

21世纪高等学校计算机规划教材

21st Century University Planned Textbooks of Computer Science

# 计算机英语 教程

Computer English

张强华 司爱侠 王晋 编著



精品系列

 人民邮电出版社  
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## 内 容 提 要

本书旨在帮助读者提高专业英语水平和能力, 全书主要内容包括计算机硬件、输入/输出设备、操作系统、软件方法、程序编制、数据库、网络、计算机安全、电子商务、多媒体及新技术等知识。另外, 本书的阅读材料丰富, 能够提高读者的阅读能力并扩大视野。

另外, 本书还为授课教师、学生和自学者, 分别提供资源包, 需要者可从人民邮电出版社教学资源与服务网 (<http://www.ptpedu.com.cn>) 免费下载。

本书既可作为高等院校专业英语的教材, 也可作为培训班用书。

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## 出版者的话

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计算机应用能力已经成为社会各行业最重要的工作要求之一，而计算机教材质量的好坏会直接影响人才素质的培养。目前，计算机教材出版市场百花争艳，品种急剧增多，要从林林总总的教材中挑选一本适合课程设置要求、满足教学实际需要的教材，难度越来越大。

人民邮电出版社作为一家以计算机、通信、电子信息类图书与教材出版为主的科技教育类出版社，在计算机教材领域已经出版了多套计算机系列教材。在各套系列教材中涌现出了一批被广大一线授课教师选用、深受广大师生好评的优秀教材。老师们希望我社能有更多的优秀教材集中地呈现在老师和读者面前，为此我社组织了这套“21世纪高等学校计算机规划教材-精品系列”。

“21世纪高等学校计算机规划教材-精品系列”具有下列特点。

(1) 前期调研充分，适合实际教学需要。本套教材主要面向普通本科院校的学生编写，在内容深度、系统结构、案例选择、编写方法等方面进行了深入细致的调研，目的是在教材编写之前充分了解实际教学的需要。

(2) 编写目标明确，读者对象针对性强。每一本教材在编写之前都明确了该教材的读者对象和适用范围，即明确面向的读者是计算机专业、非计算机理工类专业还是文科类专业的学生，尽量符合目前普通高等教学计算机课程的教学计划、教学大纲以及发展趋势。

(3) 精选作者，保证质量。本套教材的作者，既有来自院校的一线授课老师，也有来自IT企业、科研机构等单位的资深技术人员。通过他们的合作使老师丰富的实际教学经验与技术人员丰富的实践工程经验相融合，为广大师生编写出适合目前教学实际需求、满足学校新时期人才培养模式的高质量教材。

(4) 一纲多本，适应面宽。在本套教材中，我们根据目前教学的实际情况，做到“一纲多本”，即根据院校已学课程和后续课程的不同开设情况，为同一科目提供不同类型的教材。

(5) 突出能力培养，适应人才市场要求。本套教材贴近市场对于计算机人才的能力要求，注重理论技术与实际应用的结合，注重实际操作和实践动手能力的培养，为学生快速适应企业实际需求做好准备。

(6) 配套服务完善，共促提高。对于每一本教材，我们在教材出版的同时，都将提供完备的PPT课件，并根据需要提供书中的源程序代码、习题答案、教学大纲等内容，部分教材还将在作者的配合下，提供疑难解答、教学交流等服务。

在本套教材的策划组织过程中，我们获得了来自清华大学、北京大学、人民大学、浙江大学、吉林大学、武汉大学、哈尔滨工业大学、东南大学、四川大学、上海交通大学、西安交通大学、电子科技大学、西安电子科技大学、北京邮电大学、北京林业大学等院校老师的大力支持和帮助，同时获得了来自信息产业部电信研究院、联想、华为、中兴、同方、爱立信、摩托罗拉等企业和科研单位的领导和技术人员的积极配合。在此，人民邮电出版社向他们表示衷心的感谢。

我们相信，“21世纪高等学校计算机规划教材-精品系列”一定能够为我国高等院校计算机课程教学做出应有的贡献。同时，对于工作欠缺和不妥之处，欢迎老师和读者提出宝贵的意见和建议。

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IT 行业具有极高的发展速度和几乎即时的信息传播能力。对于业内人士而言，掌握了英语，尤其是专业英语，可以大大提高业务能力，成为职场中的佼佼者。因此，几乎所有高校的 IT 相关专业都开设专业英语课程，各类职业资格考试也都包含了专业英语水平的测试。本书就是一部旨在帮助读者提高专业英语水平和能力的教材。所选内容软件、硬件和网络并重，在保证体系完整的同时兼顾发展热点。

## 一、体系结构

本书分为四部分：硬件、软件、网络 and 计算机应用，每部分再分为若干课。

### 1. 选材

依据当前行业的最新发展，我们精心选择了本书素材。本书既包括了行业的基础知识和基本概念，也包括了常用软件及常用设备，同时注意了最新的发展及未来的动向。内容包括：计算机硬件、输入/输出设备、操作系统、软件基础、编程语言、数据库、计算机网络、计算机安全、电子商务、多媒体及其应用、新技术等多个主题，既有像 *Data Structure* 这样的基础文章，也有像 *Software Development Process* 这样的经典文章，还有像 *How DNA Computers Will Work* 这样的前瞻性文章，力求风格多样。

### 2. 排版

作者根据多年的教学实践，在排版上主要考虑以下两点：其一，图文并茂，这样可以提高学生的兴趣，也可以发挥图形的表现能力；其二，适当留白，便于学生在旁边加注笔记。

### 3. 单元构成

每课由以下几部分组成：两篇精心选择的课文，Text A 为主课文，Text B 为副课文；Text C 为阅读材料，用来提高读者的阅读能力并扩大视野；课文与阅读材料之后配有相应的练习题目，供检查学习效果、提高应用能力之用。

## 二、内容说明

### 1. 单词

单词是专业英语的基础，也是学习专业英语的核心。本书遵循以下原则处理单词：其一，对于超出教育部颁发的“大学英语课程教学要求”（一般要求）以外的词汇，作为新词；其二，对于在教育部颁发的“大学英语课程教学要求”（一般要求）之内，但专业英语中具有特殊含义的词汇，也作为新词，标注其专业范围内的意义；其三，对于少量在专业英语经常使用的高频词，也标注出来，以便复习。

课文与阅读材料中的单词均以蓝色印刷，并在旁边用蓝色标注词性、音标及意义，突出而醒目，非常便于学习和记忆。

## 2. 词组

在专业英语中，词组具有重要的意义。常用专业词组，均以脚注的形式，解释其意思。另外，作者还精心选择了属于少量公共英语范围，但在专业英语中颇为常用而影响读者理解文章的固定搭配，加以注释，这可以有效提高读者的篇章阅读能力。

## 3. 缩略语

计算机行业频频使用缩略语，掌握缩略语十分重要。我们以脚注形式给出了全部缩略语的完整形式和意义，便于查询和记忆。

单词、词组及缩略语按照先出现先讲解的原则处理。单词、词组及缩略语经过计算机排序，并已经加工成“单词表”（1500余条）、“词组表”（900余条）及“缩略语表”（100余条），以电子文档形式免费提供。既降低了本书成本，也便于读者学习及进一步加工使用。

## 4. 注释

对于课文中出现的专业背景知识、业内知名人物、难以理解的语法，以脚注的形式加以讲解。排除读者的学习困难，扩大读者的阅读视野。

## 5. 难句、长句翻译

一些语法结构复杂的难句和长句，进行了必要的讲解，给出了参考译文。

## 6. 练习

课文后配有“根据课文填空”、“词组英译中”、“词组中译英”、“选词填空”以及“短文翻译”练习题目，既紧扣课文，也有拓展提高。

## 三、对教师的支持

我们对教师的教学提供以下支持：其一，提供教学用的 PPT；其二，提供全部练习的参考答案；其三，提供 Text A 的参考译文；其四，提供“单词表”、“词组表”及“缩略语表”的电子文档；其五，提供参考试卷。

## 四、对学生的支持

我们对学生的学习提供以下支持：其一，提供“单词表”、“词组表”及“缩略语表”的电子文档；其二，提供参考书目。

## 五、对自学者的支持

我们对自学者提供以下支持：其一，提供“单词表”、“词组表”及“缩略语表”的电子文档；其二，提供参考书目；其三，提供参考答案和参考译文供索取。

读者可到人民邮电出版社教学服务与资源网（<http://www.ptpedu.com.cn>）免费下载资料，也可以通过 E-mail 与编者联系，邮箱地址：[zqh3882355@sina.com](mailto:zqh3882355@sina.com)；[zqh3882355@163.com](mailto:zqh3882355@163.com)。

本书既可作为高等院校的专业英语教材，也可作为培训班教材，还可供从业人员使用。

# 目 录

## Part 1 Computer Hardware(计算机硬件)

Lesson 1 About Computer (关于计算机) .....	2	Text B Motherboard .....	37
Text A Basics of Computer .....	2	Text C Overview of USB .....	44
Text B What's Inside My Computer? .....	11	Lesson 3 Input/Output Device (输入/输出设备) .....	50
Text C How to Build a Computer .....	17	Text A Display Technology .....	50
Lesson 2 Computer Hardware (计算机硬件) .....	26	Text B LCD Monitors and CRT Monitors .....	59
Text A Types of Computers .....	26	Text C Laser Printer .....	68

## Part 2 Computer Software(计算机软件)

Lesson 4 Operating System (操作系统) .....	80	Text C Array .....	119
Text A How Operating Systems Work .....	80	Lesson 6 Programming Language (编程语言) .....	127
Text B Windows 7 .....	89	Text A Programming Language Basics .....	127
Text C What Is Linux? .....	97	Text B Function of C .....	137
Lesson 5 Computer Software Basics (计算机软件基础) .....	105	Text C Start a Simple Java Program .....	142
Text A Software Development Process .....	105	Lesson 7 Database (数据库) .....	154
Text B Data Structure .....	114	Text A Database Management System .....	154
		Text B SQL .....	162
		Text C Object-Oriented Programming .....	168

## Part 3 Computer Network(计算机网络)

Lesson 8 Computer Network (计算机网络) .....	178	Basics .....	178
Text A Computer Network .....		Text B Internet .....	188
		Text C Going Wireless .....	196

**Lesson 9 Computer Network Application ( 计算机网络应用 )** ..... 202

Text A What Is TCP/IP? ..... 202

Text B The Ethernet ..... 209

Text C How Internet Search Engines Work ..... 219

**Lesson 10 Computer Security ( 计算机安全 )** ..... 227

Text A An Overview of Computer Security ..... 227

Text B Computer Viruses ..... 239

Text C Hacker ..... 247

**Part 4 Computer Application( 计算机应用 )**

**Lesson 11 eCommerce ( 电子商务 )** ..... 256

Text A Types of Electronic Business ..... 256

Text B E-Commerce Site Optimization Primer: Set Up and Tips ..... 263

Text C SMS Banking ..... 272

Text B Computer Graphics ..... 285

Text C Computer Aided Design ..... 295

**Lesson 12 Multimedia and It's Application ( 多媒体及其应用 )** ..... 278

Text A The Concept of Multimedia ..... 278

**Lesson 13 New Technology Outlook ( 新技术瞭望 )** ..... 306

Text A Web 2.0 ..... 306

Text B Mobile Computing Technologies: an Overview ..... 316

Text C How DNA Computers Will Work ..... 322



# Part 1

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## Computer Hardware ( 计算机硬件 )

- Lesson 1 About Computer (关于计算机)
- Lesson 2 Computer Hardware (计算机硬件)
- Lesson 3 Input/Output Device (输入 / 输出设备)

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# Lesson 1

## About Computer

(关于计算机)

Text A

### Basics of Computer

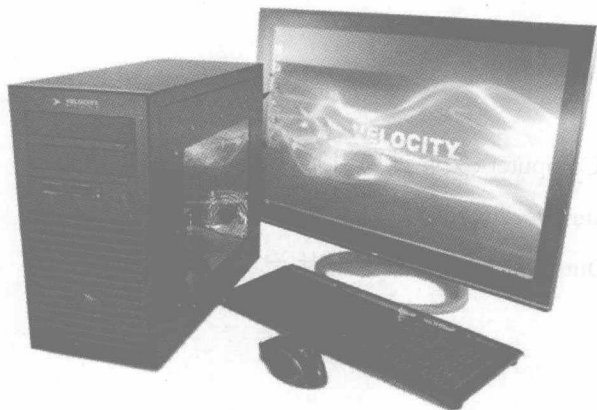


Figure 1.1 Typical PC System

A computer is a programmable machine (or more precisely, a programmable sequential state machine). (See Figure 1.1). There are two basic kinds of computers: analog and digital.

Analog computers are analog devices. That is, they have continuous states rather than discrete numbered states. An analog computer can represent fractional or irrational values exactly, with no round-off<sup>1</sup>. Analog computers are almost never used outside of experimental settings.

A digital computer is a programmable clocked sequential state machine. A digital computer uses discrete states. A binary digital computer uses two discrete states, such as positive/

programmable  
[ˈprəʊgræməbl]

adj. 可编程的

analog [ˈænəlɒɡ] adj. 模拟的

digital [ˈdɪdʒɪtl] adj. 数字的

n. 数字式

<sup>1</sup> round-off: 舍入。

negative, high/low, on/off, to represent the binary digits zero and one.

### 1. What are computers used for?

Computers are used for a wide variety of purposes.

Data processing is commercial and financial work. This includes such things as billing, shipping and receiving, inventory control, and similar business related functions, as well as<sup>1</sup> the “electronic office”.

Scientific processing is using a computer to support science. This can be as simple as gathering and analyzing raw data and as complex as modelling natural phenomenon (weather and climate models, thermodynamics, nuclear engineering, etc.).

Multimedia includes content creation (composing music, performing music, recording music, editing film and video, special effects, animation, illustration, laying out print materials, etc.) and multimedia playback (games, DVDs, instructional materials, etc.).

### 2. Parts of a computer

The classic crude oversimplification of a computer is that it contains three elements: processor unit, memory, and I/O (input/output). The borders between those three terms are highly ambiguous, non-contiguous, and erratically shifting. (See Figure 1.2)

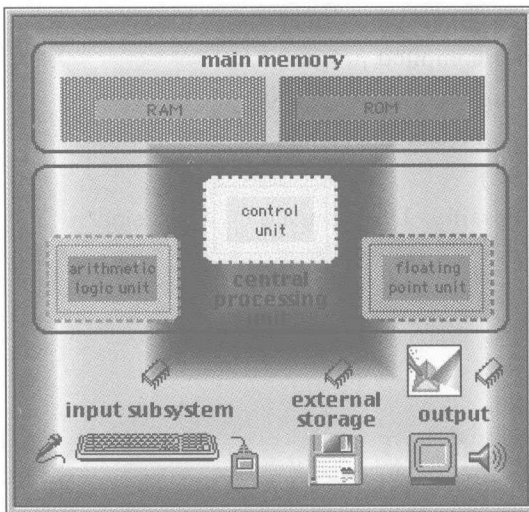


Figure 1.2 computer logic System

A slightly less crude oversimplification divides a computer into five elements: arithmetic and logic subsystem, control

bill [bil] vt. 给……开账单  
n. 账单, 钞票, 票据, 清单

gather ['gæðə] vt. 搜集,  
收集

multimedia ['mʌlti'mi:djə]  
n. 多媒体

video ['vi:diəu] n. 视频

oversimplification

['əʊvə,simpli'keiʃən]

n. 过度单纯化(的事物)

memory ['meməri]

n. 存储器, 内存

erratically ['i'rætikəli]

adv. 不规则地, 不定地

arithmetic[ə'riθmətik]  
n. 算术

<sup>1</sup> as well as: 也, 又。

subsystem, main storage<sup>1</sup>, input subsystem, and output subsystem.

## 2.1 Processor

The processor is the part of the computer that actually does the computations. This is sometimes called an MPU<sup>2</sup> (for main processor unit) or CPU<sup>3</sup> (for central processing unit or central processor unit).

processor['prəusesə]

n. 处理器; 处理机

A processor typically contains an arithmetic/logic unit (ALU<sup>4</sup>), control unit (including processor flags, flag register, or status register), internal buses, and sometimes special function units (the most common special function unit being a floating point<sup>5</sup> unit for floating point arithmetic).

flag[flæg]n. 标记

register['redʒɪstə]n. 寄存器

Some computers have more than one processor. This is called multi-processing.

The major kinds of digital processors are: CISC<sup>6</sup>, RISC<sup>7</sup>, DSP<sup>8</sup>, and hybrid.

CISC stands for Complex Instruction Set Computer. Mainframe computers and minicomputers were CISC processors, with manufacturers competing to offer the most useful instruction sets<sup>9</sup>. Many of the first two generations of microprocessors were also CISC.

mainframe['meɪnfreɪm]

n. 主机, 大型机

RISC stands for Reduced Instruction Set Computer. RISC came about<sup>10</sup> as a result of<sup>11</sup> academic research. It showed that a small well-designed instruction set running compiled programs at high speed could perform more computing work than a CISC running the same programs<sup>12</sup> (although very expensive hand optimized assembly language<sup>13</sup> favored CISC).

DSP stands for Digital Signal Processing. DSP is used

signal['sɪgnl]n. 信号

adj. 信号的 v. 发信号

<sup>1</sup> main storage: 主存。

<sup>2</sup> MPU (Main Processor Unit): 主处理器。

<sup>3</sup> CPU (Central Processing Unit 或 Central Processor Unit): 中央处理器。

<sup>4</sup> ALU (Arithmetic Logic Unit): 运算器。

<sup>5</sup> floating point: 浮点。

<sup>6</sup> CISC (Complex Instruction Set Computer): 复杂指令集计算机。

<sup>7</sup> RISC (Reduced Instruction Set Computer): 精简指令集计算机。

<sup>8</sup> DSP (Digital Signal Processing): 数字信号处理。

<sup>9</sup> instruction set: 指令集, 指令系统。

<sup>10</sup> come about: 发生, 产生。

<sup>11</sup> as a result of: 作为结果。

<sup>12</sup> It showed that a small well-designed instruction set running compiled programs at high speed could perform more computing work than a CISC running the same programs.

译文: 研究表明, 一个小的设计良好的高速运行编译程序的指令集比运行相同程序的 CISC (复杂指令集计算机) 能够进行更多的计算。

<sup>13</sup> assembly language: 汇编语言。

primarily in dedicated devices, such as MODEMs<sup>1</sup>, digital cameras, graphics cards, and other specialty devices.

device [di'vais] n. 装置, 设备

Hybrid processors combine elements of two or three of the major classes of processors.

## 2.2 Arithmetic and Logic Unit

An arithmetic logic unit (ALU) performs integer arithmetic and logic operations. It also performs shift and rotate operations and other specialized operations. Usually floating point arithmetic is performed by a dedicated floating point unit (FPU), which may be implemented as a coprocessor.

integer ['intidʒə] n. 整数

coprocessor  
['kəu'prəusesə]  
n. 协处理器

## 2.3 Control Units

Control units are in charge of<sup>2</sup> the computer. Control units fetch and decode machine instructions. Control units may also control some external devices.

decode [di:'kəud] vt. 解码  
instruction [in'strʌkʃən]  
n. 指令

A bus is a set (group) of parallel lines that information (data, addresses, instructions, and other information) travels on inside a computer. Information travels on buses as a series of electrical pulses, each pulse representing a one bit or a zero bit<sup>3</sup>. An internal bus is a bus inside the processor, moving data, addresses, instructions, and other information between registers and other internal components or units. An external bus is a bus outside of the processor (but inside the computer), moving data, addresses, and other information between major components (including cards) inside the computer. Some common kinds of buses are the system bus, a data bus, an address bus, a cache bus, a memory bus, and an I/O bus.

address [ə'dres] n. 地址

bit [bit] n. 位, 比特

## 2.4 Main Storage

Main storage is also called memory or internal memory (to distinguish from external memory, such as hard drives).

storage ['stɔ:ridʒ] n. 存储

RAM is Random Access Memory<sup>4</sup>, and is the basic kind of internal memory. RAM is called "random access" because the processor or computer can access any location in memory (as contrasted with sequential access devices, which must be

access ['ækses]  
vt. 存取, 访问

<sup>1</sup> MODEM (MODulator, DEModulator): 调制解调器。

<sup>2</sup> in charge of: 负责。

<sup>3</sup> Information travels on buses as a series of electrical pulses, each pulse representing a one bit or a zero bit.  
译文: 信息以一系列电子脉冲的形式在总线上传播, 每个脉冲代表一个 1 位或一个 0 位。

<sup>4</sup> RAM (Random Access Memory): 随机访问存储器。

accessed in order<sup>1</sup>). RAM has been made from transistors, integrated circuits<sup>2</sup>, magnetic core<sup>3</sup>, or anything that can hold and store binary values (one/zero, plus/minus, open/close, positive/negative, high/low, etc.). Most modern RAM is made from integrated circuits. At one time the most common kind of memory in mainframes was magnetic core, so many older programmers will refer to main memory as core memory even when the RAM is made from more modern technology. Static RAM is called static because it will continue to hold and store information even when power is removed. Dynamic RAM is called dynamic because it loses all data when power is removed. Transistors and integrated circuits are examples of dynamic memory. It is possible to have battery backup for devices that are normally dynamic to turn them into static memory.

ROM<sup>4</sup> is Read Only Memory (it is also random access, but only for reads). ROM is typically used to store things that will never change for the life of the computer, such as low level portions of an operating system. Some processors (or variations within processor families) might have RAM and/or ROM built into the same chip as the processor (normally used for processors used in standalone devices, such as ATMs<sup>5</sup>, microwave ovens, car ignition systems, etc.).

EPROM<sup>6</sup> is Erasable Programmable Read Only Memory, a special kind of ROM that can be erased and reprogrammed with specialized equipment (but not by the processor it is connected to). EPROMs allow makers of industrial devices (and other similar equipment) to have the benefits of ROM, yet also allow for<sup>7</sup> updating or upgrading the software without having to buy new ROM and throw out the old.

Registers are a special kind of memory that exists inside a processor. Typically a processor will have several internal registers that are much faster than main memory. These registers usually have specialized capabilities for arithmetic, logic,

transistor [træn'zistə]

n. 晶体管

binary ['bainəri]

adj. 二进位的

static ['stætik] adj. 静态的

variation [ˌvæəri'eɪʃən]

n. 变化, 变异

ignition [ɪg'niʃən]

n. 点火, 点燃

reprogram ['ri:prəʊgræm]

v. 重新编程

equipment [i'kwɪpmənt]

n. 装备, 设备, 装置

<sup>1</sup> in order: 按照顺序。

<sup>2</sup> integrated circuit: 集成电路。

<sup>3</sup> magnetic core: 磁芯。

<sup>4</sup> ROM(Read Only Memory): 只读存储器。

<sup>5</sup> ATM(Automatic Teller Machine): 自动取款机。

<sup>6</sup> EPROM (Erasable Programmable Read Only Memory): 可擦可编程只读存储器。

<sup>7</sup> allow for: 考虑到, 连……算在内; 为……酌留余地。

and other operations. Registers are usually fairly small. Some processors separate integer data and address registers, while other processors have general purpose registers that can be used for both data and address purposes. A processor will typically have 1 to 32 data or general purpose registers (processors with separate data and address registers typically split the register set in half). Many processors have special floating point registers (and some processors have general purpose registers that can be used for either integer or floating point arithmetic).

separate ['sepəreɪt]

v. 分开, 隔离, 分散

adj. 分开的, 分离的, 个别的, 单独的

### 2.5 External storage

External storage (also called auxiliary storage) is any storage other than main memory. In modern times this is mostly hard drives and removable media. With the advent of USB and FireWire hard drives, the line between permanent hard drives and removable media is blurred. Random access or indexed access devices provide an extension of memory (although usually accessed through logical file systems). (See Figure 1.3)

removable [rɪ'mu:vəbl]

adj. 可移动的



Figure 1.3 Hard disk

Sequential access<sup>1</sup> devices provide for off-line storage of large amounts of information (or backups of data) and are often called I/O devices (for input/output).

### 3. Input/Output Overview

Most external devices<sup>2</sup> are capable of both input and output (I/O). Some devices are inherently input-only (also called

<sup>1</sup> sequential access: 顺序访问, 顺序存取。

<sup>2</sup> external device: 外部设备。

read-only) or inherently output-only (also called write-only). Regardless of<sup>1</sup> whether a device is I/O, read-only, or write-only, external devices can be classified as block or character devices.

A character device is one that inputs or outputs data in a stream of characters, bytes, or bits. Character devices can further be classified as serial or parallel. Examples of character devices include printers, keyboards and mouse.

A serial device<sup>2</sup> streams data as a series of bits, moving data one bit at a time. Examples of serial devices include printers and MODEMs.

A parallel device<sup>3</sup> streams data in a small group of bits simultaneously. Usually the group is a single eight-bit byte (or possibly seven or nine bits, with the possibility of various control or parity bits<sup>4</sup> included in the data stream<sup>5</sup>). The most common parallel device is a printer (although most modern printers have both a serial and a parallel connection, allowing greater connection flexibility).

A block device<sup>6</sup> moves large blocks of data at once. This may be physically implemented as a serial or parallel stream of data, but the entire block gets transferred as a single packet of data. Most block devices are random access (that is, information can be read or written from blocks anywhere on the device).

### 3.1 Input Devices

Input devices<sup>7</sup> are devices that bring information into a computer.

Pure input devices include such things as keyboards, mouse, drawing tablets, touchpads, trackballs, and game controllers<sup>8</sup>.

Devices that have an input component include magnetic tape drives, touchscreens, and dumb terminals<sup>9</sup>.

character ['kæriktə] n. 字符

byte [baɪt] n. 字节

serial ['siəriəl] adj. 串行的, 连续的

parallel ['pærəlel] adj. 并行的

keyboard ['ki:bɔ:d] n. 键盘

mouse [maʊs] n. 鼠标

parity ['pærɪti] n. 奇偶校验

connection [kə'nekʃən] n. 连接

implement ['ɪmplɪmənt] v. 贯彻, 实现, 执行

touchpad ['tʌtʃpæd] n. 触摸板

trackball ['trækbo:l] n. 轨迹球

touchscreen ['tʌtʃskri:n] n. 触摸屏

dumb terminal: 哑终端。

<sup>1</sup> regardless of: 不管, 不顾。

<sup>2</sup> serial device: 串行设备。

<sup>3</sup> parallel device: 并行设备。

<sup>4</sup> parity bit: 校验位。

<sup>5</sup> data stream: 数据流。

<sup>6</sup> block device: 块设备。

<sup>7</sup> input device: 输入设备。

<sup>8</sup> game controller: 游戏操纵杆。

<sup>9</sup> dumb terminal: 哑终端。



### 3.2 Output Devices

Output devices<sup>1</sup> are devices that bring information out of a computer.

Pure output devices include such things as LED<sup>2</sup> displays (for light-emitting diodes), monitors, printers, and pen plotters.

plotter ['plɒtə] n. 绘图机

Devices that have an output component include magnetic tape drives and dumb terminals.

## Exercises

### I. Complete the following sentences according to the information in the text.

1. A computer is a \_\_\_\_\_ sequential state machine. The two basic kinds of computers are \_\_\_\_\_ and \_\_\_\_\_.
2. An analog computer uses \_\_\_\_\_ states while a digital computer uses \_\_\_\_\_ states.
3. Data processing includes such things as \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_, \_\_\_\_\_, and similar business related functions, as well as the "electronic office".
4. The processor is the part of the computer that actually does the \_\_\_\_\_. It is sometimes called an \_\_\_\_\_ or \_\_\_\_\_.
5. CISC stands for \_\_\_\_\_.
6. DSP stands for \_\_\_\_\_.
7. An arithmetic/logic unit (ALU) performs \_\_\_\_\_ arithmetic and \_\_\_\_\_ operations.
8. Information travels on \_\_\_\_\_ as a series of electrical \_\_\_\_\_, each pulse representing a one bit or a zero bit.
9. RAM is \_\_\_\_\_, and is the basic kind of \_\_\_\_\_ memory.
10. Pure input devices include such things as \_\_\_\_\_, \_\_\_\_\_, drawing tablets, touchpads, trackballs, and game controllers. Pure output devices include such things as LED displays (for light-emitting diodes), \_\_\_\_\_, \_\_\_\_\_, and pen plotters.

### II. Translate the following terms and phrases into Chinese.

- |                       |          |
|-----------------------|----------|
| 1. external devices   | 1. _____ |
| 2. output device      | 2. _____ |
| 3. parallel device    | 3. _____ |
| 4. assembly language  | 4. _____ |
| 5. block device       | 5. _____ |
| 6. floating point     | 6. _____ |
| 7. data stream        | 7. _____ |
| 8. input device       | 8. _____ |
| 9. integrated circuit | 9. _____ |

<sup>1</sup> output device: 输出设备。

<sup>2</sup> LED(Light Emitting Diode): 发光二极管。