普通高等学校“十三五”规划教材

信息技术英语教程

主 编 于学勇 邹戈斌

西安电子科技大学出版社
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信息技术英语教程

主　编　于学勇　邹戈斌

参　编　陈　珺　缪昀熙

杨小易　钟玉琴

王一安　陶　金

郑潇映

西安电子科技大学出版社

内 容 简 介

本书精选 C#、Linux&Unix、Windows、Android、人工智能、云计算、网络信息检索与搜索引擎技术、虚拟化技术、可穿戴技术、电子商务、物联网等最新 IT 领域的相关内容，选材广泛、内容丰富，可拓宽学生的视野，在提高学生英语学习兴趣之余，也可为其以后的专业学习奠定基础。

本书适合普通高校、实践及工程类院校学生在学习专业英语时选用。同时，本书也是高等院校学生和专业技术人员学习计算机专业英语的理想教材与工具书，还可作为 IT 领域技术人员和管理人员的参考用书。

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前 言

Preface

科技与教育的发展，经济全球化与高等教育国际化对英语学习提出了新的要求，《国家中长期教育改革和发展规划纲要（2010—2020年）》也对高校提出了培养国际化卓越人才、引进国外优秀教材和开展中外合作办学等一系列要求。高等教育国际化改变了我国高校英语教学的目的：它不再仅仅是学习者对语言本身的学习或自身素质的修养，而是使英语真正成为一门工具，学习英语是为了更好地进行专业学习和从事今后的工作；大学英语应是一门为专业配套的公共基础课程，课程设置是为专业人才培养服务。纵观各学科的专业人才培养方案或教学大纲，几乎都要求自己专业的学生“具有较强的本专业外文书籍和文献资料的阅读能力，以及能正确撰写专业文章的外文摘要的能力”。在此背景下，各类与专业结合的英文教材在英语教学中就显得不可或缺。

自20世纪90年代以来，以计算机网络为核心的现代信息技术发展迅猛，并且迅速地融入到了社会各个领域。各项实践证明，信息技术在英语教学中的运用能给课堂教学注入新的生机和活力，丰富课堂教学形式，优化教学过程，并有效提高学生的语言综合应用能力。信息技术英语课程涉及学科知识及学生的英语基础，因此对教材、教学方法等各方面均提出了挑战。基于此，杭州电子科技大学外国语学院组织相关教师编写了本书，力求帮助学生快速掌握信息技术英语术语，提高其专业英语能力。

本书在编写过程中，借鉴了CNN、Economist、Microsoft、Wikipedia、Discuss Desk、Forbes等国外主流媒体和公司的文章，来源权威、题材广泛，精选C#、Linux & Unix、Windows、Android、人工智能、云计算、网络信息检索与搜索引擎技术、虚拟化技术、可穿戴技术、电子商务、物联网等最新IT科技及相关内容，选材广泛，内容丰富，可拓宽学生在所学领域内的视野，在提高学生英语学习兴趣之余，也可为其以后的专业学习奠定基础。所选语料的纯真性、交际性、社会性和可读性不仅能加深学生对专业词汇的理解与记忆，还能有效培养他们的批判性和逻辑性思维。

本书共有18个单元，每个单元分Text A 与Text B 两个部分。Text A 的练习有填空题、术语匹配题和翻译题，要求学生深度理解文章。每篇Text A 后面均附有术语和新词解析，以帮助学生更好地理解文章。Text B 属于拓展阅读，练习部分设置了与四六级考试形式相似的段落信息匹配题，供学生课后自行练习。本书中的练习均为参编教师自主编写。练习设计由浅入深，由易入难，阅读速度从每分钟80词过渡到每分钟120词。学生在学习本书

的同时，还可以了解科技英语中常用的语法，掌握常用的信息技术专业英语词汇和表达方式，提高自身对计算机专业知识的阅读和理解能力。本书适合普通高校、实践及工程类院校学生在学习专业英语时选用。同时，本书也是高等院校学生和专业技术人员学习计算机专业英语的理想教材与工具书，还可以作为IT领域技术人员和管理人员的参考用书。

本书的Unit1 ~ Unit5由陈珺编写，Unit6 ~ Unit10、Unit16 ~ Unit18 由缪昀熙编写，Unit11 ~ Unit15由杨小易编写。于学勇、邹戈斌负责确定教程编写大纲、内容及编写原则，并主审全书，钟玉琴、王一安、陶金、郑潇映参与了书稿审读工作。

本书的编辑出版得到了西安电子科技大学出版社和杭州电子科技大学教务处等有关部门与领导的大力支持和帮助，谨此表示感谢。

囿于编者水平与经验，书中可能还存在不足之处，欢迎广大读者批评指正。

编　者

2016年春

目 录

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Unit One

Text A The Development of Computer[1]

The first recorded use of the word "computer" was in 1613 in a book called *The young man's gleanings* by English writer Richard Braithwait. It mentioned that "I have read the truest computer of Times, and the best Arithmetician that ever breathed, and he reduced the days into a short number." It referred to a person who carried out calculations, or computations, and the word continued with the same meaning until the middle of the 20th century. From the end of the 19th century the word began to take on its more familiar meaning, a machine that carries out **computations**.

Mechanical aids to computing

The history of the modern computer begins with two separate technologies, **automated** calculation and **programmability**. However, no single device can be identified as the earliest computer, partly because of the inconsistent application of that term. A few **precursors** are worth mentioning though, like some mechanical aids to computing, which were very successful and survived for centuries until the advent of the electronic calculator, like the Sumerian abacus, designed around 2500 B.C. of which a **descendant** won a speed competition against a contemporary desk calculating machine in Japan in 1946, the slide rules, invented in the 1620s, which were carried on five Apollo space missions, including to the moon and arguably the astrolabe and the Antikythera mechanism, an ancient astronomical analog computer built by the Greeks around 80 B.C. The Greek mathematician Hero of Alexandria (10~70 A.D.) built a mechanical theater which performed a play lasting 10 minutes and was operated by a complex system of ropes and drums that might be considered to be a means of deciding which parts of the mechanism performed which actions and when. This is the essence of programmability.

Mechanical calculators and programmable looms

Blaise Pascal invented the mechanical calculator in 1642, known as Pascal's calculator. It was the first machine to better human performance of **arithmetical** computations and would turn out to be the only functional mechanical calculator in the 17th century. Two hundred years later, in 1851, Thomas de Colmar released, after thirty years of development, his simplified **arithmometer**, it became the first machine to be commercialized because it was strong enough and reliable enough to

[1] https://en.wikipedia.org/wiki/Computer

be used daily in an office environment. The mechanical calculator was at the root of the development of computers in two separate ways. Initially, it was in trying to develop more powerful and more flexible calculators that the computer was first theorized by Charles Babbage and then developed. Secondly, development of a low-cost electronic calculator, successor to the mechanical calculator, resulted in the development by Intel of the first commercially available **microprocessor integrated circuit**.

First use of punched paper cards in computing

It was the fusion of automatic calculation with programmability that produced the first recognizable computers. In 1837, Charles Babbage was the first to conceptualize and design a fully programmable mechanical computer, his analytical engine. Limited finances and Babbage's inability to resist **tinkering with** the design meant that the device was never completed—nevertheless his son, Henry Babbage, completed a simplified version of the analytical engine's computing unit (the *mill*) in 1888. He gave a successful demonstration of its use in computing tables in 1906. This machine was given to the Science museum in South Kensington in 1910.

In the late 1880s, Herman Hollerith invented the recording of data on a machine-readable medium. Earlier uses of machine-readable media had been for control, not data. "After some initial trials with paper tape, he settled on punched cards..." To process these punched cards he invented the **tabulator**, and the keypunch machines. These three inventions were the foundation of the modern information processing industry. Large-scale automated data processing of punched cards was performed for the 1890 United States **Census** by Hollerith's company, which later became the core of IBM. By the end of the 19th century a number of ideas and technologies, that would later prove useful in the realization of practical computers, had begun to appear: **Boolean algebra**, the vacuum tube (**thermionic valve**), punched cards and tape, and the teleprinter.

First general-purpose computers

During the first half of the 20th century, many scientific computing needs were met by increasingly **sophisticated** analog computers, which used a direct mechanical or electrical model of the problem as a basis for computation. However, these were not programmable and generally lacked the **versatility** and accuracy of modern digital computers.

Alan Turing is widely regarded as the father of modern computer science. In 1936, Turing provided an influential **formalization** of the concept of the versatility and computation with the Turing machine, providing a blueprint for the electronic digital computer. Of his role in the creation of the modern computer, *Time* magazine in naming Turing one of the 100 most influential people of the 20th century, states: "The fact remains that everyone who taps at a keyboard, opening a spreadsheet or a word-processing program, is working on an **incarnation** of a Turing machine."

The first really functional computer was the Z1, originally created by Germany's Konrad Zuse in his parents' living room in 1936 to 1938, and it is considered to be the first electro-mechanical **binary** programmable (modern) computer.

George Stibitz is internationally recognized as a father of the modern digital computer. While working at Bell Labs in November 1937, Stibitz invented and built a **relay**-based calculator he dubbed the "Model K" (for "kitchen table," on which he had assembled it), which was the first to use binary circuits to perform an arithmetic operation. Later models added greater sophistication including complex arithmetic and programmability.

The Atanasoff–Berry Computer (ABC) was the world's first electronic digital computer, **albeit** not programmable. Atanasoff is considered to be one of the fathers of the computer. Conceived in 1937 by Iowa State College physics professor John Atanasoff, and built with the assistance of graduate student Clifford Berry, the machine was not programmable, being designed only to solve systems of **linear equations**. The computer did employ parallel computation. A 1973 court ruling in a patent dispute found that the patent for the 1946 ENIAC computer is derived from the Atanasoff–Berry Computer.

The first program-controlled computer was invented by Konrad Zuse, who built the Z3, an electro-mechanical computing machine, in 1941. The first programmable electronic computer was the Colossus, built in 1943 by Tommy Flowers.

Words and Expressions

computation /ˌkɒmpjuˈteɪʃn/ *n.* 计算，估计

automated /ˈɔːtəʊmeɪtɪd/ *adj.* 自动化的

programmability /prəʊgræməˈbɪlɪtɪ/ *n.* 可编程序性

precursor /priːˈkɜːsə(r)/ *n.* 前驱，前任；初期形式

descendent /dɪˈsendənt/ *n.* (某一原型的)派生物

arithmetical /ˌærɪθˈmetɪkl/ *adj.* 算术的，算术上的

arithmometre /ærɪθˈməʊmɪtə/ *n.* 计数器

microprocessor integrated circuit 微型处理机芯片

tinker with 胡乱地修补；鼓捣

tabulator /ˈtæbjuleɪtə(r)/ *n.* 制表机

census /ˈsensəs/ *n.* 人口普查，统计

boolean algebra 布尔代数

thermionic valve 热离子管，热阴极电子管

sophisticated /səˈfɪstɪkeɪtɪd/ *adj.* 复杂的；精致的

versatility /ˌvɜːsəˈtɪlətɪ/ *n.* 多用途

formalization /ˌfɔːməlaɪˈzeɪʃn/ *n.* 形式化；礼仪化

incarnation /ˌɪnkɑːˈneɪʃn/ *n.* 赋予形体；化身

binary /ˈbaɪnəri/ *adj.* 二进制的

relay /ˈriːleɪ/ *n.* 继电器

albeit /ˌɔːlˈbiːɪt/ *conj.* 虽然；即使

linear equations [计] 线性方程组

Exercises

I. Fill in the blanks with information given in the text.

1. Since the 19th century, the word "computer" refers to __________.

2. Two separate technologies—__________ and __________ starts the history of modern computer.

3. __________ was the first machine to outperform human beings in terms of arithmetical computations.

4. Thanks to the first commercially available __________ developed by Intel, low-cost electronic calculator came into being.

5. The fusion of automatic calculation with programmability gave birth to __________.

6. Charles Babbage's analytical engine was never completed because of __________ and his inability to resist tinkering with the design.

7. The invention of punched cards, __________ and the keypunch machines were the foundation of the modern information processing industry.

8. Large-scale automated data processing of punched cards was applied in the __________.

9. Alan Turing is widely regarded as the father of modern computer science, because he provides a blueprint for the __________.

10. "Model K" was the first to use __________ to perform an arithmetic operation.

II. Match the following terms with definitions.

Terms:

1. programmability
2. thermionic valve
3. microprocessor
4. tabulator
5. arithmometre

Definitions:

A. the first mechanical calculator strong enough and reliable enough to be used daily in an office environment

B. able to be programmed

C. an integrated circuit that contains the entire central processing unit of a computer on a single chip

D. a machine that reads, sorts, and prints out information from punched cards

E. an electronic valve in which electrons are emitted from a heated rather than a cold cathode

III. Translate the following sentences into Chinese.

1. It was the fusion of automatic calculation with programmability that produced the first recognizable computers. In 1837, Charles Babbage was the first to conceptualize and design a fully programmable mechanical computer, his analytical engine.

2. Alan Turing is widely regarded as the father of modern computer science. In 1936, Turing provided an influential formalization of the concept of the versatility and computation with the Turing machine, providing a blueprint for the electronic digital computer.

Text B Goldwasser and Micali Win Turing Award[2]

A. MIT professors Shafi Goldwasser and Silvio Micali have won the Association for Computing Machinery's (ACM) A.M. Turing Award for their pioneering work in the fields of cryptography and complexity theory. The two developed new mechanisms for how information is encrypted and secured are widely applicable today in communications protocols, Internet transactions and cloud computing. They also made fundamental advances in the theory of computational complexity, an area that focuses on classifying computational problems according to their inherent difficulty.

B. Goldwasser and Micali were credited for "revolutionizing the science of cryptography" and developing the gold standard for enabling secure Internet transactions. The Turing Award, which is presented annually by the ACM, is often described as the "Nobel Prize in computing" and comes with a $250,000 prize.

C. "For three decades Shafi and Silvio have been leading the field of cryptography by asking fundamental questions about how we share and receive information. I am thrilled that they have been honored for their pioneering work, and particularly excited that they have been recognized for their achievements as a team." says Professor Daniela Rus, director of MIT's Computer Science and Artificial Intelligence Lab (CSAIL), "We are honored and privileged to have this tremendous duo here at CSAIL."

D. Goldwasser is the RSA Professor of Electrical Engineering and Computer Science at MIT and a professor of computer science and applied mathematics at the Weizmann Institute of Science in Israel. She leads the Theory of Computation Group at CSAIL. Micali is the Ford Professor of Engineering at MIT and leads the Information and Computer Security Group at CSAIL, along with Goldwasser and Professor Ronald L. Rivest.

E. "I am delighted that Professors Shafi Goldwasser and Silvio Micali have been recognized and honored with the prestigious ACM Turing Award for their fundamental contributions to the field of provable security. Their work has had a major impact on a broad spectrum of applications touching everyday lives and has opened exciting new research opportunities." says Anantha Chandrakasan, head of MIT's Department of Electrical Engineering and Computer Science (EECS), "This is a tremendous honor for the EECS department and inspiring for the large number of students and faculties who have benefited from interactions with Shafi and Silvio." Goldwasser and Micali began collaborating as graduate students at the University of California at Berkeley in 1980 while working with Professor Manuel Blum, who received his bachelor's, master's and PhD degrees at MIT—and received the Turing Award in 1995. Blum would be the thesis advisor for both of them. While

[2] http://news.mit.edu/2013/goldwasser-and-micali-win-turing-award-0313

toying around with the idea of how to securely play a game of poker over the phone, they devised a scheme for encrypting and ensuring the security of single bits of data. From there, Goldwasser and Micali proved that their scheme could be scaled up to tackle much more complex problems, such as communication protocols and Internet transactions.

F. "I am very proud to have won the Turing Award." Goldwasser said, "Our work was very unconventional at the time. We were graduate students and let our imagination run free, from using randomized methods to encrypt single bits to enlarging the classical definition of a proof to allow a small error to setting new goals for security. Winning the award is further testimony to the fact that the cryptographic and complexity-theoretic community embraced these ideas in the last 30 years."

G. "I am honored by this recognition and thankful to the computer science community." Micali adds, "As graduate students, we took some serious risks and faced a few rejections, but also received precious encouragement from exceptional mentors. I am also proud to see how far others have advanced our initial work."

H. The Turing Award is given annually by the ACM and is named for British mathematician Alan M. Turing, who invented the idea of the computer and who helped the Allies crack the Nazi Enigma cipher during World War II. Goldwasser and Micali will formally receive the award during the ACM's annual Awards Banquet on June 15 in San Francisco.

Exercise: In this section, you are going to read a passage with five statements attached to it. Each statement contains information given in one of the paragraphs. Identify the paragraph from which the information is derived. You may choose a paragraph more than once.

1. Every year, ACM will give the Turing Award, for which the monetary award is $250,000.
2. Their early scheme for encrypting and ensuring the security of single bits of data is devised while they were playing with the idea of how to securely play poker over the phone.
3. Goldwasser and Micali have won the 2012 A. M. Turing Award for their achievement in cryptography and complexity theory.
4. Both Goldwasser and Micali work as professors at MIT.
5. Alan M. Turing first came up with the idea of computer.

Unit Two

Text A The Structure of Computer[3]

A computer is an electronic device that performs calculations on data, presenting the results to humans or other computers in a variety of (hopefully useful) ways. The computer system includes not only the **hardware**, but also **software** that is necessary to make the computer function.

Computer hardware is the physical part of a computer, including the digital **circuitry**, as distinguished from the computer software that executes within the hardware.

Computer software is a general term used to describe a collection of computer **programs**, procedures and documentation that perform some tasks on a computer system.

A computer performs basically five major operations or functions irrespective of their size and make.

1. Input: This is the process of entering data and programs into the computer system. You should know that computer is an electronic machine like any other machine which takes as inputs raw data and performs some processing giving out processed data. Therefore, the input unit takes data from us to the computer in an organized manner for processing.

2. Storage: The process of saving data and instructions **permanently** is known as storage. Data has to be fed into the system before the actual processing starts. It is because the processing speed of **Central Processing Unit** (CPU) is so fast that the data has to be provided to CPU with the same speed. Therefore the data is first stored in the storage unit for faster **access** and processing. This storage unit or the primary storage of the computer system is designed to do the above functionality. It provides space for storing data and instructions.

The storage unit performs the following major functions:

- All data and instructions are stored here before and after processing.
- **Intermediate** results of processing are also stored here.

3. Processing: The task of performing operations like arithmetic and logical operations is called processing. The CPU takes data and instructions from the storage unit and makes all sorts of calculations based on the instructions given and the type of data provided. It is then sent back to the storage unit.

4. Output: This is the process of producing results from the data for getting useful information. Similarly the output produced by the computer after processing should also be kept somewhere

[3] http://www.discussdesk.com/what-are-the-basic-functional-units-of-a-computer-system.htm

inside the computer before being given to you in readable form. Again the output is also stored inside the computer for further processing.

5. Control: The way how instructions are **executed** and the above operations are performed. Controlling of all operations like input, processing and output are performed by control unit. It is responsible for processing all operations inside the computer.

In order to carry out the operations mentioned above, the computer **allocates** the task between its various functional units. The computer system is divided into several units for its operation, as shown in figure 1.

- CPU: the place where orders are made, computations are performed, and input/output requests are displayed.
- Memory: store information being processed by the CPU.
- Input devices : provide computer information.
- Output devices : receive computer information .
- **Buses:** a bus is a subsystem that transfers data or power between computer components inside a computer.

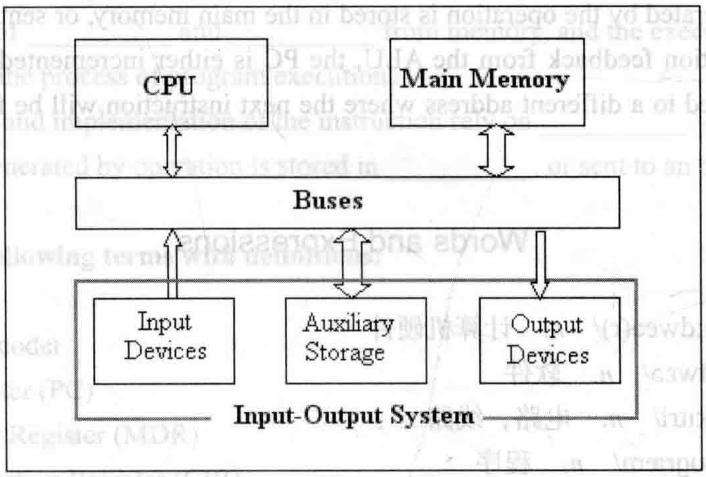

Figure 1 General model of a computer

The basic function of a computer is program execution. When a program is running, the **executable** binary file is copied from the disk drive into memory. The process of program execution is the **retrieval** of instructions and data from memory, and the execution of various operations. The cycles with complex instruction sets typically go through the following stages:

Fetch the instruction from main memory

The CPU presents the value of the Program Counter (PC) on the address bus. The CPU then fetches the instruction from main memory via the data bus into the Memory Data Register (MDR). The value from the MDR is then placed into the Current Instruction Register (CIR), a circuit that holds the instruction so that it can be decoded and executed.