



大学计算机教育国外著名教材、教参系列 (影印版)

Operating Systems: A Systematic View (*Fifth Edition*)

William S. Davis
T. M. Rajkumar

操作系统：实践与应用 (第5版)



清华大学出版社

Operating Systems

A Systematic View

Fifth Edition

操 作 系 统

实践与应用

第 5 版

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清 华 大 学 出 版 社

(京) 新登字 158 号

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William S. Davis, T. M. Rajkumar

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Original English Language Edition Published by Addison Wesley Longman, Inc.

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书 名：Operating Systems: A Systematic View 5th ed.

作 者：Davis, Rajkumar

出版者：清华大学出版社（北京清华大学学研大厦，邮编 100084）

[http:// www.tup.tsinghua.edu.cn](http://www.tup.tsinghua.edu.cn)

印刷者：北京牛山世兴印刷厂

发行者：新华书店总店北京发行所

开 本：787×960 1/16 印张：40

版 次：2002 年 9 月第 1 版 2002 年 9 月第 1 次印刷

书 号：ISBN 7-302-05710-9/TP · 3369

印 数：0001~4000

定 价：55.00 元

出版说明

进入 21 世纪，世界各国的经济、科技以及综合国力的竞争将更加激烈。竞争的中心无疑是对人才的争夺。谁拥有大量高素质的人才，谁就能在竞争中取得优势。高等教育，作为培养高素质人才的事业，必然受到高度重视。目前我国高等教育的教材更新较慢，为了加快教材的更新频率，教育部正在大力促进我国高校采用国外原版教材。

清华大学出版社从 1996 年开始，与国外著名出版公司合作，影印出版了“大学计算机教育丛书（影印版）”等一系列引进图书，受到了国内读者的欢迎和支持。跨入 21 世纪，我们本着为我国高等教育教材建设服务的初衷，在已有的基础上，进一步扩大选题内容，改变图书开本尺寸，一如既往地请有关专家挑选适用于我国高校本科及研究生计算机教育的国外经典教材或著名教材以及教学参考书，组成本套“大学计算机教育国外著名教材、教参系列（影印版）”，以飨读者。深切期盼读者及时将使用本系列教材、教参的效果和意见反馈给我们。更希望国内专家、教授积极向我们推荐国外计算机教育的优秀教材，以利我们把“大学计算机教育国外著名教材、教参系列（影印版）”做得更好，更适合高校师生的需要。

计算机引进版图书编辑室
2002.3

Philosophy and Perspective

The first edition of *Operating Systems: A Systematic View* was published in 1977. In those days, one company, IBM, dominated the computer industry. The first edition reflected that reality, but times have changed. Today, a typical computing environment consists of multiple computers from multiple vendors linked to form a network, and that new reality is the driving force behind this fifth edition.

Although numerous changes have been made, *Operating Systems: A Systematic View* remains an *applied* introduction to operating systems. This is not a theoretical text. It is aimed at those who are interested in using (rather than designing) computers, operating systems, and networks. The intent is to show *why* operating systems are needed and *what*, at a functional, black box level, they do.

The early editions of this book looked at operating systems from the perspective of an application programmer. This edition expands that perspective a bit to include experienced users who may or may not know how to program. As before, the book assumes little or no mathematics beyond high school algebra. The only prerequisites are a reasonable understanding of basic computer concepts and a sincere interest in knowing what goes on beneath the surface of a computer application.

Changes from the Fourth Edition

In addition to technological updates throughout the text, several major new topics have been incorporated into the fifth edition. New chapters introduce the Windows 2000 interface (9), the Intel Pentium architecture (13), and Windows 2000 internals (15). A new section (Part V) on network operating systems includes chapters on client/server networks (20), Novell NetWare (21), Windows/2000 (22), and the Internet (23). Also, the UNIX chapters (10 and 16) have been updated to include Linux.

Gone from the new edition is coverage of IBM's VSE and OS/400 operating systems. The new section on network operating systems incorporates the fourth edition chapter on networks and distributed systems, and the fourth edition chapter on database systems has been dropped. Finally, the material on segmentation,

paging, and virtual memory has been revised and incorporated into the new chapter on memory and processor management (6), and the three chapters on MVS/JCL have been merged to form two new chapters (11 and 12).



Fifth Edition Contents

The new edition retains the pace, level, and writing style of the earlier editions. As before, numerous illustrations closely follow the narrative and visually reinforce the concepts. The book also retains such chapter-level pedagogical features as learning objectives, summaries, key word lists, and exercises.

Part I (Chapters 2-4) reviews essential computer concepts. The primary purpose of these three chapters is to ensure that all students start with a consistent technical base before moving on. You may find much of this material familiar.

Part II overviews key operating system concepts. Chapter 5 discusses the user interface, the file system, and device management. Chapter 6 moves inside the operating system and introduces the more transparent memory and processor management functions. The intent of this section is to present a high-level, generic map of an operating system's primary functions. Later in the text when you begin reading about the internals of several different operating systems, these two chapters help you make sense of the details.

Users and programmers communicate with an operating system through a user interface, the subject of Part III. The primary focus of this section is using an interface, a command language, or a job control language to create and manipulate files. Chapter 7 is a general introduction to user interfaces. Chapters 8, 9, and 10 are presented as interactive tutorials on MS-DOS, Windows 2000, and UNIX/Linux respectively; they should be read while sitting in front of a computer. Chapters 11 and 12 introduce IBM's MVS/JCL, a traditional batch job control language.

Part IV moves inside the computer. Chapter 13 introduces the Intel Pentium architecture, useful (though not essential) preparation for Chapters 14 (MS-DOS) and 15 (Windows 2000). The material in Chapter 16 (UNIX and Linux) does not depend on the underlying hardware architecture. Chapter 17 introduces the traditional IBM mainframe architecture; it is essential to understanding Chapters 18 (IBM MVS) and 19 (IBM VM/SP).

Part V is a new section that covers network operating systems. It focuses on network management, not network theory. The viewpoint is that of the administrator (formal or de facto) of a small local area network. Chapter 20 introduces key client/server network concepts. Chapters 21 and 22 show how the concepts introduced in Chapter 20 are implemented using Novell NetWare and Windows 2000 respectively. Finally, Chapter 23 discusses the Internet, a fitting topic on which to end.

Supplements

In addition to the text, the following supplementary materials are available to assist instructors and students:

- *On-line Instructor's Manual.* Lecture suggestions, solutions to textbook exercises, and sample examination questions.
- *On-line PowerPoint Presentations.* An average of 27 slides per chapter, including virtually all the textbook figures.
- *On-line, downloadable copies of selected fourth edition chapters.* OS/400 and DOS/VSE job control language.
- *Student Study Guide.* Chapter objectives, chapter review, key words, hints on selected chapter exercises, true/false, and multiple choice questions.

The Instructor's Manual and PowerPoint presentations are available only to instructors through your Addison-Wesley Longman sales representative.

Acknowledgements

Katherine Harutunian and Maite Suarez-Rivas of Addison Wesley Longman were instrumental in getting this project off the ground, and it was a pleasure working with them. Lesley Rock of Ecomlinks, Inc. managed the production process and Shohreh Hashemi of the University of Houston did an excellent job preparing the student study guide. Additionally, we would like to thank the following reviewers for many valuable insights and suggestions.

Thomas A. Burns—*Henry Ford Community College*
Nico Culevski—*Santa Monica College*
Sallie Henry—*Virginia Tech*
Peter de Luca—*Devry Institute of Technology*
Janet L. Kourik—*Webster University*
Michael C. Kusheba—*Kilgore College*
Andrew Maynard—*Springfield Technical Community College*
Charles Nailen—*Milwaukee School of Engineering*
Yehuda Nishli—*Bramson Ort College, New York*
David Stamper—*Austin Community College*
Jozef Zurada—*University of Louisville*

We're excited about this new edition, and we sincerely hope it meets your needs.

WSD, Sarasota, Florida
TMR, Oxford, Ohio

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