

<<计算机科学基础>>

图书基本信息

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作者：（美）弗若赞，（美）费甘 编

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前言

20世纪末，以计算机和通信技术为代表的信息科学和技术对世界经济、科技、军事、教育和文化等产生了深刻影响。

信息科学技术的迅速普及和应用，带动了世界范围信息产业的蓬勃发展，为许多国家带来了丰厚的回报。

进入21世纪，尤其随着我国加入WTO，信息产业的国际竞争将更加激烈。

我国信息产业虽然在20世纪末取得了迅猛发展，但与发达国家相比，甚至与印度、爱尔兰等国家相比，还有很大差距。

国家信息化的发展速度和信息产业的国际竞争能力，最终都将取决于信息科学技术人才的质量和数量。

引进国外信息科学和技术优秀教材，在有条件的学校推动开展英语授课或双语教学，是教育部为加快培养大批高质量的信息技术人才采取的一项重要举措。

为此，教育部要求由高等教育出版社首先开展信息科学和技术教材的引进试点工作。

同时提出了两点要求，一是要高水平，二是要低价格。

在高等教育出版社和信息科学技术引进教材专家组的努力下，经过比较短的时间，第一批由教育部高等教育司推荐的20多种引进教材已经陆续出版。

这套教材出版后受到了广泛的好评，其中有不少是世界信息科学技术领域著名专家、教授的经典之作和反映信息科学技术最新进展的优秀作品，代表了目前世界信息科学技术教育的一流水平，而且价格也是最优惠的，与国内同类自编教材相当。

这套教材基本覆盖了计算机科学与技术专业的课程体系，体现了权威性、系统性、先进性和经济性等特点。

目前，教育部正在全国35所高校推动示范性软件学院的建设，这也是加快培养信息科学技术人才的重要举措之一。

为配合软件学院的教学工作，结合各软件学院的教学计划和课程设置，高等教育出版社近期聘请有关专家和软件学院的教师遴选推荐了一批相应的原版教学用书，正陆续组织出版，以方便各软件学院开展双语教学。

<<计算机科学基础>>

内容概要

进入21世纪，尤其随着我国加入WTO信息产业的国际竞争将更加激烈。我国信息产业虽然在20世纪末取得了迅猛发展，但与发达国家相比，甚至与印度、爱尔兰等国家相比，还有很大的差距。国家信息化的发展速度和信息产业的国际竞争能力，最终都将取决于信息科学技术人才的质量和数量。

引进国外信息科学和技术优秀教材，在有条件的学校推动开展英语授课或双语教学，是教育部为加块培养大批高质量的信息技术人才采取的一项重要举措。

<<计算机科学基础>>

作者简介

作者：（美国）弗若赞（Forouzan B.A.）（美国）费甘（Fegan S.C.）

<<计算机科学基础>>

书籍目录

PART I COMPUTER AND DATA 1

Chapter 1 Introduction 2

1.1 The Computer as a Black Box

1.2 von Neumann Model

1.3 Computer Hardware

1.4 Data

1.5 Computer Software

1.6 History

1.7 Key Terms

1.8 Summary

1.9 Practice Set

Chapter 2 Data Representation

2.1 Data Types

2.2 Data inside the Computer

2.3 Representing data

2.4 Hexadecimal Notation

2.5 Octal Notation

2.6 Key Terms

2.7 Summary

2.8 Practice Set

Chapter 3 Number Representation

3.1 Decimal and Binary

3.2 Conversion

3.3 Integer Representation

3.4 Excess System

3.5 Floating-Representation

3.6 Hexadecimal Notation

3.7 Key Terms

3.8 Summary

3.9 Practice Set

Chapter 4 Operations On Bits

4.1 Arithmetic Operations

4.2 Logical Operations

4.3 Shift Operations

4.4 Key Terms

4.5 Summary

4.6 Practice Set

PART II COMPUTER HARDWARE

Chapter 5 Computer Organization

5.1 Central Processing Unit(CPU)

5.2 Main Memory

5.3 Input/Output

5.4 Subsystem Interconnection

5.5 Program Execution

5.6 Two Different Architectures

<<计算机科学基础>>

5.7 Key Terms

5.8 Summary

5.9 Practice Set

Chapter 6 Computer Networks

6.1 Networks, Large and Small

6.2 OSI Model

6.3 Categories of Networks

6.4 Connecting Devices

6.5 The Internet and TCP/IP

6.6 Key Terms

6.7 Summary

6.8 practice Set

PART III COMPUTER SOFTWARE

Chapter 7 Operating Systems

7.1 Definition

7.2 Evolution

7.3 Components

7.4 Popular Operating Systems

7.5 Key Terms

7.6 Summary

7.7 Practice Set

Chapter 8 Algorithms

8.1 Concept

8.2 Three Constructs

8.3 Algorithm Representation

8.4 More Formal Definition

8.5 Subalgorithms

8.6 Basic Algorithms

8.7 Recursion

8.8 Key Terms

8.9 Summary

8.10 Practice Set

Chapter 9 Programming Languages

9.1 Evolution

9.2 Building a Program

9.3 Program Execution

9.4 Categories of Languages

9.5 A Procedural Language: C

9.6 Key Terms

9.7 Summary

9.8 Practice Set

Chapter 10 Software Engineering

10.1 Software Life Cycle

10.2 Development Process Models

10.3 Modularity

10.4 Quality

10.5 Documentation

<<计算机科学基础>>

10.6 Key Terms

10.7 Summary

10.8 Practice Set

PART IV DATA ORGANIZATION

Chapter 11 Data Structures

11.1 Arrays

11.2 Records

11.3 Linked Lists

11.4 Key Terms

11.5 Summary

11.6 Practice Set

Chapter 12 Abstract Data Types

12.1 Background

12.2 Linear Lists

12.3 Stacks

12.4 Queues

12.5 Trees

12.6 Binary Trees

12.7 Graphs

12.8 Key Terms

12.9 Summary

12.10 Practice Set

Chapter 13 File Structures

13.1 Access Methods

13.2 Sequential Files

13.3 Indexed Files

13.4 Hashed Files

13.5 Text versus Binary

13.6 Key Terms

13.7 Summary

13.8 Practice Set

Chapter 14 Databases

14.1 Database Management System

14.2 Architecture

14.3 Database Models

14.4 Relational Model

14.5 Operations Relations

14.6 Structured Query Language

14.7 Other Database Models

14.8 Key Terms

14.9 Summary

14.10 Practice Set

PART V ADVANCED TOPICS

Chapter 15 Data Compression

15.1 Lossless Compression

15.2 Lossy Compression Methods

15.3 Key Terms

<<计算机科学基础>>

15.4 Summary

15.5 Practice Set

Chapter 16 Security

16.1 Privacy

16.2 Digital Signature

16.3 Key Terms

16.4 Summary

16.5 Practice Set

Chapter 17 Theory Computation

17.1 Simple Language

17.2 Turing Machine

17.3 Gödel Numbers

17.4 Halting Problem

17.5 Solvable and Unsolvable Problems

17.6 Key Terms

17.7 Summary

17.8 Practice Set

章节摘录

版权页：插图：preface Welcome to computer science! You are about to start the exploration of a wonderful and exciting world that offers many challenging and exciting careers. Computers play a large part in our everyday lives and will continue to do so in the future. Computer science is a young discipline that is evolving and progressing. Computer networks have connected people from far flung points of the globe. Virtual reality is creating three-dimensional images that amaze the eyes. Space exploration owes part of its success to computers. Computer created special effects have changed the movie industry. And computers have played important roles in genetics.

1. Input first data item into memory. 2. Input second data item into memory. 3. Add the two together and store the result in memory. 4. Output the result.

Program Figure 1.7 Program made of instructions combines these instructions to make any number of programs. Each program can be a different combination of different instructions.

ALGORITHMS The previous requirement made programming possible, but it brought another dimension to using a computer. A programmer must not only learn the task done by each instruction but also learn how to combine these instructions to do a particular task. Looking at this issue differently, a programmer should first solve the problem in a step-by-step manner and then try to find the appropriate instruction (or series of instructions) that solves the problem. The step-by-step solution is called an algorithm. Algorithms play a very important role in computer science and are discussed in Chapter 8.

LANGUAGES At the beginning of the computer age, there was no computer language. Programmers wrote instructions (using binary patterns) to solve a problem. However, as programs became larger, writing long programs using these patterns became tedious. Computer scientists carried up with the idea of using symbols to represent binary patterns, just as people use symbols (words) for commands in daily life. But of course, the symbols used in daily life are different from those used in computers. So the concept of computer languages was born. A natural language (e.g., English) is a rich language and has many rules to combine words correctly; a computer language, on the other hand, has a more limited number of symbols and also a limited number of words. You will study computer languages in Chapter 9.

<<计算机科学基础>>

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