the display (blanking). In contrast, the pixels of a TFT are never switched off, they simply change their intensity continuously.

5．The ideal TFT — What to Consider When Buying

Want to buy a flat panel display? The first thing you should do is to consult both the vendor and the manual in order to check that the requirements are met.

6．Where′s the Future Taking Us——New Technologies

Two important developments are currently in progress. The first is that the panel manufacturers are working to improve the viewing angle. Parallel to improving standard TF′s (twisted nematic) by implementing a film, some manufacturers are investigating different terrain. What advantages new technologies such as IPS (In-Plane Switching) and MVA (Multi-domain Vertical Alignment) will really bring us is discussed in the article on viewing angle technology. The second trend is definitely towards digital control.

7．Summary

Flat panel displays offer excellent focus and sufficient color quality for standard office applications such as word processing and spreadsheet calculations. TFTs also have a lot to offer in terms of ergonomics: less desktop space required, a third of the power consumption of standard tube monitors and of course, lower emission values. TFTs are not suitable for graphics designers who require photorealistic displays. The response time for current models is certainly not ideal for users who mainly play on their PC, whereby video playback, DVD′s and presentations are handled well enough by today′s TFT devices.

Flat panel displays will only find their way into the home when prices fall and of course, when their availability is improved.

New Words

prevail [□❒♓▯❖♏♓●] *vi.*	**流行，盛行**
dynamic [♎♋♓▯■✌❍♓&] *a.*	**动力的，动态的**
overview [▯☜◆❖☜❖𝒆𝒓◆💻] *n.*	**总的看法**

tip [♦♓◘] *n.* 提示，技巧
technically-minded [♦♏&■♓&☜●●♓❍♋♓■♎♓♎] *a.* 有技术头脑的
diagonal [♎♋♓✌♈☜■●] *a.* 对角线的，斜的
n. 对角线，斜线
dimension [♎♓❍♏■☞☯■] *n.* 尺寸，大小；维
field [↗♓💻●♎] *n.* 领域
showcase [☞☜◆&♏♓♦] *n.* 展出，陈列
pixel [◘♓&♦☜●] *n.* 像素
polarizer [◘☜◆●☜❒♋♓⌘☜] *n.* 偏光器，偏光镜
newcomer [■♐◆💻&✈❍☜] *n.* 新来的人，新手
professional [◘❒☯↗♏☞☯■●] *a.* 专门的，专业的
n. 专业人员
classified [&●✌♦♓↗♋♓♎] *a.* 分类的；机密的
space-saving [♦◘♏♓♦♑♦♏♓❖☠] *a.* 节省空间的
encompass [♓■&✈❍◘☜♦] *vt.* 围绕，包围，拥有
distinguish [♎♓♦◆♓☠♌♦♓☞] *vt.* 辨别，区别，判别
emit [♓❍♓◆] *vt.* 发出，放射
matrix [❍♏♓◆❒♓&♦] *n.* 矩阵
involved [♓■❖👍●❖♎] *a.* 复杂难懂的，棘手的
block [♌●👍&] *n.* 妨碍，阻塞
filter [↗♓●◆☯] *n.* 滤光器；过滤器；滤波器
alignment [☯●♋♓■❍☯■◆] *n.* 对齐；调准
layer [●♏♓☯] *n.* 层；协议层
position [◘☯⌘♓☞☯■] *vt.* 安置，放置
align [☜●♋♓■] *vt.* 排列，使对齐
twisted [◆♦♓♦◆♓♎] *a.* 扭曲的
vertically [❖☜💻◆♓&☜●●♓] *adv.* 垂直地
polarized [◘☜◆●☜❒♋♓⌘♎] *a.* 偏振的，极化的
absorb [☯♌♦👍💻♌] *vt.* 吸收，吸引
location [●☯◆&♏♓☞☯■] *n.* 位置；特定区域
substrate [♦✈♌♦◆❒♏♓◆] *n.* 感光底层，衬底，基底
pitch [◘♓◆☞] *n.* 字符间距
emphasize [♏❍↗☯♦♋♓⌘] *vt.* 强调
transistor [◆❒✌■♦♦♓♦◆☯] *n.* （电子）晶体管
geometry [♎✞♓👍❍♓◆❒♓] *n.* 几何学
convergence [&☜■❖☯💻♎✞☜■♦] *n.* 集中，收敛
nematic [■♓❍✌◆♓&] *a.* 向列相的
scan [♦&✌■] *vt.* 扫描
left-to-right [●♏↗◆◆💻❒♋♓◆] *a.* 从左到右的
flicker [↗●♓&☜] *vi.* 闪烁，闪光，颤动
intensity [♓■◆♏■♦♓◆♓] *n.* 强度
consult [&☯■♦✈●◆] *vt.* 请教，咨询
emission [♓❍♓☞☯■] *n.* 辐射；发射，散发

terrain [♦♏⍰❒♏♓■] *n.*	地形
ergonomics [♋☯💻♈☜◆⍰■✍❍♓&♦] *n.*	生物工程学，人类工程学
consumption [&☯■⍰♦✈❍◘☞☯■] *n.*	消费，消耗量
photo-realistic [⍰➚☜◆♦☜◆❒♓☜⍰●♓♦♦♓&] *a.*	图片现实主义的
video [⍰❖♓♎♓☯◆] *a.*	视频的，录像的，电视的
n.	视频，电视
playback [⍰◘●♏♓♌✌&] *n.*	重放
availability [☯♋❖♏♓●☯⍰♌♓●♓♦♓] *n.*	可用性，有效性，实用性

Phrases

remind sb. of	提醒某人，使某人想起
profit margin	利润率
reject rate	废品率，报废率
be obliged to	必须做
be subject to	受支配，从属于；易遭受
provide sb. with	为某人提供
in detail	详细地
be rounded off with	全面提供
keep an eye on	密切注视
take up	占用
electric field	电场
diagonal dimension	对角尺寸
plasma display	等离子显示
back light	背光
point of view	观点
belong to	属于
stand for	代表
control element	控制元素
be comprised of…	由……组成
molecular structure	分子结构
color filter	滤色镜
alignment layer	调准层，对齐层
next to	贴近，靠近
be familiar with	熟悉
electron beam	电子束
in contrast	相反，大不相同
switch off	关闭
in progress	在进行中
parallel to…	与……平行
viewing angle	视角

Abbreviations

FPD (Flat Panel Display)	**平板显示器**
TFT (Thin Film Transistor)	**薄膜晶体管；薄膜工艺**
CRT (Cathode Ray Tube)	**阴极射线管**
LCD (Liquid Crystal Display)	**液晶显示器**
LED (Light Emitting Diode)	**发光二极管**
IPS (In-Plane Switching)	**板内开关，板内切换**
MVA (Multi-domain Vertical Alignment)	**多范围垂直队列**
DVD (Digital Video Disc)	**数字视盘**

Notes

[1] The current development of the market for flat panel displays will almost certainly remind some vendors of bygone days when profit margins and demand were still attractive.

本句中，when profit margins and demand were still attractive **是一个定语从句，修饰和限定** bygone days**。词组** remind sb. of sth. **的意思是“使某人想起某事”。**

本句意为：

当前平面显示器市场的发展一定会使一些销售商想起以前的日子，在那些日子里，利润率和需求还有吸引力。

[2] A potential customer is obliged to pay a lot for a flat panel display in order to save desktop space and energy.

本句中，in order to **表示目的，意思是“为了”；**be obliged to **的意思是“不得不，被迫”。**

本句意为：

为了节约桌面空间和能量，潜在用户不得不花很多钱来购买平面显示器。

[3] Within these technologies, one can distinguish between flat panel displays that emit light and those that use backlight that passes through them.

本句中，distinguish between … and … **的意思是“把……和……区别开，区分”；**that emit light **是一个定语从句，修饰和限定** flat panel displays **；**those **代替** flat panel displays **；**that use backlight **是一个定语从句，修饰和限定** those **；**that passes through them **也是一个定语从句，修饰和限定** backlight**。**

本句意为：

有了这些技术，人们能够区别出发光平面显示器和背光平面显示器。

[4] The lights are effectively turned off for a short time on CRTs when the electron beam flies back from the bottom right to the top left corner of the display (blanking).

本句中，for a short time **的意思是“暂时地，短时间地”；**when the electron beam flies back from the bottom right to the top left corner of the display (blanking) **是一个时间状语从句。**

本句意为：

当电子束从显示器的右下角回到左上角时，这些 CRT **上的光就暂时被有效地切断了。**

[5] Flat panel displays will only find their way into the home when prices fall and of course, when their availability is improved.

本句中，and **连接了两个时间状语从句。**of course **是插入语。**

本句意为：

当然，只有当平面显示器的价格下降了并且实用性得以改善时，才能进入家庭。

Exercises

1．根据课文内容，回答以下问题

（1）What are the characteristics of LCDs (Liquid Crystal Displays), plasma displays and LEDs (Light Emitting Diode)?

（2）Describe briefly how Twisted Nematic TFTs Work.

（3）Describe the architecture of a TFT Pixel.

（4）What are the advantages and disadvantages of TFT displays?

（5）Why don't TFTs flicker?

2．根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）

英 文 解 释	词　汇
The smallest unbreakable units of a picture on the monitor's screen	
In computers, a logic network in the form of an array of input leads and output leads with logic elements connected at some of their intersections	
A type of LCD flat-panel display screen, in which each pixel is controlled by from one to four transistors. This technology provides the best resolution of all the flat-panel techniques, but it is also the most expensive	
A new type of CD-ROM that holds a minimum of 4.7GB, enough for a full-length movie	
The basis of the standard microcomputer display screens. It works by moving an electron beam back and forth across the back of the screen	
A type of display used in digital watches and many portable computers. It uses two sheets of polarizing material with a liquid crystal solution between them	
An electronic device that lights up when electricity is passed through it. This kind of displays are usually red. They are good for displaying images because they can be relatively small, and they do not burn out	
To read text, images, or bar codes into the computer by a device called a scanner	
The arrangement of objects in fixed or predetermined positions, rows, or columns	
The number of characters printed per inch	

3．把下列句子翻译为中文

（1）Modern display technologies are currently classified as either cathode ray tube monitors (CRTs) or flat panel displays.

（2）LCD stands for monitors that are based on liquid crystals.

（3）The most common devices are Twisted Nematic TFTs.

（4）When no voltage is applied, the molecule structures are in their natural state and twisted by 90 degrees.

（5）Each pixel (dot) is comprised of three of these color cells or sub-pixel elements.

（6）With a diagonal of 15 inch (or about 38 cm) and a dot pitch of 0.0117 inch (0.297 mm), it makes little sense to have a resolution of 1280×1024.

（7）TFTs offer very good focus characteristics due to the active control of pixels by transistors.

（8）Flat panel displays offer excellent focus.

（9）The second trend is definitely towards digital control.

（10）The second technical article covers digital interfaces in detail.

4．上机实践

通过 Internet **查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过** E-mail **发送给老师，并附上你收集资料的网址。**

（1）收集资料，完成平板显示器的技术报告。
（2）指出目前流行的 MP3 播放器的主要品牌和性能。
（3）推荐你认为性价比最高的 MP3 播放器，并说明你的理由。
（4）简述 Steve Jobs 的生平。

Reading Material

The MP3 Players

Hard drive-based MP3 players, which allow you to store massive amounts of MP3s and other files on a portable device, have been around for a few years. But recently, three new players have taken the concept to a new high, with impressive advancements in design, functionality, and interface. Each has its unique strong points, but they′re all groundbreaking in their own way. Check out our hands-on reviews.

1．Apple iPod

Apple has followed up the successful launch of its original iPod with a new model that offers 10GB of storage (as opposed to 5GB) and updated firmware, so you now get some additional features, the most notable of which are an equalizer and a contact-list manager. However, since owners of the original iPod can update the firmware on their devices, the real upgrade here is only the extra storage space, for which you′ll pay an additional $100. In other words, Apple has made a good thing even better, though we still wish that the company would include a carrying case and a belt clip, particularly considering the iPod′s rather hefty price tag.

（1）Near-perfect Design

Designwise, Apple did everything right with the original iPod, and it didn′t make any changes to the cosmetics with this version. When you open the box, the first thing that you notice (after the multilingual sticker urging you not to steal music) is the casing, which is made of shiny stainless steel on the back and a thick slab of Lucite on the front. A large screen enables you to easily view the device′s straightforward menu structure, and songs categorized by playlist, album, or artist are all easy to find. We particularly appreciate the scroll wheel on the front of the iPod that allows you to effortlessly navigate through the menus. When holding the 6.5-ounce device in one hand, you can click through every song, album, or playlist very rapidly.

Unlike other jog dials or button navigation systems, the scroll wheel accelerates as you turn it, allowing for the kind of maneuvering that′s necessary to get through 10GB worth of MP3s (about 2000 songs encoded at a bit rate of 160kbit/s) in mere seconds. The iPod′s sonics are quite good, producing clean sound through decent earbuds and featuring no fewer than 31

EQ settings, thanks to the new firmware. As noted, the equalization feature was absent in the 5GB version.

One problem that we wish Apple would address in its next firmware upgrade is the lack of a Resume feature. When listening to audiobooks, we had to scroll all the way through the long recording to find where we′d left off. As of right now, the iPod resumes only between songs. But in all of our testing, the iPod never missed a beat because it plays tunes from a skip-free flash-memory buffer that relays music from the hard drive. Still, if you want something specifically for jogging, you might be better off with a lighter flash-based MP3 player, which doesn′t have moving parts. No one knows the effects that jogging has on hard drive-based players as of yet.

（2）I sync, Therefore iPod

Before the iPod appeared, USB was the fastest way to transfer files to an MP3 player. Thanks to the iPod′s FireWire (IEEE 1394) connection, filling up all 10GB takes only 20 minutes. Performing the same feat via USB would take at least 10 hours. And the iPod not only has the fastest file transfers but also the smartest. It′s the first MP3 player to automatically sync to jukebox software (in this case, iTunes 2.*x*). Just plug the iPod into your Mac, sit back, and watch iTunes start up and transfer every new song, album, and playlist onto the unit. At the same time, your new contacts transfer from compatible applications—currently Palm Desktop 4.0 or later and Entourage for Mac OS X or Mac OS 9, although any application that supports standard vCards (Outlook, and so on) can export to the iPod if you manually place them in the Contacts folder. The FireWire connection also recharges the iPod′s battery, which lasts 10 hours. If you′re not near your computer, you can recharge the unit with an ultracompact folding adapter that plugs into any wall outlet and powers up the iPod through the same FireWire socket.

The iPod doubles as a portable storage device to transport all file types between two compatible computers. Out of deference to copyright holders, it can sync MP3s to iTunes only on a single Mac. However, by activating the View Hidden Folders preference, you can get around this protection and freely ferry MP3s between computers. Another Easter egg: You can get your iPod engraved for an additional $50 if you order from Apple′s online store.

（3）Take That, Bill!

One common complaint has been the iPod′s lack of Windows support. At the product announcement, Apple CEO Steve Jobs mentioned that such compatibility would eventually arrive, but he didn′t seem to be in a big rush to add it. Alternatively, Windows users can turn to an often-updated piece of freeware called EphPod, which in addition to the FireWire card requires MacDrive or MacOpener, both of which run you an extra $50. However, PC fans still won′t be able to autosync contact lists or files (although both can be transferred manually). If this seems less than ideal, go with the Sonicblue Rio Riot instead, which costs less and houses twice the amount of music.

（4）The Perfect MP3 Player — For Some

Besides its steep $499 asking price, the only problems with this new iPod are its lack of a belt clip, a carrying case, and a Resume function, as well as the native Windows incompatibility.

Third-party manufacturers have solved most of those problems, and Apple will likely add a Resume function in future firmware upgrades, but it would be nice if the company included everything up front. That said, this is still the best MP3 player we′ve tested to date.

2. Creative Labs′ Nomad Jukebox 3

At first glance, Creative Labs′ Nomad Jukebox 3 doesn′t look all that different from the original Jukebox. But this hard drive-based MP3 player is smaller and sports a vastly improved user interface and feature set as well as comprehensive connectivity options. True, it may not be as slick-looking or as compact as the iPod, but the 20GB Nomad Jukebox 3 still stands out from the rest of the hard drive-based pack.

Like its predecessor, the 10.5-ounce Jukebox 3 resembles a shrunken portable CD player, barely passing the jacket-pocket test at 5.5×5.5×1.5 inches. Creative has added a jog dial as well as Back and Find buttons, making for a more user-friendly interface than the one found on the previous version. We had a few gripes — song titles don′t scroll as tunes play and the Lock Buttons feature must be activated via the settings menu rather than by a dedicated button — but they′re pretty minor.

(1) Great Connectivity

Up to this point, the problem with all Windows-based hard drive MP3 players has been that they connect via USB, which is too slow to handle massive file transfers. Thankfully, Creative includes both a FireWire/IEEE 1394 port (Creative calls it SB1394) and a USB port, which translates into a nice combination of compatibility and speed. Also, this is the first hard drive-based player that we′ve seen to offer an optical digital-in, which allows you to record content from a wide variety of sources.

First, let′s talk autosync. The Nomad 3 can sync with multiple PCs if they have the Creative PlayCenter software installed, a feat that no other hard drive-based player can currently lay claim to. What′s the big deal about this? Well, it means that you can trade entire MP3 collections in a relatively short period of time. In contrast, the iPod has built-in copy protection that allows you to sync with the iTunes folder on only a single Mac.

On top of its unique — and possibly unkosher — autosyncing capabilities, the PlayCenter software also handles automatic song titling and organization, music importing, CD burning, and standard file transfers of any type. Third-party Notmad Explorer software (Web site) also lets you access the songs on the device using Windows Explorer or a remote Web browser among other things.

If that′s not enough, another area in which the Nomad Jukebox 3 breaks new ground is recording options. Using the analog-in or digital-in connections, you can record straight to the unit′s hard drive from a variety of sources, including a powered mike. You can choose to record files as uncompressed WAVs or as MP3s compressed at bit rates of 128kbit/s to 320kbit/s. In other words, with the right accoutrements, you can easily turn old records, lectures, and concert

recordings into MP3s or WAVs, upload them to your PC, and E-mail them or burn them onto a CD. We do wish that there were a way to monitor recording levels, but still, this is a great function.

（2）A Sound Foundation

Soundwise, the Nomad 3′s DSP settings take advantage of Creative Labs′ substantial experience with sound processing. As a result, you have more options for tweaking the way your 4000 or so songs sound. Settings include a DSP that simulates auditorium or bathroom environments (among others); eight EQ presets, none of which are manual; a Time Scale feature, which changes music from half speed to time-and-a-half without altering pitch; a spatialization option (Wide, Narrow, or Full); and a Smart Volume feature, which tailors the sound for trains, cars, or quiet environments by calibrating EQ to compensate for outside frequencies as well as normalizing volume across MP3s.

Tweaks aside, we′re happy to note that the player features a crystal-clear 98dB signal-to-noise ratio and full, rich sound. The Nomad 3 comes with decent-sounding wraparound headphones, but more discerning listeners will want to swap in a new pair. Creative claims seven minutes of antiskip protection; however, we don′t recommend jogging with hard drive-based MP3 players.

（3）Optional Accessories

As far as battery life goes, you′ll get up to 11 hours from the included lithium-ion rechargeable battery (an AC adapter is provided), which is about average for these types of devices. Though the Nomad 3 lacks an in-line remote, Creative says that it will offer one that includes an FM radio, a built-in mike, and a backlit LCD for $70 starting in May. The company will also sell additional accessories, including an extra battery for $50; a PC Dock with a wireless infrared remote for $60; a car-adapter kit for $40; a case with a belt clip for $20; and a variety of faceplates, also for $20.

At $400, the 20GB Nomad Jukebox 3 compares favorably to both the Rio Riot and the iPod. While it may not be as lightweight or as slickly styled as the latter, its impressive features and connectivity options make it the portable MP3 player for power users — at least until the 40GB version ($500) arrives in May.

3．Rio Riot

With its 20GB hard drive and innovative playback options, the Rio Riot has been pegged by many MP3 aficionados as the iPod killer, especially since it′s designed to work with Windows right out of the box. But the Riot is missing some key features, such as the ability to sync with your jukebox software and a fast connection to your system. While your music will sound great once it′s on the Riot, getting tunes onto the player and organizing thousands and thousands of songs can turn into a headache-inducing chore.

（1）Auspicious Beginnings

The $400 Riot looks promising when you first take it out of the box. Weighing 10 ounces and measuring 5.38×3.63×1.38 inches, the player is smaller than a paperback book and somewhat resembles a handheld gaming device. The sturdy plastic case has convenient handgrips on either end and most of the controls — including a half-concealed scroll wheel; a lay-stop-forward-reverse mouse; and Menu, Select, and Back buttons — are within easy reach. Smack dab in the middle of the device is an impressive 1.50×2.25-inch backlit display. The display is one of our favorite aspects of the Riot since it allows you to view the slick menu graphics and multitude of song titles while browsing. We just wish that the titles would scroll so that long song names would still be readable. Also, the display has a slight ghosting effect (you can see faint outlines of items that used to be on the screen), but we see this as a very minor problem — this is still the best MP3-player display that we′ve seen.

（2）Time to Reinvent the Wheel

Unfortunately, the scroll wheel isn′t as simple to use as it looks. Because only half of this dial appears outside of the Riot′s case, we couldn′t spin it nearly as quickly as the iPod′s scroll wheel, which is fully exposed. Another design flaw: the small, hard-to-press volume-control buttons are hidden on the side of the Riot and are especially tough to access when the player is in its nice padded case. And while the Select, Back, and Menu buttons are well placed, they don′t always work the way that you′d expect. For instance, from the Play Music menu, the Back button returns you to the previous menu. That′s intuitive enough, but from the Radio menu, the Back key doesn′t do anything. For some reason, in certain situations you must use the Menu key — rather than the Back button — to return from whence you came. Ugh.

Transferring music to the Riot is relatively simple. Just fire up the included RealJukebox software (iTunes for Mac users), add your music to the program′s library, and drag the files to the Riot. Be prepared for a long wait, though. It took us 50 minutes to move about 1GB of MP3s over the Riot′s USB connection; transferring the same amount of files over the iPod′s FireWire port took 2 minutes. Do the math — it would take more than 16 hours to fill the 20GB Riot. While you probably won′t be moving 20GB worth of files to the player every day, we wish the Riot could transfer files over a faster, state-of-the-art FireWire or USB 2.0 connection.

（3）File Syncing: Missing in Action

Once all of our tunes were on the Riot, we found ourselves missing the iPod′s autosync function (not available to Windows iPod users). That′s because the Riot doesn′t sync with your system′s jukebox software. Sure, you can make your own playlists on the Riot itself, but our fingers started to go numb recreating all of the existing playlists on our system (And no, you can′t drag playlists from RealJukebox or iTunes to the Riot). When you′re dealing with 20GB of music, file-syncing capabilities or at least PC-based song organization is essential. That said, creating playlists on the Riot isn′t too awful, thanks to the large display, the scrolling mechanism and a navigation system that works well for this task.

The Riot′s heavy dependency on ID3 tags to organize music can work against it since so many

MP3s are mislabeled. The Riot files songs by artist, album, or genre, which means that you′ll have a tough time finding your MP3s if their ID3 tags aren′t pretty complete — unless you enjoy plowing through thousands of songs by title. Thankfully, the included MoodLogic software can clean up most of those ID3 tags. We highly recommend that you use it before you transfer your songs to the player.

（4）Automatic Playlists

The Riot does break some new ground with its Rio DJ feature, which creates playlists based on your most — or least — played tracks, your most recently added music, songs from a specific decade, or random play. Just select how long you′d like your mix to be — anywhere from 15 minutes to every song on the player. And if you grow tired of listening to all 4000 or so of your own songs, the Riot comes with a built-in digital FM tuner that sports eight presets and pulls in channels clearly.

（5）Supreme Sound

Once you get all of your files in order, you′re in for a treat because the Riot sounds great. Music is lush and vibrant with a generous low end, and you can tweak the treble and bass if you′re so inclined. In comparison, the iPod sounds a bit flat even with its new built-in equalizer. The Riot′s volume could stand to be a little louder — we often found ourselves trying to turn it up in vain. But at least you′ll be listening in comfort, for the player comes with a pair of comfy, decent-sounding headphones.

The Riot also ships with a sturdy carrying case and a belt clip, perfect for taking your music out on a stroll. However, think twice before taking the player on a marathon; the 10-ounce weight precludes jogging. The player never skipped during our tests, even when we shook it with reckless abandon, and its built-in, rechargeable batteries lasted for the 10 hours that Sonicblue promised.

（6）It′s Getting There

If you′re looking for a player to hold every last one of your MP3s, and you′re willing to put up with slow file transfers and a hard-to-master user interface (UI) that makes organizing your music less than pleasant, the great-sounding Rio Riot is the hard drive-based MP3 player for you. To be fair, all of the other Windows-based MP3 players we′ve reviewed up to this point also use USB 1.0, so the slow transfers are still unfortunately par for the course (although the soon-to-be-reviewed Creative Labs Nomad III does support Creative′s version of IEEE 1394/FireWire, called SB1394). But for our money, the smaller iPod, with its speedy FireWire connection, file-syncing capabilities (Mac only) and simple UI, is still the player to beat if you own a Mac. If you have a PC and abhor the idea of buying and installing a FireWire card, the Riot could still be a contender since Sonicblue will probably fix many of the problems with future firmware upgrades.

New Words

player	**播放器**
firmware	**固件**

equalizer	**均衡器**
stainless steel	**不锈钢**
lucite	**透明合成树脂**
playlist	**播放清单，节目列表**
audiobook	**有声书籍**
CEO (Chief Executive Officer)	**执行总裁**
autosync	**自动同步**
uncompressed	**未压缩的**
spatialization	**空间定位，空间化**
dB (decibel, decibels)	**分贝**
vibrant	**振动的；鲜明的，明快的（色彩、光线）；活泼的；生气勃勃的**

Unit 7

Text

Windows XP

Windows XP is the next version of Microsoft Windows beyond Windows 2000 and Windows Millennium. Windows XP brings the convergence of Windows operating systems by integrating the strengths of Windows 2000 — standards-based security, manageability and reliability with the best features of Windows 98 and Windows Me — Plug and Play, easy-to-use user interface, and innovative support services to create the best Windows yet.

1. Intelligent User Interface

While maintaining the core of Windows 2000, Windows XP features a fresh new visual design. Common tasks have been consolidated, and simplified, and new visual cues have been added to help you navigate your computer more easily. This section introduces the innovations in the user interface that make it easier to use your computer at work or at home.

(1) Fast User Switching for Multiple Users of a Computer

Designed for the home, Fast User Switching lets everyone use a single computer as if it were his or her own. There is no need to log someone else off and have to decide whether to save another user's files. Instead Windows XP takes advantage of Terminal Services technology and runs each user session as a unique Terminal Services session, enabling each user's data to be entirely separated.

Enabled by default if you're using Windows XP Home Edition, Fast User Switching is also available on Windows XP Professional if you install it on a stand alone or workgroup-connected computer. If you join a domain with a computer running Windows XP Professional, you will not be able to use Fast User Switching.

Fast User Switching makes it easier for families to share a single computer. For example, if a mother uses the computer to work on finances and has to leave for a short period of time, her son can switch to his own account and play a game. The financial application is left running and open in the mother's account. All of this is done without logging off. Switching users is easy with the new Welcome screen easily customizable with pictures for each user who logs on to the computer.

（2）New Visual Style

Windows XP has new visual styles and themes that use sharp 24-bit color icons and unique colors that can be easily related to specific tasks. For example, green represents tasks that enable you to do something or go somewhere, such as the Start menu.

（3）Redesigned Start Menu

The Start menu was designed to adapt to the way you work. Your five favorite programs display first, and your default E-mail and Web browser are always available. It groups your most frequently used files and applications together for quick and easy access. One click also gets you to Help and Support, and tools to configure your system. In addition, you can further customize the Start menu to suit your needs.

（4）Search Companion

Windows XP makes it easier to search by grouping search related tasks into a Search Companion.

（5）My Documents

Windows XP makes it easy to keep track of your files by letting you arrange them in various groups. You can view your documents by type. You can also group files according to the last time you modified them such as today, yesterday, last week, two months ago, earlier this year, or last year.

（6）Webview

Windows XP uses Webview technology helping you better manage files and the file namespace. For example, if you select a file or folder, you see a list of options allowing you to rename, move, copy, E-mail, remove it, or publish to the Web. This functionality is similar to what you see in Windows 2000 if you right-click on a file or folder; Windows XP takes this information and brings it into view directly on the desktop.

（7）File Grouping

Windows XP introduces an easier-to-manage taskbar by grouping multiple instances of the same application. For example, instead of having nine instances of a Microsoft Word file each arranged horizontally on the taskbar, Windows XP groups them together on one taskbar button. In this scenario, you see only one taskbar button, showing the number of files that are open for the application. Clicking the button shows the vertical list of all file names. In addition, the files can all be cascaded, tiled, or minimized at the same time.

（8）User Interface Enhances Productivity

The new user interface takes the Windows operating system to a new level of usability, enabling you to complete tasks more easily and faster than ever before. The rest of this paper highlights new technologies in Windows XP.

2．Comprehensive Digital Media Support

（1）Windows Media Player 8

Windows XP features Windows Media Player 8, which brings together common digital media

activities including CD and DVD playback, jukebox management and recording, audio CD creation, Internet radio playback, and media transfer to portable devices.

Windows Media Player 8 includes new features such as DVD video playback with rich media information and full screen controls, CD-to-PC music copying and automatic conversion of MP3 files. Windows Media Audio 8 provides nearly three times the music storage of MP3 with faster audio CD burning and intelligent media tracking for more control over digital media. Within Windows XP, the new "My Music" folder makes common music tasks easier to perform.

In addition, Windows Media Player 8 includes the following.

Ability to lock down Windows Media Player features in a managed network. Windows Media Player has a standard corporate skin that can be deployed in a network. If the Active Directory® service is enabled, administrators can specify a corporate skin, restrict playback formats and codices, and specify other customizations on a per-group or per-user basis (This requires client computers to run Windows XP Professional).

Digital broadcast support. Supports analog and digital TV (including HDTV). This includes signal demodulation, tuning, software de-multiplexing, and guide store. In addition you can enable IP data broadcasting such as extract streams from a digital TV signal.

Accelerated video rendering. Standardized MPEG-2 video acceleration provides smoother and faster playback using a subset of DirectX® APIs.

Video mixing renderer. This supports alpha blending letting you phase in multiple videos, overlay them, or integrate close captioning of text. Video is treated as a texture and can take advantage of 3-D graphics. For example, you could overlay videos on each side of a cube as it rotates.

Expanded support for more audio cards and their features. For example, card manufacturers can provide support for Dolby Digital.

（2）Windows Movie Maker

Windows Movie Maker version 1.1 provides base-level features for Windows Media capture and file creation, simple editing of video and audio, and the saving and publishing of Windows Media files. Although the utility produces output only in the Windows Media format, it will import all file formats and compression types supported by the DirectShow architecture.

If your computer does not contain any video capture hardware, all other non-video capture-related features of the application are fully functional and they allow for the importing and editing of media assets that exist on your computer.

Windows Movie Maker has many practical uses. If you want to archive your home video library collection onto the hard drive of a PC, you can record, edit, organize, and share the home video library from a PC. You could also share the home video with family and friends via E-mail or over the Web. If you want to make a video slide show, you can combine still images and publish into a Windows Media format.

（3）Digital Photo Support

Windows XP makes it easier to use digital devices and provides many options to manipulate images such as publishing pictures to the Web, E-mailing photos (with an option of compressing them for you for smaller file size), displaying pictures in an automatic slideshow, and allowing you to zoom in on images.

New Words

version [ˈvɜːʃn] *n.* 版本
integrate [ˈɪntɪgreɪt] *vt.* 整合
manageability [ˌmænɪdʒəˈbɪlətɪ] 易管理，可操纵性
reliability [rɪˌlaɪəˈbɪlətɪ] *n.* 可靠性
innovative [ˈɪnəveɪtɪv] *a.* 创新的，革新的
maintain [meɪnˈteɪn] *vt.* 维护，保养；保留，保存，保持
visual [ˈvɪʒuəl] *a.* 可视的，可视化
consolidate [kənˈsɒlɪdeɪt] *vt.* 使固定；使合并
simplify [ˈsɪmplɪfaɪ] *vt.* 简化，化简，精简
navigate [ˈnævɪgeɪt] *vt.* 领航，导航
cue [kjuː] *vt.* 提示，暗示；记号，信号
session [ˈseʃn] *n.* 对话期
approximately [əˈprɒksɪmətlɪ] *adv.* 约，近似地
megabyte [ˈmegəbaɪt] *n.* 兆字节
multi-user [ˌmʌltiˈjuːzə] *n.* 多用户
default [dɪˈfɔːlt] *n.* 默认，缺省
install [ɪnˈstɔːl] *vt.* 安装
stand [stænd] *n.* 台，座，架
workgroup [ˈwɜːkgruːp] *n.* 工作组
domain [dəˈmeɪn] *n.* 域，范围，领域
account [əˈkaʊnt] *n.* 账户，账目
log [lɒg] *n.* 记录，日志；登录
vt. 记录，登录
customizable [ˈkʌstəmaɪzəbl] *a.* 可定制的
style [staɪl] *n.* 字体
icon [ˈaɪkɒn] *n.* 图标
represent [ˌreprɪˈzent] *vt.* 表示，表现；代表
menu [ˈmenjuː] *n.* 菜单
group [gruːp] *n.* 组，群
vt. 组合，分组
web [web] *n.* 万维网
browser [ˈbraʊzə] *n.* 浏览器
click [klɪk] *vt.* （用鼠标）点击
search [sɜːtʃ] *vt.* 检索
document [ˈdɒkjumənt] *n.* 文档，资料
file [faɪl] *n.* 文件

namespace [▯■♏♓❍⬧◻♏♓⬧] *n.*	名空间
folder [▯♐☜◆●♎☜] *n.*	文件夹
option [▯♁◻☞☯■] *n.*	选项
rename [▯❒♓💻▯■♏♓❍] *vt.*	更名，改名，重新命名
remove [❒♓▯❍◆💻❖] *vt.*	删除
publish [▯◻✈♌●♓☞] *vt.*	发布
right-click [▯❒♋♓♦♉●♓♉] *vt.*	用鼠标右键点击，右击
multiple [▯❍✈●♦♓◻●] *a.*	多倍的，多路的，多重的，多次的
instance [▯♓■⬧♦☯■⬧] *n.*	实体；例图；事例，实例， 范例；样品
scenario [⬧♓▯■✌💻❒♓☜◆] *n.*	方案；情况；概要；脚本
taskbar [▯♦✌💻⬧♉♌✌💻] *n.*	任务栏
button [▯♌✈♦■] *n.*	按钮
cascade [♉✌▯⬧♉♏♓♎] *vt.*	层叠，重迭
tile [♦♋♓●] *vt.*	平铺显示，并列显示
minimize [▯❍♓■♓❍♋♓⌘] *vt.*	最小化
enhance [♓■▯♒♋💻■⬧] *vt.*	增强，加强，提高
comprehensive [♎♉♁❍◻❒♓▯♒♏■⬧♓❖] *a.*	综合的
digital [▯♎♓♎♑♓♦●] *a.*	数字的，数字式的，计数的
media [▯❍♓💻♎♏☜] *n.*	媒体
jukebox [▯♎♑◆💻♉♌☼♉⬧] *n.*	（自动）光盘机，点播机，自动电唱机， 小型盒式盘带设备
recording [❒♓▯♉♁💻♎♓☠] *n.*	记录，录音带；唱片
portable [▯◻♁💻♦☯♌●] *a.*	轻便的；便携式的；手提式的
conversion [♉☯■▯❖☯💻☞☯■] *n.*	转换，变换；换位法；换算
burning [▯♌☜💻■♓☠] *n.*	烧制，刻录
intelligent [♓■▯♦♏●♓♎♑☯■♦] *a.*	智能的；智能
corporate [▯♉♁💻◻☯❒♓♦] *a.*	共同的；集体的；社团的
deploy [♎♓▯◻●♁♓] *vt.*	展开，部署，配置
skin [⬧♉♓■] *n.*	皮肤，也指软件外观
specify [▯⬧◻♏⬧♓♐♋♓] *vt.*	指定，规定，确定
restrict [❒♓▯⬧♦❒♓♉♦] *vt.*	限制，约束，限定
format [▯♐♁💻❍♏♦] *n.*	格式，格式化
codices [♊♉☜◆♎♓⬧♓💻⌘] *n.*	法律（codex 的复数），规则
customization [♎♉✈⬧♦☜❍♋♓▯⌘♏♓☞☜■] *n.*	用户化，定制，定型；专用化
graphics [▯♈❒♏♐♓♉⬧] *n.*	图形
client [▯♉●♋♓☯■♦] *n.*	客户
analog [▯♏■☜●♁♈] *n.*	模拟，仿真，类比
signal [▯⬧♓♈■●] *n.*	信号；发信
demodulation [▯♎♓💻♎❍♁♎♏◆💻▯●♏♓☞☜■] *n.*	解调，检波
tuning [▯♦♏◆💻■♓☠] *n.*	调谐，调整，调音
de-multiplexing [♎♓💻▯❍✈●♦♓◻●♏♉⬧♓☠]	消多路技术，去多路技术

n.	
broadcast [⌻♌❒♋⌨♎&♋⌨♦♦] *n.*	广播，播音，播送
vt.	播放，播送
standardized [⌻♦♦✌■♎☜♍♎♋♓⌘♎] *a.*	标准化的，规格化的

Phrases

log off	注销，退出系统，销号
user session	用户会话期
log on	登录，注册，请求用机
at least	至少
by default	默认，缺省
Plug and Play	即插即用
be related to …	与……有关
group … into …	把……组合到……
full screen	全屏幕
adapt to …	使……适应于，适合于
in addition to	另外，又
keep track of	记录，留意，监视
according to	按照，根据
a list of	列表
be similar to …	与……相似
bring … into view	使……看得见
taskbar button	任务栏按钮
automatic conversion	自动转换
on a … basis	基于……
data broadcasting	数据广播
extract stream	提取流
zoom in	放大

Abbreviations

CD (Compact Disc)	光盘
HDTV (High Definition TV)	高清晰度电视
IP (Internet Protocol)	网际协议
MPEG (Moving Picture Experts Group)	运动图像专家组
API (Application Programming Interface)	应用程序接口
3-D (3-Dimesional)	三维的
(3-Dimesion)	三维

Notes

[1] Windows XP brings the convergence of Windows operating systems by integrating the

strengths of Windows 2000 — standards-based security, manageability and reliability with the best features of Windows 98 and Windows Me — Plug and Play, easy-to-use user interface, and innovative support services to create the best Windows yet.

本句中，standards-based security, manageability and reliability with the best features of Windows 98 and Windows Me **是对** the strengths of Windows 2000 **的补充说明，而** Plug and Play, easy-to-use user interface, and innovative support services **是对** the best features of Windows 98 and Windows Me **的补充说明，**to create the best Windows yet **是修饰谓语** brings the convergence of Windows operating systems**。**

本句意为：

通过整合 Windows 2000 **的性能，**Windows XP **集中了** Windows **操作系统，建立了最佳的** Windows**。**Windows 2000 **具有标准的安全性、易管理性、可靠性以及** Windows 98 **和** Windows Me **的最佳性能。**Windows 98 **和** Windows Me **具有即插即用、易使用用户界面和创新的支持服务性能。**

[2] While maintaining the core of Windows 2000, Windows XP features a fresh new visual design.

本句中，features **是一动词，意思是“具有……的特点。”**

本句意为：

Windows XP **在保留了** Windows 2000 **核心的同时，具有新的可视化设计特点。**

[3] This section introduces the innovations in the user interface that make it easier to use your computer at work or at home.

本句中，介词短语 in the user interface **做定语，修饰** the innovations**；**that **引导的定语从句也修饰和限定** the innovations**，在该定语从句中，**it **做形式宾语，真正的宾语是动词不定式** to use your computer at work or at home**。**

本句意为：

本节介绍 Windows XP **在用户界面方面所做的革新。这些革新使你在工作时或家中使用计算机更容易。**

[4] Switching users is easy with the new Welcome screen easily customizable with pictures for each user who logs on to the computer.

本句中，Switching users **是一动名词短语，做主语；**easily customizable with pictures for each user who logs on to the computer **是一形容词短语，修饰** the new Welcome screen **；定语从句** who logs on to the computer **修饰和限定** each user**。**

本句意为：

有了这种新的 Welcome **画面，切换用户很容易，也可以容易地为每个在计算机上注册的用户定制图片。**

[5] If the Active Directory® service is enabled, administrators can specify a corporate skin, restrict playback formats and codices, and specify other customizations on a per-group or per-user basis.

本句中有三个并列谓语：can specify**，**restrict **及** specify**。**on a per-group or per-user basis **的意思是“以每组或每一用户为基础”。**

本句意为：

如果激活 Active Directory®**服务，管理员就可以指定一共同的皮肤、限定重放格式和规则，并且可以以每组或每一用户为基础，指定其他定制。**

Exercises

1．根据课文内容，回答以下问题

（1）What strengths does Windows XP integrate of the previous version?

（2）Describe briefly the innovations in the user interface.

（3）What digital media does Windows XP support?

（4）Describe briefly the functions of Windows Movie Maker.

（5）Describe briefly the functions of Windows Media Player 8.

2．根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）

英 文 解 释	词　汇
A particular issue or release of a hardware product or software title	
The ability of a functional unit to perform a required function under stated conditions for a stated period of time	
The period of time during which a program is running	
A unit of storage equal to 1,048,576 bytes	
Of an attribute, value, or option that is assumed when none is explicitly specified	
A group of users sharing resources and access to files using a network arrangement, such as a LAN	
The material on which data and instructions are recorded, e.g., magnetic disk, paper tape, floppy disk, magnetic tape, punch card, etc	
A character string that identifies a user and is used by computer operating system in accounting or other services	
A record of transactions or activities that take place on a computer system	
A display of a list of available machine functions for selection by operator	

3．把下列句子翻译为中文

（1）Windows XP is the next version of Microsoft Windows beyond Windows 2000 and Windows Millennium.

（2）Fast user switching makes it easier for families to share a single computer.

（3）The Start menu was designed to adapt to the way you work.

（4）Your five favorite programs display first, and your default E-mail and Web browser are always available.

（5）In addition, you can further customize the Start menu to suit your needs.

（6）You can view your documents by type.

（7）Windows XP makes it easy to keep track of your files by letting you arrange them in various groups.

（8）Within Windows XP, the new“My Music”folder makes common music tasks easier to perform.

（9）Windows Media Player has a standard corporate skin that can be deployed in a network.

（10）You could also share the home video with family and friends via E-mail or over the Web.

4．上机实践

通过 Internet **查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过** E-mail **发送给老师，并附上你收集资料的网址。**

（1）与以前的版本相比较，Windows XP **增加了哪些新功能？给出一览表。**

（2）与以前的版本相比较，Windows XP **使用了哪些新技术？给出一览表。**

（3）到目前为止，Windows XP **的补丁程序有哪些？**

（4）了解 Windows **的下一步发展计划。**

Reading Material

FrontPage

FrontPage is another frequently used program and it's a must have software that I regularly use to update the websites I manage. Any improvements to make me work more efficiently are greatly appreciated and thank God, FrontPage is full of new features. Microsoft once again doesn't disappoint us since the program was totally rethought once again. As a reminder for those who forgot, originally Microsoft didn't make FrontPage. When Microsoft in 1996 felt that the Internet became unavoidable they bought this website editing software from another company. Since then there were many FrontPage versions, each one better than the previous and changing the way you're working with websites to provide more efficient solutions. Versions 95 & 97 of FrontPage were slow and not user-friendly, with FrontPage 98 Microsoft started to show improvements. Then came Microsoft FrontPage 2000, which was probably the most accomplished version of the software by respecting and treating correctly HTML code to avoid any compatibility worries. FrontPage is a new exciting challenge for the Microsoft FrontPage development team, which they raised successfully. So let's see what Microsoft has done to improve an already great program. The first major enhancement of FrontPage you instantly notice is that you can open several pages in the same window thanks to the new tab feature: using the tab you can easily switch from a page to another, staying in the same window! A real revolution compared to FrontPage 2000.

1. MultiPage View thanks to the new FrontPage tabs

Sure, for each page you display you can enable three different views.

The first design is the place where you create your page from the scratch. You can use one of the predefined templates if you're not really inspired or build your own one very easily just like if you were working with Publisher. Indeed the major advantage of FrontPage is its WYSIWYG design environment. With other web editing tools you may not get the result you were expecting when you designed the page. Here people that hate HTML code don't even have to worry about it since they create web pages as easily as typing a letter in Word and the result they get in their browser exactly represents what they have designed.

The HTML view is for pros only. Anyway thanks to that French scientist of the CNRS that created this language. Indeed instead of making a complex language the one he created, HTML (Hyper Text Markup Language) is really easy to learn and to understand and doesn't require too much practice. Obviously the HTML editor uses color codes to highlight portions of code and let you quickly identify which part is used for.

Finally the design view of FrontPage lets you view the page you've created exactly as it'll be shown by your browser.

2. Dynamic Content

Building a website becomes as easy as constructing Legos with FrontPage 10. Indeed

Microsoft FrontPage gives you the power to add dynamic content with the new Photo Gallery component, cross-browser enhanced Drawing Tools, and Automatic Web Content from Microsoft MSN, MSNBC, Expedia, and bCentral. Users can save time and achieve professional-looking results by using sophisticated technology such as fully customizable Themes, customized lists, and quick-to-build surveys without having to know or spend time on complex programming. In addition to that all the DHTML and other banner effects remain always easy to apply in order to create high technology websites. Many other new features are included in FrontPage like:

Photo Gallery — Users can quickly and easily create a Photo Gallery to display photos or images. They can add images to the Photo Gallery, select from several different customizable layouts, add captions and descriptions to images, reorder images, change image sizes, and switch layouts.

Enhanced Drawing Tools — Enhanced drawing tools such as auto-shapes, drop shadows, Word Art, and text boxes are as easy to use because they are in Microsoft Word and Microsoft PowerPoint. This also means that users can easily paste any shapes they have created in other Office applications directly into FrontPage.

3．Enhanced Drawing Tools

Automatic Web Content — Users can add Automatic Web Content to their Web site by inserting MSNBC headlines and weather forecasts, MSN search, Expedia maps, and bCentral small business tools. Inserted content is updated daily by the respective sources, so users can have continuously updated content without having to continually update their site.

Insert Browser-Editable Lists — Users can insert lists, via Microsoft SharePoint technology, that they have created from scratch or selected from a variety of list templates such as Announcements, Events, Tasks, and Contacts. Authorized users can easily edit, customize, and subscribe to these lists from level 4 or later browsers, and these lists can be exported to key Office applications.

Insert Discussion Boards — Users can insert a Discussion Board, making it easy for team members and visitors to the Web site to participate in newsgroup-style threaded discussions. Users decide who can see the discussions and who can contribute to them. This functionality is made possible through Microsoft SharePoint technology.

Insert Dynamic Online Surveys — This feature enables users to create and insert dynamic Online Surveys, complete with easy-to-add radio buttons, drop-down menus, and check boxes. Visitors can respond to surveys from their browsers and can choose to see results in automatic graphs. Users can simplify their survey creation with template choices, or create surveys quickly with the Survey Wizard. Dynamic Online Surveys are made possible through Microsoft SharePoint technology.

Theme — Users can apply a virtually limitless variety of formatting options with 67 customizable Themes. Each of the Themes have been updated in FrontPage and each has its own look and feel, including coordinated bullets, buttons, background, page banner, horizontal line, and font styles. Users can apply a Theme across a single page or all pages in their site. Themes can be

also applied to Microsoft Word documents and Microsoft SharePoint based Web sites.

4. Theme Browser

Border Drop-down Tool Button — Border Drop-down Tool Button enables users to add borders of any color or background color to text or graphics quickly and conveniently. This makes adding borders in FrontPage as easy as it is in Microsoft Word or Microsoft Excel, and there is no need to put the text or graphics into tables.

Page Tabs — Page Tabs make editing many pages at once easier. Users can open several pages in FrontPage and switch from page to page with just a click on the tab that represents that page.

Navigation Pane — Users can access the Folder List and Navigation Pane from the main FrontPage. This enables them to continue to edit pages while alternating between managing files and folders to manage the way the pages link to each other.

Table Editing: Table AutoFormat, Table Fill, and Table Split — Table AutoFormat provides a fast and easy way to create professional-looking tables. Users can select the style they want to use, and FrontPage automatically changes the table′s borders, shading, and colors.

With the new Table Fill, users can quickly repeat the contents of an individual cell to the right of the cell (Fill Right) or below the cell (Fill Down). This saves time when users want to copy the same content to multiple cells.

Table Split enables users to divide a table at any location quickly and easily. This is convenient when users want to add text or graphics in between rows in a table.

Task Pane — The Task Pane enables users to have easy access to frequently used commands such as New Page or Web, Web Site Templates, Insert Clip Art, Search, and Office Clipboard.

Office Clip Board — Office Clip Board helps users copy or cut content from Office applications and quickly paste them into Web pages they are creating with FrontPage. Users can visually see representations of the content on the clipboard in the Task Pane, and they have the option of preserving the source or destination text, formatting, or pasting only the text without the formatting.

Link Bars — Users can build Custom Link Bars to link to pages on or off their site. They can create Link Bars via the Navigation View to be applied site-wide, or create ad-hoc Link Bars to apply them anywhere they want in their Web. Users can place Link Bars in shared borders for site-wide navigation, or they can insert them anywhere on any page in their Web.

Users can also use the Link Bars as“ back ”and“ next ”links to chain their Web pages together in sequence, or they can include only one link to make a quick button. Users can even insert Link Bars into pages on their site with Microsoft Word 10.

Web Components — FrontPage Web Components such as hit counter, banner ad manager, marquees, hover buttons, link bars, and Web-wide search make inserting sophisticated technology into Web sites fast and easy. New components in FrontPage include Photo Gallery, Link Bars, Top 10 Lists, List Views from Microsoft SharePoint, Save to Database, and Automatic Web Content such as headline news and maps.

Inline Frames via HTML 4 based Support — FrontPage offers support for features enabled by advanced technology such as HTML 4, including Inline Frames, language attributes, and button and fieldsets in forms.

5．Microsoft FrontPage Web Mapping View

FrontPage also has new tools in there for people that run the website making a daunting task like that a lot easier.

Usage Analysis — Usage Analysis Reports can help users better understand who visits their site. This feature enables users to quickly find what pages are getting the most hits and how customers find their site with referring URLs in daily, weekly, or monthly reports. These reports can be exported to HTML or Microsoft Excel and can be filtered and charted to show the exact information users want.

Top 10 Lists — Users can quickly insert Top 10 Lists that link to the Top 10 pages on their site. The Top 10 pages can be determined by the number page hits, referring domains, referring URLs, search strings, visiting users, and more. These lists are automatically refreshed when the user comes to the page. This feature can be used on Internet or intranet sites.

Enhanced Reporting — With FrontPage Enhanced Reports, you can monitor your site′s performance by quickly finding slow or unlinked files or pages and broken hyperlinks. You can also auto filter the reports and export the data to HTML or to Microsoft Excel.

Also control on how your HTML code looks has not been forgotten:

Paste the Way You Want — When users paste content into their FrontPage-based Web site from other applications, they can now decide whether they want to preserve the formatting from the document they copied (Keep Source Formatting) or let the page′s Theme or style change the formatting (Use Destination Styles), or strip out all of the formatting and simply paste in the text (Keep Text Only).

Microsoft didn′t forget programmers! FrontPage includes many new features to ease their life. For XML lovers the new Apply XML Formatting Rule automatically takes an HTML page and reformats its HTML tags to make them XML-compliant: great! In order to produce homogeneous pages if on a site you can use the new HTML Reformatting feature that enables the user to tell FrontPage how their HTML page should be formatted — from how many indents should come before each tag to whether or not to use optional tags. New in FrontPage is the ability to take a page that has been imported into a Web and reformat the page according to the user′s preferences. Finally a very important feature is the new Active Server Page (ASP) Source Code Preservation that lets users to edit content in pages containing ASP code without disturbing the ASP code. Now, FrontPage always opens the ASP page in Normal View mode, regardless of whether the ASP code violates convention (such as multiple <head>, or <body> tags).

Also added into FrontPage is Microsoft Sharepoint. Microsoft SharePoint technology enables custom Web pages and collaboration capabilities to be truly accessible to whole teams or organizations. It is possible to edit Microsoft SharePoint sites straight from a browser, making it simple and accessible for everyone to participate in discussions, surveys, announcements, and more.

For more information see the Microsoft SharePoint Product Guide.

In addition, FrontPage has not only increased the number of available languages to 26, but has also added Unicode Support that enables users to alternate between supported languages while they create and edit Web sites. This international support enables users to work in the appropriate languages with team members who are all over the world.

SharePoint also increases communication and collaboration:

Microsoft SharePoint — Microsoft SharePoint enables users to quickly set up a team Web site for the intranet or Internet. This enables the team to store, find, and share information, documents, and Web pages.

Browser-Based Editing of Microsoft SharePoint-Based Sites — Users can edit Microsoft SharePoint content, upload documents, and participate in threaded discussions directly from the browser. All team members can contribute and interact with the Web site using the tools they prefer, and they can even receive automatic notification when pages or discussions are modified.

Discussions and Subscriptions — With Discussions, users can post and reply to comments on pages on their site or on any Web page on the Internet. They can also sign up to receive an E-mail notification when discussions have changed or when pages on their site have changed.

Customization and Integration with FrontPage — With FrontPage, users can customize their Microsoft SharePoint team Web sites. Users can create and apply custom Themes; insert graphics, Link Bars, and Automatic Web Content; and insert lists such as Announcements, Events, Contacts, Surveys, and Links on their Web site for all to view and contribute.

Document Library — Users can add a Document Library that lets them store documents in one location for everyone (or only specific people) to access. Users can create a new document for the Document Library from a specified template or upload existing documents to the Document Library. They can also sort and filter the lists of documents in the Document Libraries as well as update or contribute new information to the Document Library from any level 4 or later browser.

Another feature added is E-Commerce Functionality:

bCentral Commerce Manager Add-in for FrontPage — Users can now easily add e-commerce functionality to their FrontPage-based site via bCentral′s Commerce Manager service. The Commerce Manager service and the Commerce Manager Add-in for FrontPage allow users to quickly build a catalog of items to sell online. Users can subscribe to the Microsoft bCentral Commerce Manager service and then easily insert" buy "buttons and a shopping cart into their Web site.

Auctions via bCentral Commerce Manager — Once users subscribe to the bCentral Commerce Manager service, they can take their e-commerce functionality one step further by promoting their products across Internet auction sites like MSN eShop Auctions and Fair Market Auctions with an optional upgrade package. Users can access this functionality via the bCentral Commerce Manager Add-in for FrontPage.

Database Interface Wizard — Users can display the contents of a database on their page by using the Database Interface Wizard. This Wizard comprehensively generates the forms and pages

needed to create a Web site front-end for data.

Users can allow other, specific users to edit or delete records from the database via a Web page that is created with this wizard, while at the same time allowing everyone who can browse the site to add new records and view existing ones. Additionally, it enables users to filter data more quickly to find what they are looking for.

New Words

website	**网站**
scratch	**徒手画**
WYSIWYG (What You See Is What You Get)	**所见即所得**
DHTML (Dynamic Hyper Text Markup Language)	**动态超文本标识语言**
drop shadow	**下拉阴影**
radio button	**无线按钮**
drop-down menu	**下拉式菜单**
background	**背景**
Clip Board	**剪切板**
Link Bar	**链接条**
URL (Union Resource Locator)	**统一资源定位器**
eshop	**电子商店**
front-end	**前端**

Unit 8

Text

Microsoft Word

Microsoft Word is probably the most commonly used item in the Office series. Well, the fact is that in Small Business as well as Corporations, writing letters is always done with Microsoft Word, that is, every secretary of the world should at least know how to use Microsoft Word to be employed. Word is also used widely by customers, which probably bought the Office pack just for it. Once again Microsoft has aimed to get more people use Microsoft Word and make it easier for them to use. The actual look of Microsoft Word has changed much and is intended to be fully integrated with Windows Whistler. The colour of the background of the toolbars is light grey and when you move your mouse over the toolbars, it becomes a light blue colour with a light grey vertical line on the whole menu length. Toolbars are now absolutely flat and just like in Microsoft Word 2000 you can choose to hide or show buttons by clicking directly on the arrow to check or uncheck commands you don't want to use. Hopefully these cosmetic enhancements are not all since there are many changes under the hood. A lot of Smart tags improvements have been used throughout this Suite. There are AutoCorrect Option Smart tags, which provide an easy mechanism for you to control and modify automatic behaviour that takes place within Word. You can undo an automatic correction, choose to not have that correction take place in the future, or access the AutoCorrect Options dialog box. There is also the Name, Address and date smart tag which now will identify a name or address being written in the same way as at the moment Office recognizes an E-mail or URL address being written.

Another new feature Office 10 is the inclusion of Speech. You can dictate texts, make direct formatting changes, and navigate menus using speech and voice commands. Microsoft at last offers its lazy customers a way to write letters or documents without typing on the keyboard (for those of you who still don't know where the letter K is on the keyboard you should really consider using speech recognition right now!). At the moment speech is currently available for U.S. English, Simplified Chinese and Japanese and has some compatibility issues with some sound cards. As well as the speech function though there is also the ability to translate words in their document (Available languages are determined by language dictionaries that are installed) or to access a translation service on the Web. That is very useful for workers who have to produce documents in

different language. This service provides entire document translation as well as additional languages.

To help out with the productivity of Office, Microsoft has added a few more Document Formatting features to make things easier. One of these features is Reveal Formatting where at any point during the document you can see the current font, paragraph, spacing, image, table properties, and more. Also you can compare the formatting of two different sections of a document and apply the formatting of one to the other. As well as this you can open the Styles and Formatting Task Pane, which gives you the ability to see the formatting in use in their document (both styled and direct formatting), recently used formatting, and all the available styles. You can select all text in the document with the same style or direct formatting, and easily apply a new format or style all at once. You will benefit by being able to easily reuse formatting within their document without needing to create styles. New to Word 10 is a small fancy feature that lets you change line spacing directly from the main toolbar by pushing a small button. Creating tables is always easy and you can obviously draw tables of your own by simply using the outstanding table drawing feature. One feature I am really impressed with is the Multi-Selection feature! You′ve dreamt about it, Microsoft did it! This feature lets you easily select multiple areas of a document at once by merely using your mouse cursor with the Ctrl key of your keyboard, thereby saving time when formatting the document. Additionally, with the Find feature, you can simultaneously select similarly formatted text and reformat it. The double click and type feature is still present in Word 10 so you can double click in any area of your blank page and start typing right away without worrying to push several times the enter and space key to reach this area! Just like in Microsoft Word 2000 fonts are previewed directly in the font list so you know what your text will look like. Thanks to the IntelliSense technology, when you′re typing the beginning of a font name in the list, Word will guess the end by showing the font name you are looking to use. Office 2000 introduced a long awaited enhancement named the Office clipboard where users can store up to 12 parts of text, pictures, etc. Microsoft Office 10 comes with super Office clipboards that can store up to 24 different scraps of selections. But if it wasn′t enough in Word (like in the other Office 10 applications) you can choose to activate the clipboard view pane that will list the stuff you put in and you′ll even be able to preview text, pictures or graphs. So inserting the paste is not a nightmare anymore. Security for documents has also been rethought so users can digitally sign their documents to ensure that unauthorized persons can′t modify them. A new feature called “send for review” appears in Word and other Office application. And this lets users diffuse a document defining each recipient role. If you choose to send a document for approval this will enable following and modifying tools. When recipients send back their documents, the author can choose to include into the final document each modification one after the other so he can keep total control over it. As usual users can move, delete, replace their texts directly from the print preview window, they don′t lose time switching from the print preview to the edit mode to make the text appear as they want.

One thing that Microsoft has listened to and acted upon is Reliability and Data Recovery.

There is nothing worse than working on a document and just as you get to the end you have your computer crash and lose all the information. To help fight against this there is now a Document Recovery option where Word 10 gives you the option of saving their current files at the time an error occurs in an application. As a result, you spend less time recreating their documents. But that′s not all since Word 10 also makes automatic backups of the file you′re working on. If a fatal error occurred and word can′t offer you to save it, after you′ll have restarted your computer when you run Word 10 again, a small pane will appear on the left of the application showing the last file you were working on when the crash occurred. If you click on it, it′ll instantly be opened and you′ll be glad to see everything has been saved! Office related crashes are now smarter since a nice dialog box says you have encountered a crash and due to the Application Error Reporting it offers you to get back a report of the error to Microsoft or the user′s corporate IT department. This gives Microsoft (or organizations) the data needed to further diagnose and correct these errors, and provide users with direct access to workarounds or other information on the error. Application and Document Recovery provides a safer method for shutting down Word if it is not responding. Users can choose to shut down while initiating recovery of the document. They can report the problem to Microsoft or their corporate IT department at the same time. Repair and Extract is where Word can automatically invoke this corrupt-document repair and recovery functionality in the event of an error or a failure to load a file. Users can invoke this functionality by choosing Open and Repair from the File Open dialog box.

Overall Microsoft Word has been widely improved upon to provide users higher productivity, and a good-looking environment to work in and even tighter integration.

New Words

item [ˈaɪtəm] *n.*	（可分类或列举的）项目，条款
employ [ɪmˈplɔɪ] *vt.*	雇用；使用
customer [ˈkʌstəmə(r)] *n.*	顾客，客户，买主，用户
toolbar [ˈtuːlbɑː(r)] *n.*	工具栏
highlight [ˈhaɪlaɪt] *vt.*	增加亮度，突出显示
uncheck [ʌnˈtʃek] *vt.*	不选定，不检验，不检查
tag [tæg] *n.*	标识，标记
undo [ʌnˈduː] *vt.*	撤消
behavior [bɪˈheɪvjə(r)] *n.*	特性，性能，行为
recognize [ˈrekəgnaɪz] *vt.*	承认，识别，认可
dictate [dɪkˈteɪt] *vt.*	口述，口授
lazy [ˈleɪzi] *a.*	懒惰的，懒散的
paragraph [ˈpærəgrɑːf] *n.*	段落
spacing [ˈspeɪsɪŋ] *n.*	间距
unauthorized [ʌnˈɔːθəraɪzd]*a.*	未经授权的；未经许可的；未经批准
recipient [rɪˈsɪpiənt] *n.*	收件人
crash [kræʃ] *n.*	破坏，毁灭，丢失

fatal [ˈfeɪtl] *a.* 致命的，重大的，毁灭性的
occur [əˈkɜː(r)] *vi.* 发生，出现
restart [ˌriːˈstɑːt] *vt.& vi.* 重新启动
diagnose [ˈdaɪəgnəʊz] *vt.* 诊断
respond [rɪˈspɒnd] *vi.* 响应，回答
voice [vɔɪs] *n.* 语音
cursor [ˈkɜːsə(r)] *n.* 光标
drawback [ˈdrɔːbæk] *n.* 缺点，障碍
clipboard [ˈklɪpbɔːd] *n.* 剪贴板
paste [peɪst] *n.* 粘贴
list [lɪst] *vt.* 列出
n. 列表，名单，目录
preview [ˈpriːvjuː] *vt.* 预览，预先查看
n. 预览，预显
repair [rɪˈpeə(r)] *vt.* 修理，维护
scrap [skræp] *n.* 片，块，剪下来的图片；文章
nightmare [ˈnaɪtmeə(r)] *n.* 恶梦，可怕的事情
diffuse [dɪˈfjuːz] *vt. & vi.* 散播，传播，扩散，蔓延
approval [əˈpruːvl] *n.* 赞成，承认，正式批准
backup [ˈbækʌp] *n.* 备份
workaround [ˈwɜːkəraʊnd] *n.* 工作区
failure [ˈfeɪljə(r)] *n.* 失败
instantly [ˈɪnstəntlɪ] *adv.* 立即地，即刻地
encounter [ɪnˈkaʊntə(r)] *vt.* 遇到，遭遇
invoke [ɪnˈvəʊk] *vt.* 调用

Phrases

be intended to 意图是使，是用来
be fully integrated with … 完全与……统一，归并，整合
speech recognition 语音识别
right now 现在
at any point 在任何时候
apply … to … 把……应用到……
dialog box 对话框
multi-Selection 多选
space key 空格键
enter key 回车键
in use 正在使用的，使用中
right away 马上，立刻
thanks to 由于
up to 多达，最多到，最高可达
digitally sign 数字签名
send back 发回

keep total control over	完全控制
fight against …	与……做斗争
due to	由于，归因于
document recovery	文档恢复
shut down	关机
in the event of	万一，若，如果，在……情形下

Abbreviations

IntelliSense	智能感知
IT (Information Technology)	信息工业，信息行业

Notes

[1] You can undo an automatic correction, choose to not have that correction take place in the future, or access the AutoCorrect Options dialog box.

本句中，have that correction take place **的意思是‘让更改发生”。动词短语‘** have sb. do sth. **”的意思是“让某人做某事”。请看下例：**

There is something wrong with my computer. I'll have Tom check it.

本句意为：

你可以撤消自动纠错，选择以后不进行纠错或不访问 AutoCorrect Options **对话框。**

[2] Microsoft at last offers its lazy customers a way to write letters or documents without typing on the keyboard.

本句中，to write letters or documents without typing on the keyboard **是一个动词不定式短语，做定语，修饰和限定** a way**。**

本句意为：

最后，Microsoft **为其懒惰的用户提供了一种不必通过键盘输入就可写信或写文件的方法。**

[3] New to Word 10 is a small fancy feature that lets you change line spacing directly from the main toolbar by pushing a small button.

本句中，that lets you change line spacing directly from the main toolbar by pushing a small button **是一定语从句，修饰和限定** feature**，在该从句中，**by pushing a small button **是一介词短语，做方式状语，修饰谓语** change**。**

本句意为：

对 Word 10 **而言，有一小的新功能。该功能可让你直接从主工具栏中按一小按钮来改变行间距。**

[4] This feature lets you easily select multiple areas of a document at once by merely using your mouse cursor with the Ctrl key of your keyboard, thereby saving time when formatting the document.

本句中，thereby saving time when formatting the document **是一现在分词短语，做结果状语。**

本句意为：

这个功能可以使你只需按住键盘上的 Ctrl **键就可容易地一次选择文档的多个区域。从而节约了格式化该文件的时间。**

[5] Thanks to the IntelliSense technology when you′re typing the beginning of a font name in the list, Word will guess the end, showing the font name you are looking to use.

本句中，Thanks to the IntelliSense technology **是一原因状语，**when you′re typing the beginning of a font name in the list **是一时间状语从句，它们都修饰主句的谓语** will guess。**现在分词短语** showing the font name you are looking to use **做伴随状语，也修饰谓语** will guess。**定语从句** you are looking to use **修饰** the font name。

本句意为：

多亏了 IntelliSense **技术，当你输入列表中一个字体名的开头时，**Word **就会猜出其结尾，同时显示你想使用的字体。**

Exercises

1．根据课文内容，回答以下问题

（1）What are the characteristics of the toolbars in Word?

（2）What are the functions of Speech in Word?

（3）What are the functions of Document Formatting?

（4）What are the functions of Reliability and Data Recovery?

（5）What are the functions of Document Recovery option?

2．根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）

英 文 解 释	词　汇
In an application in GUI, a row, column, or block of on-screen buttons or icons. When user clicks on these buttons or icons, macros or certain functions of the application are activated	
One or more characters attached to a set of data that contains information about the set, including its identification	
A facility which intensifies the characters on the display screen in word processing	
A movable, visible mark used to indicate the position at which the next operation will occur on a display surface	
The inability of a functional unit to perform its required function	

续表

英 文 解 释	词　汇
In word processors and other applications, display a document on the monitor rather than sending it directly to the printer	
An occurrence of significance to an operating system or executing task	
To insert text or a graphic that has been cut or copied from one document into a different location in the same or a different document	
To close a program or an operating system in a manner ensuring that no data is lost	
A long key that sends a space character to the computer	

3．**把下列句子翻译为中文**

（1）Microsoft Word is probably the most commonly used item in the Office series.

（2）Another new feature of Office 10 is the inclusion of Speech.

（3）To help out with the productivity of Office, Microsoft has added a few more Document Formatting features to make things easier.

（4）One thing that Microsoft has listened to and acted upon is Reliability and Data Recovery.

（5）As a result, you spend less time recreating their documents.

（6）Users can invoke this functionality by choosing Open and Repair from the File Open dialog box.

（7）Users can choose to shut down while initiating recovery of the document.

（8）There are two versions that are covered in this tutorial, Excel 2000 and Excel XP.

（9）The function of a spreadsheet is to store and manipulate data, in particular numerical data.

（10）Though originally made for business, spreadsheets are widely used in scientific and engineering applications, too.

4．上机实践

通过 Internet **查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过** E-mail **发送给老师，并附上你收集资料的网址。**

（1）与以前的版本相比较，Word **增加了哪些新功能？给出一览表。**

（2）与以前的版本相比较，Word **使用了哪些新技术？给出一览表。**

（3）到目前为止，除了 MS Word **外，还有哪些文字处理软件？**

（4）了解 Word **的下一步发展计划。**

Reading Material

Excel 2000/XP

1．What is Microsoft Excel 2000/XP

Microsoft Excel is a spreadsheet program. There are two versions that are covered in this tutorial, Excel 2000 and Excel XP. For our purposes they behave the same and will give the same screen views. The function of a spreadsheet is to store and manipulate data, in particular numerical data. Once this is done, this data can be output in various useful forms such as tables and graphs. Though originally made for business, spreadsheets are widely used in scientific and engineering applications, too.

2．Why is Spreadsheeting Important to You

As computer programs go, spreadsheets are not particularly fast number crunchers, and the programming you can do with them tends to be fairly elementary. However, when dealing with computers a large part of your time is spent not on crunching numbers or programming, but on formatting your output. This is where spreadsheets work particularly well. They are capable of taking your data, performing mathematical manipulations, and making a clear presentation of the data in graphical form. Thus, they provide a convenient method for analyzing all types of data (financial, inventory, laboratory, etc.) and producing high quality graphics. In addition, if you desire, you are able to make a “quick and dirty”graph to check on the data input, the quality of data, and the strength of your mathematical relationship. “Quick and Dirty”: I like that in a program.

You will find that spreadsheets are often used in the Navy. As a JO, you might find that you are called upon to use a spreadsheet for training records, inventories or as a division officer′s notebook. Those of you who are exploring engineering careers might like to know that a LCDR I talked to from the EWS Division related to me the results of a survey that he performed. 90% of engineers surveyed chose spreadsheet programs as the number one program they use (ahead of word processors).

3．Exercise 1 : Starting the Program

The first step in learning to use your new software is to start (or in computer parlance: launch) the Excel Program. You launch Excel by 1) SELECTING the Windows Start button and this will bring up a set of choices in a menu. 2) Drag your cursor over Programs. Another menu will appear to the right. 3) Drag your cursor over to Microsoft Excel and SELECT on it, you will launch Excel.

As each file made by Excel has the extention .xls. for example, in Book1.xls, we will describe files as “ xls files ”.

The initial xls window may not fill your whole screen. This size is very useful if you want to use more than one application simultaneously (a Web Browser). However, it is often desirable to have a larger working window (also called working environment) in Microsoft Excel.

The size of the working window is controlled by two sets of three small buttons on the top right of the window (circled with red and yellow). The ones on top (the Title Bar) control the whole Microsoft Excel program environment and the ones on the line that starts on the far left with File (the Menu Bar) control the environment of the particular xls file. If you have more than one file up at a time, each will have these three buttons on their own File Title Bar.

The left-most looks like an underline symbol. If you click on the box, the program/file gets small. This is called minimizing. From the Title Bar, the underline symbol minimizes the program to the Task Bar on the bottom of the screen. The name of the task always resides there even while the program is large. You will see it as the name of the program (Microsoft Excel) and a shortened version of the file name. When minimized, by SELECTING this Task, it will return the xls back to its previous size. This is called maximizing. Try minimizing, then maximizing the program.

If you minimize the file by SELECTING the underline on the second line (or the File Title Bar), this minimizes the file to a Task Bar within the Microsoft Excel program, this time as just a shortened version of the file name. Try minimizing, then maximizing the file.

The center symbol is either a square with a heavy line on the top of the box or two smaller overlapping versions of this box. If the single box shows SELECTING it will make the environment larger. If the two boxes show SELECTING it will make the environment smaller. It is a toggle; give it a try back and forth.

If you were to SELECT the“ X ”on the right, the program would close. It is unnecessary to try this one right now. If your file has been changed since it was last saved, it will ask you if you wish to save the changes. If you have saved it or have not done anything to the file, it will close the program immediately.

4．Exercise 2: Entering Information

The following is data from an experiment performed to examine how the pressure of an automobile tire changes as a function of the temperature of the tire.

Tire Pressure vs. Temperature

Pressure (psi) Temperature (Fahrenheit)

32.0 75.

33.3 100.
34.5 125.
36.0 150.
37.1 175.
38.4 200.

Part A

Each spreadsheet program creates a “Book” which is made of a number of “Sheets”.The default has Sheet 1 - Sheet 3 available. You will be inputting data into what are called cells. Cells are addresses for information. In a spreadsheet book these addresses are defined by three parameters: 1) the page, 2) the column and 3) the row. When you open a new spreadsheet, it will default to Sheet 1, cell column A, cell row 1. In the image above, the cell A1 is boxed and is identified by its address just above the spreadsheet on the left. The book is on Sheet 1 (you can see the button Sheet 1 highlighted on the bottom). There is a spreadsheet on each of the three sheets. Each spreadsheet has 256 columns and 65 536 rows. Clearly, we do not expect you to use all of these at once.

In these exercises, we will be working on only Sheet 1. Assume that all cell addresses refer to this page. First, we will create labels in order to make your spreadsheet easy to interpret. SELECT the appropriate cell using your mouse and type in the labels.

If you are within a cell, if you just start typing, the label will appear in the cell. It will not record what you type until you tell it you are done. You can do this by 1) SELECTING another cell with your mouse. 2) You can hit the “Enter” key on your keyboard. It will record what you have typed, and will move you to the cell just below in the same column. 3) Hitting an arrow key will record and move you to the corresponding active cell. If you type “Tire Pressure vs Temperature” into cell A1 then hit the “Enter” key, you will be all ready to type “Pressure (psi)” into cell A2.

Cell Label

A1 Tire Pressure vs Temperature

A2 Pressure (psi)

D2 Temperature (degrees Fahrenheit)

Note that some labels appear to extend over more than one cell. Navigate to cell B1 by SELECTING it with your mouse or using the arrows on your keyboard. Try entering your alfa code into B1. You will notice two things: 1) the leading zero does not show, and 2) the remaining digits overwrite the A1 entry in the spreadsheet area. The first of these shows the difference between the idea of a label and a value. When you typed in your alfa, for example: 034567, you may have expected to see 034567, but you got 34567. In a numerical value (shortened to value in spreadsheet lingo), the leading zeros have no function and are left out. However, anything that can be typed can be part of a label, even numbers. Therefore, if you make your alfa code a label by putting an apostrophe (′) as the leading character, now, the leading zero will show.

You may wonder if your typing into cell B1 has erased some of cell A1. Arrow over to A1. You will notice that the whole text of the label shows again. You never lost it. It was just hidden on the spreadsheet window by cell B1. If you move back to B1 and press the Del key, the alfa code

will be removed. As cell B1 is again empty, the full contents of cell A1 will reappear in the window.

Part B

Place the pressure data in the A column starting at cell A3. Remember, you can record the data and move down, both by the“ Enter ”key. Place the temperature data in the D column starting at cell D3.

5．Exercise 3: Formatting

Note that the trailing zeros have been dropped from some of the data entries. In order to show these zeros your will need to change the numeric format of the data blocks.

Part A

Highlight the block of data from A3 to A8 by placing the mouse cursor on A3. Hold down the left mouse button and DRAG the cursor down to A8. The block of data should now be highlighted.

Part B

Hold your cursor over the highlighted block and click the RIGHT mouse button. A menu should appear. This is the Object Menu. Contained in this menu is“ Format Cells ”. SELECT this. The window that pops up is titled Format Cells. Since you have highlighted the set of cells from A3 to A8, inclusive on sheet 1, the changes you make will only affect these cells.

Part C

The Format Cells window has six folders with a menu on each. Each of the folders is labeled with a tab at the top. Number is the top folder. In this folder there is a list of categories. SELECT“ Number ”from this list. This will allow you to set the number of decimal places in your data. You will notice in the upper right of the Sample preview box is 32.00. We wish to have one place after the decimal, so change the value of decimal places to 1 in the box that comes up towards the top on the right. This can be done by typing 1 in or hitting the down arrow to get to 1. The preview box should now display 32.0.

Part D

SELECT the OK button on the Format Cellsmenu to return to the main spreadsheet. The entries 32.0 and 36.0 are now properly displayed. Any value which is entered into this block will be displayed with one digit beyond the decimal point. This may seem an esoteric example in changing a format, but for a chemist, we are now satisfied that all of our pressures have the same number of significant figures after the decimal point.

6．Exercise 4: Saving a Spreadsheet

SELECT the third icon from the left on the Toolbar (it is supposed to look like a floppy disk). If you prefer, SELECT File on the Menu Bar and then choose Save As from the menu. You will arrive at the same menu if you choose the Save icon, or go through the File menu. Now, choose the Save As commands.

At the top it (most likely) will have Save File. SELECT the box on the left labeled Desktop. Then SELECT the icon on the top (a yellow folder). This allows you to create a new folder. At the top give the folder the name Chem. Then at the bottom of this window enter the file name as“ tutor1 ”and SELECT Save This is the working title for your spreadsheet book. Always change this

title to something that will help you to remember what you were working on.

Note that the Notebook Title Bar (at the top of the Microsoft Excel window) indicates the filename along with the .xls extension which identifies it as a Excel file.

7. Exercise 5: Finding Your File

(a) If you have used the file recently, the quickest way to retrieve it is to go through Documents. However, Windows will not allow too many files to accumulate in Documents, and will purge address after a while. What " a while " means is dependent upon usage.

SELECT the Windows Start icon. Select Documents and you should find tutor1.

(b) At the top left of the Windows environment is an icon titled My Computer. If you Double-click this (SELECTING twice the same icon in quick succession) you will find, among others, (C:). You will find the folder Chem in the window that comes up and double-clicking on it will reveal the contents. You should find tutor1.

(c) A final method of finding your file is to go to Windows Start. Go up to Programs over to Windows Explorer, within (C:), you will find the folder Chem in the left-hand window. Double-clicking Chem will bring up in the right-hand window that directory's contents. You should find tutor1.

8. Exercise 6: Closing and Opening a File

There are two common methods to close a file. In the course of closing the program, any file you have open will be closed. Or you can close a file without closing the program. These two actions are represented by the two X's in the upper right corner. The X in the very top right (in the Title Bar) will close the program Microsoft Excel. If you have not saved the file since you have made any changes, it will ask you if you wish to save the file. The other X (in the Menu Bar or the File Title Bar) will close the file, but not the program. It will prompt you to save the file you have been working on.

Opening your file uses the same methods as finding the file. We can do this because Windows recognizes that any file with the extension .xls is a Microsoft Excel file. If we choose an .xls file from Documents, My Computer or Windows Explorer, Windows will recognize that it is associated with Microsoft Excel. It will launch the program while opening the file.

9. Exercise 7: Making a Chart (a.k.a. Graph) in Microsoft Excel

For those of you who have made graphs in spreadsheets, making a graph in Microsoft Excel is both easier and a bit more obtuse (i.e. obscured by language, much like using the terms: obtuse and i.e.). The easier part is that it is made more clearly stepwise. This clarity, however, is sometimes thwarted by curious terminology. I will try to give you ample warning when such problems may occur.

To make a chart (or graph), SELECT some data. In our case, SELECT A3.A8. As before, put your cursor over the highlighted cells and click on " Insert " at the top of the xls window and SELECT Chart or click on the picture of the chart located on the icon bar. Now you are in the Chart Wizard Window. This window allows you to chart your data in four steps.

Step 1 is selecting the chart type. You will notice that the top of this window reads " Step 1 of

4-Select Chart Type ”. For this particular set of data we want an XY chart. SELECT the chart XY(scatter) from the menu. SELECT Next.

Beware: the default Chart Type is NOT what we want. We want an XY Chart. This is NOT A COLUMN CHART!

Step 2 is selecting the data for each axis (x-axis and y-axis) of your chart. The window that appeared after you selected Next is the “ Chart Source Data ” window. SELECT the tab labeled “ Series ”. As you can see, the data you highlighted will be in the row titled“ y-values ”. This will be our first set of dependent variables. You must designate the independent variables (x-values) for your graph, also. There can be many dependent variables for any one set of independent variables. Microsoft Excel calls each set of dependent variables a “ series ” . The bottom left of the “ Chart Source Data ”window shows that you only have one set of dependent values called“ Series1 ”. You can add more series by selecting the “ add ” or “ remove ” buttons. In our example, the tire pressure is our only value dependent upon the temperature.

There is a very simple method to enter the values for the x-variables. First, you choose a text block by SELECTING the arrow to the right of it (dark blue). At this point the Source Data window will minimize to a Title Bar (sometimes hard to see) and you will need to SELECT a block much like you did when you changed the numeric format (by SELECTING the first cell and DRAGGING to the last cell). When the block is highlighted, hit the maximize button on the Source Data Title Bar. The Source Data window will reappear with the series text block filled in.

Once the Series have been set, we move to the next window. SELECT Next.

Step 3 is labeling the chart. The next window is called the “ Chart Options ” Window. The first tab is called “ titles ” and will be selected by default. This is where you enter titles into each of the text blocks. A typical Chart Title would be the name of the experiment. In the Axis titles be sure to put both the measured quantity as the title and the units of the measurement parenthetically. Once you have done this SELECT Next.

The final step, step 4, allows you to choose where you want your chart to be displayed. In the “ Chart Location ” Window you have the choice of selected whether you want the chart on a new sheet or on your existing sheet with your data.

Typically, in Chemistry classes, we ask for both the spreadsheet and the graph. As difficult as it may be to believe, people sometimes make incorrect graphs. This may be because of incorrect data input or analysis, incorrect choice of axes or simple spreadsheeting mistakes. Without the spreadsheet, suggestions, correction and partial credit are difficult to accomplish. It is much like trying to fix a car based on hearing someone describe a noise in the engine. You may get an idea from the noise, but it helps to open the hood.

So, to have both your speadsheet and graph on the same sheet SELECT “ As Object in: ” and “ Series 1 ” will already appear since we only have one series. SELECT Finish.

Now your chart will appear on your spreadsheet. You can change the location of your chart by clicking on it and dragging it to your desired location.

10．Exercise 8: Modifying a Graph

Excel gives you the opportunity to set your own graph size rather than insisting that you use their defaults. The scale on this graph is a little clumsy, the x-axis starting at zero and ending at 200. Starting at 25 and going up by 25′s to 250 would give a more pleasing look. As spreadsheets are all about ease of formatting, we might as well make the graph look good. We can adjust the attributes of the X-axis and, later, the Y-axis by calling up a window for each. We call up the X-axis window by putting our cursor over the numbers along the X-axis in the graph and clicking on the right button on the mouse. You will get a drop-down menu with "Format axis" at the top. SELECT "Format axis". A window will come up with a number of tabs. SELECT the Scale tab. Change the minimum from 60 to 25, the maximum from 200 to 250, and the major and minor units to 25. SELECT OK.

In the same way, move your cursor over the numbers on the Y-axis and right-click. SELECT "Format axis", then Scale tab and modify the minimum to 30, the maximum to 40, and the major and minor units to 2. SELECT OK.

11．Exercise 9: Printing

If you want to save your printer cartridge a bit, you can take away the background shading in the plot area. Having shading does look pleasant and you can make quite a number of effects, but it is a cartridge killer. To remove the background shading, double-click on the background and the Format Plot Area window will come up. On the right side is Area. Change it from Automatic to None.

To print the graph and spreadsheet data, highlight the spreadsheet data and the cells behind the graph. The graph, itself, is not in the cells but "above" it in a overlapping window. If you print this now, it will print both the spreadsheet and the graph. The easiest way to access the Print window is to SELECT the Print icon from the Button Bar.

A Print window will appear. For our purposes, you can SELECT the Print command. If you printer is properly installed, on and functioning, you will get a printout. You may preview what it should look like by SELECTING Print Preview. You can play with these and other parts of the Print window at your leisure.

This is the end of this Quick Start. You may want to save your file and exit Microsoft Excel.

New Words

number cruncher	**数字处理器，数字粉碎机**
crunch	**粉碎，压过**
graphical form	**图形化格式**
title bar	**标题栏**
underline	**下划线**
cell	**单元格**
code	**代码**
hold down	**保持按下**

number of decimal	**十进制数**
engine	**引擎**
apostrophe	**撇号；省略号**
at one′s leisure	**在空闲之时**

Unit 9

Text

Microsoft PowerPoint

As every application in the suite, Microsoft PowerPoint has evolved! For those of you who don′t know what PowerPoint is I′ll briefly describe its use here. Microsoft PowerPoint is a presentation making software that lets you create animated slideshows that can contain multimedia objects like videos, sounds, etc to illustrate, for example, your corporate profile. This application is widely used in business environments to promote products or to present sales results thanks to its unrivalled powerful but easy to use features. Microsoft has stopped counting how many CDs containing PowerPoint based shows have been created in the world. PowerPoint also comes with the famous task panes that are divided in three different ways: the slide design task pane, the Animation Scheme and the Custom Animation. The first pane "Slide Design" gives users a quick way to dig into their design options such as color schemes, animation schemes. Obviously when users select a new scheme it′s automatically previewed in real time. The Animation Schemes pane answers to a redundant problem of previous PowerPoint versions: it was hard to find all the different animations options! The Animation Schemes task pane now lists all the animation possibilities and users can get a preview of each animation. Finally the Custom Animation pane contains very powerful animation effects PowerPoint has to offer like the new"path animation"that lets you move objects along a path simultaneously or slide transitions effects. Animation performance has been enhanced and now takes advantage of hardware acceleration if available: this is especially interesting for bitmap rotation and transparency blending. The major new feature of PowerPoint is surely the fact you can now print preview your scenes before printing them! This is a true and long awaited relief for those of you who create press books based on an existing PowerPoint show. To reduce the size of PowerPoint shows, Office 10 Compress Pictures feature has been added so users can choose to compress images within PowerPoint to save size but not visual quality. In terms of presentation designing features, PowerPoint comes with several enhancements like the ability to rotate images, a multiple picture file selector that lets users select several pics to import into slideshows and more! To help you accurately draw in PowerPoint you can choose to enable the visible grid on which you can snap objects to it but you can also display drawing guides on screen.

1．The Features List of PowerPoint :

（1）Slide Design — The Slide Design Task Pane gives users an easier way to discover their design options. These options include design templates, color schemes, and animation schemes — all easily previewed at the time a selection is made.

（2）Animation Schemes — As part of the Task Pane, Animation Schemes give users one-click access to professionally designed animations. Users can easily get a preview of each animation scheme and can cycle through various options until they find the animation they want.

（3）Custom Animation — PowerPoint adds high-quality custom animations that help make presentations come alive. Examples of these animation effects include moving multiple objects simultaneously,“ path ”animation (moving objects along a predescribed path), and easy sequencing for all effects on the slide, including exits. Animation performance is also improved and takes advantage of hardware acceleration if available (such as hardware bitmap rotation and transparency blending in many 3-D video cards). Finally, PowerPoint adds new, more exciting slide transitions and enables users to add animation schemes to their entire presentation with one click.

（4）Multiple Masters — PowerPoint users can easily create more than one slide, title master, or slide master within one file. This makes it possible for users to combine multiple presentations in one file or create separate sections within the same presentation.

（5）Presenter Tools — Users presenting their PowerPoint slides will always be prepared, thanks to the new Presenter Tools. Presenters have their own view, not visible to the audience. This view includes details on what bullet or slide is coming next, enables a presenter to see their speaker notes, and lets them jump directly to any slide.

（6）Apply Automatic Layout — Apply Automatic Layout automatically snaps content into placeholders when inserted or pasted into an already existing slide. For example, when a user is working on a slide with the bulleted list layout applied and then he inserts a table, PowerPoint automatically changes the layout to the Text and Object layout so that the table and text are side by side. Furthermore, a Smart Tag icon is displayed to enable the user to undo the automatic layout or access more AutoCorrect options.

（7）Print Preview — Print Preview enables users to get a preview of how their presentations will look when printed. Users have the option to switch between various views such as notes, slides, and handouts, or even switch between landscape and portrait view.

2．PowerPoint XP Print Preview Feature

（1）Thumbnails in Normal View — From within the Normal View (also known as the Tri-Pane View), users can switch between a presentation′s outline view and thumbnail views of the slides, just as they can in the PowerPoint Slide Sorter. This graphical representation makes it easy for users to navigate through their presentation.

（2）Diagrams — Users can easily choose from a variety of built-in diagrams (including organization charts, pyramid, cycle, radial, and Venn diagrams) from within PowerPoint without

needing to have an OLE server. Benefits of these native diagrams include the ability to execute in-place chart editing, smaller file sizes, and improved international text handling.

（3）Compress Pictures — The Office 10 Compress Pictures functionality enables users to compress images within their PowerPoint (or other Office application) files. Users can select the intended use of the file (Web, print, screen display, etc.) and designate whether one or all images in the file should be optimized. The images are then shrunken and compressed in a manner that minimizes the size of the image without minimizing the visual quality of the image.

3．Pictures Compression Settings

（1）Image Rotation — Provides users with the ability to flip and rotate all images in documents.

（2）Visible Grid — A new visible grid makes it easier to create a drawing within PowerPoint. Within the Grid and Guides dialog boxes, users can select from a variety of options such as snapping objects to the grid or other objects and displaying drawing guides on-screen.

（3）Document Password Encryption — When users save their presentation, they are now offered the choice of using the standard CryptoAPI. CryptoAPI is a stronger encryption algorithm than previous versions. Default encryption remains the same (for backward compatibility) while the stronger encryption is offered as a choice. In addition, users can now set a password on the document that protects the user's data while allowing others to still view the presentation.

New Words

evolve [ɪˈvɒlv] *vi.*& *vt.*	**发展，进展；进化**
presentation [ˌprezənˈteɪʃn] *n.*	**演示，介绍，陈述，展示，表演**
slideshow [ˈslaɪdʃəʊ] *n.*	**幻灯**
multimedia [ˌmʌltiˈmiːdiə] *n.*	**多媒体**
illustrate [ˈɪləstreɪt] *vt.*	**说明，图解**
profile [ˈprəʊfaɪl] *n.*	**配置文件**
promote [prəˈməʊt] *vt.*	**促进**
present [prɪˈzent] *vt.*	**介绍，陈述，展示，表演**
animation [ˌænɪˈmeɪʃn] *n.*	**动画；活泼，有生气**
unrivalled [ʌnˈraɪvld] *a.*	**无敌的，无竞争者的，无比的**
scheme [skiːm] *n.*	**模式，设计，方案**
simultaneously [ˌsɪmlˈteɪniəslɪ] *adv.*	**同时地**
redundant [rɪˈdʌndənt] *a.*	**冗余的，多余的**
transition [trænˈzɪʃn] *n.*	**转变，转换**
acceleration [əkˌseləˈreɪʃn] *n.*	**加速，促进**
rotation [rəʊˈteɪʃn] *n.*	**旋转**
bitmap [ˈbɪtmæp] *n.*	**位图**
blending [ˈblendɪŋ] *n.*	**合成，混合**
relief [rɪˈliːf] *n.*	**（痛苦）减轻，（债务）免除，放松**

rotate [❒☯◆▯♦♏♓♦] *vt.* 旋转
selector [♦♓▯●♏&♦☜] 选择器
pics [◘♓&♦] 照片（等于 pictures）
detail [▯♎♓💻♦♏♓●] *n.* 细节，详情
cycle [▯♦♋♓&●] *n* 循环
grid [♍❒♓♎] *n.* 格子，栅格
snap [♦■✌◘] *vt.* 捕捉
bullet [▯♌◆●♓♦] *n.* 项目符号
presenter [◘❒♓▯⌘♏■♦☜] *n.* 演示者
placeholder [♊◘●♏♓♦♑♒☜◆●♎☜] *n.* 位置标志符，占位符
predescribed [♑◘❒♓♎♓▯♦&❒♋♓♌♎] 预先描述的
insert [♓■▯♦☯💻♦] *vt.* 插入
layout [▯●♏♓♋◆♦] *n.* 布局
table [▯♦♏♓♌●] *n.* 表，表格
handout [▯♒✌■♎♋◆♦] *n.* 讲义，分发的印刷品
slide [♦●♋♓♎] *vi.* 滑动，滑
n. 幻灯片
landscape [▯●✌■♎♦&♏♓◘] *n.* 横向；景物
thumbnail [▯♆✈❍■♏♓●] *n.* 缩略图，微缩图，缩微图
switch [♦♦♓♦☞] *n.* 切换，转换
vt. 切换，转换
pyramid [▯◘♓❒☜❍♓♎] *n.* 角锥，棱锥；金字塔
chart [♦☞♋💻♦] *n.* 图表
diagram [▯♎♋♓☯♍❒✌❍] *n.* 图，图表，图式，图解，框图
radial [▯❒♏♓♎𝑒𝑟☯●] *a.* 光线的，光线状的，放射状的
n. 光线，射线
execute [▯♏&♦♓&𝑒𝑟◆💻♦] *vt.* 执行，完成
handling [▯♒✌■♎●♓☠] *n.* 处理
designate [▯♎♏⌘♓♍■♏♓♦] *vt.* 指明，指出，指定
encryption [♓■▯&❒♓◘☞☜■] *n.* 加密，加密术
password [▯◘✍💻♦♦☜💻♎] *n.* 密码，口令
compress [&☯❍▯◘❒♏♦] *vt.* 压缩
shrunken [▯☞❒✈☠&☜■] *a.* 缩小的
optimize [▯✍◘♦♓❍♋♓⌘] *vt.* 使最优化
flip [↗●♓◘] *vi.* 弹
draw [♎❒✍💻] *vt.* 拉，拖，拽，画
one-click[▯♦✈■&●♓&] *n.* （用鼠标）单击
algorithm [▯✌●♈☜❒♓❄☜❍] *n.* 运算法则

Phrases

presentation making software 演示制作软件
sales result 销售结果
dig into 研究，钻研

design option	设计选项
real time	实时
slide design	幻灯片设计
task pane	任务面板
answer to …	对……反应，应答
print preview	打印预览
picture file	图像文件
import into …	输入到
design template	设计模板
get a preview of	预览
3-D video card	三维视频卡
side by side	并列，并排
outline view	大纲视图
landscape view	横向视图
thumbnail view	缩略视图
portrait view	纵向视图
speaker note	讲演者备注
organization chart	组织结构图
Venn diagram	（用圆表示集合与集合关系的）维恩图
Smart Tag	智能标签
in a manner	以……方式
a variety of	多种多样的，各种各样的

Abbreviations

OLE (Object Linking and Embedding)	对象链接和嵌入（技术）

Notes

[1] Microsoft PowerPoint is a presentation making software that lets you create animated slideshows that can contain multimedia objects like videos, sounds, etc to illustrate，for example，your corporate profile.

本句中，that lets you create animated slideshows **是一定语从句，修饰** a presentation making software**。另一定语从句** that can contain multimedia objects like videos, sounds, etc to illustrate，for example，your corporate profile **修饰** animated slideshows; for example **是插入语。**

本句意为：

Microsoft PowerPoint **是一种演示制作软件。该软件使你能够制作出有活力的，含有像视频、声音等多媒体素材的幻灯片，例如用来介绍你的公司。**

[2] Microsoft has stopped counting how many CDs containing PowerPoint based shows have been created in the world.

本句中，containing PowerPoint based shows **是一个现在分词短语做定语，修饰** CDs **。**stop

doing sth.的意思是“停止做某事”而 stop to do sth.的意思是“停下来去做某事”。请看下例：

When the employees saw their manager coming, they stopped talking and started to work.

Having worked on the computer for hours, they stopped to have a rest.

本句意为：

微软已经数不清在这个世界上有多少张 CD 中包含了用 PowerPoint 制作的幻灯片。

[3] Finally the Custom Animation pane contains very powerful animation effects PowerPoint has to offer like the new “path animation” that lets you move objects along a path simultaneously or slide transitions effects.

本句中，that lets you move objects along a path simultaneously or slide transitions effects 是一定语从句，修饰 the new “path animation”。

本句意为：

最后，Custom Animation 面板含有 PowerPoint 必须提供的非常强大的动画效果。如新的“路径动画”可使你同时沿着一个路径移动多个目标或具有滑动过渡效果。

[4] For example, when a user is working on a slide with the bulleted list layout applied and then he inserts a table, PowerPoint automatically changes the layout to the Text and Object layout so that the table and text are side by side.

本句中，so that 引导了一个结果状语从句。

本句意为：

例如，当用户在制作使用项目符列表布局的幻灯片、然后插入一个表格时，PowerPoint 自动将该布局变为 Text 和 Object 布局。这样，表格和文本就并列了。

Exercises

1．根据课文内容，回答以下问题

（1）What objects does Microsoft PowerPoint contain?

（2）What functions does Slide Design have?

（3）What functions does Animation Schemes pane have?

（4）What can PowerPoint users do with Multiple Masters?

（5）What can PowerPoint users do with Presenter Tools?

2．根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）

英 文 解 释	词　汇
The illusion of movement created by using a succession of static images	
Explain by examples, pictures, etc	
Plan or design	
A graphic image represented by tiny little points of light called pixels	
Transparency	
Two sets of lines at right angles to each other	
Move around a central point	
Customize software so that it will serve the user to its utmost capacity	
A way of organizing data or text into rows and columns	
In data security, the conversion of a clear text signal to a coded form for security reasons	

3．把下列句子翻译为中文

（1）The Slide Design Task Pane gives users an easier way to discover their design options.

（2）As part of the Task Pane, Animation Schemes give users one-click access to professionally designed animations.

（3）PowerPoint adds high-quality custom animations that help make presentations come alive.

（4）PowerPoint users can easily create more than one slide, title master, or slide master within one file.

（5）Apply Automatic Layout automatically snaps content into placeholders when inserted or pasted into an already existing slide.

（6）This enables users to quickly send E-mail to others without spending time searching for E-mail addresses: I really fall in love with this simple but awesome feature.

（7）As part of the core enhancement the search feature finds items much faster than before.

（8）When the user chooses an account, an information bar shows which account is used to send the mail.

（9）This enables users to easily browse to the Web Site using their default browser without having to copy the address first and paste it into their Web browser.

（10）Users can easily customize groups to synchronize for different combinations of accounts and folders.

4．上机实践

通过 Internet 查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过 E-mail 发送给老师，并附上你收集资料的网址。

（1）与以前的版本相比较，Microsoft PowerPoint 增加了哪些新功能？给出一览表。

（2）与以前的版本相比较，Microsoft PowerPoint 使用了哪些新技术？给出一览表。

（3）与以前的版本相比较，Microsoft Outlook XP 增加了哪些新功能？给出一览表。

（4）了解 Microsoft PowerPoint 及 Microsoft Outlook XP 的下一步发展计划。

Reading Material

Microsoft Outlook

Microsoft Outlook… What a strange name for an E-mail client! Microsoft Outlook was by far one of the most used programs that I had used along with Microsoft Word. It managed my E-mail, contacts and let me do things in an efficient way. Outlook 10 is more than improved. In fact it was totally revamped especially concerning the E-mail area. New features and improvements are numerous making Outlook better and much more powerful than ever.

As usual Outlook 10 can perfectly manage several E-mail accounts and due to the fact you can create your own folders, managing and sorting E-mail s is a child′s game. Thanks to the fact Microsoft Outlook 10 supports multiple folders, you can create rules to automatically transfer incoming E-mails into a specific folder according to the characteristics of the E-mails you receive. That is to say you can create a folder for work E-mails, another folder for family mails, as well as other folders for unknown and junk E-mails. In that way you can efficiently manage your E-mails assigning them a priority level of treatment.

Until recently, Microsoft Outlook didn′t support HTML E-mails. The HTML E-mail support was always weak but this time with Outlook 10, the HTML E-mail support has been enhanced so you can receive multimedia E-mails with Flash attachments and read them with no problem. One

feature Microsoft planned to add in Microsoft Office 2000 SR1 that was postponed is now part of Outlook 10 so you can, at last, retrieve E-mails you received on your Hotmail accounts, manage existing ones or send new ones directly within Outlook without the need to launch a browser to connect to Hotmail.com.

Back to Microsoft Outlook 10 is the ability to request a delivery receipt for sent E-mails (but why did MS remove this feature in previous release?) so you are sure the server you were sending it to correctly received E-mails. Just like in Microsoft Outlook 2000 you can request a read receipt for the E-mail you sent so you′re sure recipients read your mails. An interesting new feature of Outlook that quickly becomes essential is the "AutoComplete Addressing", that is, when user enters an E-mail address, Outlook automatically recognizes it and completes the name based on previously sent E-mail (or on the fact the buddy is in your address book) to the recipient. This enables users to quickly send E-mail to others without spending time searching for E-mail addresses. I really fall in love with this simple but awesome feature. Once you taste it you know this feature is missing in Outlook Express.

Microsoft Outlook 10 reintroduces an improved WordMail feature that is now the default E-mail editor so you can create high impact E-mail s using the power of Word! Many things were improved in WordMail like first the reliability. Then the size of produced HTML messages is smaller than before thanks to the fact WordMail removes document specific tags that were previously included so that users could edit it back in Word. If you′re like an avid user of E-mail that keeps track of every E-mail over the years, you′ll quickly have an enormous inbox with thousands of E-mails. As a result your storage file gets enormous while loading Outlook can be very long. Here Microsoft has done a good job enhancing core code to fasten loading operations, so users with a large inbox don′t wait too much before Outlook start.

But Microsoft didn′t stop here since they even include Mailbox cleanup tool that display the size of the mailbox while enabling users to search for files by size or by age in order to delete, move or archive them so they can free up some space (Exchange users can also automatically be notified when they are approaching their mailbox size limit and choose from the above options for cleaning up their mailbox). The search feature of Outlook has also been revamped: when you enable the search feature a simple small toolbar appears with a text case where you′ll have to type the content you′re searching for. This doesn′t cumber the screen and allows you to still view received E-mail s. As part of the core enhancement the search feature finds items much faster than before. Obviously advanced searching tools are still available to let you dig in your inbox. To improve further your overall communication experience, Outlook 10 now lets you directly chat through MSN Messenger with online contacts by a simple click in the contact card or in the last E-mail you received from this specific person.

1. Other enhancements of Microsoft Outlook 10

Send Using (E-mail Account Selection) — Users with multiple E-mail accounts (such as a Hotmail account and an account on Exchange) can choose on a per message basis which account to use to send their message. When the user chooses an account, an information bar shows which

account is used to send the mail.

Rules — Explicit rules are built in to determine which account should be used as the default (e.g., when replying to a message, the account is used that the message was originally sent to) or users can assign a default account for Outlook to use.

Smart Tags in Wordmail — With Word as the default E-mail editor, users can take advantage of the Smart Tags that are available in Word (including AutoCorrect, Paste Options, Address, Name, and Date Smart Tags). Smart Tags are context-sensitive buttons that give users the options and information they need at the time they need them.

Message Format in Wordmail — Users can easily change between different mail formats on the fly and on a per message basis. By giving users the option to switch between HTML, rich text, or plain text, they can more easily format their message so that the recipient can have the best viewing experience.

2．Microsoft Outlook XP Mailbox CleanUp

Text Auto Cleanup — Outlook 10 can automatically clean up plain text E-mail formatting that often contains extra line breaks that make the message difficult to read. Outlook automatically removes the extra line breaks (an option exists to turn this off as well) when a user opens an E-mail message, previews the message in the preview pane, or prints the message so that it is easier to read.

Hyperlinks in Subject Line — Outlook 10 mail messages now recognize URLs that are placed in the subject field. This enables users to easily browse to the Web Site using their default browser without having to copy the address first and paste it into their Web browser.

3．Improvements to the Calendar side of Outlook

Group Schedules — Users can save multiple group calendars within Outlook for quick and easy access to their team or conference room schedules. Within this single calendaring interface, users can view the free and busy times of their group as well as easily E-mail or set up an appointment with the entire group.

Outlook Free/Busy Sharing — Outlook 10 enables users to share Free/Busy information with others on the Internet for free. This makes it easy to schedule meetings with other Outlook users with whom you don′t share an Exchange server with.

Reminder Window — Users now get a single reminder window for all their appointment or task reminders. This enables the user to easily dismiss, snooze, or open one or all of the reminders at once.

Calendar Coloring — Users can identify their important appointments via the new color-coded calendar. The user can apply a color to individual appointments or they can automatically apply color by creating automatic formatting rules. Each color has a label that can be customized by the user.

Propose New Time — When receiving a meeting request, users now have the option to propose a new meeting time to the meeting organizer rather than just declining the request. Furthermore, users who have Exchange server can see the free and busy times of each attendee before submitting the new meeting time.

To round off the improvements for Outlook they have updated and improved the Contacts and

Address Book:

Display As Name Field — Contacts now include a Display As field for E-mail names. The name you type in the Display As box appears in the To: field when you compose a message instead of the actual E-mail address.

Address Book Column Headings — Column headings are now resizable in width. This enables the user to reveal or conceal columns to show only the information they find useful for address book entry lookup.

Contact Address Book (CAB) — The Contact Address Book makes use of the Contact's "Display Name".With this column, you can look up contact entries more efficiently, especially with multiple entries for the same contact name.

Upload Only Changed Properties — Only changes get uploaded to the Exchange Server, meaning greater performance for users when working in Outlook. For example, today if a user receives a meeting request with a large attachment and they dismiss the meeting, both the dismissal and the large attachment are uploaded back to the server. With the Local Web Storage System, only the dismissal is sent back up to the server.

Asynchronous Open Operations — Users can now continue working within Outlook 10 even while large messages are being downloaded from the server.

Unplug and Go — A number of benefits enable users to work remotely more effectively without their interaction. For example:

Users can switch between online and offline states on demand and without restarting Outlook.

Users do not need to synchronize their messages, appointments, etc. This automatically takes place, enabling users to continue to access their information even when not connected to their server.

Users can easily customize groups to synchronize for different combinations of accounts and folders. This benefits users by letting them control what gets synchronized automatically and what does not.

Progress Reporting — Users can easily see a progress report of the synchronization that is taking place instead of just receiving an "hour-glass" with no clear indication of when synchronization is taking place.

Revamped mailbox setup dialog boxes — Outlook XP features brand new mail setup configuration boxes that let users better manage their data files and their E-mail accounts.

New Words

sort	**排序**
characteristics	**特征，特性**
receive	**接收**
HTML (HyperText Markup Language)	**超文本标识语言**
send	**发送**
address book	**地址簿**

mailbox	**信箱**
archive	**文档；存档**
hyperlink	**超链接**
upload	**上传，上载**
synchronize	**同步**

Unit 10

Text

Microsoft Access

Microsoft Access is definitely a complex software while at the same time a highly customizable application aimed to help users manage their data through what we call a database software. Nonetheless Microsoft Access is so versatile you can use it to create a small database of your audio CDs and friends or to manage the stocks of your international corporation where each sales employee can use a laptop PC to connect to the server and check via Access the status of the stocks. Whether you are working with databases to capture sales data within your company or just keeping track of important lists for personal use, working with databases is often not as easy or as intuitive as it could be. A key design goal for Access 10 was to make it easier for users to build and use their databases. This goal was accomplished by providing users with a broad range of tools they need to find and use more of the product. Nonetheless if some areas of the software are indeed more approachable, the whole software remains complex. One of the new features Access developers were waiting for is the XML support. By using import & export feature you can implement XML to create real integrated applications in combination with the build Visual Basic for Applications programming language.

(1) Speech — Access 10 is enabled for the use of speech for both voice dictation and command-and-control scenarios. Users can dictate text and navigate menus, using speech and voice commands.

(2) Data Access Page Designer — The Data Access Page HTML Designer provides users with a variety of new and improved enhancements that enable users to design their Data Access Pages more effectively. Examples of just some of these new and improved enhancements include:

- Extended properties from both Microsoft Jet and Microsoft SQL Server 2000 databases. This means that lookups are dropped as lookups and label properties are appropriately set.
- Improved hyperlink handling, making it easier to create pages that are linked together.
- With improved control sizing, users can see the actual size of the control while sizing, allowing better snap-to-grid support.
- Multi-select support through the keyboard and mouse enables users to apply sizing, horizontal and vertical spacing, alignment, and property settings to data access pages.

- Auto Sum now makes it easier than ever to create totals.
- With the Data Outline, developers can view and set properties on recordset.
- New connection properties make it simple to build applications that use the same connection string. This makes it easy to move applications from test to live.

（3）Efficient Optional Access 10 File Format — Using the new optional Access 10 file format, users can enjoy faster access and data processing for large databases. In addition, this format seamlessly handles future changes to Access, such as new properties and events, which have caused file format changes in previous releases.

（4）Multiple Undo and Redo — Users can undo and redo multiple actions in Design View of the following objects: MDB tables, MDB queries, ADP views, ADP stored procedures, ADP functions, forms, reports, data access pages, macros, and modules.

（5）Shortcut Keys — Access 10 provides users with a number of new shortcut keys that help users accomplish their database tasks more easily. New shortcut keys include following.

- In Design View of a form or report with the focus either in the Design View window or in the property sheet, F7 takes the user to the Code window.
- In a Design View window, F4 takes the user to the property sheet.
- Within a property sheet in Design View, Shift+F7 moves the window focus back to the design surface without changing the control focus.
- In any table, query, form, report, page, view, or stored procedure, pressing Ctrl+> or Ctrl+PERIOD and Ctrl+< or Ctrl+COMMA toggles between views.

（6）Conversion Error Logging — If an error occurs when converting a database from Access 95, Access 97, or Access 2000 to Access 10, a table is created that lists information about each error. This makes the process of solving problems in converted databases much easier.

Another thing Access aimed to do was to make it simpler to access and analyze important information wherever it exists. More specifically, Access 10 improves the ability for users to access information from corporate-level, back-end databases such as Microsoft SQL Server. Access 10 also makes improvements in how users can analyze that data with tools such as PivotTable, dynamic views and PivotChart.

（7）Access PivotTables and PivotCharts — Users can view any MDB table or query, or ADP table, view, stored procedure, function, or form in either PivotTable or PivotChart view. With this, users can perform data analysis and build rich PivotTable and PivotChart view solutions quickly and simply. Furthermore, users can save their PivotTable and PivotChart views as Data Access Pages that can be viewed and manipulated by others via their browser.

（8）XML Presentation Output — With Access 10, you can quickly publish data to the Web using Internet standard XML/XSL. Users can export an Access report, form, table, or query to an XML Document that includes an associated XSL file for presentation. This enables users to view forms and reports created in Access with any Internet browser that supports HTML 4.0.

（9）Save Forms and Reports As Data Access Pages — Quickly move your existing Access solutions to the Web by saving your existing forms and reports as Data Access Pages. Instead of

creating new Data Access Pages, users can just perform a Save As to create Web versions of their Forms and Reports.

（10）Stored Procedure Designer — When using an Access Data Project, users can create and modify simple SQL Server stored procedures by using the Stored Procedure Designer. This enables users to create stored procedures without having to learn Transact SQL.

（11）Batch Updates for Access Projects — When using an Access Form in an Access Data Project, Access 10 enables users to specify that any updates made to the records are saved and then sent to the server in a single batch.

This was previously only possible by the developer writing code in the form. Now this functionality is expected by setting properties associated with the form. In addition, there are new properties, methods, and events to manage the committing and rollback process when the batch is submitted to the server. Another design goal was to give developers the tools they need to build powerful, sophisticated database solutions that seamlessly integrate with enterprise-wide data while ensuring forward and backward compatibility with new and existing database solutions. Access 10 now provides the tools to build solutions that integrate and leverage Internet-standards, such as XML, XSL, and dynamic Web pages, to better allow for the sharing and presentation of data across the intranet and Internet.

（12）XML Support — Access 10 supports XML throughout the product. XML data can be created by exporting from a Jet or SQL Server database and can be imported into a Jet or SQL Server database.

Access also makes it easier to import this schema or data documents into either SQL Server or Jet, by giving users the ability to include or exclude data or schema as well as determine whether the data should be appended to overwrite any existing information. Additional benefits associated with XML support as following.

- Users can create parts of or entire relational databases simply by importing an XSD schema from anywhere on the Web.
- Developers can create XSLT (data transformation) documents that allow data of different formats to move between SQL Server sources.
- Developers can use the Access Report Writer to create Web accessible reports.
- Developers can create Web presentations that run from either the server (ASP) or the client (HTM).

When creating reports that contain data that rarely changes, such as quarterly reports, developers can use XML data documents rather than requiring an active connection to a server.

Developers can limit active connections to corporate servers by creating“ live ”reports that use SQL Server 2000 HTTPSQL to return a read-only XML data document.

（13）XSL Transformations and Presentations — Developers can create their own custom XSL data transformations to be used when exporting data to an XML Document.

This enables developers to change the format of the exported data or to create their own presentation of the data.

This provides a simple mechanism to translate XML Documents from one format to another.

For example, data exported from Access could be formatted into a structure understood by a SAP or custom corporate system.

Bind Data Access Pages to embedded or Linked XML Files — Access 10 enables developers to publish Data Access Pages on a Web server and enables users to access data without being required to use Remote Data Objects on the server. This makes it easier for publishing read-only Data Access Pages on the Internet over a firewall.

（14）Extended Methods and Properties — Access 10 provides a variety of new methods and properties including:

- Being able to set up lookup relationships, validation text, formatting, and subdatasheets against tables, views, and functions.
- Programmatically control printing properties via a new Printer object and Printers collection.
- Being able to get the DateCreated and DateModified properties for any Access object by using the AccessObject object.
- New methods and properties such as CompactRepair, ConvertAccessProject, AddItem, and RemoveItem methods and a new BrokenReference property that makes it easy to detect if a project has a broken reference.

（15）Relative Path Support for Data Access Pages — Simplify deployment of Data Access Pages using an Access Jet database by specifying a relative path to the database or by using a common connection for all Data Access Pages using the ConnectionFile property.

New Words

complex [kəmˈpleks] *a.*	复杂的，综合的
application [ˌæplɪˈkeɪʃn] *n.*	应用程序
database [ˈdeɪtəbeɪs] *n.*	数据库
versatile [ˈvɜːsətaɪl] *a.*	通用的，万能的，多用的
stock [stɒk] *n.*	库存；股票
status [ˈsteɪtəs] *n.*	情况，状况；身份，地位
employee [ɪmˈplɔɪiː] *n.*	职工，雇员
intuitive [ɪnˈtjuːɪtɪv]	知觉的
accomplish [əˈkʌmplɪʃ] *vt.*	完成，实现
speech [spiːtʃ] *n.*	语音
sizing [ˈsaɪzɪŋ] *n.*	调整大小，改变尺寸
command [kəˈmɑːnd] *n.*	命令
label [ˈleɪbl] *n.*	标签
horizontal [ˌhɒrɪˈzɒntl] *a.*	水平（方向）的
vertical [ˈvɜːtɪkl] *a.*	垂直（方向）的
page [peɪdʒ] *n.*	页面
recordset [ˈrekɔːdset]	记录集
string [strɪŋ] *n.*	串

optional [ˈɒpʃənl] *a.*　可选的
seamlessly [ˈsiːmləsli] *adv.*　无缝地
previous [ˈpriːviəs] *a.*　以前的，早先的
release [rɪˈliːs] *n.*　版本，版
vt.　发布，发行
redo [ˌriːˈduː] *vt.*　重做
function [ˈfʌŋkʃn] *n.*　函数
form [fɔːm] *n.*　表单，表格；格式
report [rɪˈpɔːt] *n.*　报表
query [ˈkwɪəri] *n.*　查询，询问
macro [ˈmækrəʊ] *n.*　宏
module [ˈmɒdjuːl] *n.*　模块，模数
sheet [ʃiːt] *n.*　表格，电子表格
focus [ˈfəʊkəs] *n.*　聚焦，焦点
vi.　集中
toggle [ˈtɒgl] *vt.*　切换
PivotTable　数据透视表
PivotChart　数据透视图
manipulate [məˈnɪpjuleɪt] *vt.*　操作
export [ɪkˈspɔːt] *vt.*　输出；出口
update [ʌpˈdeɪt] *vt.*　更新
record [ˈrekɔːd] *n.*　（数据库中的）记录
[rɪˈkɔːd] *vt.*　记录，记载；录音
batch [bætʃ] *n.*　一批
save [seɪv] *vt.*　保存；节省
expect [ɪkˈspekt] *vt.*　期待，期望
commit [kəˈmɪt] *vt.*　提交
rollback [ˈrəʊlbæk] *n.*　回退；重算，重新运行，退回重来
sophisticated [səˈfɪstɪkeɪtɪd] *a.*　复杂的，高级的
compatibility [kəmˌpætəˈbɪləti] *n.*　兼容性
leverage [ˈliːvərɪdʒ] *n.*　杠杆作用
vt.　提高，影响
intranet [ˈɪntrənet] *n.*　内联网，企业内部互联网
import [ɪmˈpɔːt] *vt.*　输入，引入；进口
[ˈɪmpɔːt] *n.*　输入，引入；进口
schema [ˈskiːmə] *n.*　规划，计划
exclude [ɪkˈskluːd]　排除，除外，除去
determine [dɪˈtɜːmɪn] *vt.*　决定，确定
overwrite [ˈəʊvəraɪt] *vt.*　改写，重写
relational [rɪˈleɪʃənl]　相关的，有关的
rarely [ˈreəli] *adv.*　不常，很少地，罕见地
accessible [əkˈsesəbl]　可以接近的，可访问的
quarterly [ˈkwɔːtəli] *a.*& *adv.*　季度的，一年四次的；季度地
embedded [ɪmˈbedɪd] *a.*　嵌入的

structure [ˈstrʌktʃə(r)] *n.*	结构
read-only [ˌriːd ˈəʊnli] *a.*	只读的
subdatasheet [ˈsʌbdeɪtəʃiːt] *n.*	子数据表
firewall [ˈfaɪəwɔːl] *n.*	防火墙
lookup [ˈlʊkʌp] *n.*	查找
validation [ˌvælɪˈdeɪʃn] *n.*	确认
detect [dɪˈtekt] *vt.*	检测，发现，发觉，探测
reference [ˈrefrəns] *n.*	参考，引用；基准；访问；索引
deployment [dɪˈplɔɪmənt] *n.*	采用，利用

Phrases

laptop PC	膝上个人计算机，便携个人计算机
a (broad)range of tools	一（大）套工具
in combination with…	与……结合
voice dictation	语音听写
hyperlink handling	超链接处理
property setting	性能设置，属性设置
in addition	另外，此外
shortcut key	快捷键
data analysis	数据分析
be submitted to…	被提交给……
database solution	数据库解决方案
forward and backward	前后，双向
allow for	考虑到
be appended to	添加到，附加到
data transformation	数据转换
be associated with …	与……有关联

Abbreviations

XML (Extensible Markup Language)	可扩展标识语言
SQL (Structured Query Language)	结构化查询语言
MDB	MS Access 数据库文件的后缀
ADP (Automatic Data Processing)	自动数据处理
ASP (Active Server Page)	活动服务器页面
SAP	公司名，以 ERP 等电子商务软件知名
HTM	HTML 文件的后缀
XSL (Extensible Stylesheet Language)	扩展式样表语言
XSLT (Extensible Stylesheet Language Transformations)	扩展式样表语言转换

Notes

[1] Microsoft Access is definitely a complex software while at the same time a highly customizable

application aimed to help users manage their data through what we call a database software.

本句中，while **表示对比。**aimed to help users manage their data through what we call a database software **是过去分词短语做定语，修饰** application**。**

本句意为：

毫无疑问，Microsoft Access **是一个复杂的软件，而同时也是一个非常可定制的应用程序，其目的是帮助用户通过我们称之为数据库软件的软件来管理数据。**

[2] This was previously only possible by the developer writing code in the form.

本句中，by **引导了一个方式状语，**the developer **是** writing code **的逻辑主语。**

本句意为：

以前，这个功能只有通过开发者在表单中写代码才可能实现。

[3] Another design goal was to give developers the tools they need to build powerful, sophisticated database solutions that seamlessly integrate with enterprise-wide data while ensuring forward and backwards compatibility with new and existing database solutions.

本句中，动词不定式短语 to give developers the tools **做表语；**they need **是一定语从句，修饰** the tools **；动词不定式短语** to build powerful, sophisticated database solutions **做目的状语；**that seamlessly integrate with enterprise-wide data **也是一定语从句，修饰** database solutions**，**while ensuring forward and backwards compatibility with new and existing database solutions **是一时间状语，修饰** integrate with**，**while **表示动作同时进行。**

本句意为：

另外一个设计目标是给开发者提供所需要的工具，以便研制出功能强大的、先进的数据库解决方法。在确保与新的且现有的数据库解决方法双向兼容的同时，这些方法能无缝地与企业范围数据整和。

[4] When creating reports that contain data that rarely changes, such as quarterly reports, developers can use XML data documents rather than requiring an active connection to a server.

本句中，that contain data **是一定语从句，修饰** reports**，**that rarely changes **也是一定语从句，修饰** data**；**rather than **的意思是“而不是”。**

本句意为：

在制作含有很少有变化的报表时， 开发者可以使用 XML **数据文档，而不需对服务器进行活动连接。**

Exercises

1．**根据课文内容，回答以下问题**

（1）What kind of software is Microsoft Access?

（2）Does the Microsoft Access mentioned in the text support speech and voice?

（3）What can users do with Access PivotTables and PivotCharts?

（4）Describe briefly the functions of Multiple Undo and Redo.

（5）What can F7 do in the text?

2．**根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）**

英 文 解 释	词　汇
A file composed of records, each containing fields together with a set of operations for searching, sorting, recombining, and other functions	
A character string from a source external to a system that represents a request for system action	
An identifier within or attached to a set of data elements	
A set of characters	
An output format for a program, which is a structured document	
An output document prepared by a data-processing system	
Ask a database for specific information	
Retain data by copying it from main storage to another storage device	
An individual unit of data stored in the database. It consists of one or more related fields	
Change a system or a data file to make it more current	

3．**把下列句子翻译为中文**

（1）A key design goal for Access 10 was to make it easier for users to build and use their databases.

（2）Users can dictate text and navigate menus using speech and voice commands.

（3）Improved hyperlink handling, making it easier to create pages that are linked together.

（4）Auto Sum now makes it easier than ever to create totals.

（5）With the Data Outline, developers can view and set properties on recordset.

（6）In a Design View window, F4 takes the user to the property sheet.

（7）Developers can use the Access Report Writer to create Web accessible reports.

（8）Developers can create Web presentations that run from either the server (ASP) or the client (HTM).

（9）An AutoCAD drawing is made up of entities.

（10）A block is a group of entities that can be manipulated as a single unit.

4．上机实践

通过 Internet **查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过** E-mail **发送给老师，并附上你收集资料的网址。**

（1）简述 XML **规范要点。**

（2）简述 SQL **的特色。**

（3）到目前为止，AutoCAD **的最新版本是哪一版？**

（4）除了 AutoCAD **外，著名的** CAD **软件还有哪些？它们各有何特色？**

Reading Material

AutoCAD

No doubt AutoCAD® or an AutoCAD-based product is used in the design and maintenance of much of what you see around you — your computer, the desk, and lighting — and much of what you don′t see, including your building′s HVAC and electrical systems, the surrounding landscaping and roads, and your telecommunication networks.

AutoCAD is a powerful 2D and 3D design and drafting platform that automates your design tasks, and provides digital tools so you can focus on the design rather than the software itself. Architects, engineers, drafters, and design-related professionals use AutoCAD to create, view, manage, plot, share, and reuse accurate information-rich drawings.

1．Concepts and Definitions

AutoCAD is an interactive drawing system designed to permit a user to construct or edit a drawing on a graphics display screen. To this extent, it is analogous to a word processing program,

except that in this case the thing being processed is a drawing. Each drawing is stored on a disk file, and AutoCAD is only able to edit one drawing (or file) at a time. This similarity to word processors is reflected in the fact that the principal functional component of AutoCAD is known as the drawing editor.

Up until Release 10, AutoCAD was essentially a two-dimensional drawing system. Following that release, it now supports a full three-dimensional database. This has had the effect that the features of AutoCAD that support two-dimensional drawing are fully self-contained and can still be used as a 2D system without being concerned with its 3D features. In this course we will focus on the 2D drafting aspects of AutoCAD since that better reflects the way in which this system is generally used in practice at the present time. Several sections in these notes explain how the 3D features have been incorporated into AutoCAD, but provide little detail of the 3D operations.

In order to understand AutoCAD, we must focus on a few specific concepts.

2．What′s in an AutoCAD Drawing

An AutoCAD drawing is made up of entities. These can be either simple graphic primitives (such as lines, arcs, circles, text, and so on) or blocks (which are groups of entities).

The graphic primitives are defined geometrically in terms of the normal Cartesian coordinate system (right-handed system with positive X-axis to the right, positive Y-axis up the screen and positive Z-axis coming out of the screen towards the user). Hence, for example, lines are defined by their end-point coordinates (x, y and z), while circles are defined by their center coordinates and radius. Each entity also has certain attributes associated with it, such as line style, text font or colour.

A block is a group of entities that can be manipulated as a single unit. Once created, a block may be moved, scaled, rotated, copied or deleted. A block can be created by collecting together a group of entities from the current drawing (the drawing being currently edited) and assigning a single name to that group. Alternatively, an existing drawing (from disk) can be inserted into the current drawing as a block. Equally, a block from the current drawing can be written out to a file as a new drawing.

It is important to understand that a block, in AutoCAD, is unique to a specific drawing. That is, when an existing drawing is inserted into the current drawing as a block, AutoCAD simply copies the graphics from that drawing and includes it as a single object. The existing drawing is unaffected by the action. Indeed, if that existing drawing (from which the block was created) were subsequently edited then those changes would not affect the inserted block. It is possible, however, to update a block definition in a drawing by having AutoCAD redefine the block using the current version of the original drawing.

As an alternative to inserting a drawing into another drawing as a block, AutoCAD now provides the facility to attach a drawing to the current drawing as an external reference. The external drawing is then treated like a block except that it is automatically updated each time the drawing to which it is attached is loaded. Naturally, if the external drawing is altered in the meantime, then the external reference will be updated to reflect those changes.

Another important feature of a block (including external reference blocks) is that it can be duplicated many times within a drawing, with each copy pointing to the one graphic description, but having its own unique position, scale and rotation factor. This is known as instancing. There are two advantages to this approach:

- **space saving —** the graphics description is only stored once.
- **ease of redefinition —** the graphics description of a block can be altered and then re-defined in order to update each instance in the drawing.

It is also possible to associate named attributes with a block. For example, a block representing a door might have attributes such as type, manufacturer, finish, lock-type, etc. Each instance of the block would have a value associated with it for each defined attribute. AutoCAD provides facilities for scheduling the attribute data associated with inserted blocks in a drawing.

The final concept to be explained about blocks is the notion of exploding. Any instance of a block may be exploded in order to reduce it back to its separate graphic entities. Similarly, an external reference block can be unbound so that it becomes a local block and then, in turn, can be exploded.

3. Units, Scales and Paper Sizes

A clear understanding of the way that AutoCAD handles units of measurement, scale and paper size is necessary before a drawing can be created or edited. AutoCAD provides complete control over these things by distinguishing between model space and paper space. All drawings, whether two-dimensional or three-dimensional should be thought of as models of a real-world entity (either a drawing or a 3D description of a real-world object). In either case, the description is maintained in model space. Paper space can be thought of as a model of a standard-size piece of paper on which you can establish viewports (rectangular regions) in which AutoCAD will display scaled views of the drawing you have created in model space. You can, of course, add additional linework in paper space to form borders and annotation.

In order to understand this, it is best to picture model space as a very large piece of paper located somewhere in two-dimensional space. (AutoCAD can actually draw anywhere in 3D space, but let′s ignore that for the moment!) Since the size and location of that piece of paper is entirely up to you, it would make sense to choose something that makes drawing as simple as possible. Now, Australian architects typically use millimeters as their unit of measurement and would draw objects in their true size. This means that when drawing a plan of a building that is, say, 15 meters square, the "paper" size (in model space) would be set at something greater than 15 000×15 000 units (where "units" equals millimeters). Strictly speaking, it is not necessary to set the model space drawing size, but it is helpful to do so in order to establish a context for the drawing.

When working on the drawing in model space, you should think of the graphics screen as a window through which you can view all or part of that drawing sheet. Thus, when viewing a drawing, a larger display scale will allow you to view only a part of the drawing on the screen. This is referred to as zooming in on the drawing. As you increase the scale, you can see less of your drawing, but what you can see will be in greater detail. If you zoom out, then you will be able to

see more of the drawing, but in lesser detail. AutoCAD provides some fairly sophisticated tools for zooming in and out of your drawing and for panning back and forth across it.

Although it is possible to plot from model space, it is normal to set up a sheet in paper space, and create one or more viewports showing different views of the drawing in model space. Each view is displayed at a fixed scale, and the paper space drawing is then plotted at a scale of 1:1. In this case, text notes and other annotation on the drawing is best added in paper space, and plotted at its actual size. Any text that is entered in model space has to be drawn at an artificially large size so that when it is scaled down for plotting, it ends up at the size required. For example, text on a 1:100 drawing might be set at 250 millimeters high in model space to create plotted text that is 2.5mm high on the plot.

4．Drawing Layers

AutoCAD also supports the standard notion of layering. This means that any drawing entity can be assigned to any layer of the drawing. This allows separation of portions of the drawing. For example, all brickwork could be assigned to one layer, all electrical work to another, and so on. In that way, when plotting, only selected layers need be included in the physical drawing that is produced from the one AutoCAD drawing.

Layering can also be used to advantage while editing a drawing. For example, suppose a plan drawing is substantially complete with only the brickwork cross-hatching to go. If all the brickwork is on one layer, each other layer could be turned off so that only the brickwork is visible and selectable. That makes it possible to crosshatch the brickwork without inadvertently affecting something else.

Layering in AutoCAD is manipulated through the properties that can be assigned to each layer. Once the interaction between layer properties is understood, then these can be manipulated to great advantage. The following notes summarize the properties of layers.

（1）Layer Name

An unlimited number of layers may be created. Each is identified by a unique name assigned by the user. The name may be up to 31 characters long, made up from uppercase letters, digits and three special characters ($ - _).

（2）Current Layer

AutoCAD maintains the notion of a current layer, being that layer upon which all newly created entities are placed. Any of the existing layers may be selected as current at any time.

（3）Visibility

Each layer can be either visible (ON) or invisible (OFF). Only visible layers are displayed or plotted. Layers can be turned on or off at will, in any combination. Entities can still be added to an invisible layer (indeed it is possible to have a current layer that is invisible), but entities that are not visible cannot be selected for editing.

（4）Colour and Linestyle

Each layer has associated with it both a colour and a linestyle. As entities are drawn, they are assigned, by default, the colour and linestyle of the current layer. (This can be overridden by

assigning each entity its own colour and linestyle.) By default, new layers are assigned colour 7 (white) and continuous linestyle.

（5）Freeze/Thaw State

At any time the user may freeze one or more layers of a drawing. A frozen layer is made invisible. Any entities on a frozen layer are completely ignored or forgotten by AutoCAD during the editing process. This has the effect of speeding up many editing operations. Naturally, a frozen layer can be thawed again at any time.

The above discussion refers to the manipulation of layers generally, whether in model space or paper space. AutoCAD also permits layers to be manipulated (turned on/off or frozen) independently in each viewport in paper space. This means that a layer may be visible in one viewport, but not another. AutoCAD also allows you to manipulate layers that are contained within external reference drawings.

New Words

HVAC (Heating Ventilating And Air Conditioning)	**采暖、通风和空调**
focus on	**集中，围绕**
drawing	**绘图，制图；拉，抽；图纸**
three-dimensional	**三维的**
entity	**实体；组织，机**
cartesian coordinate system	**笛卡尔（Descartes）坐标系**
external reference	**外部引用，外部参照**
model space	**模型空间**
paper space	**图纸空间**
millimeter	**毫米**
zooming	**变焦，变焦距，（图像）缩放，图形变化，拉镜头，移向目标**
viewport	**视口**
actual size	**实际尺寸**
layer	**层**
invisible	**不可视**
linestyle	**线型**
thaw	**解冻**

Unit 11

Text

The Basics of C++

I am writing this for those people who want to learn how to program in C++, especially those who have trouble. It is for those of you who want a sense of accomplishment every time your program works perfectly. If you want the sense of accomplishment, read on.

C++ is a programming language. It is a programming language of many different dialects, just like each language that is spoken has many dialects. There are about four major ones: Borland C++, Microsoft Visual C++, Watcom C/386, and DJGPP. You can download DJGPP http://www.delorie.com/djgpp/ or you may already have another compiler.

Each of these compilers is a little different. The library functions of one will have all of the standard C++ functions, but they will also have other functions. At times, this can lead to confusion, as certain programs will only run under certain compilers, though I do not believe this to be the case with the programs in these tutorials.

If you don't have a compiler, I strongly suggest you get one. A simple one is good enough for my tutorials, but get one.

C++ is a different breed of programming language. It has only a few keywords for DOS, and it has no keywords to use for output. This means that almost everything is stored in a header file. This gives the use of many functions. But lets see a real program...

```
#include <iostream.h>
int main()
{
   cout<< " HEY, you, I'm alive!    Oh, and Hello World! " ;
   return 0;
}
```

That does not look too hard, right? Let's break down the program and then look at it. The #include is a preprocessor directive which tells the compiler to put code in the header file iostream.h into our program! By including header files, you can gain access to many different functions. For example, the cout function requires iostream.h.

The next thing is int main(). What this is saying is that there is a function called main, and that

it returns an integer, hence int. Then those little braces ({ and }) are used to signal the beginning and ending of functions, as well as other code blocks. If you have programmed in Pascal, you will know them as BEGIN and END.

The next line of the program may seem strange. If you have programmed in other languages you might think that print would be used to display text. However, in C++ the cout function is used to display text. It uses the <;<; symbols, known as insertion operators. The quotes tell the compiler that you want to output the literal string as -is. The ; is added to the end of all function calls in C++.

The penultimate line of code is ordering main to return 0. When one returns a value to main, it is passed on to the operating system. As a note, declaring int main() or void main() both will generally work. It is accepted practice to some to declare main as a void, but to others it is extremely upsetting. Previously, these tutorials had used void main, however, this is NO LONGER recommended, as it does not conform to the ANSI standard.

After, the brace closes off the function. You can try out this program if you want, just cut and paste it into the IDE of a compiler such as DJGPP, or save it to a file ending with a .cpp extension, and use a command-line compiler to compile and link it.

Comments are extremely important to understand. When you declare that an area is a comment, the compiler will IGNORE it. To comment it is possible to use either // , which declares that the entire line past that point is a comment, or it is possible to use /* and then */ to block off everything between the two as a comment. Certain compilers will change the color of a commented area, but some will not. Be certain not to accidentally declare part of your code a comment. Note that this is what is known as **“** commenting-out **”** a section of code, and it is useful when you are debugging.

So far you should be able to write a simple program to display information typed in by you, the programmer. However, it is also possible for your program to accept input. The function you use is known as cin>>.

Wait! Before you can receive input you must have a place to store input! In programming, these locations where input and other forms of data are stored are called variables. There are a few different types of variables, which must be stated. The basic types are char, int, and float.

Char is used to create variables that store characters, int is used to create variables that store integers (numbers such as 1, 2, 0, ?3, 44, ?44), and float is used to declare numbers with decimal places. In fact, they are all keywords that are used in front of variable names to tell the compiler that you have created a variable. That is known as **“** declaring a variable **”** . When you declare a variable, or variables, you must end the line with a semi-colon, the same as if you were to call a function. If you do not declare the variable you are attempting to use, you will receive numerous error messages and the program will not run.

Here are some examples of declaring variables:

```
int x;
int a, b, c, d;
char letter;
```

float the_float;

It is not possible, however, to declare two variables of different types with the same name.

```
#include <iostream.h>
int main()
{
   int thisisanumber;
   cout<< " Please enter a number: " ;
   cin>>thisisanumber;
   cout<< " You entered:  " <<thisisanumber;
   return 0;
}
```

Let's break apart this program and examine it line by line. Int is the keyword that is used when declaring a variable which is an integer. The cin>> sets the value of thisisanumber to be whatever the user types into the program when prompted. Keep in mind that the variable was declared an integer, which means the output will be in the form of an integer. Try typing in a sequence of characters, or a decimal when you run the example program to see what you get as a response. Notice that when printing out a variable, there are not any quotation marks. If there were quotation marks, the output would be " You Entered: thisisanumber. " Do not be confused by the inclusion of two separate insertion operators on a line. It is allowable, as long as you make certain to have each separate output of variable or string with its own insertion operator. Do not try to put two variables together with only one <;<; because it will give you an error message. Do not forget to end functions and declarations with the semi-colon(;). Otherwise you will get an error message when you try to compile the program.

Now that you know a little bit about variables, here are some ways to manipulate them. *, ?, +, /, =, ==, >, <; are all operators used on numbers, and these are the simple ones. The * multiplies, the ? subtracts, and the + adds. Of course, the most important for changing variables is the equal sign. In some languages, = checks if one side is equal to the other side, but in C++ == is used for that task. However, the equal sign is still extremely useful. It sets the left side of the equal sign, which must be one AND ONLY one variable, equal to the right side. The right side of the equal sign is where the other operators can be used.

Here are a few examples:

```
a=4*6;   //(Note use of comments and of semi-colon) a is 24
a=a+5;   // a equals the original value of a with five additional units
a==5      //Does NOT assign five to a.   Rather, it checks to see if a equals 5.
```

The other form of equal, ==, is not a way to assign a value to a variable. Rather, it checks to see if the variables are equal. It is useful in other areas of C++ such as if statements and loops.

You can probably guess what the <; and > are for. They are greater than and less than checks.

For example:

```
a<5      //Checks to see if a is less than five
a>5      //Checks to see if a is greater than five
a==5     //Checks to see if a equals five, for good measure
```

New Words

accomplishment [☯▯&✈❍◘●♓☞❍☯■♦] *n.* **成就；完成**
dialect [▯♎♋♓☯●♏&♦] *n.* **方言，语调**
compiler [&☜❍▯◘♋♓●☜] *n.* **编译器，编译程序**
Borland [▯♌👌💻●✌■♎] *n.* **宝兰公司，以软件知名**
tutorial [♦𝒆𝒓◆💻▯♦👌💻❒♓☜●] *n.* **指南**
confusion [&☯■▯➚𝒆𝒓◆💻✞☯■] *n.* **混乱，混淆**
keyword [▯&♓💻⬥☜💻♎] *n.* **关键字**
preprocessor [◘❒♓💻▯◘❒☜◆⬥♏⬥☜] *n.* **预处理程序**
directive [♎♓▯❒♏&♦♓❖] *n.* **命令，指令**
gain [♑♏♓■] *vt.* **获得**
brace [♌❒♏♓⬥] *n.* **大括号**
Pascal [▯◘✌⬥&☜●] *n.* **帕斯卡语言**
symbol [▯⬥♓❍♌☯●] *n.* **符号**
operator [▯👌◘☯❒♏♓♦☯] *n.* **操作符；操作员**
quote [&⬥☯◆♦] *n.* **引号；引证，引用**
output [▯♋◆♦◘◆♦] *n.* **输出**
call [&👌💻●] *vt.* **调用**
penultimate [◘♓▯■✈●♦♓❍♓♦] *a.* **倒数第二的**
value [▯❖✌●𝒆𝒓◆💻] *n.* **值，数值；计算结果**
declare [♎♓▯&●☪☯] *vt.* **声明**
void [❖👌♓♎] *a.* **空的，没有的，无效的**
practice [▯◘❒✌&♦♓⬥] *n.* **实践，实习，常例**
upsetting [✈◘▯⬥♏♦♓☠] *a.* **令人心烦意乱的,令人苦恼的**
extension [♓&⬥▯♦♏■☞☯■] *n.* **（文件）扩展名**
ignore [♓♑▯■👌💻] *vt.* **忽略**
comment [▯&👌❍♏■♦] *n.* **注释**
debug [♎♓💻▯♌✈♈] *vt.* **调试（程序），调试（设备）；排错**
variable [▯❖☪☯❒♓☯♌●] *n.* **变量**
integer [▯♓■♦♓♎✞☜] *n.* **整数**
float [➚●☯◆♦] *n.* **浮动，浮点**
decimal [▯♎♏⬥♓❍☯●] *a.* **十进制的**
n. **小数**
semicolon [▯⬥♏❍♓&☜◆●☜■] *n.* **分号**
examine [♓♑▯⌘✌❍♓■] *vt.* **检验，审查，研究**
prompt [◘❒👌❍◘♦] *n.* **提示，提示符**
allowable [☜▯●♋◆☜♌●] *a.* **容许的，可以承认的，正当的**
character [▯&✌❒♓&♦☯] *n.* **字符**
loop [●◆💻◘] *n.* **循环，回路，环，闭路**

Phrases

a sense of accomplishment	成就感
grow up	长大；长成
library function	库函数
a breed of	一种，一类
header file	头文件，页眉文件
break down	分解
gain access to…	获得……的权利，有权使用
literal string	字符串
pass on to	传给，传递给
close off	关掉，关闭
try out	试验，检验，试验
so far	迄今为止
end with…	以……结束
in fact	实际上，事实上
variable name	变量名
attempt to do sth.	试图做某事，企图做某事
error message	出错信息
break apart	拆开
line by line	一行一行地，逐行地
keep in mind	紧记，牢记
in the form of…	以……的形式，以……的格式
type in	输入，键入
a sequence of	接连的，一连串的
print out	打印出
quotation mark	引号
as long as	只要
make certain	确定
equal sign	等号

Abbreviations

DOS (Diskette Operation System)	磁盘操作系统

Notes

[1] At times, this can lead to confusion, as certain programs will only run under certain compilers, though I do not believe this to be the case with the programs in these tutorials.

本句中，At times **是一个时间状语，**as certain programs will only run under certain compilers **是一个原因状语从句，**though I do not believe this to be the case with the programs in these tutorials **是一个让步状语从句，修饰主句的谓语** can lead to。

本句意为：

因为某些程序只在某些编译器下运行，有时这可能引起混乱。可是，我认为这些指南中的程序不会出现这种情况。

[2] If you don't have a compiler, I strongly suggest you get one.

suggest **后面的从句要用虚拟语气。常用句型为** suggest that sb. should do sth.**，**that **和** should **可以省略。请看下例：**

His friend suggested he go and repair the printer right away.

本句意为：

如果你没有编译器，我强烈建议你去买一个。

[3] What this is saying is that there is a function called main, and that it returns an integer, hence int.

本句中，What this is saying **是一个主语从句，**is **是系动词，**and **连接了两个** that **引导的表语从句，即** that there is a function called main **和** that it returns an intege。called main **是一个过去分词短语做定语，修饰和限定** a function。

本句意为：

int main()**的意思是说有一个函数叫** main**，而且它返回一个整数，因此写为** int。

[4] To comment it is possible to use either // , which declares that the entire line past that point is a comment, or it is possible to use /* and then */ to block off everything between the two as a comment.

本句中，动词不定式 To comment **做目的状语，**it **做形式主语，真正的主语是动词不定式短语** to use either // **；**which declares that the entire line past that point is a comment **是一个非限定性定语从句，修饰** either // **；在该非限定性定语从句中，**that the entire line past that point is a comment **是一个宾语从句，做** declares **的宾语，**past that point **是一个介词短语做定语，修饰和限定** the entire line **；**or **的意思是“或者”，表示选择。**Or **后面的句子也是一个** it **做形式主语的句子，真正的主语是动词不定式短语** to use/* and then */**，动词不定式短语** to block off everything between the two as a comment **做目的状语。**

本句意为：

可以用任一个//来注释，//以后的那一整行是一个注释；或者也可以用/* 和 */做一个块，块之间的部分作为注释。

[5] In fact, they are all keywords that are used in front of variable names to tell the compiler that you have created a variable.

本句中，that are used in front of variable names to tell the compiler that you have created a variable **是一个定语从句，修饰和限定** keywords**。在该定语从句中，**that you have created a variable **是一个宾语从句，做** tell **的间接宾语。**

本句意为：

实际上，它们都是些关键词。这些关键词用在变量名前面，告诉编译器你已经建立了一个变量。

Exercises

1．**根据课文内容，回答以下问题**

（1）How many major compilers does C++ have? And what are they?

（2）Of different C++ compilers what are the similarities and differences?

（3）What is the function of the part between /* and */?

（4）What are the basic types of C++?

（5）What is the function of the symbol “ == ” in C++?

2．根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）

英 文 解 释	词　汇
A program that translates a source program into an executable program (an object program)	
An instructional book or program that takes the user through a prescribed sequence of steps in order to learn a product	
A name or symbol that identifies a parameter	
A computer program that carries out some preliminary computation or organization	
A highly structured high-level programming language developed by Niklaus Wirth of ETH, a university in Zurich, Switzerland	
A symbol which indicates the action to be performed on operands	
A description, reference or explanation added to or interspersed among the statements of the source language, which has no effect in the target language	
Detect, trace, and eliminate mistakes in computer programs or in other software	
A quantity that can assume any of a given set of values	
In command-driven systems, one or more symbols that indicate where users are to enter commands	

3．把下列句子翻译为中文

（1）C++ is a programming language of many different dialects, just like each language that is spoken has many dialects.

（2）By including header files, you can gain access to many different functions.

（3）C++ is a different breed of programming language.

（4）This means that almost everything is stored in a header file.

（5）If you have programmed in Pascal, you will know them as BEGIN and END.

（6）The ; is added to the end of all function calls in C++.

（7）As a note, declaring int main() or void main() both will generally work.

（8）Comments are extremely important to understand.

（9）It is not possible, however, to declare two variables of different types with the same name.

（10）a=a+5;　// a equals the original value of a with five additional units

4．**上机实践**

通过 Internet **查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过** E-mail **发送给老师，并附上你收集资料的网址。**

（1）**简述** DJGPP **的概况。**

（2）**比较** C++**不同系列之间的异同。**

（3）**简述** Pascal **语言的发展过程。**

（4）**你所知道的** C++**资源网站有哪些？**

Reading Material

EDI, E-business, and ERP

1．What is EDI

（1）Why To Hear About IT

I thought Electronic Data Interchange (EDI) was an old technology. Why am I still hearing about it?EDI refers to the electronic exchange of business information between two companies using a specific and structured format. The concept has been around since the 1970s and has

traditionally been used to automate buyer-seller transactions such as invoices and purchase orders. But as more processes within a company become automated, EDI has expanded to areas such as inventory management and product distribution.

（2）How Does It Work

EDI relies on standards, or common methods of defining classes of business data, which allow computers to recognize what data belongs to what department in a company. In the early days of EDI, many companies built in-house EDI standards, but as interest grew, industries started to agree on common standards, administered by standards organizations. These standards, which allow computers in different organizations to share information over privately built, closed networks known as value-added networks, led to the use of EDI for corporate purchasing.

（3）What Are the Benefits

Consider a very simple non-EDI-based purchase. A buyer decides he needs 365 hammers. He creates a purchase order, prints it out and pops it in the mail. When the supplier gets the order, she types it into her company′s computer system. The inventory guy pulls the order and ships out the hammers. Next, the supplier prints out and mails an invoice. It′s not hard to imagine that this process could take several days. EDI has the potential to cut massive amounts of time out of the process. Sending documents, such as purchase orders or invoices, electronically takes minutes, not days, and shipments can often go out the day the order comes in. Moreover, the electronic format does not need to be rekeyed upon arrival, which also eliminates the possibility of typos. And EDI reduces costs by cutting down on data input, routing and delivery.

（4）What Does All of This Have to Do With the Internet

Building an EDI system has traditionally required a substantial investment in some heavy-duty computers and networking equipment for both parties. Sometimes a large buyer, such as Wal-Mart, will require that all its suppliers be EDI-compliant. That puts a burden on smaller suppliers, forcing them to choose between a heavy technical investment and a loss of business. And EDI isn′t instantaneous. Because it uses information that frequently resides in mainframes, the quality of information on an EDI network depends on how frequently the data is refreshed from the mainframe.

And that′s the promise of the Web, which offers much lower connectivity costs. That, added to the lower costs of PCs and simpler software, makes EDI over the Web a compelling proposition. Moreover, XML, an open standard for sharing data on the Web, is starting to appear as a method of coding EDI standards, which could provide technical clarity across industries.

2．e-business

（1）What Does E-business Really Mean

The most basic definition of e-business is simply this: using the internet to connect with customers, partners, and suppliers. But the term also implies the transformation of existing business processes to make them more efficient. To engage in e-business, companies need to be able to unlock data in their back-end computer systems, so they can share information and conduct electronic transactions with customers, partners, and suppliers via the internet. And for some companies, engaging in e-business means adopting new web-enabled business models —

auctioning off surplus goods, selling products directly to consumers, or joining in online purchasing cooperatives with their competitors. Without a doubt, embarking on an e-business effort requires as much thinking about business strategy as it does about technology.

（2）How is E-business Different From E-commerce

In some instances, the terms are used interchangeably. But to purists, e-commerce refers only to online transactions. The term e-business encompasses online transactions, but it also refers to online exchanges of information, such as a manufacturer letting its suppliers monitor production schedules via an extranet (a secure web site that can be accessed only by authorized parties), or a financial institution letting its customers review their banking, credit card, and mortgage accounts via a single web interface. In this respect, e-business overlaps with the business-technology disciplines of Customer Relationship Management (CRM) and Supply Chain Management (SCM).

（3）Just How Much Electronic Commerce is Being Conducted Via the Net

Despite all the hype, Internet-based e-commerce currently amounts to only a small fraction of the U.S. GDP. But experts predict e-commerce volumes will grow exponentially over the next few years, particularly in business-to-business e-commerce — that is, transactions between businesses and their suppliers, partners, and business customers. Cambridge, Mass.-based market researcher Forrester Research Inc. predicts business-to-business e-commerce in the U.S. will grow from $406.2 billion in 2000 to $207 trillion in 2004. By contrast, Forrester predicts that business-to-consumer e-commerce in the U.S. will grow from $38.8 billion in 2000 to $184.5 billion in 2004.

（4）Who Should Be in Charge of a Company′s E-business Effort

In some companies, early web efforts were led by marketing or IT departments as special projects. But that is starting to change, as e-business becomes a higher priority for the business as a whole. A recent survey of large global corporations by Pricewaterhouse Coopers and The Conference Board found that nearly 50 percent of them have full-time units devoted to e-business. A survey of dotcoms and traditional companies by International Data Corp. (a Darwin sister company) found that roughly 50 percent of e-business efforts are headed by CEOs.

（5）Have All Companies Jumped on the E-business Bandwagon

Not yet. Pricewaterhouse Coopers and The Conference Board found that 70 percent of the global companies they surveyed derive less than 5 percent of their revenues from e-business. Several factors have kept some companies surveyed from rolling out e-business initiatives, including the following: potentially high and uncertain implementation costs; lack of demonstrated ROI within their industry; concern about tax, legal, and privacy issues related to e-business; and scant use of the internet among their customers.

3．What is ERP

（1）I′m Tired of Pretending I Know What ERP is

An enterprise resource planning software, or ERP, doesn′t live up to its acronym. Forget about planning — it doesn′t do that — and forget about resource, a throwaway term. But remember the enterprise part. This is ERP′s true ambition. It attempts to integrate all departments and functions across a company to create a single software program that runs off one database.

That′s a tall order. Each of those departments, like finance or human resources, typically has its own computer system, each optimized for the particular department. Typically, when a customer places an order, the order begins a mostly paper-based journey from in-basket to in-basket around the company, often being keyed and rekeyed into different computer systems along the way. All that lounging around in in-baskets causes delays and lost orders, and all the keying into different computer systems invites errors. Meanwhile, no one truly knows the order status.

（2）So What Can ERP Do

ERP automates the tasks necessary to perform a business process — such as order fulfillment, which involves taking an order from a customer, shipping it and billing for it. With ERP, when a customer service representative takes an order, he or she has all the necessary information — the customer′s credit rating and order history, the company′s inventory levels and the shipping dock′s trucking schedule. Everyone else in the company can view the same information and has access to the single database that holds the order. When one department finishes with the order, it is automatically routed via the ERP system to the next department. To find out where the order is at any point, one need only log in to the system. With luck, the order process moves like a bolt of lightning through the organization.

（3）Sounds Too Good to Be True. What′s the Catch

To do ERP right, your company needs to change the way it does business. And that kind of change doesn′t come without pain. It′s critical to figure out if your way of doing business will fit within a standard ERP package before signing the check. The move to ERP is a project of breathtaking scope, and the price tags on the front end are enough to make even the most placid CFO a little twitchy. In addition to budgeting for software costs, financial executives should plan to write checks to cover consulting, process rework, integration testing and a long list of other expenses before the benefits of ERP appear. Underestimating the price of teaching users their new job processes can lead to a rude shock, and so can failure to consider data warehouse integration requirements and the cost of extra software to duplicate the old report formats. Oversights in financial planning can send the costs of an ERP project spiraling out of control. The impact will be far greater than any other systems project you have undertaken.

New Words

structured	**结构化的**
automate	**自动操作，使自动化**
invoice	**发票，发货单**
purchase order	**购货订单**
product distribution	**产品配送**
shipment	**出货，装船**
eliminate	**消除，排除；除去**
typo	**排印错误，打字错误**
cut down on	**减少，减低**

routing	路由
delivery	递送，交付，交货
EDI (Electronic Data Interchange)	电子数据交换
EDI-compliant	适应 EDI 的
put a burden on	增加负担
instantaneous	瞬间的，即刻的，及时的
reside	驻留
refresh	刷新，更新
e-business	电子商务
clarity	透明，透明度，清晰度
as a whole	总的来说
back-end	后端
unlock	解锁，开放
online	在线，联机
dotcom	. com 类公司，指网站类公司
rekey	再次输入
jump on the bandwagon	赶时髦，一窝蜂作风
revenue	收入，年收入
scant	缺乏的，不足的
live up to	实践，做到
credit	信用
project	项目
electronic format	电子形式
business-to-business	商家对商家，企业对企业（的电子商务模式）；也缩写为 B2B
CRM (Customer Relationship Management)	客户关系管理
SCM (Supply Chain Management)	供应链管理
ERP (Enterprise Resource Plan)	企业资源计划
order fulfillment	订货履行
trucking schedule	货运安排
CFO (Chief Faculty Officer)	人事总管
undertake	从事；承担；许诺，保证

Unit 12

Text

ARPANET

After the Soviet launch of the Sputnik satellite in 1957, the US military set up the Advanced Research Projects Agency to fund research in things sometimes only vaguely related to military matters. Originally, ARPA funded research by individual corporate researchers, although in 1962 it began to fund academic researchers.

One of the original ARPANET engineers has commented that the purpose of the US military was to fund ARPA, whose purpose was to fund research. Over the years, ARPA has funded many projects in computer science research, many of which had a profound effect on the state of the art. None of the projects had such a profound effect as the ARPANET project.

In 1962, the Rand Corporation published a report written by a Paul Baran, entitled " On Distributed Communications Networks " — the first of many. This report recommended the establishment of a communications network with no obvious central control, and where surviving nodes could reestablish communication with each other after the destruction of a number of nodes. He also recommended the establishment of a nationwide public utility to transport computer data, using" packet switching "to establish a" store and forward "network. At least one of his papers was secret, and the others were not widely circulated.

Donald W. Davies (an UK researcher) also did work in this field at roughly the same time, and is credited with the invention of the term " packet switching " .

Dr. J.C.R Licklider (or " Lick " as he asked people to call him) was aware of Baran′s work through his military contacts — he worked for ARPA from 1962 (as the head of " Information Processing Techniques Office ") with an engineering, and physiological psychology background. Lick was interested in how computers (and computer networks) could be used to help people communicate, and how computers could help people think. He and Robert Taylor wrote " In a few years men will be able to communicate more effectively through a machine than face to face " . His vision attracted others involved in computer research, and meant that from the start, a computer network was thought of something allowing people to communicate rather than just computers communicating.

In October 1967, ARPA announced that it was planning a computer network to link together

16 research groups at large US Universities, and research centers, and the competitive tendering began in the summer of 1968. In January 1969, Bolt, Beranek and Newman (BBN) in Cambridge, Massachusetts was awarded the contract for establishing the network.

The plan was to deliver four Interface Message Processors (IMPs, which were Honeywell DDP 516 minicomputers) to four centers. The IMPs were the interface between the ARPANET, and each of the center's main "host" computers. Each center had its own responsibility in the project, and different host computers. The details are listed below.

- University of California, Los Angeles (UCLA). Running the SEX operating system on an SDS Sigma 7, this site was responsible for network measurement.
- Stanford Research Institute (SRI). Running the Genie operating system on an XDS-940, this site was responsible for network information. It was often known as NIC, and was at one time the organization that assigned network addresses.
- University of California, Santa Barbara (UCSB). Running OS/MVT on an IBM 360/75. This site provided expertise in Culler-Fried interactive mathematics.
- University of Utah. Running the TENEX operating system on a Digital PDP-10. They provided expertise in graphics (in particular, hidden line removal).

From the beginning of the project, things were left a bit loose with the expectation that the research groups would take some of the initiative. The research students involved in the project at all four sites formed an informal "Network Working Group", and started to discuss various technical aspects — even without detailed information from BBN .

Dave Crocker mentions that they were very nervous of offending the "official protocol designers", so when notes started to be written they were published under the title "Request For Comments". Possibly one of the most important aspects of the early RFCs was the insistence on complete openness — RFCs were allowed to contain almost any subject provided that it had something to do with the network, and they were not held by the NWG as the "official standard" In addition, the NWG encouraged publication of unpolished RFCs in the belief that rough ideas are sometimes as useful as fully worked out protocol standards. They also encouraged the free distribution of RFC's — a practice that continues to this day.

In February 1969, BBN supplied the research groups with some technical details, and the Network Working Group began working on the nuts and bolts of how the network was going to work — both how the IMP -host interface was going to work, and how the simple applications were going to work.

The first IMP was due to be delivered to UCLA on the 1st September, 1969, and the team there expected some extra time to complete the necessary software (1st September is a public holiday in the US, and there were rumours of timing problems at BBN's end that may have delayed delivery). In the end, BBN delivered the IMP on the 30th August 1969, causing a panic with the software writers. BBN delivered the second IMP to SRI at the beginning of October, and by the 21st of November it was possible to demonstrate a telnet-like connection between the two host computers to senior ARPA officials. The net had come "alive". The first two "applications" to work

between two host computers on ARPANET, were a terminal connection program (telnet), and something to move files between the two hosts (ftp). Note the lack of electronic mail (which was first implemented by transferring messages as files using ftp into special areas, before a new protocol was implemented).

After the first four sites were connected, other sites were connected to implement ARPA's original intention of 16 connected research groups. The next 11 include some names that have contributed enormously to the Internet, and they are all listed here — BBN, MIT, RAND Corp, SDC, Harvard, Lincoln Lab, Stanford (the University), University of Illinois, Case Western Reserve University, Carnegie Mellon University, and NASA-AMES.

At this point, BBN came up with a simpler, slower and cheaper version of the IMP — the TIP (or Terminal IMP). The growth of ARPANET continued beyond the original intention.

Date	Number of Hosts
1971	15
January 1973	35
September 1973	40*
1977	111
1983	4000

* Including a slow link to the UK, and Norway.

At the First International Conference on Computer Communications, which was held in Washington DC in 1972, delegates from all over the world were treated to a demonstration of the ARPANET. They also discussed the need for a common set of networking protocols, and the Internetwork Working Group was set up. It was also realized that networks such as ARPANET, and similar networks could be inter-connected, and with the use of the same networking protocols, it might be possible to link a number of individual networks into something that could be viewed as just one large network. It was the start of both the name "Internet", and the start of what the Internet is today.

The ARPANET Completion Report pinpointed the popularity of E-mail as the most surprising service by the pioneers. And the acknowledgements of Guy L. Steele's book "Common Lisp" indicated why Lisp is a programming language well suited to, and well used by AI researchers, and as it happens many of those AI researchers have a tendency to tinker with the language they work with — by the time Common Lisp was being worked on, there were at least a dozen popular varieties of Lisp in use. Common Lisp was an attempt (and a successful one) at bringing together the varieties of Lisp into one standard — agreeable to the majority. In his acknowledgements section, Guy suggests that Common Lisp would have been impossible without ARPANET's E-mail facilities. A mailing list was set up, where the issues at stake could be argued about from day to day — in excess of 3000 messages resulted, varying in size from one line to 20 pages.

ARPANET made possible collaborations between people who were thousands of miles apart.

ARPANET did have one very big disadvantage — it was difficult to get connected to as it required "political connections" and a large amount of money. Due to the difficulties, CSNET was

set up by NSF (National Science Foundation) to provide an ARPANET to those who couldn′t get connected to the real thing, and it also proved to be very popular. It also extended the community of Internet users to people other than computer scientists.

As ARPANET was being phased out, NSF then funded the NSFNET which served as the main US backbone for the Internet, until the US government disbanded it and allowed commercial Internet providers to fill the place.

New Words

ARPANET [🗄✍💻❑☯■♏⧫] *n.*	阿帕网
Soviet [🗄⬧☯◆❖♓♏⧫] *a.*	苏联的
launch [●👍💻■⧫☞] *vt.*	发射
military [🗄❍♓●♓⧫☯❒♓] *a.*	军队的，军方的；军事的；军用的
fund [♐✈■♎] *n.*	支助，投资；资金，基金
vaguely [🗄❖♏♓♈●♓] *n.*	含糊地，模糊地，不清楚地
originally [☜🗄❒♓♎✞☜■☜●♓] *adv.*	最初，原先，原来
individual [♓■♎♓🗄❖♓♎🙰◆☯●] *a.*	个别的，单独的，个人的
academic [♋✌🙵☯🗄♎♏❍♓🙵] *a.*	学院的，学术的，理论的
distributed [♎♓🗄⬧⧫❒♓♌🙰◆💻⧫♓♎] *a.*	分布式的
communication [🙵☯♋❍🙰◆💻■♓🗄🙵♏♓☞☯■] *n.*	通信
establishment [♓🗄⬧⧫✌♌●♓☞❍☯■⧫] *n.*	建立，设立；确定；机构，研究所
surviving [⬧☜🗄❖♋♓❖♓☠] *a.*	继续存在的，幸存的
node [■☜◆♎] *n.*	节点
reestablish [🗄❒♓💻♓🗄⬧⧫✌♌●♓☞]	重新建立
destruction [♎♓🗄⬧⧫❒✈🙵☞☯■] *n.*	破坏，毁坏，毁灭
establish [♓🗄⬧⧫✌♌●♓☞] *vt.*	建立，设立；确定
nationwide [🗄■♏♓☞☜■⬧♋♓♎] *a.*	全国性的
utility [🙰◆💻🗄⧫♓●♓⧫♓] *n.*	实用程序，应用程序；应用；公用事业
forward [🗄♐👍💻⬧☯♎] *adv.*	转发
circulate [🗄⬧☯💻🙵🙰◆●♏♓⧫] *vt.*	散布；流传；扩散
roughly [🗄❒✈♐●♓] *adv.*	大约，粗略地；约略地
physiological [♋♐♓⌘♓☯🗄●👍♎✞♓🙵☯●] *a.*	生理学的，生理学上的
Psychology [⬧♋♓🗄🙵👍●☯♎✞♓] *n.*	心理学
competitive [🙵☯❍🗄❑♏⧫♓⧫♓❖] *a.*	竞争的，有竞争力的
tendering [🗄⧫♏■♎☜❒♓☠] *n.*	（正式）提出，申请，提议
tender [🗄⧫♏■♎☜] *vt.*	（正式）提出，申请，提议
Cambridge [🗄🙵♏♓❍♌❒♓♎✞] *n.*	剑桥大学（英国）
Massachusetts [♋❍✌⬧☜🗄⧫☞◆💻⬧♓⧫⬧] *n.*	麻省理工学院（美国）
award [☯🗄⬧👍💻♎] *vt.*	颁发，授予，给予，判给
contract [🗄🙵👍■⧫❒✌🙵⧫] *n.*	合同；契约
announce [☯🗄■♋◆■⬧] *vt.*	宣告，宣布；通告；广播
Honeywell [🗄♒✈■♓⬥♏●] *n.*	霍尼维尔公司

responsibility [❒♓☜♦◘👌■♦☯🄱♌♓●♓♦♓] *n.*	责任，职责
site [♦♋♓♦] *n.*	网站
details [🄱♎♓💻♦♏♓●♦]	详细资料
delivery [♎♓🄱●♓❖☯❒♓] *n.*	交付，投递，传递，发送；收信人地址
expertise [☜♏&♦◘☯💻🄱♦♓💻⌘] *n.*	专家意见，专门技术
removal [❒♓🄱❍◆💻❖☯●] *n.*	移去，除去；删除
loose [●◆💻♦] *a.*	不精确的，不牢固的；宽松的
expectation [☜♏&♦◘♏&🄱♦♏♓☞☯■] *n.*	期待，预料，指望，展望
initiative [♓🄱■♓☞♓☯♦♓❖] *a.*	主动的
n.	主动性
terminal [🄱♦☯💻❍♓■☯●] *n.*	终端
offend [☯🄱➶♏■♎] *vt.*	冒犯，得罪，使……不愉快；违反
protocol [🄱◘❒☜◆♦☜&👌●] *n.*	协议
rumour [🄱❒◆💻❍☯] *n.*	谣言，传闻
panic [🄱◘✌■♓&] *n.*	惊慌；恐慌
telnet-like [🄱♦♏●■♏♦●♋♓&] *a.*	远程通信网似的
senior [🄱♦♓💻■𝑒𝑟☯] *a.*	资格较老的，地位较高的，高级的
intention [♓■🄱♦♏■☞☯■] *n.*	意图，目的
Harvard [🄱≈♋💻❖☯♎] *n.*	美国哈佛大学
Stanford [🄱♦♦✌■➶☜♎] *n.*	美国斯坦福大学
delegate [🄱♎♏●♓♑♓♦] *n.*	代表
pinpoint [🄱◘♓■◘👌♓■♦] *vt.*	明确指出；发现
popularity [☜◘👌◘𝑒𝑟◆🄱●✌❒♓♦♓] *n.*	普及，流行，大众性，通俗性，受欢迎
E-mail [🄱♓💻🄱❍♏♓●] *n.*	电子邮件
pioneer [☜◘♋♓☯🄱■♓☯] *n.*	先驱，倡导者，先锋
acknowledgement [☜&🄱■👌●♓♎✞❍☜■♦] *n.*	感谢，承认，承认书
tendency [🄱♦♏■♎☯■♦♓] *n.*	趋向，倾向
demonstration [☜♎♏❍☯■🄱♦♦❒♏♓☞☯■] *n.*	示范，演示；表示；论证，证明
attempt [☯🄱♦♏❍◘♦] *vt.*	努力，尝试，企图
variety [❖☯🄱❒♋♓☯♦♓] *n.*	变化，多样性，种种，品种，种类
excess [♓&🄱♦♏♦] *n.*	超过，超额，过度
agreeable [☯🄱♑❒♓☯♌●] *a.*	适宜的，可同意的，适合的
collaboration [&☜☜●✌♌☜🄱❒♏♓☞☜■] *n.*	协作
disadvantage [☜♎♓♦☯♎🄱❖♋💻■♦♓♎✞] *n.*	不利，不利条件，缺点，劣势
backbone [🄱♌✌&♌☜◆■] *n.*	骨干；基干；主干线

Phrases

Sputnik satellite	(苏联)人造地球卫星
set up	建立，设立
have a profound effect on…	对……有深远的影响
the state of the art	技术发展水平，目前工艺水平
communications network	通信网络
no obvious central control	无明显中心控制

packet switching	包交换（技术）
store and forward	存储转发
credit sb. with	相信某人具有
be aware of	知道，明白，意识到
face to face	面对面
be involved in…	涉及，与……关系密切的，与……有牵连的
take the initiative	采取主动
host computer	主计算机
network measurement	网络测量
network address	网络地址
hidden line removal	消隐线
technical aspect	技术方面
be nervous of	害怕
to this day	至今
nuts and bolts	（事物的）基本（构成）；实际营运
be due to do sth.	预期做某事
terminal connection program	终端连接程序
the lack of	缺乏，缺少
electronic mail	电子邮件
University of Illinois	伊利诺大学（美国）
Washington DC	华盛顿特区
networking protocol	网络协议
view as	视为，看作，认为
tinker with	笨拙的修补
mailing list	发送名单，发送文件清单
at stake	濒临危险；得失攸关
argue about	争论，辩论
from day to day	一天一天地；每天
in excess of	超过，多余
the real thing	上等货，原装货
serve as…	作为，担任， 充当，起……作用
fill the place	替代

Abbreviations

ARPA (the Advanced Research Projects Agency)	（美国国防部）高级研究计划署
BBN	Bolt、Beranek 及 Newman 三人名首字母缩写
RAND Corp (Research and Development corp)	兰德公司
IMP (Interface Message Processor)	Xerox 公司数据系统界面信息处理器
UCLA (University of California, Los Angeles)	加州大学洛杉矶分校
SDS (Scientific Data System Inc.)	科学数据系统公司
SRI (Stanford Research Institute)	斯坦福研究所

XDS (Xerox Data System)	Xerox 公司数据系统
NIC (Network Information Center)	网络信息中心
UCSB (University of California, Santa Barbara)	加州大学圣芭芭拉分校
OS (Operating System)	操作系统
MVT (Multiprogramming with a Variable number of Tasks)	可变任务数多道程序设计系统
NWG (Network Work Group)	网络工作组
RFC (Request For Comments)	请求注解
NSF (National Science Foundation)	（美国）国家科学基金
FTP (File Transfer Protocol)	文件传输协议
MIT (Massachusetts Institute of Technology)	（美国）马萨诸塞理工学院即麻省理工学院
SDC (Scientific Data Center)	科学数据中心
NASA (National Aeronautics and Space Administration)	（美国）国家航空和航天局
AI (Artificial Intelligence)	人工智能
CSNET (Computer Science NETwork)	计算机科学网络
NSFNET (the National Science Foundation NETwork)	（美国）国家科学基金会网络

Notes

[1] Over the years, ARPA has funded many projects in computer science research, many of which had a profound effect on the state of the art.

本句中，many of which had a profound effect on the state of the art **是一个非限定性定语从句，修饰** many projects。many of, some of, a lot of, all of which **或** whom **可引导一个非限定性的定语从句，修饰物用** which，**修饰人用** whom。**请看下例：**

There are many books in the school library, some of which are on computer science.

学校图书馆有很多书，其中一些是计算机科学方面的。

He has a lot of friends, all of whom are businessmen.

他有许多朋友，他们都是商人。

本句意为：

多年来，ARPA **已经在计算机科学研究方面资助了许多项目，其中很多都对现代工艺水平有深远的影响。**

[2] In addition, the NWG encouraged publication of unpolished RFCs in the belief that rough ideas are sometimes as useful as fully worked out protocol standards.

本句中，in the belief **的意思是“相信，认为”，**as … as **的意思是“与……一样……”。注意：**as … as **中间只能是形容词或副词的原级。请看下例：**

His idea is as important as yours.

Please drive as carefully as possible.

本句意为：

另外，NWG**（网络工作小组）鼓励发布未完善的** RFC**（请求注解），他们认为粗略的观**

点有时候和精心设计出的协议标准一样有用。

[3] In his acknowledgements section, Guy suggests that Common Lisp would have been impossible without ARPANET's E-mail facilities.

本句中，would have been impossible **是虚拟语气。**

本句意为：

在致谢部分，Guy **提出如果没有阿帕网的电子邮件设备，就不可能有** Common Lisp**。**

[4] ARPANET did have one very big disadvantage — it was difficult to get connected to, as it required "political connections" and a large amount of money.

本句中，did have **表示强调，意思是"的确有，确实有";"—"后是对** one very big disadvantage **的解释说明，**as **引导了一个原因状语从句。**

英语中，强调动词用 do**。请看下例：**

Please do be careful when you handle the device.

He did write a letter to the client, but forgot to post it.

本句意为：

阿帕网的确有一很大不足，即要连接到它上面很难，因为它需要"政治连接"和一大笔钱。

Exercises

1．根据课文内容，回答以下问题

（1）When and why was ARPA set up?

（2）Who first funded ARPANET?

（3）What did Paul Baran put forward in his report"On Distributed Communications Networks"?

（4）Which universities joined the ARPANET project?

（5）How many hosts did ARPANET have at first? And where were they?

2．根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）

英 文 解 释	词　汇
A computer network set up by Advanced Research Project Agency of the U.S. Department of Defense. This International network allows its members to use the facilities and access the data from dozens of different computers	

The process of transferring information in the various media from one point, person or device to another	

续表

英 文 解 释	词　汇
In a network, a point where one or more functional units interconnect transmission lines	
In E-mail, to send a received message, either modified or in its entirety, to a new recipient	
A device, usually equipped with a keyboard and a display device, capable of sending and receiving information over a link	
The set of rules governing the operation of functional units of a communication system that must be followed if communication is to be achieved	
The exchange of text messages and computer files over a communications network, such as a local area network or the Internet, usually between computers or terminals	
The main computer in a system of computers or terminals connected by communications links	
A message-delivery technique in which small units of information are relayed through stations in a computer network along the best route available between the source and the destination	
The branch of computer science concerned with enabling computer to simulate such aspects of human intelligence	

3．**把下列句子翻译为中文**

（1）At least one of his papers was secret, and the others were not widely circulated.

（2）Donald W. Davies (an UK researcher) also did work in this field at roughly the same time, and is credited with the invention of the term “packet switching”.

（3）In January 1969, Bolt, Beranek and Newman (BBN) in Cambridge, Massachusetts was awarded the contract for establishing the network.

（4）The plan was to deliver four Interface Message Processors (IMPs, which were Honeywell DDP 516 minicomputers) to four centers.

（5）This site was responsible for network measurement.

（6）It was often known as NIC , and was at one time the organization that assigned network addresses.

（7）The growth of ARPANET continued beyond the original intention.

（8）It was the start of both the name “ Internet ”, and the start of what the Internet is today.

（9）ARPANET made possible collaborations between people who were thousands of miles apart.

（10）It also extended the community of Internet users to people other than computer scientists.

4．上机实践

通过 Internet **查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过** E-mail **发送给老师，并附上你收集资料的网址。**

（1）简述文中涉及到的人物在 Internet **发展中的贡献。**

（2）Internet **最新进展状况如何？（如用户数、连入的计算机数、覆盖的国家和地区数等）**

（3）收集并整理一份简单的 Internet **缩略语清单。**

（4）简述 Internet **的技术发展趋势。**

Reading Material

Wireless LAN, WAP,and Bluetooth

1．What is a Wireless LAN

A wireless LAN lets users roam around a building with a laptop (equipped with a wireless LAN card) and stay connected to their network, without being connected to a wire.

A Wireless LAN (WLAN) is a Local Area Network (LAN) without wires. WLANs have been around for more than a decade, but are just beginning to gain momentum because of falling costs and improved standards. WLANs transfer data through the air using radio frequencies instead of cables. They can reach a radius of 500 feet indoors and 1000 feet outdoors, but antennas, transmitters and other access devices can be used to widen that area. WLANs require a wired access point that plugs all the wireless devices into the wired network.

A new standard put out by the Institute of Electrical and Electronics Engineers (IEEE) called 802.11b or Wi-Fi is making WLAN use faster and easier, and the market is growing quickly. The Cahners In-Stat Group predicts that revenue for total enterprise WLAN end-use will reach almost $4.6 billion by 2005.

Many Mac users have been wireless for over a year now with Apple′s AirPort product, which is also based on the 802.11 IEEE standard.

（1）Where are WLANs Typically Used

WLANs are used on college campuses and in office buildings. They can be set up in houses allowing multiple users to access one Internet connection. Resorts, apartment buildings and airports plan to offer WLAN access (some already do). Often the best uses for WLANs are in places where LANs aren′t installed yet, like schools or public institutions that are slow to adopt new technologies.

Starbucks and Microsoft are also getting into the WLAN game. They are teaming up to equip their coffee shops with WLANs, which allow laptop users to surf the Net while sipping coffee.

（2）Are There Different Kinds of WLANs

Bluetooth and HomeRF are also WLAN technologies, but Bluetooth works in a smaller area than 802.11b does and HomeRF hasn′t become as popular as 802.11b.

（3）What is 802.11b

It sounds like something from Star Wars, but it is the standard that is behind WLANs current popularity. 802.11b transfers data at speeds of up to 11Mbit/s (million bits per second) in the.2.4gigahertz radio band (a license is not required for this band).

The next version, 802.11a, is supposed to transfer data at even higher speeds of up to 54Mbps in the 5 gigahertz band.

（4）Are Wireless LANs Secure

A small research group at the University of California at Berkeley recently put out a report stating that they found flaws in the 802.11 standard (and 802.11b standard). Their report says that they were able to intercept transmissions over the wireless network. These transmissions were encrypted, but the encryption was broken.

（5）Are There Other Problems

If too many people or businesses in the same area have WLANs, then the band of air that they transmit signals on can become overcrowded. Problems with signal interference are already occurring and there are fears that the airwaves will become overloaded.

2．What is WAP

（1）About The Wireless Web

Have you heard the hype about the wireless Web? Or is the Web without wires a waste of time. Either way, WAP — an acronym for wireless application protocol — is making the wireless Internet a reality, and even if it isn′t successful right now, this industry is expecting enormous growth. Market researcher IDC predicts that 1.3 billion wireless Internet users will have WAP-enabled devices by 2004.

（2）Where did WAP Come From

An industry consortium called the WAP Forum promotes WAP. The WAP Forum was founded in 1997 by Ericson, Motorola, Nokia and Phone.com (which has now joined with Software.com to form Openwave Systems Inc.) after Phone.com developed a server and browser for AT&T′s PocketNet (wireless Web service).

（3）What Exactly is WAP

WAP is a set of protocols used to transfer data to wireless devices. WAP-enabled devices provide wireless users with a limited version of the Web designed to work on the small black and white screens of phones and PDAs.

Websites accessed by WAP phones must be re-written to satisfy the wireless application protocol; in order to do that, Web pages written in HTML must be transferred to the WAP Markup Language (WML). Internet browsers like Netscape and Internet Explorer read pages in HTML, while a microbrowser on a WAP-enabled device reads pages in WML.

Major websites like Yahoo and Amazon.com have carefully designed their WAP sites to look and feel much like their wired counterparts, while search engines like Google are transferring pages from HTML to WML so they can be accessed by wireless users.

（4）What′s the problem With WAP

WAP faces bandwidth constraints that limit the amount of data that can be transferred to the devices. On the wireless Internet, users are presented with a fraction of the information available on the traditional version.

And while WAP is the leading wireless protocol now, that doesn′t mean that it′s here to stay. When a better version of the wireless Web becomes available, WAP could very well become obsolete.

One potential competitor is NTT DoCoMo, a Japanese company which has developed a hugely successful wireless data service called i-mode and expects to tap the U.S. market toward the end of 2001.

3．What is Bluetooth

Bluetooth is a technology that connects electronic devices — from camcorders to PDAs to computers — without using wires. Consumers began to see Bluetooth in action when Toshiba starting selling a Bluetooth-enabled PC card over their website in September 2000 for $199. Other vendors plan to follow with devices ranging from PDAs to mobile phones.

A Bluetooth device uses radio signals to send information from one Bluetooth device to another through the air. For example, if you are trying to transfer a PC′s address book to a PDA, first the data in an address book is translated into a language that the PDA can understand by a conduit. The data goes through the conduit to the Bluetooth device. The Bluetooth device is made up of a base-band processor, a radio, and an antenna. The base-band processor transfers the data into signals that the radio can understand, and the radio puts out signals in a frequency (2.4 gigahertz) that the antenna transmits through the air to another antenna on another Bluetooth device within 30-feet. The other device receives the data and processes it in the reverse order.

Bluetooth is supported by a Special Interest Group (SIG), which was founded in 1998 and has approximately 2000 members, all of whom have access to Bluetooth specifications (the information needed to make a Bluetooth product). The SIG includes IBM, Intel, Microsoft and Nokia, and works to develop and promote the Bluetooth technology.

But Bluetooth, like many new technologies, may not be an instant hit. There are still plenty of questions about the ability of these devices to speak the same language. So while devices produced by the same company could communicate with each other easily, integration may be difficult when multiple vendors are involved. And while consultants at Forrester Research expect Bluetooth′s popularity to grow, the firm said in a brief that many businesses won′t buy in, "until user pressure forces them to in 2003".

New Words

plug	插；插头
IEEE(Institute of Electrical and Electronics Engineers)	（美国）电气和电子工程师协会
Mac	苹果公司生产的麦金塔计算机
multiple user	多用户
Bluetooth	蓝牙（技术）
Mbit/s(million bits per second)	每秒百万位
gigahertz	千兆字节
band	波段
encrypt	加密
airwaves	电视广播
overload	超载
WAP (Wireless Application Protocol)	无线应用协议
IDC (International Data Corporation)	国际数据公司
NTT (Nippon Telephone and Telegraph)	日本电报电话公司
base-band	基带
buy in	大宗卖进

Unit 13

Text

Java Technology

"Write Once, Run Anywhere". That's the trademark answer. But what does that answer really mean?

The Java technology is an object-oriented, platform-independent, multithreaded programming environment. It is the foundation for smart Web and networked services and allows you to securely extend your enterprise through platform independence. All kinds of systems can talk to each other, from smart cards to supercomputers, regardless of the underlying hardware or system software.

1. How does it Work

When software written in the Java programming language is compiled with Java technology, byte code results. The Java virtual machine can explain or interpret that byte code to any platform on which the Java virtual machine is installed. This means no more porting of programs to platforms.

Look at it this way. Suppose you speak only English. And suppose that you are speaking at an International conference attended by people like you — who speak only their native languages. Should you hire interpreters for each language represented? Should you supply English/mumble dictionaries to each attendee? Those solutions are costly, time-consuming, and error prone. But suppose you discover a language that can be understood by anyone wearing a special and inexpensive earphone that contains a universal interpreter that makes the new language instantly intelligible — no language barriers whatsoever. You'd learn that language and order up the earphones. This interpretable language is analogous to the Java technology, and the universal interpreter to the Java virtual machine, which converts the code to the correct semantics.

That's how Java technology takes programming to a new meeting of the minds, where an interpretation process resolves issues that arise from different operating systems and platforms.

2. Sun and Java Technology

Internet bandwidth will continue to grow exponentially over the next 10 to 15 years. This

phenomenon creates business opportunities which will impact our lives in ways we hadn′t previously imagined. With this increase come challenges. How does one expand with the associated complexities?

The“ Write Once, Run Anywhere ”capabilities of the Java platform position you to address this exponential growth. At Sun, we call this“ taking it to the nth ”, utilizing the openness and flexibility of Java technology as the foundation of the Sun Open Net Environment architecture — our solution for creating, assembling, and deploying Web-based services and more.

3．What is the Java Platform

The Java platform is a fundamentally new way of computing based on the power of networks and the idea that the same software should run on many different kinds of computers, consumer gadgets and other devices.

With Java technology, you can use the same application from any kind of machine — a PC, a Macintosh computer, a network computer, or even new technologies like Internet screen phones.

（1）It Works Everywhere

The idea is simple. Java technology-based software works just about everywhere — from the smallest devices to supercomputers. Java technology components don′t care what kind of computer, phone, TV, or operating system they run on. They just work on any kind of compatible device that supports the Java platform.

Java technology is widely regarded as revolutionary, because it was designed to let computers and devices communicate with one another much more easily than ever before.

（2）Want to See Some Java Technology-based Software

Perhaps the most visible examples of Java technology-based software today are on the Internet and on enterprise networks. They′re nimble, interactive programs called“ applets ”. Applets work inside Web browsers on computers and other devices.

And there are other kinds of Java technology-based software. Programs written in the Java programming language can run directly on your computer without requiring a browser, or on servers, on large mainframe computers, or other devices.

For example, Java technology-based software running on servers in large companies monitors transactions and ties together data from existing computer systems. Other companies are using Java technology-based software on their internal web sites to streamline communication and the flow of information between departments, suppliers and customers.

4．Why Java Technology is So Important

Why is Java technology so important? It′s the network!

With Java technology, the Internet and private networks become your computing environment. Coupled with the power of networking, the Java platform is helping computer users to do things that were previously unimaginable. For example, users can securely access their personal information and applications when they′re far away from the office by using any computer that′s

connected to the Internet; soon they′ll be able to access tailored applications from a mobile phone based on the Java platform, or even use smart cards as a pass key to everything from the cash machine to ski lifts.

Why Java technology? Networks require software that is portable, modular, and secure — all areas where Java technology shines, because it was designed for use on networks from the beginning.

5. Who′s Using it

As you′ll see on the next few pages, businesses are using Java technology because it connects easily to existing computing systems, lowers computing costs and speeds software development. It also lets businesses use the Internet to securely connect to their customers, suppliers and partners. And consumers benefit from Java technology because it brings personal, business and entertainment services to them — easily and securely — in many locations and on many different kinds of appliances and devices at home, at work and on the road.

6. What Java Technology Means to Business, Developers and Consumers

So, what does the Java platform really do? It simplifies computing both for users and for the companies building and using computers and software.

Java technology addresses many of today′s most pressing business computing problems — complexity, incompatibility and security. It has proved invaluable in opening new business opportunities.

The Java platform′s ease of development and widespread industry support mean lower development costs and quicker time to market. Built-in security protects company′s information and assets. The lightweight distributed model eliminates software installation headaches and lowers administrative and maintenance costs of managing a computing network, that is, "total cost of ownership", or TCO. Platform independence frees you to pick the hardware and operating system best suited to their needs.

And because Java technology programs can run on just about any type of computer and many devices, a user′s applications and data are accessible from network computers on the factory floor, laptops or other networked devices on the road or in the field.

Enterprises like Home Depot, Xerox, CAX, NASA′s Jet Propulsion Laboratory, and Kaiser Permanente are discovering the Java software is not a replacement technology, but rather an extension of their current computing environments.

If you′re a developer, the platform independence of the Java programming language means that you can write a program once, and have it run on dozens of different kinds of machines.

Java programming language software is scalable. For instance, the commerce software and services you create for a set-top box running the PersonalJava platform can also be made available instantly on network computers or web browsers on desktop computers. The same Java technology

program will work on all three devices without modification. And with proper design, it′s possible to write an application that can run on an almost infinite array of devices.

The open, platform-independent and object-oriented nature of Java technology means developers can solve the problem of integrating with existing computers that previously would have seemed unthinkably complex. As a bonus, most Java programming language software developers report that Java programming language software is easier to create and maintain, when compared with traditional languages such as C and C++.

A detailed technical explanation of Java technology written for developers is contained in the Java Language Environment White Paper.

Java technology will soon be integrated into many aspects of your life. Interactive Internet services will be available not only on personal computers, but also on appliances throughout the household and on the road. Suppose home banking, Internet shopping, entertainment, games, access to business systems away from work — even a personal ATM that lets you download funds into a smart card via your phone.

The Java platform′s device-independent nature and network-oriented design ensures that services such as these can function securely on many different consumer platforms.

7．How Java Technology Makes Computing Easier

You don′t need to be a mechanic to drive a car. Why should you have to be a "system administrator" to use a computer?

With Java software, you don′t have to be one. Java technology eliminates many of the problems associated with installing and running applications. That′s because generally the Java user does not have to configure, load, or install anything. Instead, computing devices tap into the network and funnel its power to the user. Upgrades are automatic, making installation and configuration obsolete.

It′s a whole new way of thinking about computers. Just click on a link or press a button and you′re ready to go.

Most important, right from the beginning, the Java platform was designed to run programs securely on networks, which means that it integrates safely with the existing systems on your network.

8．How the Java Platform Works

Java technology-based software is typically delivered over a network and can also be installed on computers from traditional media such as CD-ROMs. The same program or software component can run on a variety of computers and devices.

Programs written in the Java programming language run on so many different kinds of systems thanks to a component of the platform called the Java virtual machine — a kind of translator that turns general Java platform instructions into tailored commands that make the devices do their work.

New Words

Java [ˈdʒɑːvə]	爪哇，一种新型的计算机语言
trademark [ˈtreɪdmɑːk] *n.*	商标
object-oriented [ˈɒbdʒɪktˈɔːrɪəntɪd] *a.*	面向对象的
platform-independent [ˈplætfɔːmˌɪndɪˈpendənt] *a.*	平台独立的
multithreaded [ˌmʌltiˈθredɪd] *a.*	多线程的
environment [ɪnˈvaɪrənmənt] *n.*	环境
foundation [faʊnˈdeɪʃn] *n.*	基础，根本
smart [smɑːt] *a.*	智能
supercomputer [ˈsuːpəkəmˌpjuːtə(r)] *n.*	超级计算机
underlying [ˌʌndəˈlaɪɪŋ] *a.*	基础的，根本的，潜在的
explain [ɪkˈspleɪn] *vt.*	解释，说明
compile [kəmˈpaɪl] *vt.*	编译，编辑，汇编
interpret [ɪnˈtɜːprɪt] *vt.*	解释，说明，翻译
porting [ˈpɔːtɪŋ] *n.*	移植
attend [əˈtend] *vt.*	出席，参加
hire [ˈhaɪə(r)] *vt.*	雇佣，租用
interpreter [ɪnˈtɜːprɪtə(r)] *n.*	口译人员，翻译
attendee [əˌtenˈdiː] *n.*	到会者，出席者
mumble [ˈmʌmbl] *n.*	喃喃而语，咕哝
costly [ˈkɒstlɪ] *a.*	昂贵的，代价高的，费用大的
time-consuming [ˈtaɪmkənˌsjuːmɪŋ] *a.*	耗时间的
earphone [ˈɪəfəʊn] *n.*	耳机
universal [ˌjuːnɪˈvɜːsl] *a.*	普遍的，通用的；宇宙的，世界的
intelligible [ɪnˈtelɪdʒəbl] *a.*	可理解的
whatsoever [ˌwɒtsəʊˈevə(r)] *pron.*	无论什么
interpretable [ɪnˈtɜːprɪtəbl]	能说明的，能翻译的，可解释的
semantics [sɪˈmæntɪks] *n.*	语义学，语义
resolve [rɪˈzɒlv] *vt.*	解决；决心，决定；分解，溶解
exponentially [ˌekspəˈnenʃəlɪ] *adv.*	按指数规律地
phenomenon [fəˈnɒmɪnən] *n.*	现象
opportunity [ˌɒpəˈtjuːnətɪ] *n.*	机会，时机
impact [ˈɪmpækt] *n.*	影响，冲击
vt.	影响，冲击
challenge [ˈtʃælɪndʒ] *n.*	挑战
expand [ɪkˈspænd] *vt.*	扩大，扩张，发展
complexity [kəmˈpleksətɪ] *n.*	复杂性
address [əˈdres] *vt.*	提出，论述
n.	地址

utilize [▯♑◆💻♦♓●♋♓⌘] *vt.*	**利用，应用**
assemble [☯▯⬧♏❍♌●] *vt.*& *vi.*	**集合，装配，汇编**
fundamentally [♐✈■♎☜▯❍♏■♦☜●♓] *adv.*	**基础地，根本地**
component [&☯❍▯◻☯◆■☯■♦] *n.*	**成分，部件，元件，组成部分**
revolutionary [♍❒♏❖☯▯●◆💻☞☯■☯❒♓] *a.*	**革命的；创新的，改革的**
nimble [▯■♓❍♌●] *a.*	**敏捷的；灵活的；灵巧的，机敏的**
interactive [♍♓■♦☜❒▯✌&♦♓❖] *a.*	**交互式的**
applet [▯✌◻●♓♦] *n.*	Java **小程序**
streamline [▯⬧♦❒♓💻❍●♋♓■] *vt.*	**把……制成流线型，把……连成一个整体**
securely [⬧♓▯&♑◆☜●♓] *adv.*	**安全地**
tailored [▯♦♏♓●☜♎] *a.*	**简明的，简洁的，特制的**
modular [▯❍☝♎♑◆●☜] *a.*	**模块化的，积木式的**
lower [▯●☯◆☯] *vt.*	**降低，减少**
cost [&☝⬧♦] *n.*	**成本，代价；价钱**
entertainment [♏■♦☯▯♦♏♓■❍☯■♦] *n.*	**公众；娱乐；招待，款待**
incompatibility [▯♓■&☜❍♍◻✌♦☜▯♌♓●♓♦♓] *n.*	**不兼容，不相容，不一致，不兼容性**
invaluable [♓■▯❖✌●♑◆☜♌●] *a.*	**无法估价的，无价的，非常宝贵的**
asset [▯✌⬧♏♦] *n.*	**资产，财产，财富，有用的东西**
installation [♍♓■⬧♦☯▯●♏♓☞☯■] *n.*	**安装**
headache [▯♒♏♎♏♓&] *n.*	**头痛；让人头痛的事，难办的事**
administrative [☜♎▯❍♓■♓⬧♦❒☜♦♓❖] *a.*	**行政的；管理的**
maintenance [▯❍♏♓■♦♓■☯■⬧] *n.*	**维护，维修**
replacement [❒♓▯◻●♏♓⬧❍☯■♦] *n.*	**代替，替换；代替者，替换物**
scalable [▯⬧&♏♓●☜♌●] *a.*	**可升级的**
modification [♍❍☝♎♓♐♓▯&♏♓☞☯■] *n.*	**更改，修改**
infinite [▯♓■♐♓■♓♦] *a.*	**无限的，无穷的，极大的**
network-oriented [▯■♏♦⬧☜💻&▯☼💻❒♓♏■♦♓♎] *a.*	**面向网络的**
device-independent [♎♓▯❖♋♓⬧♓■♎♓▯◻♏■♎☜■♦] *a.*	**设备独立的**
unthinkably [✈■▯♆♓☠&☯♌●♓] *adv.*	**想象不到的，无法设想的；不可能的**
bonus [▯♌☜◆■☜⬧] *n.*	**奖金，红利；附带的优点，意外收获**
appliance [☯▯◻●♋♓☯■⬧] *n.*	**器具，仪表，设备**
household [▯♒♋◆⬧♒☯◆●♎] *a.*	**家庭的，普通的，平常的**
mechanic [❍♓▯&✌■♓&] *n.*	**机械工，机修工**
administrator [☜♎▯❍♓■♓⬧♦❒♏♓♦☜] *n.*	**管理员**
download [▯♎♋◆■●☯◆♎] *vt.*	**下载**
configure [&☜■▯♐♓♈☜] *vt.*	**配置**
funnel [▯♐✈■☜●] *n.*	**漏斗**
configuration [&☜■♍♐♓♈♑◆▯❒♏♓☞☜■] *n.*	**配置；组态，结构，布局；格局**
obsolete [▯☝♌⬧☯●♓💻♦] *a.*	**废弃的；过时的**

Phrases

platform independence	平台独立
smart card	智能卡
regardless of	不顾，不管
regard as …	把……认作，视为，看作
communicate with …	与……交流，与……通信
byte code	字节代码
system software	系统软件
virtual machine	虚拟机
error prone	易出错的
language barrier	语言障碍
be analogous to …	与……类似，与……相似，可与……比拟
arise from …	起因于，由于……而产生，是……的结果
interpretation process	翻译过程，解释过程，说明过程
Internet screen phone	因特网屏幕电话
position sb.to do sth.	使某人处在做某事的地位，使某人能够做某事
consumer gadget	用户装置，用户小机件
the flow of information	信息流
mobile phone	移动电话，手机
cash machine	收款机，收银机，现金出纳机
set-top box	顶置盒，顶置匣
an array of	一批，一排，一系列
Java Language Environment White Paper	爪哇语言环境白皮书
tap …into	把……接进

Abbreviations

TCO (Total Cost of Ownership)	总拥有成本，总使用成本

Notes

[1] The Java virtual machine can explain or interpret that byte code to any platform on which the Java virtual machine is installed.

本句中，on which the Java virtual machine is installed **是一介词前置的定语从句，修饰** any platform**。**

在口语中，若关系代词在定语从句中做介词的宾语时，通常用 whom、which **或** that**。此时介词放在从句的后面，关系代词可以省略。但是，在正式书面语，特别是在科技英语中，介词放在关系代词之前。此时，只能使用关系代词** whom **或** which**，且不能省略关系代词。请看下例：**

This is the client for whom we have been looking.

The only thing about which he is not sure is how to use this tool.

本句意为：

Java **虚拟机能够给安装** Java **虚拟机的任一平台说明或解释该字节代码。**

[2] But suppose you discover a language that can be understood by anyone wearing a special and inexpensive earphone that contains a universal interpreter that makes the new language instantly intelligible — no language barriers whatsoever.

本句中，that can be understood by anyone **是一个定语从句，修饰和限定** a language **；现在分词短语** wearing a special, inexpensive earphone **做** anyone **的定语 定语从句** that contains a universal interpreter **修饰和限定** earphone **；定语从句** that makes the new language instantly intelligible **修饰和限定** interpreter**。**

本句意为：

但是，假定你发现了一种带上特制的、廉价的耳机就可以听懂的语言，这种耳机包括一个通用翻译器能够使新语言即刻被理解——没有语言障碍。

[3] Most important, right from the beginning, the Java platform was designed to run programs securely on networks, which means that it integrates safely with the existing systems on your network.

本句中，which means that it integrates safely with the existing systems on your network. **是一个非限定性定语从句，**which **指** the Java platform was designed to run programs securely on networks**。**

本句意为：

最重要的是，从一开始，Java **平台的设计是为了在网络上安全地运行程序，这意味着它能够与你网络上的现有系统安全整合。**

[4] Programs written in the Java programming language run on so many different kinds of systems thanks to a component of the platform called the Java virtual machine — a kind of translator that turns general Java platform instructions into tailored commands that make the devices do their work.

本句中，written in the Java programming language **是一过去分词短语做定语，修饰和限定** Programs **；**thanks to **表示原因；过去分词短语** called the Java virtual machine **做** the platform **的定语；—后是对** the Java virtual machine **的解释说明。定语从句** that turns general Java platform instructions into tailored commands **修饰和限定** a kind of translator**，而定语从句** that make the devices do their work. **修饰和限定** tailored commands**。**

本句意为：

由于有了叫做“Java **虚拟机”的平台，用** Java **编程语言编写的程序能够在许多不同的系统中运行。**Java **虚拟机是一种编译器，它能够把普通的** Java **平台指令翻译成特殊的命令。这些指令使设备工作。**

Exercises

1．根据课文内容，回答以下问题

（1）What is characteristic of Java?

（2）What is the function of Java virtual machine?

（3）How does Java work？

（4）What role does Sun play in developing Java?

（5）How does the Java platform work?

2．根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）

英 文 解 释	词　汇
An object-oriented programming language, developed by Sun Microsystems, Inc. It was designed to be secure and can be run on any platform	
Of or being a system or language that supports the use of objects	
platform-neutral	
A facility that can process multiple requests in parallel	
An extremely powerful mainframe computer used for complex mathematical calculations demanding high speed and storage	
In computer and electronics, a circuit board with built-in logic or firmware that gives it some kind of independent decision-making ability	
Changing a program in order to run it on a different computer or moving documents, graphics, and other files from one computer to another	
A small piece of code that can be transported over the Internet and executed on the recipient′s machine. The term is especially used to refer to such programs as they are embedded in line as objects in HTML documents on the World Wide Web	
Any activity intended to retain a functional unit in, or to restore it to, a state in which it can perform its required function	
In communications, to transfer a copy of a file from a remote computer to the requesting computer by means of a modem or network	

3．把下列句子翻译为中文

（1）Write Once, Run Anywhere.

（2）The Java technology is an object-oriented, platform-independent, multithreaded programming environment.

（3）When software written in the Java programming language is compiled with Java technology,

byte code results.

（4）With Java technology, you can use the same application from any kind of machine.

（5）Internet bandwidth will continue to grow exponentially over the next 10 to 15 years.

（6）The Java™ platform is a fundamentally new way of computing.

（7）With Java technology, the Internet and private networks become your computing environment.

（8）With Java technology, the Internet and private networks become your computing environment.

（9）Coupled with the power of networking, the Java platform is helping computer users to do things that were previously unimaginable.

（10）Java programming language software is scalable.

4．上机实践

通过 Internet **查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过** E-mail **发送给老师，并附上你收集资料的网址。**

（1）**简述** Java **发展过程。**

（2）Java **最新进展状况如何？**

（3）**简述** Java **与** Internet **的关系。**

（4）Sun **公司最近在** Java **领域正进行哪些工作？还有哪些公司对** Java **进行卓有成效的研究？**

Reading Material

Understanding the World Wide Web

The World Wide Web is a system of Internet servers that supports hypertext to access several Internet protocols on a single interface. The World Wide Web is often abbreviated as the Web or

WWW.

The World Wide Web was developed in 1989 by Tim Berners-Lee of the European Particle Physics Lab (CERN) in Switzerland. The initial purpose of the Web was to use networked hypertext to facilitate communication among its members, who were located in several countries. Word was soon spread beyond CERN, and a rapid growth in the number of both developers and users ensued. In addition to hypertext, the Web began to incorporate graphics, video and sound. The use of the Web has now reached global proportions.

Almost every protocol type available on the Internet is accessible on the Web. Internet protocols are sets of rules that allow for inter-machine communication on the Internet. The following major protocols are accessible on the Web.

- E-mail (Simple Mail Transport Protocol or SMTP): Distributes electronic messages and files to one or more electronic mailboxes.
- Telnet (Telnet Protocol): Facilitates login to a computer host to execute commands.
- FTP (File Transfer Protocol): Transfers text or binary files between an FTP server and client.
- Usenet (Network News Transfer Protocol or NNTP): Distributes Usenet news articles derived from topical discussions on newsgroups.
- HTTP (HyperText Transfer Protocol): Transmits hypertext over networks. This is the protocol of the WWW.

Many other protocols are available on the Web. To name just one example, the Voice over Internet Protocol (VoIP) allows users to place a telephone call over the Web.

The World Wide Web provides a single interface for accessing all these protocols. This creates a convenient and user-friendly environment. It is no longer necessary to be conversant in these protocols within separate command-level environments. The Web gathers together these protocols into a single system. Because of this feature and because of the Web's ability to work with multimedia and advanced programming languages, the World Wide Web is the fastest-growing component of the Internet.

1. Hypertext: the Motion of the Web

The operation of the Web relies primarily on hypertext as its means of information retrieval. HyperText is a document containing words that connect to other documents. These words are called links and are selectable by the user. A single hypertext document can contain links to many documents. In the context of the Web, words or graphics may serve as links to other documents, images, video and sound. Links may or may not follow a logical path, as each connection is programmed by the creator of the source document. Overall, the WWW contains a complex virtual web of connections among a vast number of documents, graphics, videos and sounds.

Producing hypertext for the Web is accomplished by creating documents with a language called HyperText Markup Language, or HTML. With HTML, tags are placed within the text to accomplish document formatting, visual features such as font size, italics and bold, and the creation of hypertext links. Graphics may also be incorporated into an HTML document. HTML is an evolving language, with new tags being added as each upgrade of the language is developed and

released. The World Wide Web Consortium, led by Tim Berners-Lee, coordinates the efforts of standardizing HTML.

2．Pages on the Web

The World Wide Web consists of files called pages or Web pages, containing information and links to resources throughout the Internet.

Web pages can be created by user activity. For example, if you visit a Web search engine and enter keywords on the topic of your choice, a page will be created containing the results of your search. In fact, an increasing amount of information found on the Web today is served from databases, creating temporary Web pages "on the fly" in response to user queries.

Access to Web pages may be accomplished by:

- Entering an Internet address and retrieving a page directly.
- Browsing through pages and selecting links to move from one page to another.
- Searching through subject directories linked to organized collections of Web pages.
- Entering a search statement at a search engine to retrieve pages on the topic of your choice.

3．Retrieving Documents on the Web: the URL

URL stands for Uniform Resource Locator. The URL specifies the Internet address of a file stored on a host computer connected to the Internet. Every file on the Internet, no matter what its access protocol, has a unique URL. Web software programs use the URL to retrieve the file from the host computer and the directory in which it resides. This file is then displayed on the monitor connected to the user's local machine.

URLs are translated into numeric addresses using the Internet Domain Name System (DNS). The numeric address is actually the "real" URL. Since numeric strings are difficult for humans to use, alphanumeric addresses are employed by end users. Once the translation is made, the Web server can send the requested page to the user's Web browser.

Anatomy of a URL

This is the format of the URL:

protocol://host/path/filename

For example, this is a URL on the home page of the House Committee on Agriculture of the U.S. House of Representatives:

http://www.house.gov/agriculture/schedule.htm

This URL is typical of addresses hosted in domains in the United States.

Structure of this URL:

（1）Protocol: http

（2）Host computer name: www

（3）Second-level domain name: house

（4）Top-level domain name: gov

（5）Directory name: agriculture

（6）File name: schedule.htm

Note how much information about the content of the file is present in this well-constructed

URL. Other examples:

telnet://opac.albany.edu the University at Albany library text-based catalog

ftp://ftp.uu.net/graphics/picasso a file at an ftp site

Several top-level domains (TLDs) are common in the United States:

com	commercial enterprise
edu	educational institution
gov	U.S. government entity
mil	U.S. military entity
net	network access provider
org	usually nonprofit organizations

New domain names were approved in November 2000 by the Internet Corporation for Assigned Names and Numbers (ICANN): .biz, .museum, .info, .pro (for professionals) .name (for individuals), .aero (for the aerospace industry), and .coop (for cooperatives). These domain names are beginning to become available.

In addition, dozens of domain names have been assigned to identify and locate files stored on host computers in countries around the world. These are referred to as two-letter Internet country codes, and have been standardized by the International Standards Organization as ISO 3166. For example:

ch	Switzerland
de	Germany
jp	Japan
uk	United Kingdom

4．How to access the World Wide Web: Web Browsers

（1）Types of Browsers

To access the World Wide Web, you must use a Web browser. A browser is a software program that allows users to access and navigate the World Wide Web. There are two types of browsers:

Graphical: Text, images, audio and video are retrievable through a graphical software program such as Netscape Navigator and Internet Explorer. These browsers are available for both Windows-based and Macintosh computers. Navigation is accomplished by pointing and clicking with a mouse on highlighted words and graphics.

You can install a graphical browser such as Netscape Navigator in your Windows-based or Macintosh machine. Navigator is available for downloading on the Netscape Web site: http://home.netscape.com/. Microsoft′s Internet Explorer is available from the Microsoft Web site: http://www.microsoft.com/. To use these programs to access the Web, you need a connection to the Internet. This is accomplished through such means as an Ethernet connection, a dialup connection known as a SLPP or PPP, or a cable modem.

Text: Lynx is a browser that provides access to the Web in text-only mode. Navigation is accomplished by highlighting emphasized words in the screen with the arrow up and down keys,

and then pressing the forward arrow (or Enter) key to follow the link.

（2）Extending the Browser: Plug-Ins

Software programs may be configured to a Web browser in order to enhance its capabilities. When the browser encounters a sound, image or video file, it hands off the data to other programs, called plug-ins, to run or display the file. Working in conjunction with plug-ins, browsers can offer a seamless multimedia experience. Many plug-ins are available for free.

File formats requiring plug-ins are known as MIME types. MIME stands for Multimedia Internet Mail Extension, and was originally developed to help E-mail software handle a variety of binary (non-ASCII) file attachments. The use of MIME has expanded to the Web. For example, the basic MIME type handled by Web browsers is text/html associated with the file extension .html.

A common plug-in utilized on the Web is the Adobe Acrobat Reader. The Acrobat Reader allows you to view documents created in Adobe′s Portable Document Format (PDF). These documents are the MIME type application/pdf and are associated with the file extension .pdf. When the Acrobat Reader has been configured to your browser, the program will open and display the file requested when you click on a hyper-linked file name with the suffix .pdf. The latest versions of the Acrobat Reader allow for the viewing of documents within the browser window.

Web browsers are often standardized with a small suite of plug-ins, especially for playing multimedia content. Additional plug-ins may be obtained at the browser′s Web site, at special download sites on the Web, or from the Web sites of the companies that created the programs. The number of available plug-ins is increasing rapidly.

Once a plug-in is configured to your browser, it will automatically launch when you choose to access a file type that it uses.

（3）Beyond Plug-Ins: Active X

ActiveX is a technology developed by Microsoft which may make plug-ins less necessary. ActiveX offers the opportunity to embed animated objects, data and computer code on Web pages. A web browser supporting ActiveX can render most items encountered on a Web page. For example, Active X allows users to view three-dimensional VRML worlds in a Web browser without the use of a VRML plug-in. As another example of the power of ActiveX, this technology can allow you to view and edit PowerPoint presentations directly within your Web browser. ActiveX works best with Microsoft′s Internet Explorer browser.

5．The Experience of the Web

Today′s World Wide Web presents an ever-diversified experience of multimedia, programming languages and real-time communication. There is no question that it is a challenge to keep up with the rapid pace of developments. The following presents a brief description of some of the more important trends to watch.

（1）Multimedia

The Web has become a broadcast medium. It is possible to listen to audio and video over the Web both pre-recorded and live. For example, you can visit the sites of various news organizations and view the same videos shown on the nightly television news. Several plug-ins are available for

viewing these videos. For example, Apple′s Quick Time Player downloads files with the .mov extension and displays these as " movies " in a small window on your computer screen. Quick Time files can be quite large, and it may take patience to wait for the entire movie to download into your computer before you can view it.

The problem of slow download times has been answered by a revolutionary development in multimedia capability: streaming media. In this case, audio or video files are played as they are downloading or streaming into your computer. Only a small wait, called buffering, is necessary before the file begins to play. The RealPlayer plug-in plays streaming audio and video files. Extensive files such as interviews, speeches and hearings work very well with the RealPlayer. The RealPlayer is also ideal for the broadcast of real-time events. These may include press conferences, live radio and television broadcasts, concerts, etc. The Windows Media Player is another streaming media player. Many sites offer the option to use one player or the other. A list of sites that make use of these programs is available on the page, Multimedia on the Web.

Shockwave presents another multimedia experience. Shockwave allows for the creation and implementation of an entire multimedia display combining graphics, animation and sound.

Sound files, including music, may also be heard on the Web. It is not uncommon to visit a Web page and hear background music. Sound files are also available for downloading independent of Web page visits. Sound files of many types are supported by the Web with the appropriate plug-ins. The MP3 file format, and the choice of supporting plug-ins, is the latest music trend to sweep the Web. The famous Napster site allows for the exchange of MP3 files.

Live cams are another aspect of the multimedia experience available on the Web. Live cams are video cameras that send their data in real time to a Web server. These cams may appear in all kinds of locations, both serious and whimsical: an office, on top of a building, a scenic locale, a special event, and so on.

（2）Programming Languages and Functions

The use of existing and new programming languages has extended the capabilities of the Web. What follows is a basic guide to a group of the more common languages and functions in use on the Web today.

CGI, Active Server Pages: CGI (Common Gateway Interface) refers to a specification by which programs can communicate with a Web server. A CGI program, or script, is any program designed to accept and return data that conforms to the CGI specification. The program can be written in any programming language, including C, Perl, and Visual Basic Script. A common use for a CGI script is to process an interactive form on a Web page. For example, you might fill out a form ordering a book through Interlibrary Loan. The script processes your information and sends it to a designated E-mail address in the Interlibrary Loan department.

Another type of dynamically generated Web page is called Active Server Pages (ASP). Developed by Microsoft, ASPs are HTML pages that include scripting and create interactive Web server applications. The scripts run on the server, rather than on the Web browser, to generate the HTML pages sent to browsers. Visual Basic and JScript (a subset of JavaScript) are often used for

the scripting. ASPs end in the file extension .asp.

Java/Java Applets: Java is probably the most famous of the programming languages of the Web. Java is an object-oriented programming language similar to C++. Developed by Sun Microsystems, the aim of Java is to create programs that will be platform independent. The Java motto is, "Write once, run anywhere." A perfect Java program should work equally well on a PC, Macintosh, Unix, and so on, without any additional programming. This goal has yet to be realized. Java can be used to write applications for both Web and non-Web use.

Web-based Java applications are usually in the form of Java applets. These are small Java programs called from an HTML page that can be downloaded from a Web server and run on a Java-compatible Web browser. A few examples include live newsfeeds, moving images with sound, calculators, charts and spreadsheets, and interactive visual displays. Java applets can tend to load slowly, but programming improvements should lead to a shortened loading time.

JavaScript/JScript: JavaScript is a programming language created by Netscape Communications. Small programs written in this language are embedded within an HTML page, or called externally from the page, to enhance the page's the functionality. Examples of JavaScript include moving tickers, drop-down menus, real-time calendars and clocks, and mouse-over interactions. JScript is a similar language developed by Microsoft and works with the company's Internet Explorer browser.

VRML: VRML (Virtual Reality Modeling Language) allows for the creation of three-dimensional worlds. These may be linked from Web pages and displayed with a VRML viewer. Netscape Communicator comes with the Cosmo viewer for experiencing these three-dimensional worlds. One of the most interesting aspects of VRML is the option to "enter" the world and control your movements within the world.

XML: XML (eXtensible Markup Language) is a Web page creation language that enables designers to create their own customized tags to provide functionality not available with HTML. XML is a language of data structure and exchange, and allows developers to separate form from content. At present, this language is little used as Web browsers are only beginning to support it. In May 1999, however, the W3 Consortium announced that HTML 4.0 has been recast as an XML application called XHTML. This move will have a significant impact on the future of both XML and HTML.

（3）Real-Time Communication

Text, audio and video communication can occur in real time on the Web. This capability allows people to conference and collaborate in real time. In general, the faster the Internet connection, the more successful the experience.

At its simplest, chat programs allow multiple users to type to each other in real time. Internet Relay Chat and America Online's Instant Messenger are prime examples of this type of program. The development of a messaging protocol is underway. Such a protocol would allow for the expansion of this capability throughout the Internet.

More enhanced real-time communication offers an audio and/or video component. CU-See Me is one of the most popular software programs of this type. Even more elaborate are programs that allow for true real-time collaboration. Microsoft's NetMeeting and Netscape's Conference

(available with Communicator) are good examples of this.

Featured collaboration tools include following.

- audio: conduct a telephone conversation on the Web.
- video: view your audience.
- file transfer: send files back and forth among participants.
- chat: type in real time.
- whiteboard: draw, mark up, and save images on a shared window or board.
- document/application sharing: view and use a program on another′s desktop machine.
- collaborative Web browsing: visit Web pages together.

Currently no standard exists that will work among all conferencing programs.

New Words

hypertext	超文本
CERN (European Particle Physics Lab)	欧洲粒子物理实验室
intermachine communication	机器间通信
Network News Transfer Protocol	网络消息传输协议
VoIP (Voice over Internet Protocol)	基于因特网协议的语音
conversant	熟悉的，通晓的
SMTP (Simple Mail Transport Protocol)	简单邮件传送协议
Telnet (TELecommunication NETwork)	远程通信网
Telnet Protocol	Telnet 协议
Usenet	世界性的新闻组网络系统
NNTP (Network News Transfer Protocol)	网络新闻传送协议
derive from	来自，源自，出自
topical	专题的，总论的，当前有关的
newsgroup	新闻组
user-friendly	用户友好的
URL (Uniform Resource Locator)	在 Internet 的 WWW 服务程序上用于指定信息位置的表示方法
alphanumeric	字母数字混合编制的，字母数字的
search engine	搜索引擎
DNS (Domain Name System)	域名系统
end user	终端用户
TLDs (Top-Level Domains)	顶级域名
ISO (International Standards Organization)	国际标准化组织
PPP (Peer-Peer Protocol)	端对端协议
MIME (Multimedia Internet Mail Extension)	多媒体因特网邮件扩展
ASCII (American Standard Code for Information Interchange	美国信息交换标准码
PDF (Portable Document Format)	轻便文档格式
VRML (Virtual Reality Modeling Language)	虚拟真实模型语言
CGI (Common Gateway Interface)	通用网关接口

ASP (Active Server Pages)	**动态服务器页面**
script	**脚本**
whiteboard	**白板**

Unit 14

Text

Object-Oriented Programming Concepts

1. What is an Object

Objects are key to understanding object-oriented technology. You can look around you now and see many examples of real-world objects: your dog, your desk, your television set, your bicycle.

These real-world objects share two characteristics: They all have state and behavior. For example, dogs have state (name, color, breed, hungry) and behavior (barking, fetching, and wagging tail). Bicycles have state (current gear, current pedal cadence, two wheels, number of gears) and behavior (braking, accelerating, slowing down, changing gears).

Software objects are modeled after real-world objects in that they too have state and behavior. A software object maintains its state in one or more variables. A variable is an item of data named by an identifier. A software object implements its behavior with methods. A method is a function (subroutine) associated with an object.

Definition: An object is a software bundle of variables and related methods.

You can represent real-world objects by using software objects. You might want to represent real-world dogs as software objects in an animation program or a real-world bicycle as a software object in the program that controls an electronic exercise bike. You can also use software objects to model abstract concepts. For example, an event is a common object used in GUI window systems to represent the action of a user pressing a mouse button or a key on the keyboard.

Everything that the software object knows (state) and can do (behavior) is expressed by the variables and the methods within that object. A software object that modeled your real-world bicycle would have variables that indicated the bicycle′s current state: its speed is 10 mph, its pedal cadence is 90 rpm, and its current gear is the 5th gear. These variables are formally known as instance variables because they contain the state for a particular bicycle object, and in object-oriented terminology, a particular object is called an instance.

In addition to its variables, the software bicycle would also have methods to brake, change the pedal cadence, and change gears. (The bike would not have a method for changing the speed of the bicycle, as the bike′s speed is just a side effect of what gear it′s in, how fast the rider is pedaling,

whether the brakes are on, and how steep the hill is.) These methods are formally known as instance methods because they inspect or change the state of a particular bicycle instance.

The object's variables make up the center, or nucleus, of the object. Methods surround and hide the object's nucleus from other objects in the program. Packaging an object's variables within the protective custody of its methods is called encapsulation. This conceptual picture of an object — a nucleus of variables packaged within a protective membrane of methods — is an ideal representation of an object and is the ideal that designers of object-oriented systems strive for. However, it's not the whole story. Often, for practical reasons, an object may wish to expose some of its variables or hide some of its methods. In the Java programming language, an object can specify one of four access levels for each of its variables and methods. The access level determines which other objects and classes can access that variable or method. Variable and method access in Java is covered in Controlling Access to Members of a Class. Encapsulating related variables and methods into a neat software bundle is a simple yet powerful idea that provides two primary benefits to software developers.

- Modularity: The source code for an object can be written and maintained independently of the source code for other objects. Also, an object can be easily passed around in the system. You can give your bicycle to someone else, and it will still work.
- Information hiding: An object has a public interface that other objects can use to communicate with it. The object can maintain private information and methods that can be changed at any time without affecting the other objects that depend on it. You don't need to understand the gear mechanism on your bike to use it.

2. What is the Message

A single object alone is generally not very useful. Instead, an object usually appears as a component of a larger program or application that contains many other objects. Through the interaction of these objects, programmers achieve higher-order functionality and more complex behavior. Your bicycle hanging from a hook in the garage is just a bunch of titanium alloy and rubber; by itself, the bicycle is incapable of any activity. The bicycle is useful only when another object (you) interacts with it (pedal).

Software objects interact and communicate with each other by sending messages to each other. When object A wants object B to perform one of B's methods, object A sends a message to object B.

Sometimes, the receiving object needs more information so that it knows exactly what to do; for example, when you want to change gears on your bicycle, you have to indicate which gear you want. This information is passed along with the message as parameters.

The three components that comprise a message:

(1) The object to which the message is addressed.

(2) The name of the method to perform.

(3) Any parameters needed by the method.

These three components are enough information for the receiving object to perform the

desired method. No other information or context is required.

Messages provide two important benefits.

- An object′s behavior is expressed through its methods, so (aside from direct variable access) message passing supports all possible interactions between objects.
- Objects don′t need to be in the same process or even on the same machine to send and receive messages back and forth to each other.

3．What is a Class

In the real world, you often have many objects of the same kind. For example, your bicycle is just one of many bicycles in the world. Using object-oriented terminology, we say that your bicycle object is an instance of the class of objects known as bicycles. Bicycles have some state (current gear, current cadence, two wheels) and behavior (change gears, brake) in common. However, each bicycle′s state is independent of and can be different from that of other bicycles.

In object-oriented software, it′s also possible to have many objects of the same kind that share characteristics: rectangles, employee records, video clips, and so on. Like the bicycle manufacturers, you can take advantage of the fact that objects of the same kind are similar and you can create a blueprint for those objects. A software blueprint for objects is called a class.

Classes can define class variables. A class variable contains information that is shared by all instances of the class. For example, suppose that all bicycles had the same number of gears. In this case, defining an instance variable to hold the number of gears is inefficient; each instance would have its own copy of the variable, but the value would be the same for every instance. In such situations, you can define a class variable that contains the number of gears. All instances share this variable. If one object changes the variable, it changes for all other objects of that type. A class can also declare class methods. You can invoke a class method directly from the class, whereas you must invoke instance methods on a particular instance.

You probably noticed that objects and classes look very similar. And indeed, the difference between classes and objects is often the source of some confusion. In the real world, it′s obvious that classes are not themselves the objects they describe: A blueprint of a bicycle is not a bicycle. However, it′s a little more difficult to differentiate classes and objects in software. This is partially because software objects are merely electronic models of real-world objects or abstract concepts in the first place. But it′s also because the term“ object ”is sometimes used to refer to both classes and instances.

4．What is Inheritance

Generally speaking, objects are defined in terms of classes. You know a lot about an object by knowing its class. Even if you don′t know what a penny-farthing is, if I told you it was a bicycle, you would know that it had two wheels, handle bars, and pedals.

Object-oriented systems take this a step further and allow classes to be defined in terms of other classes. For example, mountain bikes, racing bikes, and tandems are all kinds of bicycles. In

object-oriented terminology, mountain bikes, racing bikes, and tandems are all subclasses of the bicycle class. Similarly, the bicycle class is the superclass of mountain bikes, racing bikes, and tandems.

Each subclass inherits state (in the form of variable declarations) from the superclass. Mountain bikes, racing bikes, and tandems share some states: cadence, speed, and the like. Also, each subclass inherits methods from the superclass. Mountain bikes, racing bikes, and tandems share some behaviors: braking and changing pedaling speed, for example.

However, subclasses are not limited to the state and behaviors provided to them by their superclass. Subclasses can add variables and methods to the ones they inherit from the superclass. Tandem bicycles have two seats and two sets of handle bars; some mountain bikes have an extra set of gears with a lower gear ratio.

Subclasses can also override inherited methods and provide specialized implementations for those methods. For example, if you had a mountain bike with an extra set of gears, you would override the "change gears" method so that the rider could use those new gears.

You are not limited to just one layer of inheritance. The inheritance tree, or class hierarchy, can be as deep as needed. Methods and variables are inherited down through the levels. In general, the farther down in the hierarchy a class appears, the more specialized its behavior.

The Object class is at the top of class hierarchy, and each class is its descendant (directly or indirectly). A variable of type Object can hold a reference to any object, such as an instance of a class or an array. Object provides behaviors that are required of all objects running in the Java Virtual Machine. For example, all classes inherit Object's to String method, which returns a string representation of the object.

Inheritance offers the following benefits:

Subclasses provide specialized behaviors from the basis of common elements provided by the superclass. Through the use of inheritance, programmers can reuse the code in the superclass many times.

Programmers can implement superclasses called abstract class that define "generic" behaviors. The abstract superclass defines and may partially implement the behavior, but much of the class is undefined and unimplemented. Other programmers fill in the details with specialized subclasses.

New Words

object [ɔbdʒikt] *n.*	**对象**
real-world [riəl wə:ld] *a.*	**现实世界的**
characteristic [kærəktəristik] *n.*	**特征，性能，特性**
state [steit] *n.*	**状态，态，情况，位置**
bark [bɑ:k] *n.*	**吠，狗叫；吠声**
wag [wæg] *vt.*	**摇摆，摇动**
tail [teil] *n.*	**尾巴，尾部**
gear [giə] *n.*	**齿轮变速，档，齿轮，传动装置**

brake [♌❒♏♓🙵] *n.* 刹车，闸
vt.& vi. 刹车
pedal [🕯◻♏♎●] *n.* 脚蹬，踏板
vi. 蹬自行车，踩……的踏板
cadence [🕯🙵♏♓♎☜■⬧] *n.* 步调，节奏，韵律
accelerate [☯🙵🕯⬧♏●☯❒♏♓⧫] *vt.* 加速
identifier [♋♓ 🕯♎♏■⧫♓♐♋♓☜] *n.* 标识符
subroutine [📪⬧✈♌❒◆💻🕯⧫♓💻■] *n.* 子程序
steep [⬧⧫♓💻◻] *a.* 陡峭的，险峻的
inspect [♓■🕯⬧◻♏🙵⧫] *vt.* 检查，视察
nucleus [🕯■🙰◆💻🙵●♓☯⬧] *n.* 核心，中心；核子
packaging [🕯◻✌🙵♓♎✞♓☠] *n.* 封装，包装
custody [🕯🙵✈⬧⧫☜♎♓] *n.* 保管，监视，收容
encapsulate [♓■🕯🙵✌◻⬧🙰◆●♏♓⧫] *vt.* 封装，包装
encapsulation [♓■📪🙵✌◻⬧🙰◆🕯●♏♓☞☜■] *n.* 封装，包装
bundle [🕯♌✈■♎●] *n.* 捆绑
conceptual [🙵☜■🕯⬧♏◻⧫☞◆☜●] 概念上的
membrane [🕯❍♏❍♌❒♏♓■] *n.* 膜，薄膜，膜片；隔板；表层
expose [♓🙵🕯⬧◻☯◆⌘] *vt.* 暴露；曝光
modularity [📪❍👍♎🙰◆🕯●✌❒♓⧫♓] *n.* 模块性
terminology [📪⧫☯💻❍♓🕯■👍●☯✞♓] *n.* 术语
hiding [🕯♒♋♓♎♓☠] *n.* 隐藏
private [🕯◻❒♋♓❖♓⧫] *a.* 私人的，私有的，秘密的
interaction [♓■⧫☯🕯❒✌🙵☞☯■] *n.* 交互作用，相互作用
message [🕯❍♏⬧♓♎✞] *n.* 消息
mechanism [🕯❍♏🙵☯■♓⌘☯❍] *n.* 机械装置；机件
achieve [☯🕯⧫☞♓💻❖] *vt.* 完成，达到
hang [♒✌☠] *vt.& vi.* 悬挂，挂
hook [♒◆🙵] *n.* 钩，钓钩
garage [🕯♑✌❒♋💻✞] *n.* 汽车库，汽车间，汽车修理厂
titanium [⧫♋♓🕯⧫♏♓■🙰☜❍] *n.* 钛
alloy [🕯✌●👍♓] *n.* 合金
rubber [🕯❒✈♌☯] *n.* 橡皮；橡胶
parameter [◻☯🕯❒✌❍♓⧫☯] *n.* 参数
class [🙵●♋💻⬧] *n.* 类
subclass [🕯⬧✈♌🙵●👌💻⬧] *n.* 子类
superclass [🕯⬧🙰◆💻◻☜📪🙵●👌💻⬧] *n.* 超类，父类
define [♎♓🕯♐♋♓■] *vt.* 定义
describe [♎♓⬧🕯🙵❒♋♓♌] *vt.* 描述
blueprint [🕯♌●◆💻📪◻❒♓■⧫] *n.* 蓝图
common [🕯🙵👍❍☯■] *a.* 公共的，公用的，共同的
n. 公共，公用
rectangle [🕯❒♏🙵⧫✌☠♑●] *n.* 矩形，方形
manufacturer [📪❍✌■🙰◆🕯♐✌🙵⧫☞☯❒☯] *n.* 厂商，生产者，制造者，制造商

inefficient [ɪnɪˈfɪʃənt] *a.*	效率低的，不胜任的，不熟练的
source [sɔːs] *n.*	来源，原因，出处
differentiate [ˌdɪfəˈrenʃɪeɪt] *vt.*	区别，区分
tandem [ˈtændəm] *n.*	双座自行车
inherit [ɪnˈherɪt] *vt.*	继承，遗传
inheritance [ɪnˈherɪtəns] *n.*	继承，遗传
hierarchy [ˈhaɪərɑːkɪ] *n.*	层次
descendant [dɪˈsendənt] *n.*	子代；后裔，子孙，后代
indirectly [ˌɪndəˈrektlɪ] *adv.*	间接地
reuse [ˌriːˈjuːz] *vt.*	重新使用，再使用
n.	重新使用，再使用
undefined [ˌʌndɪˈfaɪnd] *a.*	未下定义的，不明确的，模糊的
unimplemented [ˌʌnˈɪmplɪmentɪd] *a.*	未实现的，未实施的，未执行的

Phrases

current gear	当前档
slow down	减速
change gears	换档
be modeled after …	仿照，模仿，以……为模型
side effect	副作用
instance methods	实体方法
make up	构成
strive for …	奋斗，争取，为……而努力
access level	存取级
pass around	绕
information hiding	信息隐藏
depend on	依靠，依赖，取决于
a bunch of	一束，一捆，一串，一束
be incapable of	不能，无能力，无资格，无法
interact with	相互作用，交相感应，反应
receiving object	接受对象
aside from …	除……以外
be independent of …	不依靠，不依赖，不取决于，与……无关，不受……的制约
class variable	类变量
instance variable	实体变量
source code	源代码
abstract concept	抽象概念
handle bar	自行车的车把

Abbreviations

GUI (Graphical User Interfaces)	图形用户界面

Notes

[1] Software objects are modeled after real-world objects in that they too have state and behavior.

本句中，in that they too have state and behavior **是一原因状语从句，修饰谓语** are modeled after，in that **等于** because。

本句意为：

因为软件对象也有状态和行为，它们是仿照现实世界中的对象而制作的。

[2] You might want to represent real-world dogs as software objects in an animation program or a real-world bicycle as a software object in the program that controls an electronic exercise bike.

本句中，might **表示推测，意思是“可能，也许”。**might **比** may **的可能性小。**or **后面省略了** you might want to represent。

本句意为：

你也许想用在动画程序中的软件对象代表现实世界中的狗，或者用控制电动自行车的程序中的软件对象代表现实世界中的自行车。

[3] Encapsulating related variables and methods into a neat software bundle is a simple yet powerful idea that provides two primary benefits to software developers.

本句中，Encapsulating related variables and methods into a neat software bundle **是一动名词短语，做句子的主语；**that provides two primary benefits to software developers **是一定语从句，修饰和限定** idea。

本句意为：

把相关变量和方法封装到一个纯软件捆中是一个简单而有力的想法，这给软件开发者提供了两大主要好处。

[4] You can invoke a class method directly from the class, whereas you must invoke instance methods on a particular instance.

本句中，whereas **的意思是“然而”,“但是”，表示对比。**

本句意为：

你可以直接从类中调用一个类方法，然而，你必须在某一特殊的实体上调用实体方法。

Exercises

1．**根据课文内容，回答以下问题**

（1）What is characteristic of Object?

（2）What does information hiding mean?

（3）What are the components that comprise a message?

（4）What can subclasses do besides inheriting state from the superclass?

（5）Compared with the traditional method, what is the main advantage of object-oriented technology?

2．根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）

英 文 解 释	词　汇
Human-readable program statements, written in a high-level or assembly language, which are not directly readable by a computer	
Any text string used as a label, such as the names of variables, arrays, records, labels, procedures，etc	
A routine that can be part of another routine	
Establishing a value for a variable or symbol or establishing what the variable represents	
To represent data or a computer program in a symbolic form that can be accepted by a processor	
In OOP, a variable including both routines and data is treated as a discrete entity	
Treating a collection of structures information as a whole without affecting or taking notice of its internal structure	
A term for a program section that contains only data which can be shared by two or more programs or subprograms	
Software that mimics the performance of a hardware device, such as a program that allows applications written for an Intel processor to be run on a Motorola chip	
A type of environment that represents programs, files and options by means of icons, menus and dialogue box on the screen	

3．把下列句子翻译为中文

（1）Objects are key to understanding object-oriented technology.

（2）A software object maintains its state in one or more variables.

（3）A variable is an item of data named by an identifier.

（4）A method is a function (subroutine) associated with an object.

（5）An object is a software bundle of variables and related methods.

（6）The source code for an object can be written and maintained independently of the source code for other objects.

（7）An object has a public interface that other objects can use to communicate with it.

（8）A single object alone is generally not very useful.

（9）Software objects interact and communicate with each other by sending messages to each other.

（10）A class variable contains information that is shared by all instances of the class.

4．上机实践

通过 Internet **查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过** E-mail **发送给老师，并附上你收集资料的网址。**

（1）**简述**object-oriented technology **发展过程。**

（2）**举例说明**object-oriented technology **的应用。**

（3）**简述**object-oriented technology **的发展对软件工程的影响。**

（4）**整理**object-oriented technology **所涉及的专业词汇，列出中英文对照表。**

Reading Material

Introduction to TCP/IP

TCP and IP were developed by a Department Of Defense (DOD) research project to connect a number of different networks designed by different vendors into a network of networks — the“Internet”. It was initially successful because it delivered a few basic services that everyone needs such as file transfer, electronic mail, remote logon, across a very large number of client and server systems. Several computers in a small department can use TCP/IP along with other protocols on a single LAN. The IP component provides routing from the department to the enterprise network, then to regional networks, and finally to the global Internet. On the battlefield a communications network will sustain damage, so the DOD designed TCP/IP to be robust and automatically recover from any node or phone line failure.

This design allows the construction of very large networks with less central management. However, because of the automatic recovery, network problems can go undiagnosed and uncorrected for long periods of time.

As with all other communications protocols, TCP/IP is composed of layers:

- IP — is responsible for moving packet of data from node to node. IP forwards each packet based on a four-byte destination address (the IP number). The Internet authorities assign ranges of numbers to different organizations. The organizations assign groups of their numbers to departments. IP operates on gateway machines that move data from department to organization to region and then around the world.
- TCP — is responsible for verifying the correct delivery of data from client to server. Data can be lost in the intermediate network. TCP adds support to detect errors or lost data and to trigger retransmission until the data is correctly and completely received.

Sockets — is a name given to the package of subroutines that provide access to TCP/IP on most systems.

1. Network of Lowest Bidders

The Army puts out a bid on a computer and DEC wins the bid. The Air Force puts out a bid and IBM wins. The Navy bid is won by Unisys. Then the President decides to invade Grenada and the armed forces discover that their computers cannot talk to each other. The DOD must build a "network" out of systems each of which, by law, was delivered by the lowest bidder on a single contract.

The Internet Protocol was developed to create a Network of Networks — the "Internet".Individual machines are first connected to a LAN, (Ethernet or Token Ring). TCP/IP shares the LAN with other uses (a Novell file server, Windows for Workgroups peer systems). One device provides the TCP/IP connection between the LAN and the rest of the world.

To insure that all types of systems from all vendors can communicate, TCP/IP is absolutely standardized on the LAN. However, larger networks based on long distances and phone lines are more volatile. In the US, many large corporations would wish to reuse large internal networks based on IBM′s SNA. In Europe, the national phone companies traditionally standardize on X.25. However, the sudden explosion of high-speed microprocessors, fiber optics, and digital phone systems has created a burst of new options: ISDN, frame relay, FDDI, Asynchronous Transfer Mode (ATM). New technologies arise and become obsolete within a few years. With cable TV and phone companies competing to build the National Information Superhighway, no single standard can govern citywide, nationwide, or worldwide communications.

The original design of TCP/IP as a Network of Networks fits nicely within the current technological uncertainty. TCP/IP data can be sent across a LAN, or it can be carried within an internal corporate SNA network, or it can piggyback on the cable TV service. Furthermore, machines connected to any of these networks can communicate to any other network through gateways supplied by the network vendor.

2. Addresses

Each technology has its own convention for transmitting messages between two

machines within the same network. On a LAN, messages are sent between machines by supplying the six-byte unique identifier (the "MAC" address). In an SNA network, every machine has Logical Units with their own network address. DECNET, Appletalk, and Novell IPX all have a scheme for assigning numbers to each local network and to each workstation attached to the network.

On top of these local or vendor specific network addresses, TCP/IP assigns a unique number to every workstation in the world. This "IP number" is a four-byte value that, by convention, is expressed by converting each byte into a decimal number (0 to 255) and separating the bytes with a period. For example, the PC Lube and Tune server is 130.132.59.234.

An organization begins by sending electronic mail to Hostmaster@internic.net requesting assignment of a network number. It is still possible for almost anyone to get assignment of a number for a small "Class C" network in which the first three bytes identify the network and the last byte identifies the individual computer. The author followed this procedure and was assigned the numbers 192.35.91.* for a network of computers at his house. Larger organizations can get a "Class B" network where the first two bytes identify the network and the last two bytes identify each of up to 64 thousand individual workstations. Yale's Class B network is 130.132, so all computers with IP address 130.132.*.* are connected through Yale.

The organization then connects to the Internet through one of a dozen regional or specialized network suppliers. The network vendor is given the subscriber network number and adds it to the routing configuration in its own machines and those of the other major network suppliers.

There is no mathematical formula that translates the numbers 192.35.91 or 130.132 into "Yale University" or "New Haven, CT". The machines that manage large regional networks or the central Internet routers managed by the National Science Foundation can only locate these networks by looking each network number up in a table. There are potentially thousands of Class B networks, and millions of Class C networks, but computer memory costs are low, so the tables are reasonable. Customers that connect to the Internet, even customers as large as IBM, do not need to maintain any information on other networks. They send all external data to the regional carrier to which they subscribe, and the regional carrier maintains the tables and does the appropriate routing.

New Haven is in a border state, split 50-50 between the Yankees and the Red Sox. In this spirit, Yale recently switched its connection from the Middle Atlantic regional network to the New England carrier. When the switch occurred, tables in the other regional areas and in the national spine had to be updated, so that traffic for 130.132 was routed through Boston instead of New Jersey. The large network carriers handle the paperwork and can perform such a switch given sufficient notice. During a conversion period, the university was connected to both networks so that messages could arrive through either path.

3．Subnets

Although the individual subscribers do not need to tabulate network numbers or provide explicit routing, it is convenient for most Class B networks to be internally managed as a much

smaller and simpler version of the larger network organizations. It is common to subdivide the two bytes available for internal assignment into a one-byte department number and a one-byte workstation ID.

The enterprise network is built using commercially available TCP/IP router boxes. Each router has small tables with 255 entries to translate the one-byte department number into selection of a destination Ethernet connected to one of the routers. Messages to the PC Lube and Tune server (130.132.59.234) are sent through the national and New England regional networks based on the 130.132 part of the number. Arriving at Yale, the 59 department ID selects an Ethernet connector in the C& IS building. The 234 selects a particular workstation on that LAN. The Yale network must be updated as new Ethernets and departments are added, but it is not affected by changes outside the university or the movement of machines within the department.

4. An Uncertain Path

Every time a message arrives at an IP router, it makes an individual decision about where to send it next. There is concept of a session with a preselected path for all traffic. Consider a company with facilities in New York, Los Angeles, Chicago and Atlanta. It could build a network from four phone lines forming a loop (NY to Chicago to LA to Atlanta to NY). A message arriving at the NY router could go to LA via either Chicago or Atlanta. The reply could come back the other way.

How does the router make a decision between routes? There is no correct answer. Traffic could be routed by the“ clockwise ”algorithm (go NY to Atlanta, LA to Chicago). The routers could alternate, sending one message to Atlanta and the next to Chicago. More sophisticated routing measures traffic patterns and sends data through the least busy link.

If one phone line in this network breaks down, traffic can still reach its destination through a roundabout path. After losing the NY to Chicago line, data can be sent to NY to Atlanta to LA to Chicago. This provides continued service though with degraded performance. This kind of recovery is the primary design feature of IP. The loss of the line is immediately detected by the routers in NY and Chicago, but somehow this information must be sent to the other nodes. Otherwise, LA could continue to send NY messages through Chicago, where they arrive at a “ dead end ” . Each network adopts some Router Protocol which periodically updates the routing tables throughout the network with information about changes in route status.

If the size of the network grows, then the complexity of the routing updates will increase as will the cost of transmitting them. Building a single network that covers the entire US would be unreasonably complicated. Fortunately, the Internet is designed as a Network of Networks. This means that loops and redundancy are built into each regional carrier. The regional network handles its own problems and reroutes messages internally. Its Router Protocol updates the tables in its own routers, but no routing updates need to propagate from a regional carrier to the NSF spine or to the other regions unless, of course, a subscriber switches permanently from one region to another.

5. Undiagnosed Problems

IBM designs its SNA networks to be centrally managed. If any error occurs, it is reported to

the network authorities. By design, any error is a problem that should be corrected or repaired. IP networks, however, were designed to be robust. In battlefield conditions, the loss of a node or line is a normal circumstance. Casualties can be sorted out later on, but the network must stay up. So IP networks are robust. They automatically and silently reconfigure themselves when something goes wrong. If there is enough redundancy built into the system, then communication is maintained.

In 1975 when SNA was designed, such redundancy would be prohibitively expensive, or it might have been argued that only the Defense Department could afford it. Today, however, simple routers cost no more than a PC. However, the TCP/IP design that, "Errors are normal and can be largely ignored", produces problems of its own.

Data traffic is frequently organized around "hubs", much like airline traffic. One could imagine an IP router in Atlanta routing messages for smaller cities throughout the Southeast. The problem is that data arrives without a reservation. Airline companies experience the problem around major events, like the Super Bowl. Just before the game, everyone wants to fly into the city. After the game, everyone wants to fly out. Imbalance occurs on the network when something new gets advertised. Adam Curry announced the server at "mtv.com" and his regional carrier was swamped with traffic the next day. The problem is that messages come in from the entire world over high-speed lines, but they go out to mvt.com over what was then a slow speed phone line.

Occasionally a snowstorm cancels flights and airports are filled up with stranded passengers. Many go off to hotels in town. When data arrives at a congested router, there is no place to send the overflow. Excess packets are simply discarded. It becomes the responsibility of the sender to retry the data a few seconds later and to persist until it finally gets through. This recovery is provided by the TCP component of the Internet protocol.

TCP was designed to recover from node or line failures where the network propagates routing table changes to all router nodes. Since the update takes some time, TCP is slow to initiate recovery. The TCP algorithms are not tuned to optimally handle packet loss due to traffic congestion. Instead, the traditional Internet response to traffic problems has been to increase the speed of lines and equipment in order to say ahead of growth in demand.

TCP treats the data as a stream of bytes. It logically assigns a sequence number to each byte. The TCP packet has a header that says, in effect, "This packet starts with byte 379642 and contains 200 bytes of data". The receiver can detect missing or incorrectly sequenced packets. TCP acknowledges data that has been received and retransmits data that has been lost. The TCP design means that error recovery is done end-to-end between the Client and Server machine. There is no formal standard for tracking problems in the middle of the network, though each network has adopted some ad hoc tools.

6．Need to Know

There are three levels of TCP/IP knowledge. Those who administer a regional or national network must design a system of long distance phone lines, dedicated routing devices, and very large configuration files. They must know the IP numbers and physical locations of thousands of subscriber networks. They must also have a formal network monitor strategy to detect problems

and respond quickly.

Each large company or university that subscribes to the Internet must have an intermediate level of network organization and expertise. A half dozen routers might be configured to connect several dozen departmental LANs in several buildings. All traffic outside the organization would typically be routed to a single connection to a regional network provider.

However, the end user can install TCP/IP on a personal computer without any knowledge of either the corporate or regional network. Three pieces of information are required:

- The IP address assigned to this personal computer.
- The part of the IP address (the subnet mask) that distinguishes other machines on the same LAN (messages can be sent to them directly) from machines in other departments or elsewhere in the world (which are sent to a router machine).
- The IP address of the router machine that connects this LAN to the rest of the world.

In the case of the PCLT server, the IP address is 130.132.59.234. Since the first three bytes designate this department, d" subnet mask "is defined as 255.255.255.0 (255 is the largest byte value and represents the number with all bits turned on). It is a Yale convention (which we recommend to everyone) that the router for each department has station number 1 within the department network. Thus the PCLT router is 130.132.59.1. Thus the PCLT server is configured with the values:

My IP address: 130.132.59.234

Subnet mask: 255.255.255.0

Default router: 130.132.59.1

The subnet mask tells the server that any other machine with an IP address beginning 130.132.59.* is on the same department LAN, so messages are sent to it directly. Any IP address beginning with a different value is accessed indirectly by sending the message through the router at 130.132.59.1 (which is on the departmental LAN).

New Words

DOD (Department Of Defense)	**美国国防部**
put out a bid	**招标**
Unisys	**优利系统公司，美国大型计算机厂商之一**
bidder	**投标人，出价人**
remote logon	**远程登录**
uncorrected	**未修订的**
undiagnosed	**未诊断的**
packet	**信息包**
destination address	**目的地址**
trigger	**触发**
DEC	**数据设备公司**
Token Ring	**令牌网**
peer systems	**对等系统**
SNA (System Network Architecture)	**系统网络构架**

fiber optics	**光纤**
FDDI (Fiber Distribution Data Interface)	**光纤分布式数据接口**
Asynchronous Transfer Mode (ATM)	**异步传输模式**
superhighway	**超级高速公路**
citywide	**城域**
subnet	**子网**
router	**路由器**
workstation	**工作站**
end-to-end	**端对端**
ad hoc	**（拉丁语）特定的，尤其，格外**
PCLT (Parallel Communications Link Transmitter)	**并行通信链路发送器**
stranded	**陷于困境的**
congested	**交通堵塞的，拥挤的**
traffic congestion	**交通堵塞**
mask	**掩码**

Unit 15

Text

The Short History of Computer

Nothing epitomizes modern life better than the computer. 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 is 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.

1. First Generation Computers (1946～1956)

Computer development spurred by the war was the Electronic Numerical Integrator And Computer (ENIAC), produced by a partnership between the U.S. government and the University of Pennsylvania. Consisting of 18000 vacuum tubes, 70000 resistors and 5 million soldered joints, the computer was such a massive piece of machinery that it consumed 160 kilowatts of electrical power, enough energy to dim the lights in an entire section of Philadelphia. Developed by John Presper Eckert (1919～1995) and John W.Mauchly (1907～1980), ENIAC, unlike the Colossus and Mark I, was a general-purpose computer that computed at speeds 1000 times faster than Mark I.

In the mid-1940′s John von Neumann (1903～1957) joined the University of Pennsylvania team, initiating concepts in computer design that remained central to computer engineering for the next 40 years. Von Neumann designed the Electronic Discrete Variable Automatic Computer (EDVAC) in 1945 with a memory to hold both a stored program as well as data. This "stored memory" technique as well as the "conditional control transfer", that allowed the computer to be stopped at any point and then resumed, allowed for greater versatility in computer programming. The key element to the von Neumann architecture was the central processing unit, which allowed all computer functions to be coordinated through a single source. In 1951, the UNIVAC I (Universal Automatic Computer), built by Remington Rand, became one of the first commercially available computers to take advantage of these advances. Both the U.S. Census Bureau and General

Electric owned UNIVACs. One of UNIVAC′s impressive early achievements was predicting the winner of the 1952 presidential election, Dwight D. Eisenhower.

First generation computers were characterized by the fact that operating instructions were made to order for the specific task for which the computer was to be used. Each computer had a different binary-coded program called a machine language that told it how to operate. This made the computer difficult to program and limited its versatility and speed. Other distinctive features of first generation computers were the use of vacuum tubes (responsible for their breathtaking size) and magnetic drums for data storage.

2．Second Generation Computers (1956～1963)

By 1948, the invention of the transistor greatly changed the computer′s development. The transistor replaced the large, cumbersome vacuum tube in televisions, radios and computers. As a result, the size of electronic machinery has been shrinking ever since. The transistor was at work in the computer by 1956. Coupled with early advances in magnetic-core memory, transistors led to second generation computers that were smaller, faster, more reliable and more energy-efficient than their predecessors. The first large-scale machines to take advantage of this transistor technology were early supercomputers, Stretch by IBM and LARC by Sperry-Rand. These computers, both developed for atomic energy laboratories, could handle an enormous amount of data, a capability much in demand by atomic scientists. The machines were costly, however, and tended to be too powerful for the business sector′s computing needs, thereby limiting their attractiveness. Only two LARCs were ever installed: one in the Lawrence Radiation Labs in Livermore, California, for which the computer was named (Livermore Atomic Research Computer) and the other at the U.S. Navy Research and Development Center in Washington, D.C. Second generation computers replaced machine language with assembly language, allowing abbreviated programming codes to replace long, difficult binary codes.

Throughout the early 1960′s, there were a number of commercially successful second generation computers used in business, universities, and government from companies such as Burroughs, Control Data, Honeywell, IBM, Sperry-Rand, and others. These second generation computers were also of solid state design, and contained transistors in place of vacuum tubes. They also contained all the components we associate with the modern day computer: printers, tape storage, disk storage, memory, operating systems, and stored programs. One important example was the IBM 1401, which was universally accepted throughout industry, and is considered by many to be the Model T of the computer industry. By 1965, most large business routinely processed financial information using second generation computers.

It was the stored program and programming language that gave computers the flexibility to finally be cost effective and productive for business use. The stored program concept meant that instructions to run a computer for a specific function (known as a program) were held inside the computer′s memory, and could quickly be replaced by a different set of instructions for a different function. A computer could print customer invoices and minutes later design products or calculate

paychecks. More sophisticated high-level languages such as COBOL (Common Business- Oriented Language) and FORTRAN (Formula Translator) came into common use during this time, and have expanded to the current day. These languages replaced cryptic binary machine code with words, sentences, and mathematical formulas, making it much easier to program a computer. New types of careers (programmer, analyst, and computer systems expert) and the entire software industry began with second generation computers.

3. Third Generation Computers (1964～1971)

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. The quartz rock eliminated this problem. Jack Kilby, an engineer with Texas Instruments, developed the Integrated Circuit (IC) in 1958. The IC combined three electronic components onto a small silicon disc, which was made from quartz. Scientists later managed to fit even more components on a single chip, called a semiconductor. As a result, computers became ever smaller as more components were squeezed onto the chip. Another third-generation development included the use of an operating system that allowed machines to run many different programs at once with a central program that monitored and coordinated the computer's memory.

4. Fourth Generation Computer (1971～Present)

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. 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 an area about half the size of a U.S. dime helped diminish the size and price of computers. It also increased their power, efficiency and reliability. The Intel 4004 chip, developed in 1971, took the integrated circuit one step further by locating all the components of a computer (central processing unit, memory, and input and output controls) on a minuscule chip. Whereas previously the integrated circuit had had to be manufactured to fit a special purpose, now one microprocessor could be manufactured and then programmed to meet any number of demands. Soon everyday household items such as microwave ovens, television sets and automobiles with electronic fuel injection incorporated microprocessors.

Such condensed power allowed everyday people to harness a computer's power. They were no longer developed exclusively for large business or government contracts. By the mid-1970's, computer manufacturers sought to bring computers to general consumers. These minicomputers came complete with user-friendly software packages that offered even non-technical users an array of applications, most popularly word processing and spreadsheet programs. Pioneers in this field were Commodore, Radio Shack and Apple Computers. In the early 1980's, arcade video games such as Pac Man and home video game systems such as the Atari 2600 ignited consumer interest for more sophisticated, programmable home computers.

In 1981, IBM introduced its Personal Computer (PC) for use in the home, office and schools. The 1980′s saw an expansion in computer use in all three arenas as clones of the IBM PC made the personal computer even more affordable. The number of personal computers in use was more than doubled from 2 million in 1981 to 5.5 million in 1982. Ten years later, 65 million PCs were being used. Computers continued their trend toward a smaller size, working their way down from desktop to laptop computers (which could fit inside a briefcase) to palmtop (able to fit inside a breast pocket). In direct competition with IBM′s PC was Apple′s Macintosh line, introduced in 1984. Notable for its user-friendly design, the Macintosh offered an operating system that allowed users to move screen icons instead of typing instructions. Users controlled the screen cursor using a mouse, a device that mimicked the movement of one′s hand on the computer screen.

As computers became more widespread in the workplace, new ways to harness their potential developed. As smaller computers became more powerful, they could be linked together, or networked, to share memory space, software, and information and communicate with each other. As opposed to a mainframe computer, which was one powerful computer that shared time with many terminals for many applications, networked computers allowed individual computers to form electronic co-ops. Using either direct wiring, called a Local Area Network (LAN), or telephone lines, these networks could reach enormous proportions. A global web of computer circuitry, the Internet, for example, links computers worldwide into a single network of information. During the 1992 U.S. presidential election, vice-presidential candidate Al Gore promised to make the development of this so-called “information superhighway”, an administrative priority. Though the possibilities envisioned by Gore and others for such a large network are often years (if not decades) away from realization, the most popular use today for computer networks such as the Internet is electronic mail, or E-mail, which allows users to type in a computer address and send messages through networked terminals across the office or across the world.

5．Fifth Generation (Present and Beyond)

Defining the fifth generation of computers is somewhat difficult because the field is in its infancy. The most famous example of a fifth generation computer is the fictional HAL9000 from Arthur C. Clarke′s novel, 2001: A Space Odyssey. HAL performed all of the functions currently envisioned for real-life fifth generation computers. With artificial intelligence, HAL could reason well enough to hold conversations with its human operators, use visual input, and learn from its own experiences (Unfortunately, HAL was a little too human and had a psychotic breakdown, commandeering a spaceship and killing most humans on board).

Though the wayward HAL9000 may be far from the reach of real-life computer designers, many of its functions are not. Using recent engineering advances, computers are able to accept spoken word instructions (voice recognition) and imitate human reasoning. The ability to translate a foreign language is also moderately possible with fifth generation computers. This feat seemed a simple objective at first, but appeared much more difficult when programmers realized that human understanding relies as much on context and meaning as it does on the simple translation of words.

Many advances in the science of computer design and technology are coming together to enable the creation of fifth-generation computers. Two such engineering advances are parallel processing, which replaces Von Neumann's single central processing unit design with a system harnessing the power of many CPUs to work as one. Another advance is superconductor technology, which allows the flow of electricity with little or no resistance, greatly improving the speed of information flow. Computers today have some attributes of fifth generation computers. For example, expert systems assist doctors in making diagnoses by applying the problem-solving steps a doctor might use in assessing a patient's needs. It will take several more years of development before expert systems are in widespread use.

New Words

epitomize [ɪˈpɪtəmaɪz] *vt.* 概括，摘要，成为……的缩影，体现
infiltrate [ˈɪnfɪltreɪt] *vt.* 渗透
grocery [ˈgrəʊsəri] *n.* 食品杂货店
inventory [ˈɪnvəntri] *n.* 详细目录，总量，存货
computerized [kəmˈpjuːtəraɪzd] *a.* 计算机化的
computerize [kəmˈpjuːtəraɪz] *vt.* 用计算机处理，计算机化
untangled [ʌnˈtæŋgld] *a.* 解开的，整理的
promise [ˈprɒmɪs] *n.* 承诺
transaction [trænˈzækʃn] *n.* 处理（事务）
virtually [ˈvɜːtʃuəli] *adv.* 实质上，事实上
evolution [ˌiːvəˈluːʃn] *n.* 进展，发展，演变，进化
spur [spɜː] *vt.* 刺激，鞭策
partnership [ˈpɑːtnəʃɪp] *n.* 合伙，合股（企业）；(体育项目的）队友
massive [ˈmæsɪv] *a.* 结实的，厚重的
consume [kənˈsjuːm] *vt.* 消耗，消费
consumer [kənˈsjuːmə] *n.* 消耗者，消费者
resistor [rɪˈzɪstə] *n.* 电阻器
initiate [ɪˈnɪʃɪeɪt] *vt.& vi.* 开始，初始
concept [ˈkɒnsept] *n.* 概念，观念
program [ˈprəʊgræm] *n.* 程序
resume [rɪˈzjuːm] *n.* 摘要，概略；再用，恢复
versatility [ˌvɜːsəˈtɪlɪti] *n.* 多功能性
element [ˈelɪmənt] *n.* 要素，元素，单元
architecture [ˈɑːkɪtektʃə] *n.* 体系结构
coordinate [kəʊˈɔːdɪneɪt] *vt.* 调整，整理
commercially [kəˈmɜːʃəli] *adv.* 商业上
available [əˈveɪləbl] *a.* 可用到的，可利用的，有用的，有效的
impressive [ɪmˈpresɪv] *a.* 给人深刻印象的，感人的
achievement [əˈtʃiːvmənt] *n.* 成就，功绩
predict [prɪˈdɪkt] *vt.* 预言，预报

distinctive [ⵚ♓♦▯♦♓☠&♦♓❖] *a.* 有特色的，与众不同的
breathtaking [▯♌❒♏☬☜♦♏♓&♓☠] *a.* 惊人的，惊险的
task [♦♋💻♦&] *n.* 任务
data [▯ⵚ♏♓♦☯] *n.* 数据
invention [♓■▯❖♏■☞☯■] *n.* 发明，创造
replace [❒♓▯◘●♏♓♦] *vt.* 替换，取代，代替
cumbersome [▯&✈❍♌☯♦☯❍] *a.* 笨重的，麻烦的，讨厌的
shrink [☞❒♓■&] *vi.* 收缩，缩短
handle [▯♒✌■ⵚ●] *vt.* 处理，操作
abbreviated [☜▯♌❒♓💻❖♓♏♓♦♓ⵚ] *a.* 小型的，简短的
tape [♦♏♓◘] *n.* 磁带
flexibility [☜➶●♏&♦☯▯♌♓●♓♦♓] *n.* 弹性，柔韧性
invoice [▯♓■❖👌♓♦] *n.* 发票，货物，发货单
chip [♦☞♓◘] *n.* 芯片
formula [▯➶👌💻❍𝑒𝑟◆●☯] *n.* 公式，规则
career [&☯▯❒♓☯] *n.* 事业；经历；全速
damage [▯ⵚ✌❍♓ⵚ✞] *vt.* 损害
sensitive [▯♦♏■♦♓♦♓❖] *a.* 敏感的；灵敏的
quartz [&♦👌💻♦♦] *n.* 石英
squeeze [▯♦&♦♓💻⌘] *vt.* 压，挤
dime[ⵚ♋♓❍] *n.* （美国的）一角硬币
diminish [ⵚ♓▯❍♓■♓☞] *vt.* & *vi.* （使）减小，（使）变小
locate [●☯◆▯&♏♓♦] *vt.* 定位，位于；查找……的位置
manufacture [☜❍✌■𝑒𝑟◆▯➶✌&♦☞☯] *vt.* 加工，制造
fuel [➶𝑒𝑟◆☯●] *n.* 燃料；加燃料
injection [♓■▯ⵚ✞♏&☞☯■] *n.* 注射，（人造卫星等）射入轨道
incorporate [♓■▯&👌💻◘☯❒♏♓♦] *vt.*& *vi.* 合并
condensed [&☜■▯ⵚ♏■♦♦] *a.* 浓缩的
harness [▯♒♋💻■♓♦] *vt.* 利用（河流等）产生动力，利用电力
offer [▯👌➶☯] *vt.* 出现，提供，意图
minicomputer [▯❍♓■♓&☜❍☜◘𝑒𝑟◆💻♦☜] *n.* 微计算机
ignite [♓♈▯■♋♓♦] *vt.* 点火，点燃
palmtop [▯◘✍💻❍♦👌◘] *n.* 掌上型电脑
notable [▯■☯◆♦☯☌●] *a.* 显著的，著名的
Macintosh [▯❍✌&♓■♦👌☞] *n.* 麦金塔，苹果公司制造的一种计算机
screen [♦&❒♓💻■] *n.* 计算机显示屏
cursor [▯&☜💻♦☜] *n.* 光标，指针
mouse [❍♋◆♦] *n.* 鼠标
mimic [▯❍♓❍♓&] *vt.* 模仿
share [☞☪☯] *vt.* 共享，共有；分享，分配
network [▯■♏♦⬥☯💻&] *n.* 网络
administrative [☜ⵚ▯❍♓■♓♦♦❒☜♦♓❖] *a.* 管理的，行政的
priority [◘❒♋♓▯👌❒♓♦♓] *n.* 优先，优先权

envision [♓■▯❖♓✞☜■] *vt.* **想像，预想**
address [☯▯♎❒♏♦] *n.* **地址**
input [▯♓■◘◆♦] *vt.* **输入**
commandeer [♋&☝❍☜■▯♎♓☜] *vt.* **夺取，霸占**
imitate [▯♓❍♓♦♏♓♦] *vt.* **模仿，效仿**
context [▯&☝■♦♏&♦♦] *n.* **环境，上下文；设备场景**
resistance [❒♓▯⌘♓♦◆☜■♦] *n.* **电阻**
apply [☯▯◘●♋♓] *vt.* **应用**
information [♓■↗☯▯❍♏♓☞☯■] *n.* **信息**
assess [☯▯♦♏♦] *vt.* **估计；评估**

Phrases

for better or worse **不论好坏**
traffic cop **交通警察**
have an impact on … **对……有影响**
consist of **由……组成**
general-purpose computer **通用计算机**
vacuum tube **电子管，真空管**
computer engineering **计算机工程学**
as well as **也，又，以及**
take advantage of **利用**
presidential election **总统大选**
be characterized by … **具有……特征**
be responsible for … **对……负责**
magnetic drum **磁鼓**
lead to **导致**
an enormous amount of **大量的**
in demand **需要**
in place of **代替**
binary code **二进制代码**
a number of **许多的**
machine language **机器语言**
assembly language **汇编语言**
IBM **国际商用机器公司**
associate … with **把……与……联系起来，联想**
single chip **单（芯）片**
Intel **英特尔公司**
as a result **结果**
at once **同时；立即**
CPU (Central Processing Unit) **中央处理单元**
minuscule chip **微芯片**
word processing **字处理**
laptop computer **膝上型计算机**

breast pocket	小袋，胸袋
in competition with …	与……竞争
memory space	内存空间
information superhighway	信息高速公路
in one's infancy	初期，萌芽阶段
hold conversations with …	与……交谈，与……会谈
psychotic breakdown	精神分裂
voice recognition	语音识别
rely on	依靠，依赖
parallel processing	并行处理
superconductor technology	超导技术
assist sb. in doing sth.	帮助某人做某事
high-level language	高级语言
mainframe computer	大型计算机
expert system	专家系统

Abbreviations

ATM (Automatic Teller Machines)	自动取款机，自动柜员机
ENIAC (Electronic Numerical Integrator and Computer)	阿尼亚克（电子数字积分计算机）
EDVAC (Electronic Discrete Variable Automatic Computer)	艾迪瓦克（电子离散变量自动计算机）
COBOL (COmmon Business- Oriented Language)	一种公共商用计算机语言
FORTRAN (Formula Translator)	一种科学计算计算机语言
IC (Integrated Circuit)	集成电路
LSI (Large Scale Integration)	大规模集成电路
VLSI (Very Large Scale Integration)	超大规模集成电路
ULSI (Ultra-Large Scale Integration)	超（特）大规模集成电路
PC (Personal Computer)	个人计算机
LAN (Local Area Network)	局域网

Notes

[1] Nothing epitomizes modern life better than the computer.

本句用比较级表示最高级，可改写为：The computer epitomizes modern life best.

本句意为：

没有什么能比计算机更好地体现现代生活。

[2] Consisting of 18 000 vacuum tubes, 70 000 resistors and 5 million soldered joints, the computer was such a massive piece of machinery that it consumed 160 kilowatts of electrical power, enough energy to dim the lights in an entire section of Philadelphia.

在本句中，Consisting of 18 000 vacuum tubes, 70 000 resistors and 5 million soldered joints **是一个现在分词短语，做原因状语；**such a … that…**的意思是“如此……以至于……”；**enough energy to dim the lights in an entire section of Philadelphia **是对** 160 kilowatts of

electrical power **的补充说明。**

本句意为：

由于该计算机由 18 000 **个真空管、**7 **万个电阻器以及** 500 **万个焊接点组成，它是如此巨大的一台机器以至于要消耗** 160 **千瓦电力，这些电力足以照亮整个费城。**

[3] It was the stored program and programming language that gave computers the flexibility to finally be cost effective and productive for business use.

在本句中，It was … that **是一个强调句型，强调部分为** the stored program and programming language。

本句意为：

正是该存储程序和编程语言使计算机能够最终物超所值并应用于商业的多个方面。

[4] 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.

在本句中，Though transistors were clearly an improvement over the vacuum tube **是一个让步状语从句。**which damaged the computer′s sensitive internal parts **是一个非限定性定语从句，修饰** a great deal of heat。

本句意为：

尽管晶体管比电子管有了明显的改进，它们仍然会产生大量的热，这些热量损坏了计算机内部的敏感部件。

[5] Another third-generation development included the use of an operating system that allowed machines to run many different programs at once with a central program that monitored and coordinated the computer′s memory.

在本句中，that allowed machines to run many different programs at once **是一个定语从句，修饰** an operating system。that monitored and coordinated the computer′s memory **是一个定语从句，修饰** a central program。

本句意为：

另外一种第三代计算机的发展包括了使用操作系统，操作系统用一个中心程序监控和调整计算机内存，使计算机同时运行多个不同的程序。

[6] As opposed to a mainframe computer, which was one powerful computer that shared time with many terminals for many applications, networked computers allowed individual computers to form electronic co-ops.

在本句中，which was one powerful computer that shared time with many terminals for many applications **是一个非限定性定语从句，修饰** a mainframe computer。**而该从句中，**that shared time with many terminals for many applications **是一个非限定性定语从句，修饰** one powerful computer。

本句意为：

大型计算机功能强大，可以分时地用于许多应用程序的多个终端，与此相对应，联网的计算机允许单个的计算机协作。

[7] Another advance is superconductor technology, which allows the flow of electricity with little or no resistance, greatly improving the speed of information flow.

在本句中，which **是一个非限定性定语从句，修饰**superconductor technology。greatly improving the speed of information flow **是一个现在分词短语，做结果状语。**

本句意为：

另外一个发展是超导技术。它使电流的阻力很小或几乎没有，从而提高了信息流的速度。

[8] It will take several more years of development before expert systems are in widespread use.

在本句中，before **的意思为“才”。**

本句意为：

还需要许多年的发展，专家系统才能得以广泛应用。

[9] The 1980′s saw an expansion in computer use in all three arenas as clones of the IBM PC made the personal computer even more affordable.

在本句中，as clones of the IBM PC made the personal computer even more affordable **是一个原因状语从句。**saw **的意思是“经历了”。**

本句意为：

由于 IBM PC **的克隆使得更多的人能够买得起个人计算机。**20 **世纪** 80 **年代，在三个应用领域，经历了计算机的扩展时期。**

Exercises

1．根据课文内容，回答以下问题

（1）What contribution did John von Neumann make to computer development?

（2）What characteristics did the second generation computers have?

（3）When did integrated circuit appear?

（4）What characteristics did the fourth generation computers have?

（5）Describe briefly the development of the fifth generation computers.

2．根据下面的英文解释，写出相应的英文词汇（使用所学的单词、词组或缩略语）

英 文 解 释	词　汇
A device where information can be stored and retrieved, usually on the motherboard	
A sequence of instructions that can be executed by a computer	
The software that controls the hardware resources as well as the software resources	

A representation of facts, concepts, or instructions in a numerical manner often consisting of 0s and 1s	
A number specifying a location in memory where data is stored	

续表

英 文 解 释	词　汇
An integrated circuit on a piece of semi-conductive material	
An output device on which images and characters are displayed	
A most common pointing device, often with two or three buttons	
A computer produced by a partnership between the U.S. government and the University of Pennsylvania which consisted of 18 000 vacuum tubes, 70 000 resistors and 5 million soldered joints	
A language that is used directly by a computer	

3．**把下列句子翻译为中文**

(1) Each computer had a different binary-coded program called a machine language that told it how to operate.

(2) Second generation computers replaced machine language with assembly language, allowing abbreviated programming codes to replace long, difficult binary codes.

(3) It was the stored program and programming language that gave computers the flexibility to finally be cost effective and productive for business use.

(4) As a result, computers became ever smaller as more components were squeezed onto the chip.

(5) In 1981, IBM introduced its Personal Computer (PC) for use in the home, office and schools.

(6) The number of personal computers in use more than doubled from 2 million in 1981 to 5.5 million in 1982.

(7) Many advances in the science of computer design and technology are coming together to enable the creation of fifth-generation computers.

（8）The key element to the von Neumann architecture was the central processing unit, which allowed all computer functions to be coordinated through a single source.

（9）Defining the fifth generation of computers is somewhat difficult because the field is in its infancy.

（10）As smaller computers became more powerful, they could be linked together, or networked, to share memory space, software, and information and communicate with each other.

4．上机实践

通过 Internet **查找资料，借助“金山词霸”等电子词典和辅助翻译软件，完成以下技术报告。通过** E-mail **发送给老师，并附上你收集资料的网址。**

（1）写出 ENIAC **概述。包括研制经过、功能概述、不足之处及历史照片等方面。**

（2）写出 John von Neumann**的小传。**

（3）了解 Al Gore**其人，简述他在推动信息技术发展方面所做的贡献。**

（4）简述未来计算机处理器的发展。

Reading Material

The Various Generations of Processors over the Past 20 Years

1．Generation 1 — 8086 and 68000

In the beginning, the computer dark ages of two decades ago, there was the 8086 chip, Intel′s first 16-bit processor which delivered 8 16-bit registers and could manipulate 16 bits of data at a time. It could also address 16-bit of address space at a time (or 64K, much like the Atari 800 and Apple II of the same time period). Using a trick known as segment registers, a program could simultaneously address 4 such 64K segments at a time and have a total of 1 megabyte of addressable memory in the computer. Thus was born the famous 640K RAM limitation of DOS, since the remaining 384K was used for hardware and video.

A lower cost and slower variant, the 8088, was used in early PCs, providing only an 8-bit bus externally to limit the number of pins on the chip and reduce costs. As I incorrectly stated here before, the 8086 was not used in the original IBM PC. It was actually the lower cost 8088.

While these first generation processors from Intel and Motorola ran at speeds of 4 to 8 MHz, they each required multiple clock cycles to execute any given machine language instruction. This is because these processors lacked any of the modern features we know today such as caches and pipelines. A typical instruction to 4 to 8 cycles to execute, really giving the chips an equivalent

speed of 1 MIPS (i.e. 1 million instructions per second).

2. Generation 2 — 80286 and 68020

By 1984, Intel released the 80286 chip used in the IBM AT and clones. The 80286 introduced the concept of protect mode, a way of protecting memory so that multiple programs could run at the same time and not step on each other. This was the base chip that OS/2 was designed for and which was also used by Windows/286. The 286 ran at 8 to 16 MHz, offering over double the speed of the original 8086 and could address 16 megabytes of memory.

3. Generation 3 — 80386 and 68030

The world of home computers didn't really become interesting until late 1986 when Intel released its 3rd generation chip — the 80386, or simply the 386. This chip, although almost 15 years old now, is the base on which OS/2 2.0, Windows 95, and the original Windows NT run on. It was Intel's first true 32-bit x86 chip, extending the registers to a full 32 bits in size and increasing addressable memory to 4 gigabytes. In effect, catching up to the 68020 in a big way, by also adding things like paging (which is the basis of virtual memory) and support for true multi-tasking and mode switching between 16-bit and 32-bit modes.

The 386 is really the chip, I feel, that put Intel in the lead over Motorola for good. It opened the door to things like OS/2 and Windows NT and Linux — truly pre-emptive, multi-tasking, memory protected operating systems. It was a 286 on steroids, so much more powerful, so much faster, so much more capable than the 286, that at over $20 000 a machine, people were dying to get their hands on them. I remember reading the review of the first Compaq 386 machine, again, a $20 000 machine that today you can buy for $50, and the reviewer would basically kill to get one.

What made the 386 so special? Well, Intel did a number of things right. First they made the chip more orthogonal. What that means is that they extended the machine language instructions so that in 32-bit mode, almost any of the 8/32-bit registers could be used for anything — storing data, addressing memory, or performing arithmetic operations. Compare this to the 8086 and 80286 whose 16-bit instructions could only use certain instructions for certain operations. The orthogonality of the 386 registers made up for the extra registers in the Motorola chips, which specifically had 8 registers which could be used for data and 8 for addressing memory. While you could use an address registers to hold data or use data registers to address memory, it was most costly in terms of clock cycles.

The 386 allowed the average programmer to do away with segment registers and 640K limitations. In 386 protect mode, which is what most Windows, OS/2, and Linux programs run in today, a program has the freedom to address up to 4 gigabytes of memory. Even when such memory is not present, the chip's paging feature allows the OS to implement virtual memory by swapping memory to hard disk, what most people know as the swap file.

Another innovation of the 386 chip was the code cache, the ability of the chip of buffer up to 256 bytes of code on the chip itself and eliminate costly memory reads. This is especially useful in tight loops that are smaller than 256 bytes of code.

Motorola countered with the 68030 chip, a similar chip which added built-in paging and

virtual memory support, memory protection, and a 256 byte code cache. The 68030 also added a pipeline, a way of executing parts of multiple instructions at the same time, to overlap instructions, in order to speed up execution.

4．Generation 4 — 486 and 68040

This generation is famous for integrating the floating point co-processor, previously a separate external chip, into the main processor. This generation also refined the existing technology to run faster. The pipelines on the Intel 486 and Motorola 68040 were improved to in effect give the appearance of 1 clock cycle per instruction execution. 20 MIPS. 25 MIPS. 33 MIPS. Double or triple the speed of the previous generation with virtually no change in instruction set! As far as the typical programmer or computer user is concerned, the 386 and 486, or 68030 and 68040, were the same chips, except that the 4th generation ran quicker than the 3rd. And speed was the selling point and the main reason you upgraded to these chips.

The way these chips exploited speed was in a number of ways. First, the caches were increased in size to 8K, and made to handle both code and data. Suddenly relatively large amounts of data (several thousands bytes) could be manipulated without incurring the costly penalty of accessing main memory. Great for mathematical calculations and other such applications. This is why many operating systems today and many video games don′t support anything prior to the 4th generation. Mac OS 8 and many Macintosh games require a 68040. Windows 98, Windows NT 4.0, and most Windows software today requires at least a 486. The caches made that huge a difference in speed! Remember this for later!

With the ability to read memory in a single clock cycle now came the ability to execute instructions in a single clock cycle. By decoding one instruction while finishing the execution of the previous instruction, both the 486 and 68040 could give the appearance of executing 1 instruction per cycle. Any given instruction still takes multiple clock cycles to execute, but by overlapping several instructions at once at different stages of execution, you get the appearance of one instruction per cycle. This is the job of the pipeline.

Keeping the pipeline full is of extreme importance! If you have to stop and wait for memory (i.e. the data or code being executed isn′t in the cache) or you execute a complex instruction such as a square root, you introduce a bubble into the pipeline — an empty step where no useful work is being done. This is also known as a stall. Stalls are bad. Remember that.

One of the great skills of writing assembly language code, or writing a compiler, is knowing how to arrange the machine language instructions in such an order so that the steps you ask the processor to perform are done as efficiently as possible.

The rules for optimizing code on the 486 and 68040 are fairly simple:

- keep loops small to take advantage of the code cache.
- avoid referencing memory by using the chip′s 32-bit registers.
- avoid referencing memory blocks larger than the size of the data cache.
- avoid complex instructions — for example where possible use simple instructions such as ADD numerous times in places of a multiply.

The techniques used in the 4th generation are very similar to techniques used by RISC (Reduced Instruction Set Computer) processors. The concept is to use as simple instructions as possible. Use several simple instructions in place of one complex instructions. For example, to multiply by 2 simply add a value to itself instead of forcing the chip to use its multiply circuitry. Multiply and divide take many clock cycles, which is fine when multiplying by a large number. But if you simply need to double a number, it is faster to tell the chip to add two numbers than to multiply two numbers.

Another reason to follow the optimization rules is because both the 486 and 68040 introduced the concept of clock doubling, or in general, using a clock multiplier to run the processor internally at several times the speed of the main computer clock. The computer may run at say, 33 MHz, the bus speed, but a typical 486 or 68040 chip is actually running at 66 MHz internally and delivering a whopping 66 MIPS of speed.

5. Generation 5 — the Pentium and PowerPC

With the first decade and the first 4 generations of chips now in the bag, both Motorola and Intel looked for new ways to squeeze speed out of their chips. Brick walls were being hit in terms of speed. For one, memory chips weren't keeping up with the rapidly increasing speed of processors. Even today, most memory chips are barely 10 or 20 times faster than the memory chips used in computers two decades ago, yet processor speeds are up by a factor of a thousand!

Worse, the remaining hardware in the PC, things like video cards and sound cards and hard disks and modems, run at fixed clock speeds of 8 MHz or 33 MHz or some sub multiple of bus speed. Basically, any time the processor has to reference external memory or hardware, it stalls. The faster the clock multiplier, the more instructions that execute each bus cycle, and the higher the chances of a stall.

This is why for example, upgrading from a 33 MHz 486 to a 66 MHz 486 only offers about a 50% speed increase in general, and similarly when upgrading from the 68030 to the clock doubled 68040.

It's been said many times by many people, but by now you should have realized that Clock Speed Is Not Everything!

- Two chips running at the same speed (a 33MHz 386 and a 33MHz 486) do not necessarily give the same level of performance.
- Doubling the internal clock speed of a chip (486 from 33 to 66MHz) does not always double the performance.

What can affect speed far more than mere clock speed is the rate at which the chip can process instructions. The 4th generation brought the chip down to one instruction per clock cycle. The 5th generation developed the concept of superscalar execution. That is, executing more than one instruction per clock cycle by executing instructions in parallel.

Intel and Motorola chose different paths to achieve this. After an aborted 68050 chip and short lived 68060 chip, Motorola abandoned its 68K line of processors and designed a new chip based on IBM's POWER RISC chip. A RISC processor (or Reduced Instruction Set) does away with

complicated machine language instructions which can take multiple clock cycles to execute, and replaces them with simpler instructions which execute in fewer cycles. The advantage of this is the chip achieves a higher throughput in terms of instructions per second or instructions per clock cycle, but the down side is it usually takes more instructions to do the same thing as on a CISC (or Complex Instruction Set) processor.

The theory with RISC processors, which has long since proven to be bullshit, was that by making the instructions simpler the chip could be clocked at a higher clock speed. But this in turn only made up for the fact that more instructions were now required to implement any particular algorithm, and worse, the code grew bigger and thus used up more memory. In reality a RISC processor is no more or less powerful than a CISC processor.

Intel engineers realized this and continued the x86 product line by introducing the Pentium chip, a superscalar version of the 486. The original Pentium was for all intents and purposes a faster 486, executing up to 2 instructions per clock cycle, compared to the 1 instruction per cycle limit of the 486. Once again, clock speed is not everything.

By executing multiple instructions at the same time, the design of the processor gets more complicated. No longer is it a serial operating. While earlier processors essentially followed this process:

- fetch an instruction from memory or the code cache.
- decode the instruction.
- execute the instruction in either the Floating Point Unit (FPU), integer unit, or branch unit.
- repeat.

a superscalar processor has additional steps to worry about:

- fetch two instructions from memory or the code cache.
- decode the two instructions.
- execute the first instruction.
- if the second instruction does not depend on the results of the first instruction, and if the second instruction does not require an execution unit being used by the first instruction, execute the second instruction.
- repeat.

The extra check is necessary to make sure that the code executes in the correct order. If two ADD operations follow one another, and the second ADD depends on the result of the first, the two ADD operations cannot execute in parallel. They must execute in serial order.

Intel gave special names to the two “pipes” that instructions execute in the U pipe and the V pipe. The U pipe is the main path of execution. The V pipe executes“paired”instructions, that is, the second instruction sent from the decoder and which is determined not to conflict with the first instruction.

Since the concept of superscalar execution was new to most programmers, and to Microsoft′s compilers, the original Pentium chip only delivered about 20% faster speed than a 486 at the same speed. Not 100% faster speed as expected. But faster, nevertheless. The problem was very simply

that most code was written serially.

Code written today on the other hand does execute much faster, since compilers now generate code that "schedules" instructions correctly. That is, it interleaves pairs of mutually exclusive instructions so that most of the time two instructions execute each clock cycle.

The original PowerPC 601 chip similarly had the ability to execute two instructions per cycle, an arithmetic instruction pair with a branch instruction. The PowerPC 603 and later versions of the PowerPC added additional arithmetic execution units in order to execute 2 math instructions per cycle.

With the ability to execute twice as much code as before comes greater demand on memory. Twice as many instructions need to be fed into the processor, and potentially twice as much data memory is processed.

Intel and Motorola found that as clock speed was being increased in the processors, performance didn't scale, even on older chips. A 66 MHz 486 only delivered 50% more speed than a 33 MHz 486. Why?

The reason again has to do with memory speed. When you double the speed of a processor, the speed of main memory stays the same. That means that a cache miss, which forces the processor to read main memory, now takes TWICE the number of clock cycles. With today's fast processors, a memory read can literally take 100 or more clock cycles. That means 100, or worse, 200 instructions not being executed.

The way Intel and Motorola attacked this problem was to increase the size of the L1 cache, the very high speed on-chip level one cache. For example, the original 486 had an 8K cache. The newer 100 MHz 486 chips had a 16K cache.

But 8K or 16K is nothing compared to the megabytes that a processor can suck in every second. So computers started to include a second level cache, the L2 cache, which was made up of slightly slower but larger memory. Typically 256K. The L2 cache is still on the order of 10 times faster than main memory, and allows most code to operate at near to full speed.

When the L2 cache is disabled (which most PC users can do in the BIOS setup), or when it is left out completely, as Apple did in the original Power Macintosh 6 100, performance suffers.

6. Generation 6 — the P6 architecture and PowerPC G3/G4

By 1996 as processor speeds hit 200 MHz, more brick walls were being hit. Programmers simply weren't optimizing their code and as processor speeds increased, the processors simply spent more time waiting on memory or waiting for instructions to finish executing. Intel and Motorola adopted a whole new set of tricks in their 6th generation of processors. Tricks such as "register renaming", "out of order execution", and "predication".

In other words, if the programmer won't fix the code, the chip will do it for him. The Intel P6 architecture, first released in 1996 in the Pentium Pro processor, is at the heart of all of Intel's current processors — the Pentium II, the Celeron, and the Pentium III. Even AMD's Athlon processor uses the same tricks.

What they did is as follows:

- Expand the L2 cache to a full 512K of memory. The Pentium II, the original Pentium III, and the original AMD Athlon all did this. Big speed wins with no burden on the programmer.
- Expand the L1 cache. The P6 processors have 32K of L1 cache (16K for data, 16K for code), while the AMD Athlon has a whopping 128K of L1 cache (64K data, 64K code). Another big speed win, more so for the Athlon. Again with no burden on the programmer.
- Expand the decoder to handle 3 instructions at once. This places a burden on the programmer because instructions now have to be grouped in sets of 3, not just in pairs. Potential 50% speed increase if the code is written properly.
- Allow decoded instructions to execute out of order provided they are mutually exclusive. This is a huge speed win because it can make up for poor scheduling on the part of the programmer. It also allows code to execute around“ bubbles ”, or instructions which are stalled due to a memory access. Big speed win.
- Improved branch prediction. The processor can“ guess ”with pretty good reliability whether a branch instruction (an“ if/else ”in a higher level language) will go one way or the other. Higher rates of branch prediction mean fewer stalls caused by branching to the wrong code.
- Conditional execution or“ predication ”allows the processor to conditionally execute an instruction based on the result of a previous operating. This is similar to branching, except no branch occurs. Instead data is either moved or not moved. This reduces the number of“ if/else ”style branch conditions, which is a big win. Unfortunately, predication is new to the P6 family and is not supported on the 486 or earlier versions of the Pentium.
- Add additional integer execution units so that up to 3 integer instructions can execute at once. Big speed wins thanks to out of order execution.
- In the AMD Athlon, add additional floating point units to allow up to 3 floating point instructions to execute at once. Big speed wins for the Athlon, allowing it to trounce the Intel chips on 3-D and math intensive tasks.
- Allow registers to be mapped to a larger set of internal registers, a process called“ register renaming ”. Internally, the P6 and K7 architectures do away with the standard 8x86 32-bit general purpose registers. Instead they contain something like 40 32-bit registers. The processor decides how to assign the 8 registers which the programmers“ sees ”to the 40 internal registers. This is a speed win for cases where the same register is used serially, but for mutually exclusive instructions. The two uses of the register will get renamed to two different internal registers, thus allowing superscalar out-of-order execution to take place. This trick works best on older 386 and 486 code, or poorly optimized C code which tends to make heavy use of one or two registers only.

From an engineering standpoint, the enhancements in the 6th generation processors are truly amazing. Through the use of brute force (larger caches and faster clock speed), parallel execution (multiple execution units and 3 decoders), and clever interlocking circuitry to allow out-of-order execution, Intel has been able to stick with the same basic architecture for 5 years now, catapulting CPU throughput from the 100 to 150 MHz range in 1995 to over 1 GHz today. Most code, every poorly written unoptimized code, executes at a throughput of over 1 instruction per clock cycle, or

roughly 1000 MIPS on today's fastest Pentium III processors.

The PowerPC G3 and G4 chips use much the same tricks (after all, all these silicon engineers went to the same schools and read the same technical papers) which is why the G3 runs faster than a similarly clocked 603 or 604 chip.

New Words

register	寄存器
variant	派生，变式，变体，异体
cache	高速缓冲存储器
pipeline	管道，管线
steroid	甾族化合物，类固醇
die to do sth.	渴望做某事
get one's hands on	得到，占有，获得，拥有
orthogonal	正交状态的，正交的，直交的，垂直的
incur	招致
addressable	可寻址的
multi-tasking	多任务
orthogonality	正交性，正交状态
paging	内存分页，页面调度
swapping	交换（技术），对调；转储
buffer	缓冲存储器
penalty	处罚，惩罚
co-processor	协处理器
superscalar	超标量体系结构
branch	分支
segment register	段寄存器
protect mode	保护模式
swap file	交换文件
floating point	浮点
Throughput	吞吐量，通过量，吞吐率，（计算机的）解题能力
L2 cache	二级缓冲存储器
MIPS (Million Instructions Per Second)	每秒百万指令
OS/2	IBM 研制的一种 PC 操作系统
RISC (Reduced Instruction Set Computing)	精简指令集
CISC (Complex Instruction Set Computing)	复杂指令集

附录　参考译文

Unit 1

PC 的基本部件（1）

1．处理器

处理器是计算机的大脑，也称为微处理器或 CPU。它解释从其他设备接收的全部指令，并执行这些指令，如让打印机打印。一般来讲，处理器的速度越快，计算机能够执行指令和任务的速度就越快。这样，游戏可以玩得更顺畅，电子表格的运算可以进行得更快。

（1）Intel Pentium 4

新的 Intel Pentium 4 是最强有力的桌面型处理器，它改进了当今高端应用性能并突显了因特网需求。

（2）Intel Pentium 4 Processor-M

基于与流行的桌面 Pentium 4 处理器的相同技术，Mobile Pentium 4 处理器具有类似的体系结构，它延长了电池寿命并满足了其他移动计算的需求。移动 Intel Pentium 4 处理器是移动领域高性能的处理器，基于移动 Intel Pentium 4 处理器的系统提供的处理能力与桌面用户所期待的相同。在三维任务中无与伦比，移动 Intel Pentium 4 处理器也增强了面向用户的网络和多任务性能。移动 Intel Pentium 4 也以 400MHz 的处理器总线而自豪！

（3）Intel Pentium Ⅲ Processor-M

Intel Pentium Ⅲ Processor-M 是 Intel 公司最新、最快和最高性能的处理器，推荐给那些需要高性能低价格的移动用户使用。Intel Pentium Ⅲ–M 提供更高的位速度和更好的电池寿命，这是采用了“超微”的 0.13μm 制造技术而不是以前 Pentium Ⅲ所用的 0.18μm 技术。这种处理器使用的平台比市场上任何移动平台都更高、更快和更有效。

（4）Intel Celeron

Intel Celeron 处理器的桌面 PC，是大多数通用的有用工具——从财务管理到因特网交互游戏——价值惊人。

2．内存

随机存储器是计算机的重负荷机器。对处理器而言，RAM 就像步兵，它临时储存来自操作系统的信息、应用程序及当前正在使用的数据。这使得处理器可以访问运行程序所需的信息。RAM 的大小决定可以同时运行的程序数及有多少数据可以给程序使用。它也决定应

用程序的运行速度及同时可以在多少个应用程序之间转换。简单地说，RAM 越大，可以平稳和同时运行的程序就越多。

3．硬盘

硬盘是计算机的主要存储单元。其中保存着操作系统、应用程序、文件和数据。如果你要用计算机存储数字音频或视频文件，或者做一些密集的应用工作，就应该考虑购买大容量的硬盘。

选择硬盘时主要考虑以下三点。

- 容量：硬盘的存储性能以 GB 度量。1GB 等于 1000MB。当计算硬盘容量需求时，不管是否用计算机编辑视频或存储大的音频文件，都要考虑应用软件的大小和数量。硬盘容量越大能存储的东西就越多。
- 转速：转速是选择硬盘要考虑的主要因素，因为它决定检索数据的速度。典型的转速是每分钟 5400 转或 7200 转。转速越高，访问信息时等待的时间就越少。
- 接口：接口连接硬盘和计算机，用来传输数据。大多数的硬盘支持 ATA-66 或 Ultra ATA-100 接口。高级技术附件（ATA）是行业标准接口。使用 Ultra ATA-100 接口的硬盘比使用 ATA-66 接口的硬盘快。

4．视频卡

视频卡是计算机的一部分，它把视频数据转换成你在显示器上能看到的可视信息。视频卡插在计算机的主板上，负责解码和处理视频信号。你在显示器上看到的视频质量取决于视频卡和你所选择的显示器。视频卡的内存越大，图形处理器的速度越快，玩游戏或运行精细图形设计软件时的显示效果就越好。

当今的视频卡提供了基本家庭应用和家庭办公所需的全部性能。高质量的视频卡可以进一步提高游戏、视频和电影的图像效果，更流畅，真实地再现特征和情景。如果你是一个痴迷的游戏玩家或图形设计者，可能需要三维性能及高于 Nvidia Geforce3 提供的刷新速率。

购买视频卡最好考虑以下规格。

（1）存储器

视频卡有自己的存储器，该存储器专门用于储存图形图像。显示内存释放了计算机的 RAM，所以计算机的内存就不用再存图形。显示内存的容量也符合标准：16MB、32MB、64MB 和 128MB。显示内存的容量决定了显示器可以显示的分辨率的高低和色彩的数量。典型地说，视频卡存储器的容量越大，所显示的高性能图案和支持二维与三维图形的能力就越强。视频卡以 SDR（单速率）或 DDR（双速率内存）为基础。DDR（双速率内存）视频卡的内存带宽是 SDR 的两倍。内存容量是视频卡说明中的第一项。

例如，128MB DDR NVIDIA® Geforce4 Ti 4600

内存类型通常如下：

例如，128MB DDR NVIDIA® Geforce4 Ti 4600

（2）处理器

除了内存，视频卡还有自己的用于产生图像的处理器。

图像处理器的设计专门用于计算图形变换。它可以比计算机所用的普通 CPU 更快地产生

结果图形。我们的综合图形解决方案使用计算机的 CPU 创建图形，所以它着色图片的速度没有自带处理器的视频卡那么快。即使要在显示器上产生基本的图像，也需要数千次的计算。视频卡处理器也叫做“控制器”或“图形引擎”。视频卡生产厂通常跟在视频卡上内存容量的后面。

例如，128MB NVIDIA® Geforce4 Ti 4600。NVIDIA 是视频卡生产厂。

视频卡控制器（或处理器）通常跟在其后：

例如，128MB NVIDIA® Geforce4 Ti 4600。

视频卡的另一个公共特性是寄存器带宽或数据带宽。寄存器带宽越宽，处理器每一个指令可以处理的数据就越多。寄存器越大视频卡速度越快。大部分的中高端视频卡都有 128 位加速器。16MB 的 ATI Rage Ultra Rage Ultra 视频卡有 64 位加速器。请看我们每一款视频卡说明书的“详细描述”页。

5．显示器

购买显示器应考虑以下几点。

（1）尺寸

显示器以英寸来度量，指从显示器一个角到另一个角的对角长度。实际可见区域（或屏幕测量）以括号内标称可见图像尺寸来度量，所以你可以看到所列出的显示器的尺寸，如：17"（16.0 可见图像尺寸）。

紧记大多数显示器的厚度与宽度相同，因此如果地方有限，你应该考虑购买平面显示器。

（2）质量

显示器的质量用点距或条距来度量。距数越低，显示的图像越清晰。0.27mm 是点距的平均数。显示器质量（指分辨率）也可以用像素来度量。分辨率越高，屏幕上可以显示的图像就越多。

（3）设计

大多数显示器都采用荫罩或栅格设计。如果没有表明显示器的种类，则很可能是荫罩式的。荫罩式显示器可清晰地显示文本和图像。另外一种的栅格式显示器也叫做单枪三束彩色显像管。它可以显示丰富的色彩和图像。一些显示器具有平面显示屏。平面显示屏与传统的显示器不同，因为它们没有一点曲面，特别是不会产生相应的变形。

（4）优点

使用单枪三束彩色显像管的显示器可以使用户得到：

- 格外清晰的图片
- 用于明亮图像的高磷表面
- 暗屏带来增强的对比度
- 减少反射
- 增强色彩纯度

6．声卡

为了从计算机中听到声音回放，你的系统必须包括综合音频解决方案或声卡以及喇叭。声卡或综合音频解决方案使你的计算机具有以下能力：通过喇叭播放声音、通过连接到计算

机上的话筒录音或处理存储在磁盘上的声音。一个高质量的声卡可以把你的计算机变成令人兴奋的多媒体娱乐系统。要选择合适的音频解决方案，应考虑声音将对计算机的整体运算所产生的影响。

一些声卡可以让你听 CD 音乐、享受 DVD 电影中的强烈音效、录制和编辑音频文件。我们高端的声卡支持三维声音增强，并为最大的游戏经历提供游戏操纵杆/MIDI 支持。选择声卡和喇叭系统可以极大地提高你的计算机的声音质量并带来全面的音频体验。

当考虑音频解决方案时，请考虑以下属性。

（1）复调音乐

复调音乐是听一个 MIDI 文件时你能听到的不同乐器“声音”或其他声音的数。声音的数越大，在 MIDI 格式中播放歌曲时丢失音符的机会就越少。你 PC 上的声音也由数字音频流产生，如由 MP3、WAV 和 WMA 音频源产生数字音乐文件。

Turtle Beach Santa Cruz DSP Sound Card 上的不同 MIDI 乐器的声音的数目只受 PC 处理器速度的限制。与可以播放高达 96 种数字音频流的性能结合，Santa Cruz 可以用最适宜的声音深度、清晰度和详细度在你的 PC 上复现无数的现实音。SoundBlaster Live! 声卡提供 1024 种软音效。

（2）环境音效

环境音效使你的电影更具现实主义色彩，也让游戏具有清晰的音效。EA 环境音效的强力效果使游戏玩家体验真实世界的音效。可以听到游戏中怪物的爬动声。可以使用“音乐厅”、“爵士乐俱乐部”或其他环境效果来听你喜欢的 MP3 音乐。用 5.1 声道效果来享受电影。EA 对声效产生的影响会使你惊讶。SoundBlaster Live! Digital Sound 和 Turtle Beach Santa Cruz DSP 声卡都支持 EA 三维声效。

（3）其他功能

SoundBlaster Live! Digital Sound 和 Turtle Beach Santa Cruz DSP 声卡都支持游戏操纵杆和 MIDI 设备。MIDI 是电子化地表现音乐的一个标准，带有 MIDI 接口的计算机可以记录由合成器建立的声音，也可以处理数据来产生新的声音。

Turtle Beach Santa Cruz DSP 声卡是我们得到卢卡斯影业 THX 认证的声卡系列中的唯一声卡。THX 是具有世界威望的卢卡斯影业的工程师建立的一种技术标准。关于 Dimension 系统建立的 THX 标准的更多信息，请访问以下网址：

http://www.dell.com/us/en/dhs/topics/segtopic_thx.htm.

Unit 2

PC 的基本部件（2）

1．键盘

台式计算机装备有键盘以满足你的个人需要。所有键盘的设计都考虑了舒适和效率，并且你可以从省地方的键盘、标准键盘和无线键盘中选一个。

根据对你来说最重要的特点，选择键盘。

（1）Dell 键盘

- 有使键盘柔和又响应宁静的软橡皮盖。
- 三个可调整的输入角度，使人舒适，身体放松。

（2）Dell 静音键盘

- 设计完美，节省地方，适合办公环境。
- 兼容 PS2。
- 软橡皮盖使触键柔和又响应宁静。
- 可调整输入角度，使人舒适和身体放松。

（3）Dell 增强功能键盘

- 7 个可编程键。
- 内置两个 USB 接口。
- 软橡皮盖使触键柔和又响应宁静。
- 可调整输入角度，使人舒适和身体放松。
- 可移动式手掌休息支架。

（4）Logitech 无线键盘和鼠标

- 一键控制，用于大多数因特网和多媒体命令。
- 最新一代的六英尺无线应用技术。
- 可分离的手掌支架，因为多余的桌面空间可以减少舒适感。

2．鼠标

根据对你来说最重要的特点，选择鼠标：

（1）Logitech 光学 USB 鼠标

- 最新的光学传感器技术可以比传统鼠标更精确地记录移动。
- 因为没有会磨损和聚集灰尘的移动部件，所以它更容易使用，也更可靠。

光学传感器替换了滚动球，所以可以工作在任何表面。不再需要鼠标垫。

- 三个可编程按钮。除了顶上左右两个按钮之外，轮子也可作第三个按钮。
- 无需点击滚动条就可方便、快速地卷动文挡。根据用户卷动文档的速度而卷动，因而增加了对卷动的控制。
- 人类环境改造学的设计，适合左右手使用，也适合各种大小的手掌。
- USB 接收器连接到 USB 接口上，PS/2 接口用来连接其他外部设备。

（2）微软智能鼠标

- 自动卷动功能释放你的手，可以使其做笔记或打电话。
- 快速缩放轮可以关闭和放大图片视图，而无需菜单和工具栏（在兼容软件中有效）。
- 带突起纹格的设计容易抓住，两个按钮间带有滚轮。
- Logitech 滚轮鼠标。
- 粗糙格子的设计更舒适。
- 滚轮使卷动更容易。
- 可以执行视窗浏览器的 Thumb（拇指）按钮。

（3）Dell 标准鼠标

- 适合左右手使用的舒适外形。
- 容易安装、无需软件。
- 第二按钮可以简捷地访问视窗的菜单。

3．光学设备

你可以定制 Dell PC 的光学设备，这取决于你所选的型号。大多数情况下。CD-ROM 或 DVD-ROM 驱动器都作为一个标准部件来提供，许多时候也为附加媒体提供第二个驱动器仓。这些媒体驱动器都可以用来存储和传输数据、播放音乐和电影，以及制作音乐 CD。

（1）CD-ROM

CD-ROM 读数据文件和把软件装入计算机的成本很低。Dell 的 CD-ROM 已经改进，以提供最高质量的可读性。Dell 的 CD 固件做了特殊的改进，以便从脏的和有划痕的 CD 中提取高质量的音频和数据文件。

（2）DVD-ROM

DVD-ROM 让你可以看到笔记本计算机上水晶般清晰的颜色、图片，也可以听到 DVD 电影的清晰声音。它也可以为你准备好将来的软件及释放在 DVD-ROM 上的大数据文件。如果用户的设备中有完全光阅读性能，DVD-ROM 驱动器也可以有效地读取 CD-ROM 盘。Dell 的 CD 固件做了特殊的改进，以便当盘片变脏和有划痕时也可进行最高质量的数字音频抽取。

（3）CD-RW

CD-RW 允许用户为了备份数据和传递数据来制作自己的数据光盘。它允许你存储和共享视频文件、大的数据文件、数字照片，以及其他人可以通过 CD-ROM 访问的任何大的数据文件。CD-ROM 可以做的事情它都可以做。它可以读你现有的所有 CD-ROM 盘片、音频 CD 及你用 CD 刻录机制作的任何 CD。

（4）DVD/CD-RW 组合驱动器

Dell DVD/CD-RW 组合驱动器带给你 DVD-ROM、CD-RW 及 CD-ROM 的全部优点。它让你节省了 C800/C810 笔记本的宝贵空间，以便用于附加电池和第二个硬盘。使用 DVD/CD-RW 组合驱动器，可以读 DVD-ROM 盘、读 CD-ROM 盘，也可以制作用户自己的数据光盘，这样制作的光盘成本不超过 1 美元却可以保存 650MB 的数据。

（5）DVD+RW/CD-RW 组合驱动器

Dell DVD+RW/CD-RW 组合驱动器带给你可重写 DVD 解决方案的领先优势，以显现的 DVD+RW 标准而建。使用它可以在 DVD+RW 光盘上保存你喜欢的原始录像（用 Sonic 的 MyDVD 或 DVDIt SE 录制的）或者保存高达 4.7GB 的个人数据（以 Roxio 的 Direct CD 格式）。

（6）软驱

软盘驱动器是德尔的 Dimension 系列的标准配置，是在可删除媒介中读写的最常用和最便利的设备。软驱可以在 3.5 英寸的可删除软磁盘上记录最多为 1.44MB 的数据。

（7）Iomega® Zip® 驱动器

一个 Iomega® Zip® 250MB 的驱动器可以处理大量的文本、视频、音频和各种多媒体文件。就像你的硬盘一样存储文件，但容量仅仅受你所拥有的 Zip 软盘数量的限制。多购买 Zip 软盘，以更安全和更便利的存储、备份和共享重要的文件，最多可达 250MB（每盘）。

4．扬声器

扬声器连接在你的计算机上，让你可以听来自计算机的声音。使用高质量声卡和高端扬声器，可以让你的计算机成为多媒体发电站，让你有最美妙的声音体验。如果你想有更好的声音体验，可以选择带附属扬声器和低音扬声器的扬声器系统。

选择配计算机的扬声器时，应考虑以下因素。

（1）扬声器系统的类型

我们提供的入门级的扬声器包括 2 个扬声器或通道，可以放在显示器的左边和右边，以获得基本的声音。两个扬声器可以提供立体声，但几乎不提供低音。要增强音频体验效果，可以给扬声器增加一个低音扬声器。通过增加整体系统功能和激活低音，低音扬声器可以增强音响效果。我们的高端和超高端扬声器系统包括低音扬声器。带有低音扬声器的扬声器系统可以明显增强音频体验。如果你要在计算机上听音乐或播放 DVD，推荐你配置它。

（2）功率

扬声器的功率越大，可以传送的音频能量也越大。功率也决定扬声器可以发出的最大音量。当评价一个扬声器系统时，应考虑通过为每个附属扬声器和低音扬声器增加瓦数系统可以提供的总功率。我们的 Harman Kardon 扬声器的基本系统，包括 2 个附属扬声器，每一个扬声器的输出功率为 3W。至于更大的音量和更丰富的声音，我们的高端扬声器可以做到每个扬声器从 6W～20W 的功率、每个低音扬声器从 18W～100W 的功率。我们的 Altec Lansing ADA995 扬声器包括 5 个扬声器（每个 20W）和一个强环绕低音扬声器（100W），并提供 200 瓦的持续功率。

（3）频率范围

高的频率范围可以改善声音再现的精确度。以赫兹（Hz）来度量频率响应的范围。入门级的扬声器的频率范围从 90Hz～20kHz，限制了可以在音乐、电影和游戏中可以听到的低音的量。带低音扬声器的高端的扬声器的频率范围是 29Hz～24kHz，这将使音调和回声更大。

（4）控制

入门级的扬声器包括最基本的功率和音量控制。如果换成较高端的扬声器，可以通过控制低音与高音来获得更好的听音效果。超高级的 Altec Lansing ADA995 THX Certified 扬声器系统可以完全整合进计算机系统，可以通过 Enhanced Performance 键盘来调整所有的音量控制。

5．调制解调器

要上因特网或收发电子邮件，调制解调器是必需的。调制解调器技术是利用电话线把计算机连接到因特网服务提供商和万维网。

除了上因特网或收发电子邮件外，调制解调器还可以用来从计算机发传真、把计算机变成私人的自动应答机、通过因特网玩游戏或进行视频会议。

Dell 推荐为计算机购买调制解调器。对于那些要进行以下活动的计算机用户来说，调制解调器必不可少：

- 上因特网；
- 发送和接收电子邮件；

- 发送和接收传真；
- 进行视频会议。

Data/Fax/Voice 调制解调器，也叫作电话调制解调器，提供了把计算机作为免提电话和设置为自动应答机的便宜方法。

调制解调器技术利用电话线在计算机之间传输数据，无论在路上还是在家。要上网，用户就必须选择因特网服务提供商。

Unit 3

笔记本电脑

大多数 Sony 笔记本电脑都像欧洲的跑车：紧凑而轻盈。但该公司最近的替换桌面系统 VAIO PCG-GRX570 却像泛美的强力汽车。VAIO 是我们测试的第一台带有超过 16 英寸的屏幕的电脑笔记本，它形体大而重。但是由于它的强有力的引擎，它仍然可以快速上路。

1．重量级选手

PCG-GRX570 的重量大约是 Sony CIMV2 Picturebooks 的三倍，8.4 磅。如果装入这个巨大的重 1.4 磅的交流电适配器，其旅行总重量将高达 9.7 磅。这个 1.9×13.9×11.5 英寸的大盒子倒退到大笔记本计算机常见的年代。实际上，这个巨兽被紧紧地压到标准的笔记本计算机包中。

对于一些人来说，尺寸和重量方面的不足可以通过紫黑色的 PCG-GRX570 的顶板来弥补。只有一点很小的例外，该笔记本电脑的 1.6GHz Intel Pentium 4-M 的处理器。尽管技术上它不是可用的最快移动处理器，但也差不多（GRX 系列的两个版本都带有 1.7GHz 的处理器）。内装 512MB 的内存、40GB 的硬盘和组合 DVD/CD-RW 驱动器，价值 2699 美元的 PCG-GRX570 清楚地规定了当今桌面计算机的替代品。

2．超越众人

该笔记本电脑最主要的特色是宽阔的 16.1 英寸屏幕。这个当今最大的笔记本电脑显示屏，提供了比大多数桌面计算机的替代品的 15 英寸显示屏大 20%的可视空间。CG-GRX570 型笔记本电脑依靠高性能的带有 32MB 视频内存的 ATI Mobility Radeon 7500 图形加速器以 UXGA 分辨率（1600×1200）来驱动这个大屏幕。尽管它留下许多地方可以运行两个或多个程序，但字体和图形有时显得相当小。

VAIO PCG-GRX570 提供了三个 USB 插槽、一个 iLink（FireWire）接口；用于连接调制解调器、以太网、外接显示器、打印机的连接器；供音频输出、麦克风和耳机所用的插座；两个 Type II（一个 Type III）PC Card 插槽；一个必配的 MagicGate 内存条插槽。唯一缺少的东西是串口，它作为系统可选的接口备件（200 美元）。尽管 Sony 以每个 150 美元销售无线 PC Card（PCWA-C100），这个笔记本电脑也缺少内部的 802.11b（Wi-Fi）或蓝牙选件。

VAIO PCG-GRX570 配备带有全尺寸键（19.5mm）的舒适的键盘，但键盘的声音大得烦

人。触摸板也很一般。下面是带有一个 Back 按钮的轻便转盘，可以用来卷动和点击。

3．傲视群雄

我们的实验测试表明，PCG-GRX570′的总分为 157，比当前同类产品的先导者日本东芝公司的 Satellite 5105-S607 落后 7 个点。日本东芝公司的 Satellite 5105-S607 使用 1.7 千兆赫兹移动 Pentium 4-M。另一方面，GRX570 的因特网目录建立分数是 193 分，当今第二。

这么大的系统给电池留出大的空间，因此测试中 VAIO 的电池寿命长就不令人惊讶了。4000mAh 的锂离子电池持续了 2 小时 26 分钟，远远领先于 Satellite 5105-S607，但比 Micron 公司的以 Pentium 4-M 为动力的TransPort GX3慢。不幸的是，更换 VAIO 的电池时需要去掉盖子，而且没有电量指示器。

4．Sony 温和的一面

PCG-GRX570 的特点是软件各色俱全，包括装入音频、视频和数字图片标题。你有 Microsoft Word 2002，但要使用 Office XP 就必须更新。尽管 Sony 包括了简明设置小册子，但它不是我们希望看到的与该系统相称的资深用户手册。幸运的是，可以通过点击来获得另外的帮助。Notebook Setup 实用软件合并了许多设置，一个单独的小软件链接到公司在线支持中心。Sony 提供 24/7 的电话支持，但免一年部件费和人工费的保修太短了，我们鼓励买主花 199 美元把它加到三年。

Sony VAIO PCG-GRX570 明显地不适合频繁旅行者。一旦你不计较它尺寸和重量，它就是一个带漂亮显示器的桌面计算机的有力替代品。只有一点点问题，如没有内置的无线网络、键盘噪音大、保修期短，使它屈居这类计算机的领先者之后。

5．挑选笔记本电脑时应该考虑什么

（1）处理器

笔记本电脑中最主要的芯片——处理器或 CPU（中央处理器），有延长电池寿命的重要的管理功能。像在桌面电脑中一样，处理器的主要度量是其时钟速度，以兆赫（MHz）或吉兆赫（GHz）度量。笔记本电脑总是比配置同等 CPU 的桌面电脑更慢和更贵。AMD Duron 和 Intel Celeron 芯片组经常用在廉价笔记本电脑中。AMD Athlon 4 和 Intel Pentium III-M 用在性能更好的笔记本电脑中。第三个厂家 Transmeta，提供 Crusoe CPU，其性能类似于 Celeron 和 Duron，但用电很少，使它们适合超级轻便的笔记本电脑。Apple iBook 和 Titanium 各自提供 PowerPC G3 和 G4 处理器。

（2）内存

在笔记本电脑中，内存比桌面电脑简单了许多，因为大多数笔记本电脑都使用 SDRAM。也有使用 Small Outline（SO）内存模块的，价格比标准桌面模块稍高一点。你实际需要的内存量取决于你的操作系统和你计划要运行的软件。一般凭经验的规则是： Windows XP 或 Mac OS X 需要 256MB、其他的 Windows 和 Mac 操作系统需要 128MB。

（3）硬盘

因为它们必须小、用电少并吸收震动，所以笔记本电脑的硬盘比相应的桌面电脑慢且贵。笔记本电脑的硬盘最高 48GB——价格比默认的 20GB 的笔记本电脑的硬盘贵数百美元。

5400rpm 的硬盘比 4200rpm 运行要快。移动硬盘的故障率远远高于桌面计算机的硬盘，所以要寻找自检测、分析及报告技术（SMART）以便对可能发生的问题尽早警告。

（4）光驱

当然你需要用光盘来安装软件。除非你要买一个便宜的型号，否则不要买比 CD-RW 更差的驱动器。使用既可以读 CD-ROM 也可以刻录 CD-R 或 CD-RW 盘的驱动器，可以避免增加一个大的软盘驱动器。要路途看电影和玩魔鬼游戏，考虑使用速度是 DVD 两倍的 CD-RW 驱动器。最便宜的笔记本电脑包括固定驱动器，但可替换驱动器舱为你提供了最佳灵活性。最小和最轻的型号可能什么光驱也没有，而是依靠外挂驱动器。

（5）显示器

笔记本电脑使用液晶显示器，显示范围是 12.1 英寸～15 英寸。对于大多数人来说，液晶显示器的屏幕必须在 14 英寸或以上才能以 1024×768 的分辨率（这是首选的 Windows 分辨率）舒适地观看。笔记本电脑的液晶显示器以前在亮度、颜色和清晰度上差别很大，但现在不了。质量都超过了基础要求，差别不明显。不幸的是说明书很少谈到，所以如果你很在意显示屏，可在你当地的经销商处进行比较。

（6）尺寸和重量

像拳击手一样，笔记本电脑也分重量级。除了某些例外，几乎全部的笔记本电脑都可归入 4 个等级之一。超轻便式的重量不到 4 磅、1～1.5 英寸厚、有 12.1 英寸或更小的屏幕、没有内置驱动器并有省电的较慢的 CPU 和硬盘。稍微大一点和重些的薄轻型笔记本电脑有 14.1～15 英寸的显示屏、一个驱动器舱、更快的 CPU 和硬盘。目的在于平衡尺寸、重量、功能和电力的主流笔记本电脑更重，可能会包括一个固定驱动器，但通常对资金紧张的人来说，它最值。最后，桌面替代笔记本针对那些不注意尺寸、重量或价格的人。这些系统重量可以高达 10 磅，但提供顶级性能、最大的显示屏和最多的功能。

（7）视频

像桌面计算机一样，大多数笔记本电脑都有专门用于视频的处理器和内存。视频内存的数量取决于笔记本电脑的等级。小的笔记本最多 8MB，而桌面计算机替代机可以提供像桌面电脑一样的 32MB 或 64MB。由于如 Nvidia 等公司的创新，笔记本电脑的视频卡比以往任何时候都能更好地显示电影、游戏和色彩。尽管这样，其性能仍不能与一个较便宜的驱动标准 CRT 显示器的桌面图形卡相比。玩家应该寻找 4X AGP 替代 2X AGP 并提供三维图形支持。为了演示和在桌面使用，一定要有最少支持带 32 位色彩的 1280×1024 的 VGA 接口。

（8）通信

实际上，全部笔记本电脑都带有内置的 56K 调制解调器。内置的以太网连接器也将迅速成为标准配置。这些连接器经常被整合在一个内部迷你 PCI 卡上，这样就可以留下你的 PC 卡槽用于其他外围设备。许多笔记本电脑也包括一个用于无线网络（802.11b）的内置天线。但接受器通常是可选的，其价格约为 150 美元。

（9）接口和扩展槽

几乎全部笔记本电脑都有一个打印机接口、一个用于外接显示器的 VGA 接口及至少一个用于外部设备的 USB 接口。大多数还带有两个 PC Card 槽，尽管它们已经不再是带有内置的 56K 调制解调器和内置以太网连接器的笔记本电脑的基本配置。为主要使用笔记本电脑的人提供了外接键盘和鼠标接口。如果你打算用笔记本电脑播放 DVD 或作演示，可以找一个

多媒体插座（组合立体声和视频输出）。对于家庭用户，立体声输入、游戏接口、MIDI 连接器和一个 IEEE 1394 接口（用来捕捉和编辑数字视频和连接外部存储设备）是理想的。如果缺少什么，你通常可以买一个接口复制器或坞站，它可以增加连接器、为更多驱动器和卡提供空间，也可以方便地在远离计算机桌的地方插入电缆。笔记本扩展选件通常比较贵，所以最好买一个完全满足你需要的笔记本电脑。

（10）电池

笔记本电脑普遍地使用锂离子电池。性能越好的笔记本电脑需要的电池就越大、越重，以保证它的运行时间。厂家的电池寿命额定值是省电情况下的值（暗的屏幕、慢的 CPU、休眠的驱动器、没有连接因特网）。我们自己电池性能测试报告的全部评价基于标准用法。一些笔记本电脑提供双电池或一个薄片电池（一个附加电池），以便在跨国飞行时有足够的电。

（11）服务和支持

大多数厂家都提供至少一年的免部件费和免人工费的保修（一些提供三年保修）。大多数也提供现场服务——技术人员上门服务——并免技术支持费用。如果你不是一个高水平的用户，则值得多花一点钱把保修期延长到三年。

Unit 4

个人打印机

具有成本意识的家庭、学生和在家工作的用户经常会购买 100 美元以下的喷墨打印机，作为经济地获得基本打印性能的途径。这些超廉价的打印机通常会牺牲许多功能来保持低价格，但本文提到的三种型号却令人惊奇：有点给人深刻印象的输出效果、在特定情况下令人惊讶的打印速度及一些有用的功能，这些功能包括从对新手友好的设置指南到老练的图片增强控制。警惕那些隐藏的长期的交易，像不得不购买一个连接电缆（我们测试的机器都没有带）、支付昂贵的墨水费用或摆弄经不起家庭用户折腾的脆弱的纸盘。

购买 Epson Stylus C60 打印机是可以忍受的。该喷墨打印机打印文本的速度很快，但并不完美，图像质量惊人——却非常慢。然而，如果以一些对新手友好的文档和便宜的墨水作为补偿，C60 打印机就会成为家庭用户或学生以及手头拮据的数字摄影爱好者的一致选择。

1．对网络新手亲切而和蔼

新用户非常欣赏 79 美元 Epson Stylus C60 打印机对用户友好的步骤。该打印机带有一个大的彩色 Start Here 卡，这个卡可以使你很容易地连接打印机、安装墨水和纸张以及设置驱动程序。小册子 Printer Basics（打印机基础）给你更详细的发现和处理故障的建议，甚至也包括要运输打印机做包装的建议。里面的 CD-ROM 有更详细的 Reference Guide（参考）、Epson Print Show 录像（动画演示基本打印和使用方法）及驱动程序（用于并行连接：Windows 95、98、Me、2000 及 XP；用于 USB: Windows 98、Me、2000 及 XP，加上 Mac OS 8.5.1 到 9.1; OS X 驱动程序，它们都是联机可用的）。你也可以获得一个叫做 Epson Film Factory Lite 的程序，

它可用来收集、编辑和存储各种数字图像)。唯一没有包括的是一个 USB 或并行连接的电缆，需要另外购买。

Stylus C60 的紧凑设计适合绝大多数桌面。可以放 100 张纸的打印输入盘垂直地连接到打印机背面的顶上。增加了大约 1 英尺的高度。输出盘从打印机前的底座伸出，增加了大约 6 英寸的宽度。还有，打印机支持纸的类型包括：信封、照片纸、明信片、幻灯片和不干胶贴纸。

Stylus C60 的驱动程序很复杂但很友好，即使对新手也是。除了一些，如 Paper Type（纸型选择）和 Orientation（方向选择）这样的基本功能以外，边距调整和如 Photo Enhance（图片增强）这样的用户化图像及色彩管理设置，使你可以针对人物、自然图像等调整调色板。

2．始终如一的优良输出质量

但是，如果没有快速高质量的输出，这些便利将一无所值。在我们的实验室测试中 Stylus C60 的文本打印速度为每分钟 5.9 页，比许多更贵的打印机要快。在普通纸张上和 Epson′s Photo Quality Inkjet 测试专用纸张上字母的打印质量都挺好。我们注意到有一些锯齿状的和细的水平带，但总体而言，打印是密集和相当饱满的。图片打印要慢一些，每张 8×10 的图片要花 6.2 分钟，但打印结果证明等待是值得的。我们测试的图片的外表看上去是光滑而自然、色彩丰富并着色精确。普通纸张上的图形色彩匹配良好且底纹光滑。在 Epson 喷墨纸张上，颜色精确——有点偏亮——图片要素看上去圆润。

直到你购买替换的墨水之前，许多喷墨打印机看上去廉价，而 Stylus C60 不是这样。打印花费是合理的：文本每页 6 分而彩色每页 26 分。

Epson 对 Stylus C60 型打印机有特殊的服务和支持计划。你可以花 14.95 美元把一年保修延长到两年。花 24.95 美元可以延长到三年。对产品提供终生免费电话服务，周一到周五，太平洋时间早上 6 点到晚上 8 点；周六，上午 7 点到下午 4 点。Epson 的网站也提供有用的资源，如最新的驱动程序（包括 Mac OS X 所用的驱动程序)、FAQ 及操作指南。

100 美元以下的打印机没有完美的，但 Epson Stylus C60 巧妙地平衡了其优点与不足之处。学生们将喜欢喷墨打印机的快速打印、看上去不错的文本打印质量；业余摄影师喜欢漂亮的图片，即使慢一点也没关系。最吸引人的是每个人都买得起的价格。

3．挑选打印机时应该考虑什么

（1）打印机类型

有三种技术支配个人打印机：喷墨、激光和使用更少的 LED（发光二极管）打印机。使用可替换的、喷射微小墨滴的个人喷墨打印机的价格最低、打印速度慢、但通常有令人满意的彩色输出效果。激光打印机和发光二极管打印机应用了与光复印机相似的处理过程。在这个过程中感光鼓把装好的墨粉粒滚到纸上，这样很快打印出清晰的打印品。因为打印速度更快、也更容易维护，所以几乎全部的工作组模式都使用激光打印机和发光二极管打印机。

（2）输出类型

要打印许多黑白文档吗？买激光打印机和发光二极管打印机吧！它们的速度快并且消费

品成本低。需要输出彩色吗？买喷墨打印机。有图片质量的喷墨打印机通常可以产生最好的自制彩色图片，但预先告诉你，它们通常比普通喷墨打印机的速度慢（它的启动很慢）。不要为了省钱而购买喷墨打印机：尽管前面花的钱比激光打印机少，但喷墨打印机的彩色墨盒和覆膜纸的成本会快速增加。商家需要良好的彩色输出质量并大量打印，往往会选择既快又贵的彩色激光或 LED 打印机。图形专业人员会尝试特殊用途的彩色打印机，使用一些替代技术，如固体墨水、升华染色、热彩色胶片、热蜡等等。

（3）最大分辨率

个人激光打印机提供每英寸 600 点——对清晰的单色输出这个分辨率足够了。一些昂贵的组激光打印机的分辨率为 1200dpi 或甚至 2400dpi。典型的喷墨打印机声称其输出分辨率为 1200 dpi 或 2400dpi，但是，其清晰度不能与激光打印机相比。因为，喷墨打印头逐行打印出微小的墨点，这是一个远远不精确的过程。通常，你可以忽略喷墨打印机的 dpi 声称，如果可能，直接比较其实际打印输出质量。

（4）已安装的内存

典型的个人打印机几乎不需要内存。喷墨打印机需要的内存量也很少，仅仅够保存打印一行的点阵或略微多一些就行了。激光和 LED 打印机是页式打印机，这意味着在打印之前必须把一整页装入内存。然而，一些个人打印是基于主机的打印机，它可以通过使用计算机的处理器和内存来管理打印任务从而来降低成本。高端的、可以直接连入局域网络的工作组打印机可保存许多页、笺头图形、表格、特殊字体等等，所以要求机外的内存在 32MB 和 128MB 之间（可扩展到 256MB 或 384MB）。

（5）最大速度

以每分钟页数来度量（ppm），这个规格总是被夸大。激光打印机打印文本的速度只比厂家声称的速度略慢一点。但喷墨打印机所声称的速度都是在低打印质量的设置下打印非常简单文本内容时的速度——换句话说，在现实中根本看不到。实际检查的结果是：喷墨打印机打印一幅 8×10 的彩色图片可能要花费 2～15 分钟不等。

（6）月工作负载循环

厂家说明书建议的最大页数是打印机每月可以处理的量。这最初只涉及小型办公室和工作组打印机，不涉及个人打印机。这是 IT 部门单凭经验的方法：要避免崩溃，购买月工作负载循环大约四倍于你打算实际每月打印页数的打印机。

（7）接口

几乎所有的个人打印机现在都带有通用串行总线（USB）接口，USB 接口比老式的并行接口快得多。只有老式的计算机没有 USB 接口。对于较大的工作组来说，需要可以通过以太接口直接连入网络的打印机。

（8）操作系统支持

这个问题比你想象得大。一些打印机完全不支持 Mac 计算机，而且在提供与 Windows 最新版本完全兼容的驱动程序之前，许多厂商不慌不忙。那些畏缩不前的、不及时制作新驱动程序的厂家可能武断地缩短你的打印机的生命。

（9）保修和支持

打印机一般带有一年最多两年的保修。有些厂家也会提供额外的价格，来延伸工作组型号打印机的保修期。

Unit 5

带 DDR333 和 AGP 8x 的 VIA P4X333

1．USB，AGP 8x，DDR333，ATA/133: 完美的芯片组

有时新推出的芯片组往往缺乏创新。但这次不是。VIA 以前“只是一个芯片组制造者”，现在已排行全球芯片组市场的第二。它在竭尽全力扩展通过制造一系列成功的芯片组而得到的良好声誉。许多测试表明，Pentium 4 缺乏发挥它全部潜力的带宽。P4X333 平台可以补救这个不足吗？

看起来好像 VIA 应该能够继续成功地完成这个事情——这个新的芯片组确实提供了一些功能，而这些功能正是我们中的大部分人一直在迫不及待地等待着的。USB 2.0 将成为各种计算机主要的外部接口，显然 VIA 没有它是不行的。新的南桥芯片 VT8235 不仅支持 USB 2.0，也支持 UltraATA/133 的 IDE 接口。尽管 Maxtor 是唯一提供这种驱动器的制造厂家，但有这一最先进的接口当然没有错。最后，VIA 强调它在南桥与北桥之间的总线带宽是双倍的，现在的传输速率是 533 MB/s（刚好与 SiS 一样快，是 Intel Hub 结构的两倍）。

最后但不是最不重要的问题，这篇文章不能回答：AGP 8x 怎么样？根据说明书，VIA 实行了新的图形卡接口，该接口最终实现了图形适配器和北桥之间的双倍带宽。过去，从 AGP 1x 升级到 2x 和 4x 总是能提升图形处理性能。另一文章将讨论这一话题。这里，评价 P4X333、特别是新的内存接口的性能不是主要因素。而是要抓住众所周知的因素，如 GeForce 4 TI4600、512 MB DDR333 SDRAM（CL2.0）和 Maxtor 的快速硬盘驱动器。让我们看看这个芯片组的作用吧。

2．VIA 对 Intel：快速概要

VIA 插足了已经被芯片巨人 Intel 控制的市场。Intel 的优势是它为自己的处理器提供芯片组，这样，就提供了一个迅速而可靠的平台。

Intel 曾经必须经受的唯一挫折是 Pentium III芯片组 i820 带来的灾难，及所谓的“内存转换中心”，MTH 应该能够在为 Rambus DRAM 设计的芯片组上使用常规的 SDRAM 内存。不幸的是，这个 MTH 芯片有某些无法排除的缺陷，整个事件得一绰号“Caminogate”——表明用于 i820 的代号。

由于这个灾难，Intel 逐步淘汰了 820 芯片组并发布 815 来替换老的 BX。这个芯片组的改进版本（815T）用于今天的 Celeron 和 Pentium III CPU，但由于 Intel 的错误，VIA 通过提供 Apollo Pro 133A 芯片组（由于 i820 + MTH 的失败，使 Apollo Pro 133A 芯片组成为那时最快的 PIII芯片组），使其市场迅速壮大。

从此，来自台湾的产品在坚固性和性能方面持续增长。今天，VIA 很强大，足以推动自己的技术研发（如 C3、Eden 及现在带有 AGP 8x 第一个芯片组）。

3．另一个竞争者：SiS

然而，还有另一个没有睡眠的竞争者——矽统科技公司（SiS），在过去的几个月内，它努力摆脱自己的“非常低价”的形象。它让我们惊奇的第一个产品是用于 Athlon 的 735 芯片组。今天，SiS 提供可用于所有普通 PC 结构的多种芯片组。645DX 是他们用于 Pentium 4 的旗舰产品，该产品也支持 DDR333 和 533 MHz FSB，但不支持 ATA/133、USB 2.0 和 AGP 8x。当 VIA 仍然为 Pentium 4 总线许可证而奋斗的时候，SiS 已经被正式许可销售 P4 芯片组了。这个问题可以决定 P4X333 成功与否。例如，在欧洲，获得基于 P4X266A 的主板（除 VIA 品牌外）并不那么容易，因此，看起来那些大的主板厂家仍然很谨慎。

4．为图形做准备：AGP 8X 支持

P4X333 是第一个支持 AGP 8x（或 AGP 3.0，更准确地说）的 Pentium 4 芯片组。尽管 2000 年后期已经定义了标准，但没有贯彻到行业中。即将推出的 Intel 芯片组 i845E 和 i845G 既不支持 AGP 8x，刚刚发布的 850E 版本也不支持。另外，现在没有可用的 AGP 8x 图形卡，所以也许不算悲惨。

你也许会奇怪为什么在图形卡和系统之间必须有如此巨大的带宽。一方面，图形适配器总是可能把纹理或其他数据交换给主内存。大多数 BIOS 都有叫做“孔径尺寸”的一项，在那里可以定义图形适配器可以使用的最大内存容量。用板载图形和统一内存结构（没有指定的显示内存）运行的机器将非常明显地受益于双倍带宽。但无论如何 AGP 总线的流量相当大，所以我们期望在大多数基准中性能增强。

在 AGP 4x 与 AGP 8x 之间双倍带宽主要通过以八倍频 66 MHz（结果是 533 MHz）运行的 AGP 来实现，而不是四倍频。听起来不熟悉吗？不，Pentium 4 与其系统总线做的事情一样。迄今为止，它一直以 100 MHz 四倍频（= 400 MHz）运行，最新的芯片组（850E，845E）把时钟速度提高到 133 MHz。因此，FSB 和 AGP 保持伪同步运行。

下表显示了全部 AGP 标准之间的不同。

	AGP 1.0	AGP 2.0	AGP 3.0
名称	AGP，AGP 2x	AGP 4x	AGP 8x
信令	3.3 V	1.5 V	0.8 V
时钟速度	66 MHz 双倍频	66 MHz 四倍频	66 MHz 八倍频
总线宽度	32 位	32 位	32 位
带宽	533 MB/s	1066 MB/s	2133 MB/s
向后兼容	是	是	仅对 AGP 4x

AGP 8x 使用与 AGP 4x 相同的连接器，不同仅在于对某些针再分配以便支持新的信令。这样，就可以运行所有 AGP 8x 和 AGP 4x 图形卡——但 AGP 2x 不行。这意味着不能使用 1999 年中期之前制造的图形适配器。因此，你将不得不再次牺牲向后兼容性来得到更快的平台。

5．对带宽问题的回答：DDR333

即使 ATA/133 接口、USB 2.0 和 AGP 8x 都非常重要，而且也令人满意，但与内存控制器加上组合内存相比，它们对总体性能的影响较小。当时钟速度从 133 MHz 增加到 166 MHz

（双倍频），DDR-SDRAM 的最大带宽从 2.1 GB/s 爬升到 2.7 GB/s（这就是该标准也称为 PC2100 和 PC2700 的原因）。

这仍然比双通道 RDRAM（3.2 GB/s）的速度慢，但传统的 SDRAM 只能承受 RDRAM 等待时间的一段。这样性能相当或更好。这也是 RDRAM 内存时钟也从 400 MHz 增加到 533 MHz 的主要原因。顺便说一下，这里我们所用的测试设置与我们评论新的 VIA 芯片组时相同。

当谈论 DDR333 内存时，我们不应忘记有两种 RAM 可用：CL 2.0 和 CL 2.5 模式。仅仅几天前我们发布的文章表明了快（CL2）和慢（Cl2.5）内存设置之间的不同。基本上说，如果等待时间比较短，则 CL2 是首选的。

许多 THG 读者询问 CL2 模式下的 DDR266 与 CL2.5 模式下的 DDR333 之间的不同。差别相当大，或换句话说：无论你运行的速度是多少，DDR333 总是比 DDR266 快。仍然，我们建议，如果可能你去找更快的 DIMM。

6．芯片体系结构：板载柔性

除技术规范和性能评测之外，P4X333 引进了新的南桥，即 VT8235。除标准功能（AC97 声音系统、串并口、IR 接口、键盘和鼠标控制器、PCI 桥）外，该芯片还为 VIA 芯片家族引进了 USB 2.0 和 UltraATA/133。注意 P4X333 和 VT8235 与它们的前辈 P4X266/A 和 VT8233A 是针脚兼容的，这使得它们可以容易地互换。

因此，主板厂家可以快速地把他们的产品转换到 P4X333，而无需花费昂贵的费用来修改生产过程和主板布局。

7．VIA P4X333 基准板

基准主板配备有最高的硬件功能，芯片组直接支持。它有 6 个 PCI 槽、1 个 ACR 槽、3 个用于 DDR266 或 DDR333 DIMM 的 DIMM 插座、AC97 声音系统、100 Mbit 网络适配器和 UltraATA/133 接口。很可能这个主板只需经过一些修改（如果要修改的话）不久就可得到。

8．基准测试结果

为了给出平衡的、完整的 P4X333 性能景象，我们运行了 25 个基准测试。请注意全部测试都是用 Intel 最新的 Pentium 4、在 2.53 GHz 模式下、以 133 MHz FSB 来执行的。由于时间限制，我们不能为本评论再测试其他全部的芯片组，所以我们选择一个主要的竞争者来代替。

我们选择 i850E 与 P4X333 竞争有三个原因：首先，它的前辈 P4X266A 和 Intel 845D 都不能以同样的速度运行 DDR333。其次，它们绝无可能以 133 MHz FSB 运行 Pentium 4。第三，Intel 打算无论如何都要在下一周发布更新的、支持 DDR333 和 FSB133 的 845 芯片组。

Unit 6

TFT 指南

当前平板显示器市场的发展一定会使一些销售商想起以前的日子，在那些日子里，利润

率和需求仍很有吸引力。高速增长的需求、产能不足、持续的高报废率，使销售商处于理想的境况之中。为了节约桌面空间和能量，潜在用户不得不花很多钱来购买平板显示器。然而这种情形不会持续太久，因为市场会受销售动力的影响而改变方向和价格。

TFT 指南的第一部分提供了 TFT 市场状况、价格和发展趋势的概况。新手和专业人士都可从中获益。我们将详细描述平板显示器的功能、特性和技术。本文包括对买家有用的提示。

第二、第三部分将专注于有技术头脑的读者。我们将报告用于增加视角的当前技术、最新的数字接口（DFP 和 DVI）以及像素间的关系和显示器最大可能的对角尺寸。

最后我们将报告这个领域最重要的公司和展示各种型号的产品。我们将关注价格并报告价格的变化。

1．什么是 TFT——了解技术

现代显示技术通常被分为两类：阴极射线管显示器和平板显示器。阴极射线管显示器很大也很占地方，而平板显示器——即没有射线管——如其名称所示，是平的并节省空间。平板显示器本身也包括许多不同的技术，如 LCDs（液晶显示器）、等离子显示器、LEDs（发光二极管）及其他几种。有了这些技术，人们能够区别出发光平板显示器和背光平板显示器。

我们将讨论这些显示器，目前看这似乎最有意义，所谓的 TFT-LCD。这些都属于背光设备。也使用 STN 和 DSTN（中性矩阵 LCD），但现在主要用于非常廉价的笔记本计算机中。

2．TFT 是如何工作的

TFT 代表“薄膜晶体管”，描述可以有效地控制单独的像素的控制元素。因此，也叫做“动态矩阵 TFT”。其图像是如何产生的？基本矩阵相当简单：用了一个带有许多像素的可以发出任何颜色的平板。为此，使用背光，它通常由一系列的点状管组成。为了照亮单个像素，它需要很小的“门”或“窗”，以便打开时让光线通过。当然，这个技术是相当复杂的，也比以上的解释复杂得多。LCD 代表基于液晶的显示器。液晶可以改变其分子结构来允许不同级别的光线通过（或者阻挡光线通过）。两个偏光过滤器、颜色过滤器和两个阵列层确切地确定多少光线可以通过和何种颜色可以建立。该层位于两个玻璃面板之间。给阵列层上施加一个特定的电压，这样就建立一个电场，该电场决定液晶的排列。因此屏幕上的每一个点（像素）都需要三个成分：分别是红、绿、蓝，就如阴极射线管设备中的显示管一样。

最常见的设备是旋转排列的向列 TFT。下面将解释这种 TFT 设备的工作方法。存在一系列明显不同的技术。

当没有施加电压时，其分子结构按它们的自然状态排列并旋转 90 度。背光可以通过这个结构，射出光线。

当施加电压时，也就是建立了电场，液晶被旋转变为垂直排列。偏振光被第二个偏光器吸收。在这种情况下，光线不能离开 TFT。

3．TFT 像素的结构

红、绿、蓝颜色滤光器被整合在互相靠近的玻璃基片上。每一像素（点）都由这样三个颜色单元或子像素单元组成。这意味着 1280×1024 像素的分辨率存在 3840×1024 个晶体管和像素单元。对于 15.1 英寸 TFT（1024×768 像素）的点距或像素距是大约 0.0188 英寸（或 0.30

mm），而 18.1 英寸 TFT（1280×1024 像素）大约是 0.011 英寸（或 0.28 mm）。

像素是决定性的，间距越小分辨率可能越高。然而，由于其最大显示面积的限制，TFT 也有物理局限。有 15 英寸（大约 38 cm）对角线长度和 0.0117 英寸点距（0.297 mm），有 1280×1024 的分辨率没有意义。第四部分更详细地讲述了点距和对角线尺寸之间的关系。

4．TFT 显示器的优点和缺点

因为你会相当熟悉传统射线管显示器的特点，所以我们只强调 TFT 显示器与 CRT 显示器在以下方面的不同。

由于可以通过晶体管有效控制像素，所以 TFT 显示器可以提供非常好的聚焦特性。与 CRT 显示器相比，另一个优点是没有几何及收敛误差，这是因为它的技术本性。为什么 TFT 不抖动？这很简单。因为它没有使用在屏幕上每一行从左到有扫描的电子束。当电子束从显示器的右下角回到左上角时，这些 CRT 上的光就暂时被有效地切断了。相反，TFT 的像素从来无需关闭，它们只是简单地连续改变它们的强度。

5．理想的 TFT——购买时要考虑什么

要购买平板显示器？首先要与经销商联系并查看说明书，看是否符合你的要求。

6．未来会把我们带到哪里——新的技术

当前有两个很重要的发展。第一个就是平板厂家正在改进视角。同时通过使用薄膜来改进标准的 TF（旋转排列的向列），有些厂家也在研究不同的领域。

本文从视角技术角度讨论了如 IPS（板内开关）和 MVA（多范围垂直队列）这样的新技术的优点会给我们带来什么。第二个趋势是明确地朝数字控制方向发展。

7．总结

对于像字处理和电子表格这样的标准办公应用软件，平板显示器提供了极好的聚焦和足够的颜色质量。TFT 在人类工程学方面也有许多贡献：所需桌面空间小、电能消耗是标准射线管显示器的三分之一、当然还有极低的辐射值。TFT 不适合需要高质量图形显示的图形设计者。对于主要在个人计算机上玩的用户来说，当前型号的响应时间确实不理想。因此，今天的 TFT 设备不能够很好地放电影、看 DVD 及演示。

当然，只有当平板显示器的价格下降了并且其实用性得以改善时，才能进入家庭。

Unit 7

Windows XP

Windows XP 是继 Windows 2000 和 Windows Millennium 之后又一个微软的 Windows 版本。通过整合 Windows 2000 的性能，Windows XP 集中了 Windows 操作系统，建立了最佳的 Windows。Windows 2000 具有标准的安全性、易管理性及可靠性以及 Windows 98 和 Windows

Me 的最佳性能。Windows 98 和 Windows Me 具有即插即用、易使用用户界面和创新的支持服务性能。

1．智能用户界面

在保持 Windows 2000 的核心的同时，Windows XP 具有全新的视觉设计。整理和简化了常规任务，增加了可视化提示，以便使你更容易地操作计算机。本节介绍在用户界面方面的革新，用户界面可以让你在工作中或家中更容易地使用计算机。

（1）计算机多用户间的快速用户切换

快速用户切换（Fast User Switching）为家庭用户而设计，让每一个人使用单一计算机，就像这个计算机是他或她的一样。不需要让某人退出和决定是否保存另一个用户的文件。而 Windows XP 利用终端服务技术的优势，把每一个用户的对话期作为一个独立的终端服务的对话期，这样确保了每一个用户的数据都是完全独立的。

如果你使用的是 Windows XP 家庭版，快速用户切换（Fast User Switching）功能缺省地被激活，如果你在孤立的计算机上或连在工作组中的计算机上安装了 Windows XP 专业版，也可以使用该功能。如果把安装了 Windows XP 专业版的计算机连接到一个域中，则不能使用该功能。

快速用户切换功能可以让家庭用户非常容易地共用一个单一的计算机。例如，妈妈用计算机做财务并要离开一小会儿，儿子可以切换到自己的账户玩游戏。财务应用软件还在运行，妈妈的账户还开着。做这些不需要退出。有了这种新的 Welcome 画面，切换用户很容易，也可以容易地为每个在计算机上注册的用户定制图片。

（2）新的视觉风格

Windows XP 具有新的视觉风格，使用清晰的 24 位色彩图标及容易与特定任务关联的颜色。例如，绿色表示你可以做的或到某处的任务，如 Start 菜单。

（3）重新设计了 Start 菜单

设计 Start 菜单来适应你的工作方式。首先显示你喜欢的 5 个程序，你默认的电子邮件和网络浏览器也总是有效的。把你最常用的文件和应用程序分组，以便快速集中和容易访问。一个点击就可获得 Help and Support（帮助和支持）以及配置系统的工具。另外，你可以进一步定制你的 Start 菜单，以便适合自己的需要。

（4）搜索伙伴

通过与任务相关的分组搜索，Windows XP 可以容易地进入 Search Companion 进行搜索。

（5）我的文档

通过把文件放在不同的组中，Windows XP 可以容易地跟踪文件。你可以按类型查看文件，也可以按你最后修改的日期查看文件，如：今天、昨天、上周、两个月前，今年初或去年。

（6）网页浏览

Windows XP 使用网页浏览技术来帮助你更好地管理文件和文件名空间。例如，如果你选择了文件或文件夹，你可以看到一个可选列表，它允许你更名、移动、复制、发电子邮件、删除或把文件或文件夹发布到网络上。这个功能跟你在 Windows 2000 中右键点击文件或文件夹后看到的相似。Windows XP 提供这些信息并把它直接显示在桌面上。

（7）文件分组

Windows XP 通过把同样的应用按不同情况分组提供了容易管理的任务栏。例如，把在

任务栏上水平排列的 Microsoft Word 已有的 9 种例图组合到一个任务栏按钮上。这样，只要看一个任务栏按钮，就可以看出应用程序打开的文件数。点击这个按钮就可以垂直地列出全部文件名，另外，这些文件同时可以层叠、平铺和最小化。

（8）用户界面增强效力

这个新的用户界面把 Windows 操作系统带到一个新的可用性水平，完成复杂任务比以前快得多和容易得多。文章的剩余部分主要讲述 Windows XP 中的新技术。

2．全面支持数字媒体

（1）Windows Media Player 8

Windows XP 带有 Windows Media Player 8 的特点，Windows Media Player 8 可以支持常用的媒体应用，包括：CD 和 DVD 播放、自动唱片点唱机管理和录制、制作音频 CD、因特网收音机播放，及把媒体传输到轻便设备。

Windows Media Player 8 包括了许多新功能，如带有丰富媒体信息和全屏幕控制的 DVD 播放、CD 到 PC 的音乐复制和 MP3 文件的自动转换。Windows Media Audio 8 提供了大约 3 倍于 MP3 的存储量，带有快速音频 CD 刻录，并且具有比数字媒体更容易控制的智能媒体跟踪功能。Windows XP 内，有一个新的“我的音乐”文件夹，更易于常用音乐的播放。

另外，Windows Media Player 8 还包括以下功能：

可以通过控制网络来启动 Windows Media Player。Windows Media Player 有一个可以通过网络展开的标准化的公司皮肤。如果激活 Active Directory®服务，管理员就可以指定一公司皮肤、限定重放格式和规则，并且可以以每组或每一用户为基础，指定其他定制。（这需要客户的计算机运行 Windows XP Professional。）

支持数字广播。支持模拟和数字电视（包括 HDTV）。这包括信号解调、调谐、软件分离信号及操作存储。另外可以使用 IP 数据广播，如从数字电视信号中抽取媒体流。

加速的视频播放。使用了 DirectX® APIs 子集，标准化的 MPEG-2 视频加速使回放更平滑和更快速。

视频混合播放器。这支持阿尔法混合，让你进入多个视频、覆盖它们，或整合文本标题。视频被看作一个结构，可以利用 3-D 图形。例如在视频转动时，你可以覆盖一个立方体每一面上的视频。

扩展了对多种音频卡及其特色的支持。例如，声卡厂家可以提供杜比数字的支持。

（2）Windows Movie Maker

Windows Movie Maker 1.1 版本提供了 Windows Media 捕捉和文件创建、视频和音频的简单编辑、保存和出版 Windows Media 文件的基本功能。虽然只能以 Windows Media 的格式输出，但可以接受各种文件格式的输入，及 DirectShow 体系支持的压缩文件。

如果你的计算机没有包含任何视频捕捉卡，该应用程序的所有其他非视频、与捕捉有关的功能都在充分发挥作用，允许输入和编辑计算机中的媒体资源。

Windows Movie Maker 有许多实际的用途。如果要把你的家庭录像档案收集到计算机的硬盘中，你可以录制、编辑、编排和共享计算机中的家庭录像库。也可以通过电子邮件或网络与家人和朋友分享这些录像。如果你要制作幻灯片，可以组合精制的图片并发布为 Windows Media 格式。

（3）支持数字图片

Windows XP 可以容易地使用数字设备，并提供各种图片操作选择，如：把图片发布到网络上、电子邮件图片（选择把它们的容量缩得较小）、以自动播放格式播放图片并允许放大图片。

Unit 8

微软 Word

微软 Word 可能是 Office 系列中最常用的一项。事实上，在小企业和大公司中，通常用微软 Word 来写信，即世界上的每一个秘书，应该至少知道如何使用微软 Word 才能被雇用。Word 也是客户使用最广泛的软件，有的用户购买 Office 软件包可能就是为了使用微软 Word。微软再一次把目标瞄准了使更多的人使用微软 Word，并尽量使它更容易使用。实际上微软 Word 已经改变了许多，并有意与 Windows Whistler 整合在一起。工具栏背景的颜色是淡灰色，而当鼠标移过工具栏时，就会变成淡蓝色，并使整个菜单呈淡灰色。工具栏现在完全平铺，就像在 Microsoft Word 2000 可以通过直接点击箭头来隐藏和显示按钮一样，来停止或不停止你不想使用的命令。由于 Microsoft Word 2000 具有许多改变，希望不只是有这些装饰性的新功能。Smart 标签进行了许多改进，可以用于整套软件。其中 AutoCorrect Option Smart 标签提供了在 Word 中控制和修改自动行为的简单机制。你可以撤消自动纠错，选择以后不进行纠错或不访问 AutoCorrect Options 对话框。

就像 Office 可以辨认正在写的并以高亮度显示的电子邮件或 URL 地址一样，Name、Address 和日期智能标签现在也可以用同样的方式识别名称或地址。

Office 10 的另外一个新功能包括了 Speech（语音）。你可以口述文本、直接进行格式改变并操作使用语音和播放命令的菜单。最后，Microsoft 为其懒惰的用户提供了一种不必通过键盘输入就可写信或写文件的方法（对于不知道字母 K 键在键盘上位置的用户，确实可以考虑立即使用语音识别。）目前，语音只能用于对美国式英语、简单的汉语和日语，与其他一些声卡有兼容问题。语音功能也具有翻译文档中单词（可用的语言取决于由所安装的语言字典）或访问网站上翻译服务的能力。这对于那些必须制作不同语言文档的工作人员十分有用。这个服务也可以翻译整个文档及其他语言。

为了帮助 Office 提高效率，微软又多增加了几个 Document Formatting 功能，以更便于使用。功能之一是 Reveal Formatting，在任何一点你可以看到当前字体、段落、间距、图像、表格特性等。也可以比较文档两个不同节的格式并把其中一个应用到另一个。也可以打开 Styles 和 Formatting Task Pane，它们也使你可以查看当前文档的格式（包括式样和直接设置格式）、最近用过的格式及所有可用的式样。也可以选择文档中的带有同样式样和直接设置格式的所有正文，立即应用一个新格式和式样。可以非常容易地重用格式而无需建立式样。对 Word 10 而言，有一小的新功能。该功能可让你直接从主工具栏中按一小按钮来改变行间距。建立表格总是容易的，显然也可以用优秀的画表功能来简单地画一个自己的表格。给我留下深刻印象的功能之一是 Multi-Selection，你梦想它，而微软式实现了它。这个功能可以使你只需按住键盘上的 CTRL 键就可容易地一次选择文档的多个区域。从而节约了格式化该文件

的时间。另外，使用 Find 功能，你可以同时选择类似格式的文档并重新格式它。双击并输入的功能在 Word 10 中依然有效，所以可以在空白页的任何位置双击并以正确的方式输入，而无需按几次回车键和空格键来到达这个区域。就像 Microsoft Word 2000 一样，可以直接在字体列表中预览字体，因此可以知道你的文本看上去是什么样子的。多亏了 IntelliSense 技术，当你输入列表中一个字体名的开头时，Word 就会猜出后结尾，同时显示你想使用的字体。Office 2000 引入了叫做 Office 剪切板的长期储备功能，剪切板中可以储备 12 份文本、图片等。Microsoft Office 10 有超级 Office 剪切板，它可以储备 24 份不同的片段。但如果在 Word 中不够用（像在其他 Office 10 应用程序中一样），你可以选择激活剪切板查看面板，该面板将列出你放在剪切板中的材料，甚至也可以预览文本、图片和图表。因此粘贴不再困难。文档的安全性也重新考虑过了，所以用户可以给文档进行数字签名以便确保未经授权的人不能修改文档内容。现在 Word 和其他 Office 应用软件中有一个新功能，叫做“send for review”（发送和接收）。这让用户可以把文档发送给每一个接收者。如果发送一个审批文档，将启动跟随和修改工具。当接收者送回他们的文档后，作者可以依次把其他人的修改加入最后的文档，这样他就可以保持总体控制。普通用户可以在打印预览窗口中直接移动、删除、替换他们的正文，不需要在打印预览与编辑模式之间切换来浪费时间。让文本按他们所需显示。

Microsoft 听取并吸收的一个意见，实现了 Reliability（可靠性）和 Data Recovery（数据恢复）。没有比正在从事文档操作时计算机崩溃并丢失全部数据更坏的事情了。使用 Document Recovery 选项可以帮助克服这一问题，Word 10 提供的这一功能可以在错误发生时保存当前的文档。这样，你可以花费少量的时间重新建立文档。这不是唯一的方法，因为 Word 10 也可以自动备份工作中的文档。如果一个致命错误发生而 Word 没有提示你保存它，那么当你重新启动计算机再次运行 Word 10 的时候，一个小的面板将出现在应用软件的左面，表明当崩溃发生时你正在使用的最后文件。如果你点击它，它将立即被打开，你将高兴地看到每项工作都被保存了。Office 相关的崩溃处理更智能化了，因为当遇到崩溃时，一个更好的对话框会告诉你。由于 Application Error Reporting 会提供一个错误报告给微软或用户公司的 IT 部门。这给微软和用户公司提供了未来诊断、修改错误的数据，并以直接访问工作区或其他错误信息的方式提供给用户。Application and Document Recovery 提供关闭 Word 时没有响应的安全模式。用户可以选择在开始恢复文档时关闭。同时会提供一个问题报告给微软或用户公司的 IT 部门。Word 中的 Repair and Extract 可以自动调用破坏文档修复，以及错误发生或装入文件失败时的恢复功能。用户可以通过从 File Open 对话框中选择 Open and Repair 来调用这个功能。

总之，Microsoft Word 已经进行了广泛的改变，以便给用户提供更高的效率。一个漂亮的工作环境及更紧密的集成。

Unit 9

微软 PowerPoint

像 Office 组件中的其他软件一样，微软 PowerPoint 也改进了。在这里我将给那些不了解

PowerPoint 的人做一个简要介绍。微软 PowerPoint 是一个演示制作软件，该软件使你能够制作出充满活力的、含有视频、声音等多媒体素材的幻灯片，例如可用于介绍你的公司。由于其性能无与伦比的而又简单易用，该软件广泛使用于商业环境中，以促销产品或展示销售结果。微软已经数不清在这个世界上有多少张 CD 中包含了用 PowerPoint 制作的幻灯片。PowerPoint 也带有几个著名的任务面板，这些面板分为三种不同的方面：Slide Design（幻灯片设计面板），Animation Scheme 和 Custom Animation。Slide Design 给用户一个可以快速地进入设计选项的方法，这些选项如颜色方案、动画模式。显然，当用户选择了一个新的方案时，可以实时预览。Animation Schemes 面板解决了以前 PowerPoint 版本的遗留问题：很难找出全部动画选项。Animation Schemes 任务面板列出了所有可用的动画，用户可以预览每一个动画。最后，Custom Animation 面板含有 PowerPoint 必须提供的非常强大的动画效果。如新的“路径动画”可使你同时沿着一个路径移动多个目标或具有滑动过渡效果。动画性能被加强了，并且尽可能利用硬件优势的加速性能：这对于位图旋转或幻灯片混合尤其有意义。PowerPoint 主要的新功能使你在打印之前预浏览幻灯片。这可以减少你印刷基于幻灯片的书籍的等待时间。为了减少 PowerPoint 幻灯片文件的大小，Office 10 增加了 Compress Pictures 功能，因此用户可以在 PowerPoint 软件内压缩图像来节省空间而不影响视觉效果。在演示设计功能方面，PowerPoint 也有几项增强，如能够旋转图像、多项图片文件选择器让用户选择数个图片放到播放中等等。为了帮助你在 PowerPoint 中精确绘制，可以选择使用可视栅格来捕捉目标，但也可以在屏幕上显示这些绘制指南。

1．PowerPoint 的功能

（1）Slide Design——Slide Design Task Pane（幻灯片设计任务面板）给用户提供了一种容易发现他们设计选项的方法。这些选项包括设计模板、配色方案及动画方案——选项制成时很容易预览。

（2）Animation Schemes —— 作为 Task Pane 的一部分，它使用户可以一键访问内行设计的动画。用户可以容易地预览每一个动画方案，可以在各种选项之间循环查看，直到找到自己所要的动画。

（3）Custom Animation —— PowerPoint 增加了高质量的定制动画，它可以使演示更生动。这些动画效果的样例包括同时移动多个目标、“路径”动画（沿指定路径移动目标）、安排幻灯片上全部效果的顺序、也包括退出。动画性能也被提升了，并且尽可能利用硬件优势的加速（如硬件位图旋转和用三维视频卡混合幻灯片）。最后，PowerPoint 增加了新的、更令人兴奋的幻灯片过渡效果，并使用户可以增加动画方案，以便一次点击就可以播放整个幻灯片。

（4）Multiple Masters —— PowerPoint 用户可以容易地在一个文件内建立多个幻灯片、标题图或幻灯片图。这使得用户可以把多种演示组合在一个文件中在同一文件中建立单独的部分。

（5）Presenter Tools —— 多亏了新的 Presenter Tools，用户可以只演示他们准备好了的 PowerPoint 幻灯片。Presenters 使他们自己可以看见但观众看不见。这个演示包括下一个幻灯片的细节，使演讲者可以看到讲稿，并能直接跳到任何一张幻灯片。

（6）Apply Automatic Layout —— 当插入到或粘贴到一个已经存在的幻灯片时，Apply

Automatic Layout 会自动地把内容吸入到占位符上。例如，当用户在制作使用项目符列表布局的幻灯片、然后插入一个表格时，PowerPoint 自动将该布局变为 Text 和 Object 布局。这样，表格和文本就并列了。另外，显示的 Smart Tag 图标可以使用户撤消自动布局或进一步访问 AutoCorrect 选项。

（7）Print Preview —— Print Preview 使用户可以预览他们将播放的幻灯片是怎样的。用户可以选择在多种视图间切换，如备注、幻灯片及讲义。或在风景和肖像视图间切换。

2．PowerPoint XP 预览功能

（1）Thumbnails in Normal View —— 从 Normal View（普通视图，也叫做三面板视图）中，用户可以在演示大纲视图与幻灯片视图之间切换，就如他们在 PowerPoint Slide Sorter 所做的那样。这种图形表示使用户更容易地操作演示。

（2）Diagrams —— 用户可以容易地从 PowerPoint 内置的图表（包括组织结构图、锥图、饼图、射线图和维恩图）中选择，而无需 OLE 服务程序。这些本地图的好处包括适当地进行图表编辑、缩小文件大小及改进国际化文本处理。

（3）Compress Pictures —— Office 10 的 Compress Pictures 功能使用户可以压缩他们 PowerPoint 文件（或其他 Office 应用软件）内的图像。用户可以选择所要的文件（网络的、打印的、屏幕显示的等等）并指定这些将优化的文件中的一个或全部。这些图像以尽可能小但又不影响观看的方式来压缩。

3．图片压缩设置

（1）Image Rotation —— 让用户可以反转和旋转文档中的图像。

（2）Visible Grid —— 一个新的可视栅格，使用户可以容易地在 PowerPoint 内画图。在 Grid and Guides dialog 对话框中，用户可以在各个选项中进行选择，如把目标捕捉到栅格或在屏幕上显示画图指南。

（3）Document Password Encryption —— 当用户保存幻灯片时，现在可以选择使用标准的 CryptoAPI。CryptoAPI 是一个比以前版本更有力的加密算法。默认的加密算法与原来一样（为了向后兼容）同时提供更有效的加密算法，以供选择。另外，用户现在可以给文档设置密码，保护他们的数据，尽管其他人还可以演示。

Unit 10

Microsoft Access

毫无疑问，Microsoft Access 是一个复杂的软件，而同时也是一个非常可定制的应用程序，其目的是帮助用户通过我们称之为数据库软件的软件来管理数据。但是，Microsoft Access 也是一个通用软件，可以用来建立你的音乐 CD 和朋友的小数据库，或者用来管理你的国际公司的股票，这些公司的每一个销售员都可以用笔记本电脑连接到服务器，通过 Access 查看股票情况。无论是用数据库获得公司内的销售数据，或个人用来跟踪重要的清单，用数据库通

常不那么容易，或不是那么直观。Access 10 设计的关键目标是让用户更容易地建立和使用他们的数据库。通过给用户提高使用范围更广泛的、他们需要的工具和更有用的产品，这一目标已经实现。但是，如果软件的某些区域的确更易于接近，则整个软件仍就很复杂。Access 的新功能之一就是开发者等待的 XML 支持。通过导入导出功能你可以执行 XML，以便与 Visual Basic 编程语言整合建立综合应用软件。

（1）Speech（语音）——Access 10 可以对语音口述和命令与控制场景提供语音功能。用户可以口述正文和用语音命令来使用导航菜单。

（2）Data Access Page Designer（数据访问页面设计器）——Data Access Page HTML Designer 提供了许多新的和改进了的功能，让用户更有效地设计他们的 Data Access Page。例如以下这些新功能和改进的功能。

- 来自 Microsoft Jet 和 Microsoft SQL Server 2000 数据库的扩展功能。这意味着查找被作为查找拉出，也适当地设置了标签功能。
- 改进了超链接处理，使建立超链接页更容易。
- 使用改进的控制定位，用户可以看到整个定位中的实际控制大小，提供更好的栅格捕捉支持。
- 通过键盘和鼠标的多选择支持，让用户可以在数据访问页中应用定位、水平和垂直间距、对齐和功能设置。
- Auto Sum（自动求和）可以更容易地得到总计。
- 使用 Data Outline（数据大纲），开发者可以查看和设置记录集的属性。
- 新的连接功能可以用相同的连接串更简单地建立应用软件。这使应用软件从实验到实用很容易。

（3）Efficient Optional Access 10 File Format（有效可选的 Access 10 文件格式）——使用新的可选的 Access 10 文件格式，用户可以更快地访问和处理大数据库中的数据。另外，这个格式可以无缝地处理未来 Access 的变化，如新的属性和事件，这已经引起以前版本的文件数据的改变。

（4）Multiple Undo and Redo（多次撤消和重做）——用户可以对下列目标使用 Design View 中的多次撤消和重做：MDB 表、MDB 请求、ADP 查看、ADP 存储处理、ADP 函数、表单、报表、数据访问页面、宏和模块。

（5）Shortcut Keys（快捷键）——Access 10 提供了一些新的快捷键，帮助用户更容易地进行数据库操作。新的快捷键包括以下几个。

- 在以 Design View（设计查看）窗口或属性表为焦点的表单或报表的 Design View 中，F7 把用户带到 Code 窗口。
- 在 Design View 窗口中，F4 用于属性表。
- 在 Design View 的属性表中，使用 SHIFT+F7 可以把窗口焦点移回设计层而不用改变控制焦点。
- 在任何表、请求、表单、报表、页面、视图或存储的过程中，按 CTRL+> 或 CTRL+PERIOD 和 CTRL+< 或 CTRL+COMMA 可以实现视图间的连接。

（6）Conversion Error Logging（转换错误日志）——把数据库从 Access 95、Access 97 或 Access 2000 向 Access 10 转换时如果出错，将会建立一个表格，其中列出每一个错误的信息。

这使解决转换数据库中的问题变得更容易。

Access 打算做的另外一件事是使访问和分析重要信息更简单，无论这些信息在哪里。更明确地说，Access 10 改进了用户从公司层、后台数据库（如 Microsoft SQL Server）访问信息的能力。Access 10 也改进了用户使用如 PivotTable、动态视图和 PivotChart 这样的工具分析数据的能力。

（7）Access PivotTables 和 PivotCharts——用户可以查看 PivotTable 或 PivotChart 视图中任何.MDB 表或请求、或 ADP 表、视图、存储的过程、函数或表单。使用这些，用户可以进行数据分析和快速和简单地建立良好的 PivotTable 和 PivotChart 视图分析。此外，可以把 PivotTable 和 PivotChart 视图保存为 Data Access Pages，后者可以通过浏览器被其他人查看和使用。

（8）XML Presentation Output（XML 显示输出）——使用 Access 10，你可以使用因特网标准的 XML/XSL 把数据快速地发布到网站上。用户可以把 Access 报表、表单、表格或请求导出为一个 XML Document，其中包含一个用于展示的相关的 XSL 文件。这使用户可以使用支持 HTML 4.0 的浏览器来查看用 Access 建立的表单和报表。

（9）Save Forms and Reports as Data Access Pages（把表单和报表保存为数据访问页面）——通过把已经存在的表单和报表保存为 Data Access Pages，可以快速地把现存的 Access 解决方案移植到网站上。用户不用建立新的 Design View 窗口中，只要执行 Save As 就可以建立表单和报表的网络版本。

（10）Stored Procedure Designer（存储过程设计器）——使用 Access Data Project 时，用户可以通过 Stored Procedure Designer 来建立和修改简单的 SQL Server 存储的过程。这使用户可以建立存储的过程而无需学习 Transact SQL。

（11）Batch Updates for Access Projects（访问计划的批升级）——使用 Access Data Project 中的 Access Form，Access 10 使用户可以指定保存对记录所做的任何更新，并一批地发送到服务器上。

以前，这个功能只有通过开发者在表单中写代码才可能实现。现在可以通过设置与表单相关的属性来实现。另外，当把一批记录交付给服务器时，有一些新的属性、方法和事件来管理交付和回退过程。另外一个设计目标是给开发者提供所需要的工具，以便研制出功能强大的、先进的数据库解决方法。在确保与新的且现有的数据库解决方法双向兼容的同时，这些方法能无缝地与企业范围数据整合。Access 10 现在提供了一些工具（如 XML、XSL 和动态网页）用来建立和支持因特网标准，以便更好地通过因特网和内联网来共享和展示数据。

（12）XML Support（XML 支持）——Access 10 对 XML 的支持贯穿产品始终。XML 数据可以从 Jet 或 SQL Server 数据库导出，也可以导入到 Jet 或 SQL Server 数据库中。

通过使用户可以包含或排除数据或图表以及决定是否应该添加数据来改写现有信息 Access 也使把图表或数据文档导入到 SQL Server 或 Jet 数据库中更容易。与 XML 支持相关的其他好处如下。

- 用户可以通过从任何网站导入一个 XSD 图表来简单地建立相关部分数据库或整个数据库。
- 开发者可以建立 XSLT（数据转换）文档，让不同格式的数据在 SQL Server 源之间移动。

- 开发者可以使用 Access Report Writer 来建立网络可访问的报表。
- 开发者可以在服务器（ASP）或客户机（HTM）网络展示数据。
- 在制作含有很少有变化的报表（如季度报表）时，开发者可以使用 XML 数据文档，而不需对服务器进行活动连接。
- 开发者可以通过建立一个“活动”报表来限制公司服务器相关的活动，该报表使用 SQL Server 2000 HTTPSQL 来返回一个只读 XML 数据文档。

（13）XSL Transformations and Presentations（XSL 转换和显示）—— 开发者可以建立自己个性化的 XSL 数据转换方法以便把数据导出为 XML 文档时使用。

这使得开发者可以改变数据导出格式或建立自己的数据显示形式。

这提供了把 XML 文档从一种格式转换为另一种格式的简单机制。例如，从 Access 导出的数据可以转换为 SAP 或用户公司系统可以理解的结构。

Bind Data Access Pages to embedded or Linked XML Files（把数据访问页面绑在嵌入的或连接的 XML 文件中）——Access 10 允许开发者在网络服务器上发布 Data Access Pages，让用户可以访问数据而无需运行服务器上的 Remote Data Objects（远程数据对象）。这使越过防火墙通过因特网发布只读 Data Access Pages 更容易。

（14）Extended Methods and Properties（扩展方法和属性）—— Access 10 提供了几种新的方法和属性，包括：

- 能够设置查找关系、确认文本、格式化和根据表格、视图和函数设置子数据表。
- 通过一个新的 Printer 对象和 Printer 集来程序化地控制打印属性。
- 通过使用 AccessObject 对象，得到 Access 对象中 DateCreated 和 DateModified 属性。
- 新方法和属性，如 CompactRepair、ConvertAccessProject、AddItem，及 RemoveItem 方法和一个新的 BrokenReference 属性使得当一个属性出问题时，容易查出来。

（15）Relative Path Support for Data Access Pages（数据访问页面的相关路径支持）——通过给相关数据库指定路径或者通过使用带有 ConnectionFile 属性的 Data Access Pages 所有的公共连接，可以简单地调用使用 Access Jet 数据库的 Data Access Pages。

Unit 11

C++基础

本文写给那些要学习如何编写 C++程序的人，尤其是遇到麻烦的人。这是为了让你们中的那些人在每次程序都运行很好的时候有一种成就感。如果你要想得到这种成就感，继续读吧。

C++是一个编程语言。就像每一个语言都有许多方言一样，C++也是一个有许多方言的编程语言。主要有四种：Borland C++、Microsoft Visual C++、Watcom C/386 及 DJGPP。你可以从以下网址下载 DJGPP：http://www.delorie.com/djgpp/，或许你已经有了其他编译器。

各个编译器之间有所不同。一种是库函数都有标准的 C++函数，但也有其他函数。因为某些程序只在某些编译器下运行，有时这可能引起混乱。可是，我认为本教程中的程序不会

出现这种情况。

如果你没有编译器，我强烈建议你去买一个。简单的就够本教程用了，但要有一个。

C++是一种不同的编程语言。它有少数用于 DOS 的关键字，但没有用于输出的关键字。这意味着几乎所有的东西都存储在头文件中。它提供了许多有用的函数。还是让我们看一个实际程序：

```
#include <iostream.h>
int main()
{
    cout<<"HEY, you, I′m alive!    Oh, and Hello World! ";
    return 0;
}
```

它看上去不难，对吧？让我们分解程序然后再看它。#include 是预处理程序指令，告诉编译器把头文件 iostream.h 的代码放到我们的程序中。通过包含头文件，可以访问许多函数。例如，函数 cout 就需要头文件 iostream.h。

接下来是 int main()。int main()的意思是说有一个函数叫 main，而且它返回一个整数，因此写为 int。紧接着的花括号是用在函数开头和结尾的符号，也可以用到其他的代码块。如果你编写过 Pascal 程序，就知道它们是 BEGIN 和 END。

程序的下一行似乎很陌生。如果你用过其他编程语言，你也许会想到它是用来显示文本。然而在 C++中，cout 函数用于显示文本。它使用<;<;作为嵌入符。引号告诉编译器照字面串输出。在 C++中，分号;加在所有函数调用的末尾。

倒数第二行的作用是让主函数 main 返回 0。当一个值返回给主函数时，它也传递给操作系统。要注意的是，声明 int main()或 void main()都较常用。公认的惯例是有些宣称主函数是空的，而另一些是很混乱的。以前的教程都使用空的主函数，但这不再是被推荐的，因为它与 ANSI 标准不一致。

最后，用花括号结束该函数。如果你想，也可以试试这个程序。就把它剪切和粘贴到像 DJGPP 这样的编译器的 IDE（集成设计环境）中，或保存为一个带.cpp 扩展名的文件，然后使用命令行编译器来编译和连接它。

注释对于理解程序是非常重要的。当声明一个区域是注释时，编译器将忽略它。可以用任一个//来注释，//以后的那一整行是一个注释；或者也可以用/* 和 */做一个块，块之间的部分作为注释。有些编译器会改变注释区的颜色，但有些不会。但一定不要随意地宣称部分代码为注释。注意这就是被称为注释出的代码段，在调试程序中有用。

到目前为止，你可以写一个显示你（编程者）输入信息的简单程序。然而也可能让你的程序接受输入。你使用的函数称为 cin>>。

慢着！在你可以接受输入之前你必须有地方存储它！在程序设计中，可以存放输入和其他形式数据的场所被称为变量。有几种不同类型的变量，必须进行陈述。基本类型是 char、int 及 float。

Char 是用来建立存储字符的变量，int 用来建立存储整数（1、2、0、?3、44、?44）的变量，而 float 用来声明带小数位的数。实际上，它们都是些用在变量名前面的关键词，告诉编译器你已经建立了一个变量。这被称为“ 声明变量 ”。当声明一个变量或一些变量时，必须

用分号结束该行，如同调用函数一样。如果不声明打算使用的变量，就会收到许多错误信息，而且程序也不能运行。

这里是声明变量的一些例子：

```
int x;
int a, b, c, d;
char letter;
float the_float;
```

然而，不能用相同的名字声明两个不同类型的变量。

```
#include <iostream.h>
int main()
{
   int thisisanumber;
   cout<<"Please enter a number: ";
   cin>>thisisanumber;
   cout<<"You entered: "<<thisisanumber;
   return 0;
}
```

让我们分解这个程序并逐行分析它。Int 是用来声明整型变量的关键词。cin>> 设置 thisisanumber 的值为提示时用户输入到程序中的任何东西。紧记变量被声明为整型，这意味着只能以整数格式输出。当运行这个程序时，试着输入一些字符或一些小数，看看程序的响应。注意当输出变量时，没有引号。如果有引号，则输出将是：“ You Entered: thisisanumber. ”。不要被一行包含两个独立的嵌入符搞糊涂了。只要你保证每一个输出变量或串有自己的嵌入操作符，这是允许的。不要用一个<;<;放两个变量，因为这将给出一个出错信息。不要忘了函数或声明的末尾要带分号（;）。否则当你编译程序时会出现出错信息。

既然你对变量有一些了解，就可以以下方法操作它们。*、-、+、/、=、==、>、<是用于数字的全部操作符，这些都比较简单。*是乘、-是减、+是加。当然，转换变量最重要的是等号。在某些语言中，=检查一边是否等于另一边。但在 C++中，用==执行这一任务。但等号还是非常有用的。它让等号的左面必须是也只能是一个变量，等于右面。等号的右面是其他可用的操作符。

这有几个例子：

```
a=4*6;   //（注意注释和分号的使用）a 是 24
a=a+5;   // a 等于原来的值再加 5
a==5     //不是把 5 赋值给 a。而是检查 a 是否等于 5。
```

等号的另一个形式==，不是给变量赋值，而是检查变量是否相等。它在 C++的其他方面如 If 语句和循环中也有用。

你可以大概猜出<和>的用途。它们是检查小于和大于。例如：

```
a<5          //检查 a 是否小于 5
a>5          //检查 a 是否大于
a==5         //检查 a 是否等于 5，另外增加一项
```

Unit 12

阿　帕　网

在 1957 年苏联发射了人造地球卫星之后，美国军事部门开始建立高级研究计划署（ARPA）以资助一些有时与军事含糊地相关的研究。尽管 1962 年 ARPA 开始资助学院的研究人员，但起初它只资助个人公司的研究人员。

最初的阿帕网工程师之一评论说美国军事部门的目的是资助 ARPA，其目的是资助研究。多年来，ARPA 已经在计算机科学研究方面资助了许多项目，其中很多都对现代工艺水平有深远的影响。没有任何一个其他项目像阿帕网项目这样影响深远。

在 1962 年，兰德公司发表了由 Paul Baran 所写的一个报告，题名为“分布式通信网络”——是所有相关文章中的第一个。这个报告建议建立一个没有明显控制中心的通信网络，在许多节点被破坏后，幸存的节点能够重新建立相互间的通信。他还提出了通过使用“包交换技术”来建立“存储和转发网络”建立全国性的公众设施传输计算机数据。至少他的一篇文章是秘密的而其他也不广为人知。

Donald W. Davies（一个美国研究者）大约在同一时期也做了类似的工作。并因发明了术语“包交换技术”而倍受赞扬。

Dr. J.C.R Licklider（或“Lick”，他让人们那样叫他）通过自己军事接触理解了 Baran 的工作——他从 1962 年起工作在 ARPA（是“信息处理技术办公室”的领导），他具有工程学和生理物理学的背景知识。

Lick 对如何使用计算机（或计算机网络）帮助人们通信及计算机如何帮助人们思考很感兴趣。他和 Robert Taylor 写了“在几年后人们可以通过机器比面对面更有效地沟通”这篇文章。他的设想吸引了其他计算机研究者，并意味着从一开始，人们认为计算机网络更是让人们之间沟通而不仅仅是计算机之间通信。

1967 年 10 月，ARPA 宣布它计划把建立一个计算机网络，把美国最大的 16 个大学研究组和研究中心连接起来。竟标在 1968 年夏天进行。在 1969 年 1 月，美国马萨诸塞州剑桥市的 Bolt，Beranek and Newman（BBN）赢得了建造该网络的合同。

该计划要把 4 个接口信息处理机（IMP s 是 Honeywell DDP 516 型微型计算机）连接到 4 个中心。IMPs 是阿帕网与每一个中心“主机”之间的接口。每一个中心都有自己在项目中的职责和不同的主机。详述如下。

- 加利福尼亚大学洛杉矶分校。在 SDS Sigma 7 上运行 SEX 操作系统，这个站点负责网络测量。
- 斯坦福研究协所（SRI）。在 XDS-940 上运行 Genie 操作系统，这个站点负责网络信息。它就是常说的 NIC，曾经负责管理网络地址分配。
- 加州大学圣芭芭拉分校。在 IBM 360/75 上运行 OS/MVT 操作系统，这个站点提供 Culler-Fried 交互数学方面的专门技术。
- 犹他州大学。在 Digital PDP-10 上运行 TENEX 操作系统，他们提供图形学（尤其是

消隐线）方面的专门技术。

从这个项目开始，研究组比较松懈，主动性不够。这 4 个站点组的这个项目的研究者组织了一个非正式的“网络工作组”，并开始讨论各种技术问题——甚至没有来自 BBN 的详细信息。

Dave Crocker 说他们非常紧张，害怕冒犯“官方协议设计师”，所以开始写的备注以“请求注释”的标题发布。可能早期 RFC（请求注解）的重要方面之一个是要求完全公开——允许 RFCs 包括几乎与网络有关的所有问题，NWG（网络工作小组）不认为他们是官方标准。另外，NWG 鼓励发布未完善的 RFC（请求注解），他们认为粗略的观点有时候和精心设计出的协议标准一样有用。他们也鼓励 RFC 的自由发布——这一直实行到现在。

1969 年 2 月，BBN 为研究组提供了一些技术细节资料。研究组开始研究网络如何运行的具体细节，即 IMP 主接口如何工作，以及简单的应用程序如何工作。

第一个 IMP 预定在 1969 年 9 月 1 日交付给 UCLA，小组成员希望有一些额外的时间来完成必要的软件（9 月 1 日是美国的公共假日，并且，在 BBN 那边有一些传闻，说要延迟交付）。最后，BBN 在 1969 年 8 月 30 日交付了 IMP，引起了软件编程员的惊慌。在 10 月初，BBN 把第二个 IMP 交付给 SRI，到了 11 月 21 日就可以给 ARPA 高级官员演示两个主机之间的类似远程登录连接。这个网络开始“活”起来。一开始工作于阿帕网上的两个主机之间的两个“应用程序”是一个终端连接程序（远程登录）和在两个主机之间移动文件的协议（文件传输协议）。注意没有电子邮件（在新的协议执行前，首先使用文件传输协议把信息作为文件传输到特定区域，才能完成电子邮件的传输）。

在开始的 4 个站点连接完成后，又有其他的站点被连接以便实现 ARPA 最初连接 16 个研究组的目的。下面包括了 11 个对因特网有巨大贡献的一些名字，把它们列在这里：BBN、MIT（麻省理工学院）、RAND Corp（兰德公司）、SDC（科学数据中心）、Harvard（哈佛大学）、Lincoln Lab（林肯实验室）、Stanford（the University）（斯坦福大学）、University of Illinois（伊利诺大学）、Case Western Reserve University、Carnegie Mellon University 及 NASA-AMES。

这时，BBN 提出了更简单、更慢、更便宜的 IMP 版本——TIP（终端 IMP）。阿帕网的成长远远超过当初的预计。

时期主机数

1971	15
1973 年 1 月	35
1973 年 9 月	40*
1977	111
1983	4000

* 包括慢速连接到英国和挪威。

1972 年在华盛顿特区举行了第一界国际计算机通信讨论会，在这次会议上，给来自世界各地的代表演示了阿帕网。他们也讨论了对网络协议公共集的需求，并且建立了因特网网络工作组（Internetwork Working Group）。会议也认识到像阿帕网这样的网络可以与其他类似的网络互联。使用相同的网络协议，也许能把许多独立的网络连接成一个大网络。在这次会议上开始使用“Internet”这一名称，也是今天因特网的开始。

“阿帕网最终报告”（ARPANET Completion Report）指出了电子邮件的普及是开创者们为

人们提供的最令人惊讶的服务。Guy L. Steele 所写的书《普通 Lisp》的致谢部分指出了原因。Lisp 是适合人工智能的编程语言，也是被人工智能研究者用得很好的编程语言。就像所发生的那样，许多人工智能研究者喜欢修补他们所用的语言——研究 Common Lisp 时，至少有一打各种各样的 Lisp 在使用。Common Lisp 试图（也成功地）把各种 Lisp 整合成一个标准——适合大多数。在致谢部分，Guy 提出如果没有阿帕网的电子邮件性能，就不可能有 Common Lisp。建立了一个发送文件清单，可以每天争论重要的问题——信息超过 3000 条，大小不等，从一行到 20 页。

阿帕网可以使相隔数千英里的人合作。

阿帕网的确有一很大不足，即要连接到它上面很难，因为它需要“行政连接”和一大笔钱。由于这些难点，NSF（国家科学基金）建立了 CSNET 给那些不能真正连接到阿帕网的人提供帮助。它也被证实非常受欢迎。它也把因特网的用户疆界延伸到计算机科学家之外。

随着阿帕网的逐渐淘汰，NSF 则资助 NSFNET 作为美国因特网的骨干，直到美国政府解散它并允许商业化的因特网提供商来替代它。

Unit 13

Java 技术

“一次写成，到处可用”。这是标牌式的回答。但这个回答究竟意味着什么？

Java 技术是一个面向对象的、平台独立的、多线程的编程环境。它是智能网站和网络服务的基础，并让你可以安全地跨平台扩展事业。从智能卡到超级计算机，无论基础的硬件和系统软件如何，所有的系统都可以互相调用。

1．它是如何工作的

当用 Java 编程语言写好软件并用 Java 技术编译后，结果就形成字节代码。Java 虚拟机能够给安装 Java 虚拟机的任一平台说明或解释该字节代码。这就意味着不再需要给平台移植程序。

这样看这个问题。假定你只说英语。并假定你要在一个国际会议上发言，参加者都像你一样——他们只会本国语言。你要雇佣每种语言的翻译吗？你要给每个与会者提供一本英语/本语的字典吗？这种方法是昂贵的、费时的和容易出错的。但是，假定你发现了一种带上特制的、廉价的耳机（这种耳机包括一个通用翻译器能够使新语言即刻被理解，没有语言障碍）就可以听懂的语言，你就会学习这个新语言，购买耳机。这种可翻译的语言类似于 Java 技术，通用翻译器类似于 Java 虚拟机，Java 虚拟机可以把代码转换为正确的语义。

Java 技术就是这样使人们对编程有一致的看法：一个解释过程解决来自不同操作系统和不同平台的问题。

2．Sun 和 Java 技术

在以后的 10 到 15 年，因特网的带宽以指数的速度增长。这一现象以我们以前不能设想

的方式影响我们的生活，创造了商业机会。机遇带来了挑战。面临这些随之而来的复杂情况，人们应该如何发展自己的事业呢？

Java 平台“一次写成，到处可用”的性能让你可以应对这种指数增长。在 Sun 公司，我们称之为“让它成为第 n 个”，把 Java 技术的柔性和开放性作为 Sun Open Net Environment 结构的基础——这就是我们建立、汇编和开发基于网络服务及其他问题的解决方案。

3．什么是 Java 平台

Java 平台主要是一种新的基于网络力量处理问题的方法及一种观念。这个观念是同一软件可以运行于不同计算机、客户装置和其他设备。

使用 Java 技术，你可以使用来自任一机器的同一应用软件——个人电脑、Macintosh 计算机、网络计算机或甚至像因特网屏幕电话这样的新设备。

（1）工作于任何地方

其想法很简单。基于 Java 技术的软件可以在任何地方工作——从最小的设备到超级计算机。Java 技术的部件不考虑计算机、电话、电视的种类，也不考虑它们运行的操作系统。它们工作于任何一种支持 Java 平台的兼容设备。

Java 技术被广泛地视为一场革命，因为其设计可以让计算机和其他设备用比以前更容易地互相通信。

（2）想看某些基于 Java 技术的软件

或许今天基于 Java 技术软件的可见的例子都是基于因特网或网络业务的。它们是快捷的、叫做“applets”的交互式的程序。Applets 工作在计算机或其他设备的 Web 浏览器内。

还有另外一些基于 Java 技术的软件。用 Java 语言写成的程序可以直接在计算机上运行而不需要浏览器，或者运行于服务器、大型计算机或其他设备上。

例如，运行在大企业的服务器上的基于 Java 技术软件监控事务处理并从已有的计算机系统中收集数据。其他企业在它们网站上用基于 Java 技术软件一体化部门、供应商和客户之间通信和信息流动。

4．为什么 Java 技术如此重要

为什么 Java 技术如此重要？在于网络！

使用 Java 技术，因特网和私有网络成为你的处理环境。结合网络的力量，Java 平台可以帮助计算机用户做以前无法想象的事情。例如，他们可以在远离办公室的地方，使用任何一个连入因特网的计算机安全地访问他们的个人信息和软件。不久，他们也可以从基于 Java 平台的移动电话上访问定制软件，也甚至可以用智能卡作为各种场合的通行钥匙——从提款机到滑雪电梯。

为什么是 Java 技术？网络需要轻便的、模块化的和安全的软件——这都被 Java 技术的阳光照耀，因为它从一开始就是为网络设计的。

5．谁在使用它

如你将在后面所看到的，企业正在使用 Java 技术，因为它容易连接到现有的计算机系统、降低了运算成本、加快了软件开发速度。它也使企业可以通过因特网与他们的客户、供应商和

伙伴建立安全的联系。客户可以从 Java 技术中获得利益，因为它给他们带来个人、业务和娱乐服务——容易而安全——在许多场所和各种器具，以及家中的、工作中的和路途中的设备。

6．Java 技术对企业、开发者和客户意味着什么

那么，Java 平台到底能做什么呢？它使用户和公司制造和使用计算机及软件简单化。

Java 技术解决了大部分当今最紧迫的业务处理问题——复杂性、不兼容性和安全性。它被证明在开发新的商业机会方面是非常宝贵的。

Java 平台易开发并支持许多行业，这意味着更低的开发成本和更快的市场响应时间。内置的安全性保护了企业的信息和资产。轻量级的分布模式消除了软件安装时的头痛问题，并降低了网络管理和维护的成本，即“总使用成本”或 TCO。平台独立性让你可以自由地选择最大限度满足他们需求的硬件和操作系统。

并且，因为 Java 技术可以运行在任何一种计算机和多种设备上，可以从工厂的网络计算机、笔记本电脑或路途或野外的其他网络设备上访问用户软件和数据。

像 Home Depot、Xerox、CAX、NASA′s Jet Propulsion Laboratory 及 Kaiser Permanente 这样的公司，都发现 Java 软件是不可替代的技术，而不是他们当前处理环境的延伸。

如果你是一个开发者，Java 编程语言的平台独立意味着写一次程序，可以在一大不同的机器上运行。

Java 编程语言软件可以升级。例如，你为机顶盒建立的运行在 PersonalJava 平台上的商业和服务软件可以立即运行在网络计算机上或桌面计算机的网络浏览器上，同样的 Java 程序也可以运行在三种设备上而无需修改。如果设计得当，它也可能运行在无限的设备上。

Java 技术的开放性、平台独立性和面向对象属性意味着开发者可以解决与现有计算机整合的问题。这在以前是不可想像得复杂。作为一个额外收获，大多数 Java 编程语言软件开发者报告说，与像 C 和 C++这样的传统语言相比，Java 编程语言软件更容易建立和维护。

为开发者写的 Java 技术的详细说明已经包括在 Java 语言环境白皮书中。

不久，Java 技术将更多地结合到你的生活中。交互式的因特网服务将不仅仅应用于个人计算机上，也可以应用于家庭和路途中的设备。假如家庭银行、因特网商店、娱乐、游戏、从工厂之外访问企业系统——甚至让你通过电话把奖金下载到智能卡的个人 ATM。

Java 技术的设备独立性和面向网络设计属性确保这些服务在许多不同用户平台上安全提供。

7．Java 技术怎样使处理更容易

要开汽车你不需要成为机修工。为什么要用计算机就必须成为“系统管理员”？

使用 Java 软件，就无需如此。Java 技术消除了与安装和运行软件相关的许多问题。这是因为 Java 用户通常无需配置、装载、安装任何东西。而是把设备接进网络，把力量集中到用户。升级是自动的，废除了安装和配置。

这是关于计算机的一整套新思维。只要点击链接和按下按钮就行了。

最重要的是，从一开始，Java 平台的设计是为了在网络上安全地运行程序，这意味着它能够与你网络上的现有系统安全整合。

8．Java 平台是如何工作的

基于 Java 技术的软件典型地通过网络发放，也可以通过如 CD-ROM 这样的传统媒体安装到计算机上。同一程序或软件部件可以运行在多种计算机和设备上。

由于有了叫做“ Java 虚拟机 ”的平台，用 Java 编程语言编写的程序能够在许多不同的系统中运行。Java 虚拟机是一种编译器，它能够把普通的 Java 平台指令翻译成特殊的命令。这些指令使设备工作。

Unit 14

面向对象编程概念

1．什么是对象

对象是理解面向对象技术的关键。看看你周围，可以看到许多现实世界的对象的例子：你的狗、你的桌子、你的电视、你的自行车。

这些现实世界的对象有两个特性：它们都有状态和行为。例如：狗有状态（名字、颜色、品种、饥饿）和行为（吠、拿东西、摇尾巴）。自行车也有状态（当前档、当前步调、两个轮子、档数）和行为（刹车、加速、减速、换档）。

因为软件对象也有状态和行为，它们是仿照现实世界中的对象而制作的。一个软件对象以一个或多个变量来维持其状态。变量是一个由标识符命名的数据项。一个软件对象用一些方法实现其行为。一个方法是与对象相关联的一个函数（子程序）。

定义：一个对象就是变量及相关方法的软件捆。

可以使用软件对象来表示现实世界中的对象。你也许想用在动画程序中的软件对象代表现实世界中的狗，或者用控制电动自行车的程序中的软件对象代表现实世界中的自行车。也可以用软件对象来模拟抽象的概念。例如，一个事件是 GUI 窗口系统中的常用对象，用来表示用户按下鼠标按钮或按下键盘上的一个键的行为。

任何软件对象的所知（状态）和所做（行为）都可以通过该对象内的变量和方法来表达。模拟现实世界中自行车的变量可以指明自行车当前的状态：速度为每小时 10 英里、踏板为每分钟 90 转及它当前用的是第五档。这些变量被正式称为实例变量，因为它们包含了特定自行车对象的状态。用面向对象的术语表达，一个特定的对象就叫做实例。

除了软件自行车的变量外，软件自行车也有刹车、加速、减速、换档的方法。（自行车没有改变其速度的方法，因为自行车的速度只是所用的档、骑车人的速度、是否捏闸以及坡度的一个副作用）这些变量正式被称为实例变量，因为它们检查或改变特定自行车实例的状态。

对象的变量构成了对象的中心或核心。方法包围和隐藏程序中的其他对象的对象核心。把对象的变量包裹到被保护的方法的容器内叫做封装。这个对象的概念性描述——把变量核心包在受保护的方法中——是对象的理想表现，也是面向对象系统设计者努力的目标。然而，

这并非全部。通常，由于实际的原因，一个对象可能需要露出它的一些变量或隐藏它的一些方法。在 Java 编程语言中，一个对象可以为其每一个变量和方法指定四种访问等级之一。该访问等级决定了其他对象和类可以访问的变量和方法。在 Java 编程语言中，变量和方法在控制对类成员访问（Controlling Access to Members of a Class）中叙述。把相关变量和方法封装到一个纯软件捆中是一个简单而有力的想法，这给软件开发者提供了两大主要好处。

- 模块化：一个对象的源代码可以编写和修改，而不管其他对象的源代码。一个对象也可以容易地在系统内传送。你可以把你的自行车给其他人，它依然可以用。
- 信息隐藏：对象有一个可以用来与其他对象通信的公共接口。对象可以维护私有信息和方法，它们可以随时改变而不受它所依赖的其他对象的影响。你可以不懂你自行车的传动装置而使用它。

2．什么是消息

单一的对象通常没有什么用。而一个对象往往以包含许多其他对象的大程序或应用软件的部件的形式出现。通过这些对象相互作用，程序员可以实现更有序的功能和更复杂的行为。悬挂在修车场内的自行车的不过是一些钛合金和橡胶而已。从本质上讲，自行车没有任何用。只有当另一个对象（你）与它相互作用（踩）时自行车才有用。

软件对象通过相互发送信息来相互作用和通信。当对象 A 要对象 B 执行 B 的一个方法时，对象 A 给对象 B 发送一个消息。

有时，接收消息的对象需要更多的消息，才能更精确地知道做什么。例如，当你要换档时，就必须指明所要的档，这个信息作为参数与消息一起传送。

消息由三部分组成：

（1）一个处理消息的对象；

（2）一个要执行的方法名称；

（3）方法所需的参数。

这三部分对于接收对象执行所要方法来说，信息足够。不再需要其他信息。

消息提供两个重要的益处：

- 一个对象的行为可以通过它的方法表达，所以（除直接变量访问外）消息传输支持所有对象之间可能的交互。
- 对象无需以相同的过程或在同一机器上来回相互间发送和接收信息。

3．什么是类

在现实世界中，有许多同类的对象。例如，你的自行车只是世界上许多自行车中的一辆。使用面向对象的术语，我们说你的自行车是称为自行车的对象类中的一个实例。自行车有一些共同的状态（当前档、当前步调、两个轮子）和行为（换档、刹车）。然而，每一个自行车的状态是独立的、可以不同于其他的自行车。

在面向对象软件中，也可能有许多同类的对象，它们都有以下特性的：矩形、雇员记录、录像剪辑，如此等等。像自行车厂商一样，你可以利用同类对象相似这一实情，为这些对象建立设计图。对象的软件设计图叫做类。

类可以定义类变量。一个类变量包括可以被该类中所有实例共享的信息。例如，假定所有的自行车都有相同的档位数。在这种情况下，定义一个变量来保存档位数是低效率的。每一个实例都有自己的变量复制品，但每一个实例的值是相同的。在这种情况下，你可以定义一个包含档位数的类变量。所有的实例共享这个变量。如果一个对象改变了该变量，那么这个改变对该类型的其他变量都有效。一个类也可以声明类方法。你可以直接从类中调用一个类方法，然而，你必须在某一特殊的实例上调用实例方法。

你也许注意到对象和类看上去非常相似。而实际上，类和对象的差别往往是某些混乱的根源。在现实世界中，类明显地不等同于它的对象所描述的事物。一个自行车的设计图不是自行车。然而，要在软件中区分对象和类有点困难。部分原因是软件中的对象仅仅是现实世界对象的电子化模拟或初始的抽象概念，也因为术语“对象”有时也用来指类和实例。

4．什么是继承

普通地说，对象是根据类定义的。可以通过了解对象的类来了解对象的许多方面。即使你一点也不知道它是什么，但只要告诉你它是自行车，你就知道它有两个轮子、把手和踏板。

面向对象系统向前跨进一步，允许根据其他类来定义类。例如，山地自行车、比赛自行车和双人自行车是各种各样的自行车。在面向对象的术语中，山地自行车、比赛自行车和双人自行车全部是自行车类的子类。同样，自行车类是山地自行车、比赛自行车和双人自行车的超类。

每一个子类都继承超类的状态（以变量声明的形式）。山地自行车、比赛自行车和双人自行车共享一些状态：步调、速度和其他类似东西。每一个子类都继承超类的方法。山地自行车、比赛自行车和双人自行车共享一些行为：如刹车和换档速。

然而，子类不受给它们超类提供的状态和行为的限制。子类可以给从超类继承来的变量和方法进行增加。双人自行车有两个座位和两个把手；一些山地自行车有额外的调速装置。

子类也可以不用继承的方法，并可以为这些方法提供特定的执行方案。例如，如果你有一套额外调速装置的山地自行车，可以不用“变档”方法而用这些新的调速装置骑行。

你不受继承层的限制。继承树或类层可以满足深度需求。方法和变量从上到下层遗传。一般来说，越下级的类层，越有自己的特别属性。

Object 类是顶级类，每一个类都是它的后代（直接或间接）。一个典型的 Object 变量可以保存任一对象的参数，如一个类的实例或一个队列。Object 提供在 Java Virtual Machine（Java 虚拟机）中运行的全部对象需要的行为。例如，全部类把 Object 遗传给 String 方法，该方法返回对象表示的串。

继承有以下优点：

子类规定来自超类公共元素基础的特定行为。通过使用继承，程序员可以多次重用超类中的代码。

程序员可以执行称为抽象类的超类，该类定义了“一般”行为。抽象超类定义或部分地执行行为，但许多类是不可定义和不可执行的。其他程序员用特定的子类填写细节。

Unit 15

计算机简史

没有什么能比计算机更好地体现现代生活。好也罢坏也罢，计算机已经渗透到我们生活的每一方面。当今计算机可以做的事情远远超出单纯计算：在维护库存清单的同时，超市扫描仪可以计算我们的购物单；计算机化的电话交换中心扮演了交通警察的角色，管理数百万的电话并保持线路畅通；自动柜员机让我们几乎在世界任何地方处理银行业务。但是，这些技术来自哪里又要朝何方发展？要充分理解和认识计算机对我们生活的影响并把握未来，了解计算机的发展是十分重要的。

1．第一代计算机（1946～1956）

受战争的影响，开发出的计算机是电子数字积分计算机（ENIAC），由美国政府和宾夕法尼亚大学合作制造。由于该计算机由 18000 个真空管、7 万个电阻器以及 500 万个焊接点组成，它是如此巨大的一台机器以至于要消耗 160 千瓦电力，这些电力足以照亮整个费城。ENIAC 由John Presper Eckert（埃克特，1919～1995）和 John W.Mauchly（莫奇利，1907～1980）研制，与 Colossus 和 Mark I 不同，它是通用计算机，速度比 Mark I 快 1000 倍。

在 20 世纪 40 年代中期，John von Neumann（冯诺依曼，1903～1957）也加入到宾夕法尼亚大学的项目中。他最初提出的计算机设计概念在随后的 40 年中保留中心地位。1954 年，John von Neumann设计了电子数据计算机（EDVAC），内存既可以存储程序也可以存储数据。这个“存储内存”技术和“条件控制传输”，让计算机可以在任何一点停下来然后重新运行，使计算机程序实现更多的功能。John von Neumann体系结构的计算机的关键要素是中央处理单元，该中央处理单元通过一个单一的源协调计算机的全部功能。1951 年，Remington Rand 建造了UNIVAC I（通用自动计算机），成为第一个利用这些进步的商用计算机。美国人口普查署和通用电气公司拥有这些 UNIVAC 计算机。UNIVAC 令人印象深刻的成就之一是预告了 1952 年美国总统大选的获胜者——Dwight D. Eisenhower（德怀特·戴维·艾森豪威尔）。

第一代计算机具有如下特征：对计算机要执行的特定任务要制作一些特定操作指令。每一个计算机都有不同的二进制程序，称为机器语言，它告诉计算机如何运行。这使编制计算机程序很难并限制了计算机的功能和速度。第一代计算机的其他特征是使用电子管（这是造成它们体积大的原因）和用磁鼓存储数据。

2．第二代计算机（1956～1963）

1948 年晶体管的发明极大地改变了计算机的发展。在电视机、收音机和计算机中，晶体管替代了大而笨重的电子管。因此，电子设备的大小从此一直在缩小。1956 年，晶体管开始用在计算机中。与早期的磁芯存储器结合，晶体管使第二代计算机比它们的前辈更小、更快、更容易使用和更有效率。最初利用晶体管的大规模机器是早期的超级计算机——由 IBM 制造的 Stretch 和由 Sperry-Rand 制造的 LARC。这些计算机都由原子能实验室研制，可以处理大

量的数据，这很好地满足了原子能科学家的需求。然而，这些计算机很贵，而其功能远远超出了商业部门的计算机需求，因而限制了其魅力。只安装了两台 LARC：一台在加利福尼亚州利弗莫尔市的劳伦斯放射实验室，该计算机以此得名（利弗莫尔原子研究计算机），另一台在华盛顿特区的美国海军研究发展中心。第二代计算机用汇编语言替代了机器语言，用短的编程代码替代了长的、难的二进制代码。

在 20 世纪 60 年代初期，有大量商品化的第二代计算机成功地应用于企业、大学、政府机构，这些计算机来自如 Burroughs、Control Data、Honeywell、IBM、Sperry-Rand 及其他公司。这些第二代计算机设计固定，包括用晶体管替代电子管。也包括了我们当今计算机相关的全部组成部分：打印机、磁带存储器、磁盘存储器、内存、操作系统和存储的程序。一个重要的例子是 IBM 1401，它被计算机行业普遍接受，许多人认为它是该行业的 Model T of。到 1965 年，大部分企业都用第二代计算机处理日常财务信息。

正是该存储程序和编程语言使计算机能够最终物超所值并应用于商业的多个方面。存储程序的概念意味着为特定功能（称为一个程序）运行的计算机指令存储在计算机的内存中，并可以被执行不同功能的指令集快速地替换。计算机也可以打印顾客发票、几分钟之后设计产品和算工资。在此期间，更成熟的高级语言如 COBOL（面向商业的公共语言）和FORTRAN（公式翻译语言）得到普遍应用，并一直延续到今天。这些语言使用字、句和数学公式取代了神秘的二进制机器代码，使编写计算机程序容易得多。新的职业（程序员、分析员和计算机系统专家）和整个软件行业也伴随第二代计算机出现。

3．第三代计算机（1964～1971）

尽管晶体管比电子管有了明显的改进，它们仍然会产生大量的热，这些热量损坏了计算机内部的敏感部件。石英石解决了这一问题。Texas Instruments公司的工程师 Jack Kilby 在 1958 年研制出了集成电路（IC）。集成电路把三种电子元件集中到一个由石英制成的小硅片上。科学家随后设法把更多元件放到了一个芯片上，称为半导体。结果随着许多部件可以压到芯片上，计算机变小多了。另外一种第三代计算机的发展包括了使用操作系统，操作系统用一个中心程序监控和调整计算机内存，使计算机同时运行多个不同的程序。

4．第四代计算机（1971～现在）

在集成电路之后，只有一件事向下进行——那就是尺寸。大规模集成电路可以把数百元件放到一个芯片上。到了 20 世纪 80 年代，超大规模集成电路可以把成千上万个元件压到一个芯片上。特大规模集成电路的元件数增加到数百万。能够把如此多的元件压缩到大约一美分硬币的一半大小的面积，这一能力帮助减小了计算机的尺寸和价格，也增加了计算机的性能、效率和可靠性。1971 年研制的Intel 4004 芯片把计算机的全部部件（中央处理单元、内存和输入/输出控制）放到一个很小的芯片上，让集成电路技术前进了一大步。然而，以前的集成电路为某一特殊用途而制造，但现在可以制造一个微处理器然后进行编程来满足各种需求。不久家用产品（如微波炉、电视机和带有电子化燃料注入系统的汽车）都加进了微处理器。

如此强大的功能让常人可以利用计算机的性能。它们不再是专门为大企业或政府合同研制的。在 20 世纪 70 年代中期，计算机厂家寻求把计算机带给普通顾客。这些微型计算机带

有用户友好的软件包，这些软件包给不懂行的用户提供了一批应用软件，最流行的字处理和电子表格程序。这个领域的先驱是Commodore、Radio Shack和 Apple Computers 公司。在 80 年代初期，如Pac Man这样的娱乐场所的视频游戏和 Atari 2600 这样的家庭游戏点燃了顾客对更成熟的、可编程的家用计算机的兴趣。

1981，IBM 推出了供家庭、办公室和学校使用的个人计算机（PC）。由于 IBM PC 的仿制品的出现，人们更能够买得起个人计算机，20 世纪 80 年代经历了计算机在上述三个领域的扩张。正在使用的个人计算机的数量翻了一番多，从 1981 年的两百万台增加到 1982 年的 550 万台。十年后，有 6500 万台个人计算机在使用。计算机继续朝着更小尺寸发展，从桌面到膝上（可以放到公文包中）到掌上电脑（能够放到胸前的口袋中）。与 IBM 公司的 PC 直接竞争的是 Apple 公司的 Macintosh 系列产品（1984 年推出的）。Macintosh 以用户友好的设计而知名，它推出了一个新的操作系统，该系统让用户不用输入指令就可以移动屏幕上的图标。用户可以使用鼠标来控制屏幕上的图标，鼠标是一个在屏幕上模拟人手移动的设备。

随着计算机在工作场所的更广泛使用，利用他们潜能的新方法也研究出来了。由于这些较小的计算机性能较强大，他们可以连在一起、或组成网络来共享内存空间、软件和信息，及相互通信。大型计算机功能强大，可以分时地用于许多应用程序的多个终端，与此相对应，连网的计算机允许单个的计算机协作。把它们直接相连，叫做“局域网”（LAN），或者用电话线连成庞大范围的网络。例如，当前全球范围的因特网，就把全世界的计算机连接到一个信息网络中。1992 年美国总统大选中，副总统候选人戈尔许诺优先发展所谓的“信息高速公路”。尽管戈尔和其他人对这般巨大网络的预见实现起来需要多年（如果不是数十年），但当今像因特网这样的计算机网络最流行的应用是电子邮件，即 E-mail，它让用户输入一个计算机地址，然后通过办公室的或世界各地的网络终端发送信息。

5．第五代计算机（现在～未来）

因为第五代计算机还在幼年期，所以给它下定义有点困难。第五代计算机最著名的例子 Arthur C. Clarke2001 写的小说《空间旅行》中虚构的HAL9000。HAL 实现了第五代计算机所设想的全部功能。因具有人工智能，它的推理能力足以使它与它的人类操作员进行对话、可以使用可视输入并从自己的经验中学习。（不幸的是，HAL 太人性化了并有精神故障，霸占了飞船并杀死了船上的大部分人。）

尽管难以驾驭的 HAL 9000 是现实世界的计算机设计师设计不出来的，但它的许多功能是可以设计出来的。使用最新研发的技术，计算机可以接受口述指令（语音辨认）和模仿人类推理。翻译外语也是第五代计算机最可能实现的性能。起初，这个技能的实现似乎是一个很简单的目标，但当程序员们认识到人的理解既依据上下文及内涵又依据词的简单翻译时，就困难得多了。

计算机设计和技术科学的许多进展正在朝着能够创造第五代计算机的方向发展。有两个这样的进展是并行发展的，一是把许多 CPU 的能力系统地组合为一个来用，代替了 Von Neumann 的中央处理单元设计；另外一个发展是超导技术。它使电流的阻力很小或几乎没有，从而提高了信息流的速度。今天的计算机已经具有了第五代计算机的一些属性。例如，专家系统通过应用解决问题方案来帮助医生做出诊断，医生可能用这些方案来确定病人的需求。还需要许多年的发展，专家系统才能得以广泛应用。