21世纪高等学校规划教材 | 计算机应用

计算机专业英语

吴强 孟立 等 编著

清华大学出版社

21世纪高等学校规划教材

计算机专业英语

吴强 孟立 等 编著

清华大学出版社
北京

内 容 简 介

本书主体用英文编写，按计算机相应专业方向进行分类。计算机科学技术范围很广，本书将关注方向投向计算机应用、计算机网络、电子商务、软件开发等，在确保涉猎基本的计算机知识点之外，也包括当前最新的技术和应用内容，如云计算、大数据、移动互联网等，旨在使学生在掌握计算机专业英语基本知识的前提下，对自己所学专业方向及新技术、新趋势有所了解。

本书内容来自国外近期英文计算机方面的教材、培训资料、专著、使用说明书及网络信息，内容覆盖面广，题材新颖，实用性强，书中所附习题贴近实际英语需求，在重视学生阅读能力的基础上，着重培养学生实际应用计算机专业英语的能力。本书可供大专院校计算机相关专业的专业英语课程使用，也可供计算机专业工程技术人员学习参考。

本书封面贴有清华大学出版社防伪标签，无标签者不得销售。
版权所有，侵权必究。侵权举报电话：010-62782989　13701121933

图书在版编目（CIP）数据

计算机专业英语 / 吴强等编著. —北京：清华大学出版社，2015
21 世纪高等学校规划教材 • 计算机应用
ISBN 978-7-302-40825-3

Ⅰ. ①计…　Ⅱ. ①吴…　Ⅲ. ①电子计算机-英语-高等学校-教材　Ⅳ. ①H31

中国版本图书馆 CIP 数据核字（2015）第 163108 号

责任编辑：闫红梅　李　晔
封面设计：傅瑞学
责任校对：胡伟民
责任印制：刘海龙

出版发行：清华大学出版社
网　　址：http://www.tup.com.cn，http://www.wqbook.com
地　　址：北京清华大学学研大厦 A 座　　邮　　编：100084
社 总 机：010-62770175　　邮　　购：010-62786544
投稿与读者服务：010-62776969，c-service@tup.tsinghua.edu.cn
质 量 反 馈：010-62772015，zhiliang@tup.tsinghua.edu.cn
课 件 下 载：http://www.tup.com.cn，010-62795954

印 刷 者：北京富博印刷有限公司
装 订 者：北京市密云县京文制本装订厂
经　　销：全国新华书店
开　　本：185mm×260mm　　**印　张**：23.25　　**字　数**：585 千字
版　　次：2015 年 8 月第 1 版　　**印　次**：2015 年 8 月第1次印刷
印　　数：1～2000
定　　价：44.50 元

产品编号：064494-01

前言

本书旨在让读者接触到纯正的计算机英语和最新的计算机发展动态，培养和提高读者对计算机专业英语文献、教科书及网上材料的阅读理解能力，通过书中的配套练习提高读者口头及书面的专业英语表达能力。

全书由五部分组成：第一部分为计算机基础，第二部分为计算机网络，第三部分为编程与软件工程，第四部分为电子商务，第五部分是参考译文（由于篇幅所限，本书仅提供前6章的翻译，全部参考译文可访问清华大学出版社网站下载电子版）。全书包括12章英文内容，其中第1、2、3、6、9、12章共6章广泛选自文献、论文、网络等，浓缩了计算机最新技术及概念，语言风格多样，每一节自成一体，便于老师及学生选择性地进行教学和自学；第4、5、7、8、10、11章共6章多采用英文原版的教科书、讲义等，专业性及系统性较强，语言平实，较准确地反映了当前英文原版教材的英语难易程度。

本书每一单元分为原文、生词与词组、注释及扩展学习四部分（扩展学习部分根据原文的情况而设立）。每章安排有练习，练习分为三部分：英译汉、口语练习和写作练习。授课教师可根据学生实际情况及学时安排选择性地布置。

本书解释较详细，文章涉及范围较广，可供大专院校作为计算机相关专业的专业英语教材，也可作为其他有志于学好计算机专业英语的读者自学。

本书由浙江清华长三角研究院吴强、郑州轻工业学院孟立策划，郑州轻工业学院孟立负责组稿。其中吴强、孟立编写第1、2、3、4、5章，马江涛、张静、徐翠云、朱晓晗、朱梦编写第6、7、8、9、10、11、12章及参考译文。

由于作者水平有限，书中难免有不妥及错误之处，敬请读者批评指正。

编　者

2015年4月

于郑州

目 录

PART 1 Fundamentals of Computer ····· 1

Chapter 1 Hardware ····· 2
Unit 1.1 Computer Hardware ····· 2
Keywords and Expressions: ····· 5
Notes: ····· 6
Extended Study: ····· 7
Unit 1.2 Computer Architecture ····· 8
Keywords and Expressions: ····· 11
Notes: ····· 12
Extended Study: ····· 14
Unit 1.3 Microprocessor ····· 15
Keywords and Expressions: ····· 18
Notes: ····· 19
Extended Study: ····· 21
Unit 1.4 How Hard Disk Works ····· 22
Keywords and Expressions: ····· 24
Notes: ····· 24
Extended Study: ····· 25
Unit 1.5 Virtual Memory ····· 26
Keywords and Expressions: ····· 29
Notes: ····· 29
Extended Study: ····· 30
Exercises: ····· 30
Chapter 2 Software ····· 32
Unit 2.1 Computer Software ····· 32
Keywords and Expressions: ····· 34
Notes: ····· 35
Extended Study: ····· 36
Unit 2.2 Operating System ····· 36
Keywords and Expressions: ····· 40
Notes: ····· 41

试读结束：需要全本请在线购买： www.ertongbook.com

Extended Study: ····42
Unit 2.3 Linux ····43
Keywords and Expressions: ····45
Notes: ····46
Extended Study: ····47
Unit 2.4 Flowchart ····48
Keywords and Expressions: ····51
Notes: ····51
Extended Study: ····52
Unit 2.5 Object-oriented Programming ····52
Keywords and Expressions: ····55
Notes: ····57
Extended Study: ····58
Exercises: ····58
Chapter 3 Application ····59
Unit 3.1 Relational Database ····59
Keywords and Expressions: ····62
Notes: ····63
Unit 3.2 SQL ····64
Keywords and Expressions: ····69
Notes: ····70
Extended Study: ····71
Unit 3.3 Virtual Reality ····71
Keywords and Expressions: ····73
Notes: ····74
Extended Study: ····75
Unit 3.4 Online Game ····76
Keywords and Expressions: ····78
Notes: ····79
Extended Study: ····80
Unit 3.5 Big Data ····81
Keywords and Expressions: ····84
Notes: ····85
Exercises: ····86

Part 2 Computer Networks & Internet ····89

Chapter 4 Introduction to Computer Networks ····90
Unit 4.1 Topology ····90
Keywords and Expressions: ····94

Notes: ····· 95
Extended Study: ····· 95
Unit 4.2 Wireless Networks ····· 96
Keywords and Expressions: ····· 98
Notes: ····· 99
Extended Study: ····· 99
Unit 4.3 Ethernet ····· 100
Keywords and Expressions: ····· 103
Notes: ····· 104
Unit 4.4 The Benefits of VDI ····· 104
Keywords and Expressions: ····· 107
Notes: ····· 107
Exercises: ····· 109
Chapter 5 Architecture of Computer Networks ····· 110
Unit 5.1 OSI model ····· 110
Keywords and Expressions: ····· 113
Notes: ····· 114
Extended Study: ····· 114
Unit 5.2 Network Layer and Transport Layer ····· 115
Keywords and Expressions: ····· 117
Notes: ····· 117
Extended Study: ····· 118
Unit 5.3 Internetworking Devices ····· 120
Keywords and Expressions: ····· 126
Notes: ····· 126
Extended Study: ····· 127
Unit 5.4 IP Addresses ····· 127
Keywords and Expressions: ····· 131
Notes: ····· 132
Unit 5.5 IPv6 ····· 132
Keywords and Expressions: ····· 135
Notes: ····· 136
Extended Study: ····· 136
Unit 5.6 Mobile Networks ····· 138
Keywords and Expressions: ····· 141
Notes: ····· 141
Extended Study: ····· 142
Exercises: ····· 145
Chapter 6 Internet and the World Wide Web ····· 146

Unit 6.1 Common Uses of the Internet ····· 146
Keywords and Expressions: ····· 149
Notes: ····· 149
Extended Study: ····· 151
Unit 6.2 How DNS Works ····· 152
Keywords and Expressions: ····· 155
Notes: ····· 156
Unit 6.3 World Wide Web ····· 157
Keywords and Expressions: ····· 159
Notes: ····· 159
Extended Study: ····· 160
Unit 6.4 Internet Cookies ····· 163
Keywords and Expressions: ····· 165
Notes: ····· 166
Extended Study: ····· 166
Unit 6.5 Firewall ····· 167
Keywords and Expressions: ····· 171
Notes: ····· 172
Extended Study: ····· 173
Unit 6.6 Cloud Computing ····· 174
Keywords and Expressions: ····· 176
Notes: ····· 177
Exercises: ····· 178

PART 3 Programming and Software Engineering Service ····· 179

Chapter 7 Programming Fundamentals ····· 180
Unit 7.1 Hello, World—Your First VB Program [1] ····· 180
Keywords and Expressions: ····· 183
Notes: ····· 183
Unit 7.2 Data Types and Controls ····· 184
Keywords and Expressions: ····· 188
Notes: ····· 189
Extended Study: ····· 189
Unit 7.3 Variables ····· 190
Keywords and Expressions: ····· 197
Notes: ····· 197
Unit 7.4 Arrays ····· 198
Keywords and Expressions: ····· 199
Notes: ····· 199

Exercises: ····200
Chapter 8 Control Structure and GUI ····201
Unit 8.1 If-Then Selection Structure ····201
Keywords and Expressions: ····206
Notes: ····207
Unit 8.2 Do-While and For-Next Loop Structure ····207
Keywords and Expressions: ····211
Notes: ····212
Extended Study: ····212
Unit 8.3 Subroutines and Functions (1) ····213
Keywords and Expressions: ····215
Notes: ····215
Unit 8.4 Subroutines and Functions (2) ····215
Keywords and Expressions: ····218
Notes: ····218
Exercises: ····219
Chapter 9 Software Engineering ····221
Unit 9.1 FAQs About Software Engineering ····221
Keywords and Expressions: ····224
Notes: ····224
Unit 9.2 Waterfall Life Cycle Model ····225
Keywords and Expressions: ····228
Notes: ····228
Unit 9.3 Secrets of Successful Software Requirements ····229
Keywords and Expressions: ····231
Notes: ····232
Extended Study: ····233
Unit 9.4 White Box Testing and Black Box Testing ····234
Keywords and Expressions: ····237
Notes: ····237
Exercises: ····238

Part 4 Electronic Commerce ····239

Chapter 10 Introduction to Electronic Commerce ····240
Unit 10.1 Development of Electronic Commerce ····240
Keywords and Expressions: ····241
Notes: ····242
Extended Study: ····242
Unit 10.2 Categories of Electronic Commerce ····243

Keywords and Expressions: ····246
Notes: ····246
Unit 10.3 Two Waves of Electronic Commerce ····247
Keywords and Expressions: ····250
Notes: ····250
Extended Study: ····251
Unit 10.4 Advantages and Disadvantages of Electronic Commerce ····252
Keywords and Expressions: ····255
Notes: ····255
Exercises: ····256
Chapter 11 Selling on the Web ····257
Unit 11.1 Web Catalog Revenue Model ····257
Keywords and Expressions: ····259
Notes: ····260
Unit 11.2 Digital Content Revenue Models ····261
Keywords and Expressions: ····263
Notes: ····263
Unit 11.3 Advertising-Supported Revenue Models ····264
Keywords and Expressions: ····266
Notes: ····266
Unit 11.4 Fee-for-Transaction Revenue Model ····267
Keywords and Expressions: ····271
Notes: ····272
Unit 11.5 Creating an Effective Web Presence ····273
Keywords and Expressions: ····274
Notes: ····274
Exercises: ····275
Chapter 12 Electronic Commerce Support Services ····276
Unit 12.1 Basic Functions of Electronic Commerce Software ····276
Keywords and Expressions: ····281
Notes: ····281
Extended Study: ····283
Unit 12.2 Mobile Commerce ····283
Keywords and Expressions: ····286
Notes: ····286
Extended Study: ····287
Unit 12.3 Managing EC Security ····288
Keywords and Expressions: ····290
Notes: ····290

Extended Study：……290
Exercises：……291

Part 5 参考译文……293

第一部分 计算机基础……294
第 1 章 硬件……294
1.1 计算机硬件……294
1.2 计算机体系结构……296
1.3 微处理器……298
1.4 硬盘的工作原理……299
1.5 虚拟内存……301
第 2 章 软件……302
2.1 计算机软件……302
2.2 操作系统……304
2.3 Linux 及其用户社区……306
2.4 流程图……308
2.5 面向对象的程序设计……310
第 3 章 应用……312
3.1 关系数据库……312
3.2 SQL……314
3.3 虚拟现实……318
3.4 在线游戏……320
3.5 大数据……321
第二部分 计算机网络与互联网……324
第 4 章 计算机网络介绍……324
4.1 拓扑结构……324
4.2 无线网络……327
4.3 以太网……328
4.4 VDI 的优势……330
第 5 章 计算机网络体系结构……332
5.1 OSI（开放系统互连）模型……332
5.2 网络层和传输层……334
5.3 网络互连设备……335
5.4 IP 地址……338
5.5 IPv6……340
5.6 移动网络……342
第 6 章 互联网和万维网……344
6.1 互联网用途……344
6.2 DNS 的工作原理……346

试读结束：需要全本请在线购买： www.ertongbook.com

6.3 万维网……348
6.4 Cookies……350
6.5 防火墙……352
6.6 云计算……356
参考文献……358

PART 1 Fundamentals of Computer

Chapter 1 Hardware

Unit 1.1 Computer Hardware

Computer hardware is the physical part of a computer, including the **digital circuitry**, as distinguished from the computer software that **executes** within the hardware[1]. The hardware of a computer is infrequently changed, in comparison with software and data, which are "soft" in the sense that they are readily created, modified or erased on the computer[2]. **Firmware**[3] is a special type of software that rarely, if ever, needs to be changed and so is stored on hardware devices such as **read-only memory (ROM)** where it is not readily changed (and is, therefore, "firm" rather than just "soft").

Most computer hardware is not seen by normal users. It is in **embedded** systems in automobiles, microwave ovens, **electrocardiograph** machines, **compact disc** players, and other devices. Personal computers, the computer hardware familiar to most people, form only a small minority of computers[4].

Computer hardware

A typical Personal computer consists of a **case** or **chassis** in desktop or tower shape and the following parts(Figure1.1):

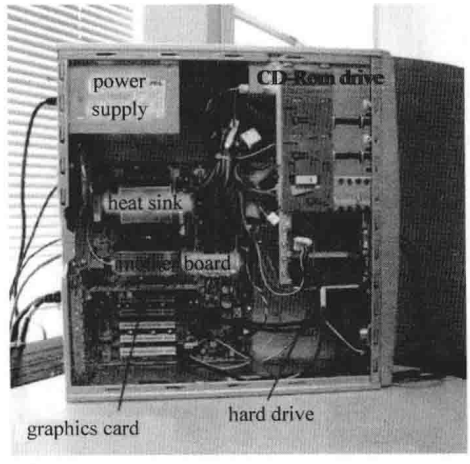

Figure 1.1 Internals of typical personal computer

- **Motherboard** or system board with **slots** for **expansion cards** and holding parts(Figure1.2).

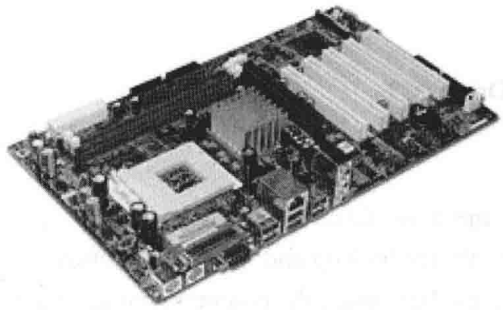

Figure 1.2 Typical Motherboard found in a computer

  - Central processing unit (CPU)
    - Computer fan—used to cool down the CPU
  - **Random Access Memory (RAM)**—for program execution and short term data storage, so the computer does not have to take the time to access the **hard drive** to find the file(s) it requires[5]. More RAM will normally contribute to a faster PC. RAM is almost always removable as it sits in slots in the motherboard, attached with small **clips**. The RAM slots are normally located next to the CPU **socket**.
  - Firmware usually Basic Input-Output System (BIOS) based or in newer systems Extensible Firmware Interface (EFI) compliant.
  - Buses.
    - PCI.
    - USB.
    - HyperTransport.
    - AGP.
    - ISA (outdated).
    - EISA (outdated).
- Power supply—a case that holds a **transformer**, voltage control, and (usually) a cooling fan.
- Storage controllers of **IDE, SATA, SCSI** or other type, that control hard disk, **floppy disk**, **CD-ROM** and other drives; the controllers sit directly on the motherboard (on-board) or on expansion cards.
- Video display controller that produces the output for the computer display. This will either be built into the motherboard or attached in its own separate slot (PCI, or AGP), requiring a **Graphics Card**.
- Computer bus controllers (**parallel**, **serial**, USB, **FireWire**) to connect the computer to external **peripheral devices** such as **printers** or **scanners**.
- Some type of a removable media writer[6]:

- CD—the most common type of removable media, cheap but fragile.
  - CD-ROM Drive.
  - CD Writer.
- DVD.
  - DVD-ROM Drive.
  - DVD Writer.
- Floppy disk.
- USB flash drive, memory stick.
- Tape drive —mainly for backup and long-term storage.

- Internal storage—keeps data inside the computer for later use.
  - Hard disk—for medium-term storage of data.
  - Disk **array** controller.
- **Sound card**—translates signals from the system board into **analog** voltage levels, and has **terminals** to plug in **speakers**.
- Networking—to connect the computer to the Internet and/or other computers.
  - **Modem**—for **dial-up** connections.
  - Network card—for **DSL**/Cable internet, and/or connecting to other computers.
- Other peripherals

In addition, hardware can include external components of a computer system. The following are either standard or very common.

- Input devices.
  - Text input devices.
    - Keyboard.
  - Pointing devices.
    - Mouse(Figure1.3).
    - Trackball.
  - Gaming devices.
    - Joystick.
    - Gamepad.
    - Game controller.
  - Image, Video input devices.
    - Image scanner.
    - **Webcam.**
  - Audio input devices.
    - Microphone.
- Output devices.
  - Image, Video output devices
    - Printer—Peripheral device that produces a hard copy. (Inkjet, Laser).
    - Monitor—Device that takes signals and displays them. (**CRT, LCD**).

Figure 1.3 Wheel Mouse

- Audio output devices.
  - Speakers—A device that converts analog audio signals into the equivalent air **vibrations** in order to make **audible** sound.
  - **Headset**—A device similar in functionality to computer speakers used mainly to not disturb others nearby.

Keywords and Expressions:

digital circuitry	数字电路
execute	执行，实行，完成
firmware	固件，韧件
read-only memory (ROM)	只读存储器
embedded	嵌入的，内含的
electrocardiograph	电图仪，心动电流描记器
compact disc	CD 光盘
case	箱子，盒子
chassis	底盘，底架
motherboard	主板
slot	插槽
expansion card	扩充卡
central processing unit (CPU)	中央处理器
Random Access Memory (RAM)	随机存取存储器
hard drive	硬盘
clip	夹子
socket	孔，插座，插槽
Basic Input-Output System (BIOS)	基本输入输出系统（见 Extended Study）
Extensible Firmware Interface (EFI)	可扩展固件接口
compliant	顺从的，适应的
bus	数据传送总线，总线，母线
PCI(Peripheral Component Interface)	周边元件扩展接口
USB (Universal Serial Bus)	通用串行总线
HyperTransport	超传输（一种为主板上的集成电路互连而设计的端到端总线技术）
AGP (Accelerated Graphics Port)	图形加速接口
transformer	变压器
IDE (Integrated Device Electronics)	集成设备电路
SATA（Serial Advanced Technology Attachment）	串行 ATA 接口
SCSI (Small Computer Systems Interface)	小型计算机系统接口

试读结束：需要全本请在线购买： www.ertongbook.com