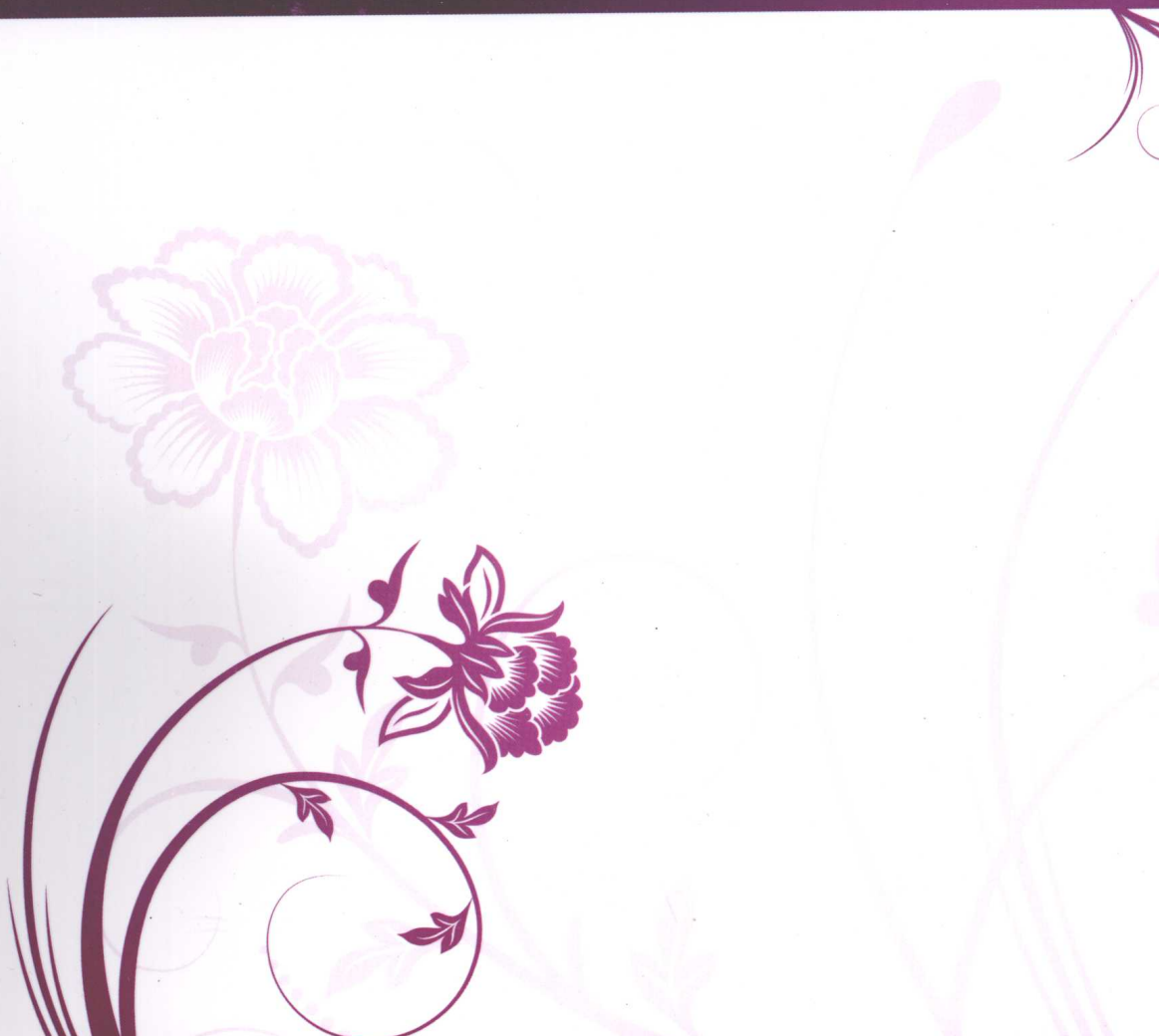


21世纪高等学校规划教材 | 计算机科学与技术



大学计算机英语 基础教程

王振 刘士才 杨慧 编著



清华大学出版社

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内 容 简 介

编者基于多年的双语教学经验、良好的英语和计算机基础,参考目前“大学计算机基础”和“计算机专业英语”课程的教学大纲内容,编写了这样一部便于老师教学安排和学生学习的英文版教材(其中约 2/3 内容为英文,1/3 为中文),使得选修双语课程和计算机专业英语的学生能在计算机和英语两个方面切实达到教学目的。

本书既可以作为高等院校“大学计算机基础”课程的双语教材和相关专业的“计算机专业英语”课程教材,同时也可以作为一本自学计算机英语的资料。

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出版说明

随着我国改革开放的进一步深化,高等教育也得到了快速发展,各地高校紧密结合地方经济建设发展需要,科学运用市场调节机制,加大了使用信息科学等现代科学技术提升、改造传统学科专业的投入力度,通过教育改革合理调整和配置了教育资源,优化了传统学科专业,积极为地方经济建设输送人才,为我国经济社会的快速、健康和可持续发展以及高等教育自身的改革发展做出了巨大贡献。但是,高等教育质量还需要进一步提高以适应经济社会发展的需要,不少高校的专业设置和结构不尽合理,教师队伍整体素质亟待提高,人才培养模式、教学内容和方法需要进一步转变,学生的实践能力和创新精神亟待加强。

教育部一直十分重视高等教育质量工作。2007年1月,教育部下发了《关于实施高等学校本科教学质量与教学改革工程的意见》,计划实施“高等学校本科教学质量与教学改革工程(简称‘质量工程’)”,通过专业结构调整、课程教材建设、实践教学改革、教学团队建设等多项内容,进一步深化高等学校教学改革,提高人才培养的能力和水平,更好地满足经济社会发展对高素质人才的需要。在贯彻和落实教育部“质量工程”的过程中,各地高校发挥师资力量强、办学经验丰富、教学资源充裕等优势,对其特色专业及特色课程(群)加以规划、整理和总结,更新教学内容、改革课程体系,建设了一大批内容新、体系新、方法新、手段新的特色课程。在此基础上,经教育部相关教学指导委员会专家的指导和建议,清华大学出版社在多个领域精选各高校的特色课程,分别规划出版系列教材,以配合“质量工程”的实施,满足各高校教学质量和教学改革的需要。

为了深入贯彻落实教育部《关于加强高等学校本科教学工作,提高教学质量的若干意见》精神,紧密配合教育部已经启动的“高等学校教学质量与教学改革工程精品课程建设工作”,在有关专家、教授的倡议和有关部门的大力支持下,我们组织并成立了“清华大学出版社教材编审委员会”(以下简称“编委会”),旨在配合教育部制定精品课程教材的出版规划,讨论并实施精品课程教材的编写与出版工作。“编委会”成员皆来自全国各类高等学校教学与科研第一线的骨干教师,其中许多教师为各校相关院、系主管教学的院长或系主任。

按照教育部的要求,“编委会”一致认为,精品课程的建设工作从开始就要坚持高标准、严要求,处于一个比较高的起点上;精品课程教材应该能够反映各高校教学改革与课程建设的需要,要有特色风格、有创新性(新体系、新内容、新手段、新思路,教材的内容体系有较高的科学创新、技术创新和理念创新的含量)、先进性(对原有的学科体系有实质性的改革和发展,顺应并符合21世纪教学发展的规律,代表并引领课程发展的趋势和方向)、示范性(教材所体现的课程体系具有较广泛的辐射性和示范性)和一定的前瞻性。教材由个人申报或各校推荐(通过所在高校的“编委会”成员推荐),经“编委会”认真评审,最后由清华大学出版社审定出版。

目前, 针对计算机类和电子信息类相关专业成立了两个“编委会”, 即“清华大学出版社计算机教材编审委员会”和“清华大学出版社电子信息教材编审委员会”。推出的特色精品教材包括:

(1) 21 世纪高等学校规划教材·计算机应用——高等学校各类专业, 特别是非计算机专业的计算机应用类教材。

(2) 21 世纪高等学校规划教材·计算机科学与技术——高等学校计算机相关专业的教材。

(3) 21 世纪高等学校规划教材·电子信息——高等学校电子信息相关专业的教材。

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(5) 21 世纪高等学校规划教材·信息管理与信息系统。

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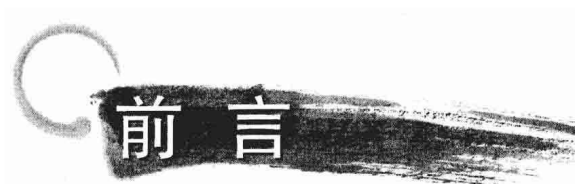
(7) 21 世纪高等学校规划教材·电子商务。

清华大学出版社经过二十多年的努力, 在教材尤其是计算机和电子信息类专业教材出版方面树立了权威品牌, 为我国的高等教育事业做出了重要贡献。清华版教材形成了技术准确、内容严谨的独特风格, 这种风格将延续并反映在特色精品教材的建设中。

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前言

本书是一本用英语教授计算机基础知识的教材。

全书内容丰富，分为八章，主要内容包括计算机基础知识、微型计算机计算机硬件组成、操作系统原理、Windows XP 使用、Office 2007 办公软件、计算机病毒、网络基础、Internet 和多媒体技术等内容。文字叙述简练、清楚，英语语言规范、流畅，较全面的覆盖了计算机科学和信息技术领域中基础层面的名词和术语，尤其是一些目前十分流行及最新的概念和词汇。书中含有大量丰富的图示，使书中描述的各种概念、术语和技术一目了然。所以，本书在使学生了解和掌握计算机及信息技术专业基础知识的同时，也有助于他们掌握相应的英语词汇，提高专业英语的阅读能力。

由于欧美国家的课程和教学体系同中国有很大差异，特别是在基础教育部分，同类英文原版教材内容与我国的教学大纲相差较大，并且与其他后续课程的衔接也不够紧密；此外，原版教材内容多涉及文化背景，知识点叙述过于冗长，使得英语的学习时间远远超出理论知识本身的学习，对教学安排造成很大的压力。本书有效地克服了以上缺点。

为方便读者学习，书中每小节后附有词汇表，每章后面均附有一定数量的习题。本书第 1~6 章由王振编写，第 7、8 章由杨慧编写，刘士才对全书内容结构做了规划与设计工作，并对部分章节进行了审核。

本书既可以作为高等院校“大学计算机基础”课程的双语教材和相关专业的“计算机英语”课程教材，同时也可以作为一本自学计算机英语的参考书。

由于我们水平有限，书中难免存在许多不足之处，恳请读者批评指正。读者可以通过电子邮件（wangoucqd@gmail.com）与我们联系。

编 者
2010 年 5 月

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Chapter 1

Computer Basics

1.1 Development 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. 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.

The history of computer development is often referred to the different generations of computing devices. Each generation of computer is characterized by a major technological development that fundamentally changed the way computers operate, resulting in increasingly smaller, cheaper, more powerful and more efficient and reliable devices.

Read about each generation and the developments that led to the current devices we use today.

1.1.1 History of Computer

1. First Generation (1940—1956)

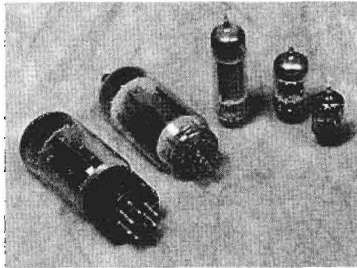
The first generation computers used vacuum tubes for circuitry and magnetic drums for memory, and were often enormous, taking up entire rooms (see figure 1.1). They were very expensive to operate and in addition to using a great deal of electricity, generated a lot of heat, which was often the cause of malfunctions.

First generation computers relied on machine language, the lowest-level programming language understood by computers, to perform operations, and they could only solve one problem at a time. Input was based on punched cards and paper tape, and output was displayed on printouts.

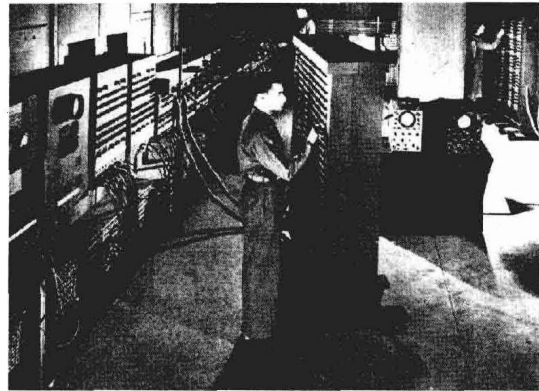
2. Second Generation (1956—1963)

By 1948, the invention of the transistor greatly changed the computer's development (see figure 1.2). 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.



(a) vacuum tube



(b) ENIAC

Figure 1.1 First generation computer

Second generation computers moved from cryptic binary machine language to symbolic, or assembly, languages, which allowed programmers to specify instructions in words. High-level programming languages were also being developed at this time, such as early versions of COBOL and FORTRAN. These were also the first computers that stored their instructions in their memory, which moved from a magnetic drum to magnetic core technology.

3. Third Generation (1964—1971)

The development of the integrated circuit (Jack Kilby, an engineer from Texas Instruments, developed the integrated circuit (IC) in 1958) was the hallmark of the third generation of computers. Transistors were miniaturized and placed on silicon chips, called semiconductors, which drastically increased the speed and efficiency of computers.

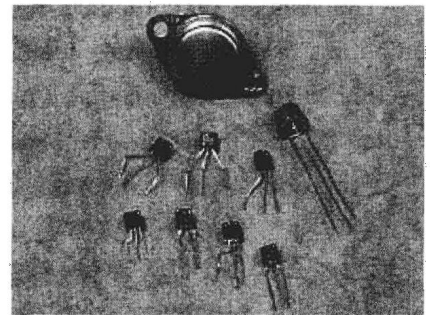


Figure 1.2 Transistor

Instead of punched cards and printouts, users interacted with third generation computers through keyboards and monitors and interfaced with an operating system, which allowed the device to run many different applications at one time with a central program that monitored the memory. Computers for the first time became accessible to a mass audience because they were smaller and cheaper than their predecessors.

4. Fourth Generation (1971—Present)

The microprocessor brought the fourth generation of computers, as thousands of integrated circuits were built onto a single silicon chip. What in the first generation filled an entire room could now fit in the palm of the hand. The Intel 4004 chip, developed in 1971, located all the components of the computer—from the central processing unit and memory to input/output

controls—on a single chip.

In 1981 IBM introduced its first computer for the home user, and in 1984 Apple introduced the Macintosh. Microprocessors also moved out of the realm of desktop computers and into many areas of life as more and more everyday products began to use microprocessors.

As these small computers became more powerful, they could be linked together to form networks, which eventually led to the development of the Internet. Fourth generation computers also saw the development of GUIs, the mouse and handheld devices.

5. Fifth Generation (Present and Beyond)

Fifth generation computing devices, based on artificial intelligence, are still in development, though there are some applications, such as voice recognition, that are being used today. The use of parallel processing and superconductors is helping to make artificial intelligence a reality. Quantum computation and molecular and nanotechnology will radically change the face of computers in years to come. The goal of fifth-generation computing is to develop devices that respond to natural language input and are capable of learning and self-organization.

1.1.2 Types of Computers

Computers come in a variety of types designed for different purposes, with different capabilities and costs.

1. Microcomputers

A microcomputer is a computer that has a microprocessor chip as its CPU. They are often called personal computers because they are designed to be used by one person at a time. Personal computers are typically used at home, at school, or at a business.

Personal computers come in two major varieties, desktop computers and laptop computers (see figure 1.3).

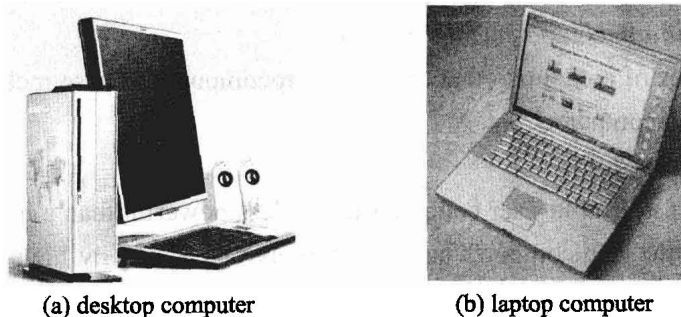


Figure 1.3 Personal computer

2. PDAs and Palmtop Computers

A Personal Digital Assistant (PDA) is a handheld microcomputer that trades off power for small size and greater portability (see figure 1.4). They typically use a touch-sensitive LCD screen for both output and input (the user draws characters and presses icons on the screen with a

stylus). They may use Windows CE or similar operating system for handheld devices.

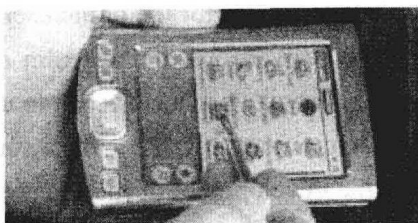


Figure 1.4 PDA

3. Workstations/Servers

A workstation is a powerful, high-end microcomputer (see figure 1.5). They contain one or more microprocessors. They may be used by a single-user for applications requiring more power than a typical PC (rendering complex graphics, or performing intensive scientific calculations).

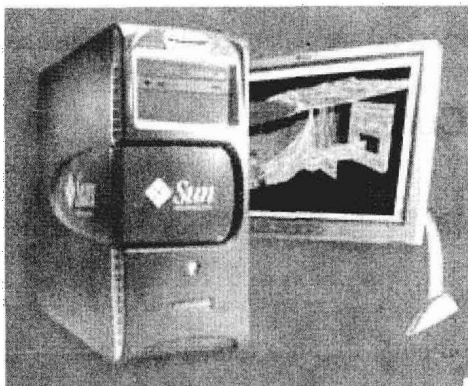


Figure 1.5 Workstation

Alternately, workstation-class microcomputers may be used as server computers that supply files to client computers over a network. In this respect, high-end workstations have essentially supplanted the role of minicomputers (see below).

There are classes of computers that are not microcomputers. These include minicomputers, mainframes, and supercomputers.

4. Minicomputers

A minicomputer is a multi-user computer that is less powerful than a mainframe. The niche previously filled by the minicomputer has been largely taken over by high-end microcomputer workstations serving multiple users (see above).

5. Mainframes

A mainframe computer is a large, powerful computer that handles the processing for many users simultaneously. Users connect to the mainframe using terminals and submit their tasks for processing by the mainframe. A terminal is a device that has a screen and keyboard for input and output, but it does not do its own processing (they are also called dumb terminals since they can't process data on their own). Mainframes are typically used in situations where a company