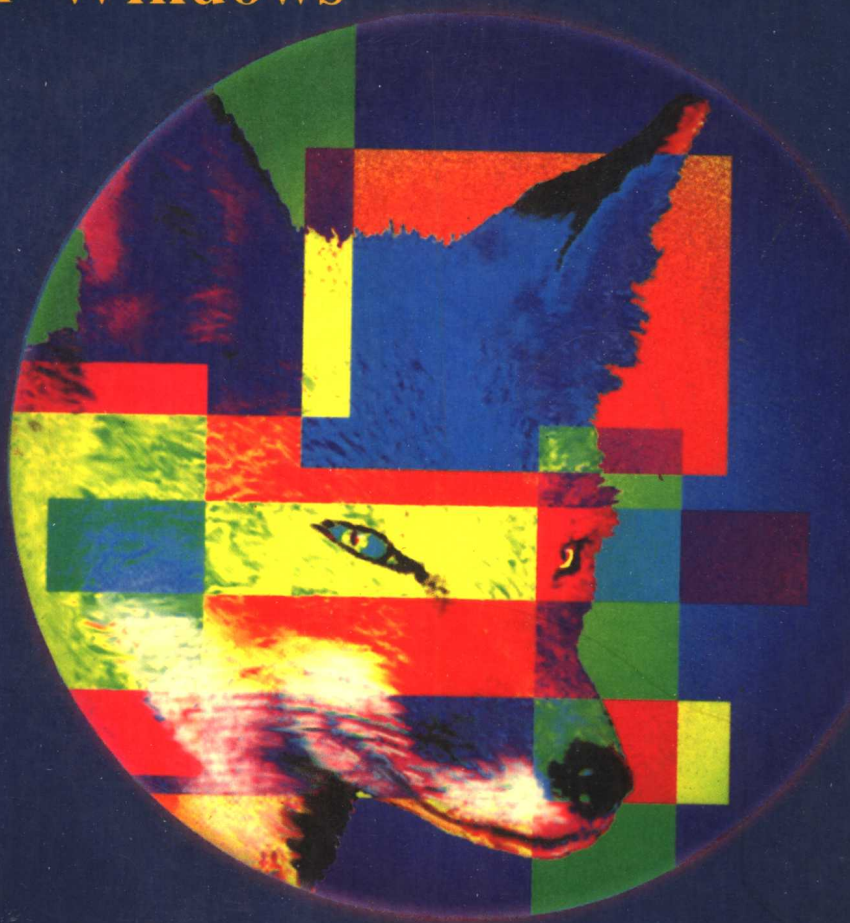


微机新软件系列丛书

学苑出版社

FoxPro[®] 2.6 for Windows[™]

开发人员指南



FOXPRO[®] 2.6

FOR WINDOWS[™]

DEVELOPER'S GUIDE

Jeb Long

SECOND EDITION

微机新软件系列丛书

FoxPro[®] 2. 6 for Windows[™]

开发人员指南

(中国大陆版)

Jeb Long 著



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1994.

(京)新登字 151 号

内 容 提 要

本书共分为四部分,第一部分介绍了 FoxPro 和数据库的基本概念;第二部分介绍了 FoxPro 语言的各种语法元素、界面、数据处理、动态数据交换、对象链接与嵌入;第三部分介绍了 FoxPro 的各种工具和 FoxPro 2.6 的增强功能;第四部分附录包括 ASCII 表、FoxPro 的语法及术语表。本书对从事数据库应用与开发的科技人员是一本难得的好书。

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Original edition published by Sams Publishing Copyright ©1994

This reprint jointly published by Xue Yuan Press & Beijing Hope Computer Co. / Simon & Schuster (Asia) Pte Ltd.

This edition authorized for sale in mainland China only.

微机新软件系列丛书

FoxPro® 2.6 for Windows™开发人员指南

(中国大陆版)

著:Jeb Long

责任编辑:甄国宪

出版发行:学苑出版社 邮政编码:100036

社 址:北京市海淀区万寿路西街 11 号

印 刷:北京市地质矿产局印刷厂

开 本:787×1092 1/16

印 张:90.25 字数:2042 千字

印 数:1~3000 册

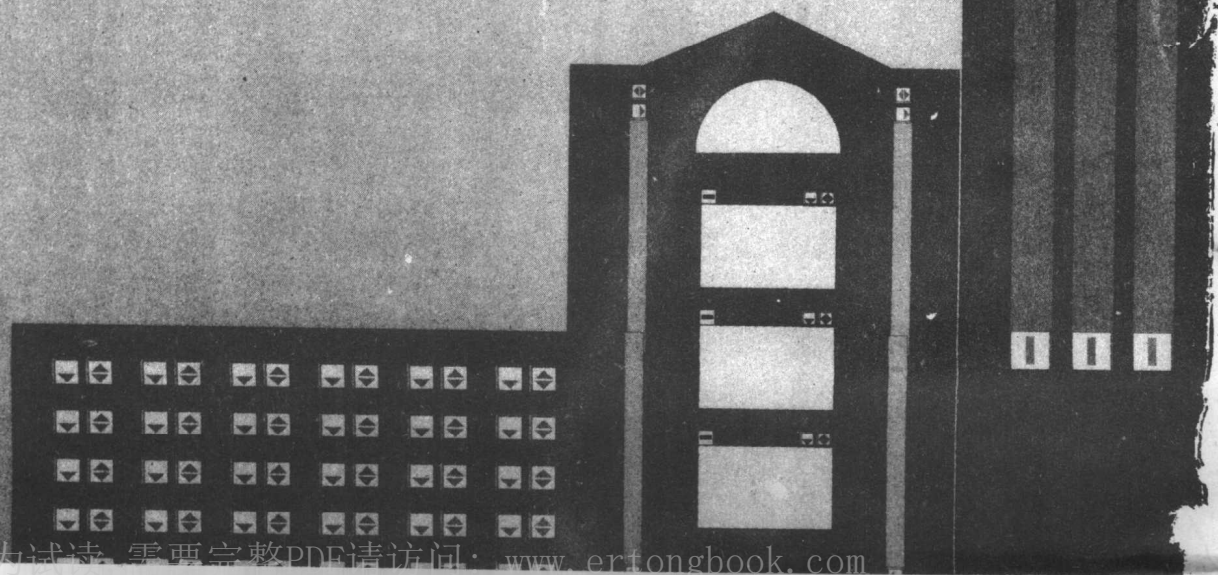
版 次:1994 年 8 月北京第 1 版第 1 次

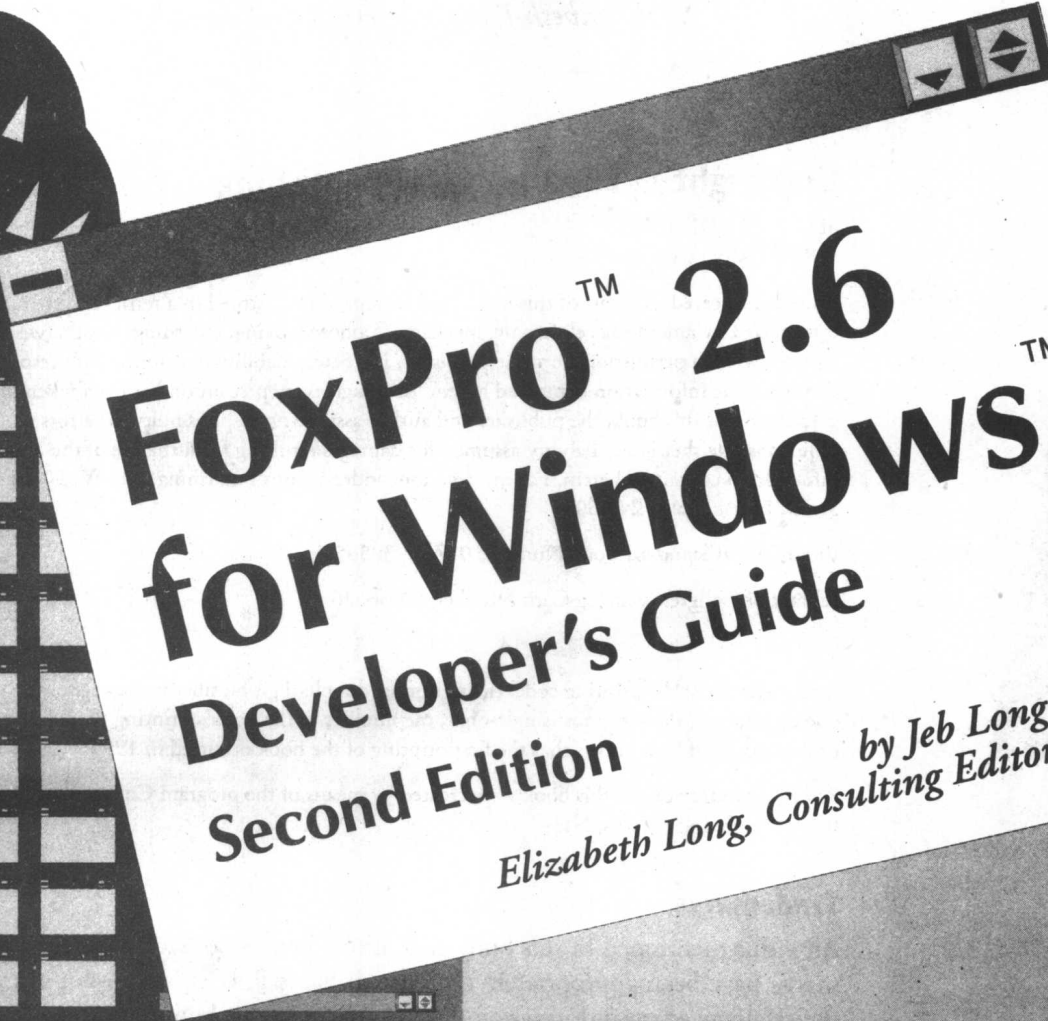
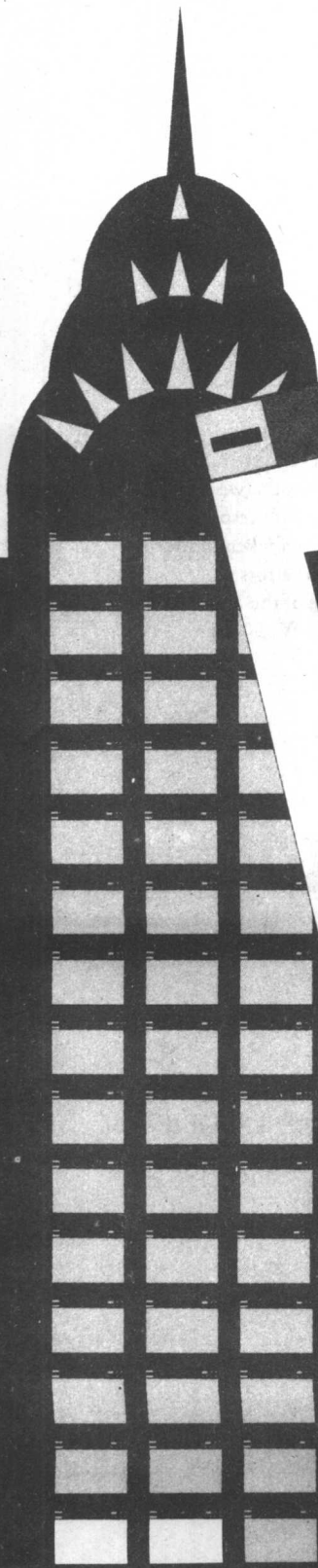
ISBN7-5077-0976-0/TP·35

本册定价:138.00 元

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FOXPROTM 2.6
FOR WINDOWSTM
DEVELOPER'S
GUIDE
SECOND EDITION





FoxProTM 2.6TM for WindowsTM Developer's Guide

Second Edition

by Jeb Long
Elizabeth Long, Consulting Editor

SAMS
PUBLISHING

A Division of
Macmillan
Computer Publishing
201 West
103rd Street
Indianapolis, Indiana
46290 USA

*This book is dedicated to my wife,
Elizabeth Long, my friend and partner.*

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SECOND EDITION

FIRST PRINTING—1994

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International Standard Book Number: 0-6732-30565-8

Library of Congress Catalog Card Number: 94-66636

97 96 95 94 4 3 2 1

Interpretation of the printing code: the rightmost double-digit number is the year of the book's printing; the rightmost single-digit, the number of the book's printing. For example, a printing code of 94-1 shows that the first printing of the book occurred in 1994.

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*Composed in AGaramond and MCPdigital
by Macmillan Computer Publishing*

Printed in the United States of America

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FOREWORD

It is a pleasure to welcome Jeb Long to the community of FoxPro authors. Jeb was present for the birth of Xbase, and as the author of JPLDIS, the immediate precursor to dBASE II, he originated many of the central language commands (REPLACE, STORE, and so forth) that we still use today. I am pleased to see him using FoxPro now.

I first became acquainted with Jeb during Ashton-Tate's abortive attempt to acquire Fox Software in 1986-87. During those discussions I developed deep respect for Jeb as a major software engineering talent. We've been friends ever since.

It is appropriate that Jeb's new book, *FoxPro 2.6 for Windows Developer's Guide, Second Edition*, focuses on the FoxPro language. Although Jeb covers the FoxPro power tools thoroughly, he puts most of his emphasis on using the language, whether through traditional, procedural programming or code snippets. This is an interesting contrast to most of the books published on FoxPro recently. His approach to showing how the components of the FoxPro language relate to one another is particularly lucid.

Congratulations to Jeb for *FoxPro 2.6 for Windows Developer's Guide, Second Edition*. It is a refreshing book and should be a valuable addition to any FoxPro developer's library.

David L. Fulton
Vice President and Database Architect
Microsoft

ACKNOWLEDGMENTS

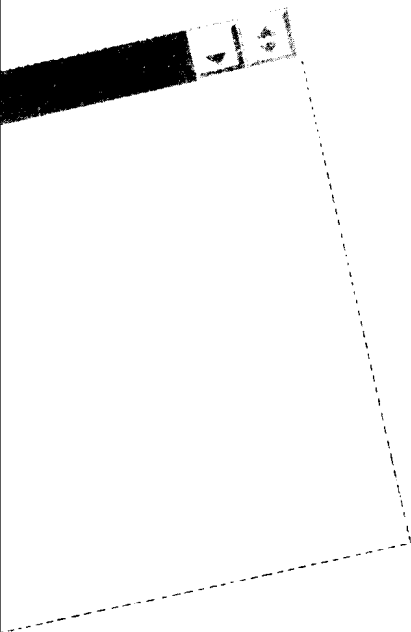
Grateful acknowledgment is extended to all the people who made this book possible with their enthusiastic support and encouragement:

The Macmillan Computer Publishing editorial and publishing staff. Special gratitude to Gregory Croy, Mary Corder, Sandy Doell, Grant Fairchild, and Hugh Vandivier.

Bruce Braunstein for his skillful and enthusiastic attention to technical details. He also graciously contributed portions of his *FoxMaster™ FoxPro Magazine on a Disk* to the diskette included with this book.

I would like to extend my gratitude to Alastair Dallas, who graciously allowed me to use excerpts from the book that we coauthored.

Elizabeth Long, consulting editor. Thanks for all your assistance and encouragement in developing and preparing this manuscript.



ABOUT THE AUTHOR

Jeb Long has 30 years experience in software design and engineering at some of the most prestigious technical organizations in the country. Mr. Long has worked as an independent consultant and author since he left Ashton-Tate Corporation in 1990. While at Ashton-Tate, he was the guru of dBASE products. In that role, he was the dBASE language architect and was responsible for the dBASE language components for all versions of dBASE III and dBASE IV, except for the initial version.

Mr. Long's relationship to dBASE dates back to 1973 when he was a software engineer at the California Institute of Technology's Jet Propulsion Laboratory. He was responsible for developing a file management program for JPL's UNIVAC 1108 Mainframe Computer. This program, *JPLDIS*, was the immediate precursor to dBASE. Later, under contract to Wayne Ratliff, Mr. Long translated and adapted the original version of dBASE II to run on the IBM PC.

In his eleven years at the Jet Propulsion Laboratory, Mr. Long was responsible for software tasks in support of our nation's planetary exploration program. Among these tasks were programs to calculate interplanetary trajectories, to process telemetry from space vehicles, to simulate spacecraft propulsion subsystems, and to support spacecraft tests and operations. He was actively involved in the Mariner and Viking missions to Mars.

A 1963 graduate of the University of Texas, Mr. Long now lives with his wife Elizabeth on a hill overlooking Los Angeles. Elizabeth has a Masters Degree in English and has worked as a technical writer at JPL. Jeb and Elizabeth have worked closely together in writing this book. Mr. Long has also written numerous books and articles for technical magazines. His books include *Do It Yourself Quick C for Windows*, Sams Publishing; *Do it Yourself Microsoft C/C++ 7*, Sams Publishing; *dBASE IV 1.5 Programmers Language* (coauthored with Alastair Dallas), Sams Publishing; and *dBASE Programmer's Utilities* (co-authored with R. A. Byers and C. Wayne Ratliff) Ashton-Tate Publishing Group.

INTRODUCTION

Welcome to *FoxPro 2.6 for Windows Developer's Guide, Second Edition*. This book is designed to help you use and develop programs in FoxPro for Windows. This book focuses on helping first-time FoxPro users, as well as experienced FoxPro users, master the skills necessary to develop applications in FoxPro for Windows. To fully benefit from this book, it would be helpful if you have had experience with Microsoft Windows, programming, and possibly some experience with databases.

FoxPro for Windows is a computer program that runs on IBM-PC and compatible microcomputer systems and operates under Microsoft Windows. Your microcomputer must have the following system components and capabilities to run FoxPro for Windows:

- ☐ An 80386SX processor or higher
- ☐ A mouse
- ☐ 640K bytes of conventional RAM memory
- ☐ 8M of RAM if virtual memory is set to none, or 4M of RAM if virtual memory is set to temporary or permanent
- ☐ Microsoft Windows 3.x
- ☐ About 20M of hard disk space. Disk space requirements vary depending on various installation options.

FoxPro for Windows is a database management system (DBMS) with which you can create and maintain a list of data, called a *table*, or database files, such as a phone list, an inventory list, or a grocery list. In fact, you can maintain any collection of related information using FoxPro. You can sort or organize tables. You can search for and retrieve information within a table. You can generate reports, input forms, and mailing labels from tables. In a DBMS, as well as in FoxPro, you can organize information in multiple tables and retrieve the data simultaneously from any of the tables. You can relate tables that contain common information. FoxPro automatically maintains this relation so that you can

manipulate or extract related information as required. This type of DBMS is loosely called a *relational DBMS*. A group of related tables is referred to as a *database*.

FoxPro uses easy-to-learn commands that create, manipulate, and retrieve data from database files. FoxPro belongs to a category of DBMSs called *Xbase*. This generic term refers to languages like FoxPro, dBASE III Plus, dBASE IV, FoxBASE+, and ARAGO. Xbase was originally derived from a mainframe DBMS called JPLDIS (Jet Propulsion Laboratory Database-Management and Information Retrieval System) developed in 1972. Developers and programmers throughout the world have written tens of millions of Xbase code lines. It has become the language of choice for many businesses. Borland International reports that over four million people have copies of dBASE IV, one of the more popular Xbase dialogs. FoxPro 2.0 runs dBASE IV programs without any change except a much faster runtime. Since Microsoft Corporation acquired Fox Holdings, Inc., the company responsible for FoxBASE+ and FoxPro, FoxPro's market share in the Xbase market category has increased. FoxPro for Windows supports commands supported by other Xbase products plus language extensions that are not included in any other Xbase product.

The introduction of FoxPro for Windows represents a milestone in microcomputer history, because now you can run programs written in the MS-DOS business language of the '80s, Xbase, with little or no changes, under the operating environment of the '90s, the Windows 3.1 graphical user interface (GUI).

The Organization of This Book

This book has three parts, plus three appendixes. Part I, "Overview and Concepts," consists of Chapters 1 through 3. This part introduces FoxPro for Windows, provides a quick tour of FoxPro, and presents database concepts and FoxPro language fundamentals.

Part II, "The FoxPro Language," consists of Chapters 4 through 18. This part provides a detailed description of each element in the powerful FoxPro for Windows Language. You will learn how to best use each command to solve your database management problems. Chapter 4, "Variables," covers database fields and memory variables and how to use them. In Chapter 5, "Expressions," you will learn how to form expressions from variables, constants, functions and

operators. Chapter 5 also describes all the functions supported by FoxPro for Windows. Chapter 6, "Control Flow," describes how to combine command statements in a program, how to move between procedures, and how commands regulate program flow using branching and looping commands.

In Chapter 7, "Windows," you will learn how to utilize user-defined windows. Chapters 8 and 9, "Input and Output" and "Full-Screen Data Editing," cover how to perform input and output operations in FoxPro for Windows. Chapter 10, "Environment," describes the many FoxPro SET commands used to manipulate the environment. Chapter 11, "DBF Files" focuses on the FoxPro database file, its structure, and usage. Chapter 12, "Data Set Operations," describes commands that operate on database files. Chapter 13, "Data Ordering," describes commands used to sort and index a file. Chapter 14, "Import and Export" describes commands that transfer data between database files, arrays, and foreign data files. Chapter 15, "Multiuser Considerations," describes the fundamentals of operating FoxPro for Windows in a multiuser environment. In Chapter 16, "Menus, Popup Menus, and Dialog Boxes," you learn how to create user-defined menu systems, how to use the Menu Builder to create a user-menu system, and how to use the command language to build a user-defined menu function. Chapter 17, "DDE, OLE, and Operating System Interfaces," describes how FoxPro for Windows communicates with the outside world. In Chapter 18, "Queries Using SQL and RQBE," you learn how to use FoxPro's SQL commands to perform query operations.

Part III, "Tools For Improved Productivity," consists of Chapters 19 through 26. This section describes the programming tools supplied with FoxPro for Windows to improve your productivity. Chapters 19 and 20 describe how to use the Screen Builder, Report Writer, and Mailing Label Writer. Chapter 21 examines the issue of extending the FoxPro Language. Chapter 22 introduces you to the Project Manager to build and maintain program applications.

Chapter 23, "Building FoxPro for Windows Applications," concentrates on building FoxPro for Windows applications. It provides a step-by-step process for developing an application for a customer, beginning with the initial customer contact, and ending with the final site installation and subsequent customer support. Chapter 23 also covers the technical side of an application, and presents the process for designing, programming, testing, debugging, and documenting an application.

Chapters 24, “Introduction to FoxPro 2.6 for Windows”; 25, “FoxPro 2.6 Language Enhancements”; and 26, “Wizards” cover the many additional features available only in FoxPro Version 2.6 for Windows.

The appendixes contain an ASCII chart, FoxPro for Windows syntax, and a glossary.

This Book’s Audience

This book is intended for a full range of FoxPro users from the programmer who is a novice in FoxPro to the expert who has used previous versions of FoxPro. FoxPro 2.6 for Windows is a new product, and this book describes all its features. Because this book discusses each feature in detail, it is useful to FoxPro beginners as well as FoxPro specialists. Some books focus on how the FoxPro language can solve your problems, but this approach does not necessarily foster a thorough understanding of the FoxPro language. I wrote this book to help you better understand the FoxPro 2.6 for Windows language. The better you grasp the language, the more useful it will be to you.

Many other FoxPro books are written for beginners who are not yet comfortable with computers. This book is not a beginner’s tutorial. Although I describe all aspects of FoxPro for Windows in this book, I primarily specialize in the FoxPro for Windows interface, programming language, and development tools, and I provide in-depth information that cannot be found elsewhere. After beginners comprehend computer basics and wade through the tutorials, this book can then provide them with a deeper understanding of the FoxPro for Windows language, the user interface, and the development tools.

This book also focuses on another audience: programmers who want to pick up the FoxPro for Windows language quickly, without suffering through tutorials. This book will enable you to capture the essence of the FoxPro for Windows language quickly.

What's in FoxPro 2.5 for Windows

FoxPro 2.5 for Windows has a Windows-style user interface and many new language features. Although you can run FoxPro 2.0 programs under FoxPro 2.5 for Windows without making any changes, you will probably want to update your program to take advantage of the Windows interface and the new FoxPro features. FoxPro 2.5 for Windows incorporates the following advanced features:

- ☐ FoxPro 2.5 for Windows is a multiuser product. The single-user and multiuser versions have been combined.
- ☐ FoxPro 2.5 has an increase in the number of work areas from 25 to 225.
- ☐ Record length has increased from 4,000 bytes to 65,500 bytes.
- ☐ The limits for the number of relations and the length of a relational expression have been removed.
- ☐ Support for Windows *object linking and embedding* (OLE) has been added. This enables you to insert information (sound, pictures, spreadsheets) created in other applications into the new general data type database fields.
- ☐ Ten new functions are provided that support Windows *dynamic data exchange* (DDE), which allows data exchange between FoxPro and other Windows applications as both a client and a server.
- ☐ Improved user interface has been added by providing Windows dialog box elements.
- ☐ An optional Windows-style status bar has been added as an alternative to the traditional Xbase status line. The improved Windows-style status bar appears at the bottom of the screen.
- ☐ Multiple fonts are provided for text screen display and printing. In addition, you can change the font within a text editing window.

- ☐ The Screen Builder, Report Writer, and Label Writer have been adapted to utilize a variety of graphical objects that are standard in Windows, such as line, pen, fill, and color. The Screen Builder enables you to pick controls and other graphical objects from a tool bar and place them in the layout window.
- ☐ A spelling checker has been added that allows you to check spelling when editing text programs or memo fields.
- ☐ The Graph Wizzard has been added, which provides you the option of presenting RQBE results in graphics form.
- ☐ The language in FoxPro 2.5 for Windows has been extended to take advantage of the Windows environment.
- ☐ The new @ . . . SPINNER command enables you to "spin" through numeric values.
- ☐ The AFONT() function stores information in an array about a font in a window.
- ☐ The APPEND GENERAL command imports an OLE object into the new general data type database field.
- ☐ The _TRANSPORTER system memory variable specifies the program that converts FoxPro 2.0 screens and reports to a FoxPro 2.5 for Windows format.
- ☐ The #DEFINE, #UNDEF, #IF, and #ENDIF preprocessor directives provide conditional compilation support.
- ☐ Three system memory variables (_DOS, _MAC, and _UNIX_WINDOWS) determine on which platform FoxPro 2.5 is running.
- ☐ The FONTMETRICS() function returns font attributes.
- ☐ The GETDIR() function displays the new Select Directory dialog box from which you can choose a disk directory.
- ☐ The GETFONT() function displays the Font dialog box from which you can choose a font, a font size, and a font style.
- ☐ The MODIFY GENERAL command opens a general type field for editing, inserting, or deleting an OLE object.