

MASTERING · dBASE III PLUS™ A STRUCTURED APPROACH

Carl Townsend



MASTERING dBASE III PLUS:™

A STRUCTURED APPROACH

CARL TOWNSEND



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TABLE OF CONTENTS

INTRODUCTION xvii

1	MAKING THE DECISION	1
	To Program or Not to Program	2
	Why Use Database Management?	3
	Types of Database Management Systems	4
	dBASE III PLUS	6
	The Features of dBASE III PLUS	6
	Limitations of dBASE III PLUS	8
	Using dBASE III PLUS	8
	When Not to Use dBASE III PLUS	8
	When to Use dBASE III PLUS	10

2	INSTALLING AND RUNNING dBASE III PLUS	11
	What You Will Need	12
	Starting the Installation	12
	System Disk Copies	13
	The Configuration File	14
	Running dBASE III PLUS	15
	Getting Help	16
	Configuring dBASE III PLUS	16

3	FILES, RECORDS, AND DATABASES	17
	Files, Records, and Fields	18
	File Names	18

Opening and Closing Files 20

Databases 21

Opening and Closing Database Files 21

Database Fields 22

4 VARIABLES 23

Use of Memory Variables 24

Types of Memory Variables 24

Initializing Variables 25

Data Field Variables and Memory Variables 26

 Data Field Variables 26

 Memory Variables 26

Managing Variable Space 27

Giving Names To Variables 30

5 EXPRESSIONS,
FUNCTIONS, AND PROGRAMS 33

Expressions 34

Functions 34

Directing Output to Screen or Printer 35

Mathematical Operations 39

 The COUNT Command 40

 The SUM Command 41

 The AVERAGE Command 42

 The TOTAL Command 42

Programs 43

6 STRUCTURED SYSTEM
DEVELOPMENT WITH dBASE III PLUS 47

The System 48

The Four Phases of System Development	48
Structured Analysis	48
Defining the Goals	50
The Data Flow Diagram	51
The Data Dictionary	55
Completing the Analysis	55
Structured Design	58
Structured Programming	60
Structured Implementation	61

7 PROGRAM DESIGN CONCEPTS 63

Naming Programs	64
The Parts of the Program	64
The Preamble	64
The Setup Area	65
The Body of the Program	65
Closing Section	65
Structured Program Development	67
Audit Control	69
Error Recovery	69
Using Macros	71

8 DESIGNING AND CREATING A DATABASE 75

Designing a Database	76
Creating the Database	79
Modifying a Database	81
Accessing Files	82
Building an Index For a Database	83
Basic Concepts of Database Design	85
Summary of Database Design	87

9 DESIGNING SCREENS AND MENUS 91

- The Program Map 92
- Principles of Screen Design 92
- The Main Menu 95
- The Submenu 98
- The Parameter File 98
- Using Password Control 104
- Other Menu Alternatives 104

10 ADDING RECORDS TO A DATABASE 111

- Using Direct Commands: APPEND and BROWSE 112
- Adding to the Chart of Accounts Using Program Control 115
- Data Validation 120
- Using a Dictionary 121
- Controlling Duplicates 121
- Using Temporary Files 121
- Adding Data to Unindexed Files—The Batch Adder 123
- General Rules for Add Programs 128

11 EDITING RECORDS IN A DATABASE 129

- Finding the Record 130
- Editing with the Edit Command 131
- The BROWSE Command 134
- Editing with Program Control 136
- Updating from a Transaction File 136
- General Rules for Edit Programs 137
- Deleting Records 139
- General Rules for Delete Programs 141

12	DESIGNING PROCESSING PROGRAMS	143
	The Processing Program Design	144
	The Posting Cycle	145
	Closing	149
	Direct and Batch Processing	156

13	dBASE III PLUS REPORTING	159
	Output Commands	160
	The Report Generator	161
	Creating the Report Form	161
	Printing the Report	165
	The SET PRINT Command	167
	Formatted Reports	174
	Printing Mailing Labels	179
	Controlling the Printer	180
	Strategies for Report Programs	182

14	DESIGNING PROGRAMS FOR SCREEN DISPLAYS	185
	Output Screen Displays	186
	Using Output Commands for Screen Displays	186
	Creating Output Screens without Formatting	186
	Formatting Output Screens	187
	Input Screen Displays	190
	Using Formatted Screens for Input	190
	Special Screen Features	190
	Saving Screens for Repetitive Use	192
	Strategies for Screen Display Programs	194

15 MANAGING dBASE III PLUS DATABASES 195

- Displaying Directories and System Status 196
- Using an Alias 196
- The COPY Command 197
- Recovering Files: Deleting and Renaming 198
- Sorting Files 200
- Updating a File 200
- The JOIN Command 202
- Recovering a Damaged Database 204
- Modifying Files 204
- Database Buffers 205
- Strategies For Database Design 206

16 IMPLEMENTATION 207

- Designing for the User 208
- Writing the Documentation 208
- Refining the Program 208
- From Development to Production 210
- Getting Help 211

17 SPECIAL PROGRAMMING TECHNIQUES 213

- Using the Configuration File 214
- Editing Programs 216
- Using Procedure Files 217
- Using SET Switches 219
- Using the CREATE SCREEN Command 222
- Using the Date Variable 223
- Using MEMO Fields 225
- Running DOS Programs from dBASE III PLUS 225
- Using DOS Menus 226

18	LINKING DATA FIELDS	227
	Hierarchical Processing	228
	Automatic File Linking	229
	Reporting from Linked Files	230
19	USING dBASE III PLUS WITH OTHER PROGRAMS	233
	dBASE III PLUS Compatibility	234
	The Foreign File	234
	The Delimiter	235
	Writing Foreign Files	236
	Reading Foreign Files	238
	Using dBASE III PLUS with Word Processors	239
	Using dBASE III PLUS with Lotus 1-2-3	239
	Using dBASE III PLUS with Framework	241
	Using dBASE III PLUS with PFS:FILE	243
	Using dBASE III PLUS with Other Utilities	244
20	LOCATING RECORDS WITH dBASE III PLUS	245
	Indexed Access	246
	Using FIND	247
	Using SEEK	247
	Cautions in Using Indexed Access	247
	Software Switches For Indexed Access	249
	The LOCATE Command: Scanned Access	249
21	USING dBASE III PLUS ADD-ON PRODUCTS	251
	Program Generators	252
	Report Generators	252
	Utilities	253

- Compilers 255
 - The cENGLISH Translator 256
 - Clipper 257
 - WordTech's dbIIICompiler 258

22 dBASE II TO dBASE III PLUS CONVERSION 259

- Using dCONVERT 260
- dCONVERT Exceptions 260
- Taking Advantage of dBASE III PLUS 265

23 DEBUGGING PROGRAMS WITH dBASE III PLUS 267

- Designing Before Programming 268
- dBASE III PLUS Error Recovery 268
- The ECHO Switch 268
- The TALK Switch 269
- The STEP Switch 270
- Miscellaneous Debugging Commands 270
- Using Alternate Files 270
- Dumping Memory Variables 271
- Saving a Command History 271
- General Debugging Precautions 271

24 NETWORKING WITH dBASE III PLUS 273

- What Is Local Area Networking? 274
- What You Will Need 275
- Installing dBASE III PLUS on a Network 275
- Starting dBASE III PLUS on the Network 277
- Network Programming 278
 - Opening Files 278
 - dBASE Locking 279

Cautions in Using File and Record Locking	280
Protection and Encryption	281
Types of Security	281
Using the PROTECT Utility	283
Using Security	284
The Networking Commands	285

A	GLOSSARY	287
----------	----------	-----

B	DATA AND INDEX FILE STRUCTURES	291
----------	--------------------------------	-----

C	dBASE III PLUS SPECIFICATIONS	295
----------	-------------------------------	-----

D	RESOURCE DIRECTORY	297
----------	--------------------	-----

E	dBASE III PLUS COMMANDS AND FUNCTIONS	303
----------	--	-----

F	dBASE III PLUS ERROR MESSAGES	321
----------	-------------------------------	-----

	INDEX	337
--	-------	-----

MAKING THE DECISION

Bill Weigel ran a small business from his home doing computer consulting for local businesses. Bill could locate almost any type of software for a user and help a businessperson purchase the type of software or hardware needed for a particular application. Bill's wife, Sue, did the accounting for their business, and both enjoyed their cottage industry. Eventually, however, the books got out of hand. Sue found it a full-time job to keep the book-keeping up-to-date, so Bill started looking for an accounting program he could run on his IBM personal computer.



TO PROGRAM OR NOT TO PROGRAM

The salesperson at Bill's local computer store showed him several general ledger programs. None of them were too expensive, so Bill was able to borrow a few of the manuals for a few days to study the products more closely. Although most of the products appeared to meet most of his needs, he did note several deficiencies:

1. Almost all the products did not provide the original code the program was written in; Bill would essentially be purchasing a "black box." If he wanted to add features or make changes later, he would not be able to do this without the original code. In addition, Bill did not like the idea of trusting his records to an unknown system.
2. Some of the features Bill wanted, such as being able to compare current account status with a budget, were not available on many of the systems.
3. Many of the systems could not be used with other software he was using, such as spreadsheets, word processors, and graphic utilities.
4. Recovery procedures from a bad posting or closing were often inadequate, complex, or time consuming.
5. Bill had serious questions about how long a closing or posting would take, as the manuals did not give many specifications about this.
6. Sue liked to do the accounting a specific way, and did not want to change her way of accounting to accommodate somebody else's program. All the programs he looked at used a fairly rigid system.

There were some advantages in purchasing one of the commercial products, and Bill identified these as well:

1. The cost of the commercial product would be less than the cost of his time in developing his own software.
2. He would be purchasing a proven product with a large user base.
3. He would be able to start his bookkeeping tomorrow. If he wrote his own software, it would be several weeks before he could start using it.

After Bill finished his research, he made the decision to write his own software. Sue had had considerable accounting experience, and Bill felt they had enough knowledge in this area to define what was needed. Bill decided to use dBASE III PLUS for his general ledger system. His development costs would not be much higher than with a commercial product, and he could design his reports exactly as he wished them for his own work and that of his CPA. It would not take very long to get a prototype of the system operational for Sue to use. The tremendous flexibility of dBASE III PLUS made it easy to create any special reports the CPA would need. He could also interface the data to spreadsheets and word processors, such as the Framework program he had already purchased. Bill solved his problem with a database manager called dBASE III PLUS.

WHY USE DATABASE MANAGEMENT?

A *database management system*, or DBMS, is a group or collection of programs that gives the user access to a collection of information stored as data. This collection, or pool, of information is called the *database*. Typical applications for a database management system might include:

Financial—payroll, general ledger, accounts receivable, accounts payable

Inventory Control—inventory, material requirement planning, purchase order systems, sales order systems

Business—real estate management, project management, medical data systems, sales prospect control, cost accounting, etc.

Home data management—cataloging of records, books and tapes, nutrition analysis, mailing lists

In some types of database managers, the user writes the application programs in BASIC, C, Pascal, FORTRAN, or another high-level language. Other database managers, such as dBASE III PLUS, use a language that is part of the database management system, and no additional programming language is needed.

Database managers help reduce the duplication of data that often occurs when a system grows to meet many needs. For example, the name and address that were saved in a payroll file occur again in a company's medical records file, and again in the credit union file. There is a chance of error each time the name and address are entered. In addition, the duplication of data wastes disk space. With a database management system the name and address are stored only once.

Database managers also minimize program development time. Without database management the programmer must keep track of how and where

data is stored. The programmer has the responsibility of writing programs that locate the desired record, often using complex index routines. Every time a report program is written, routines must be included to extract the desired records, sort them to a desired order, and then print the report. A database manager, on the other hand, keeps track of how and where the data is stored, permitting the programmer to concentrate on the application and reducing programming time. When Bill wrote his general ledger in dBASE III PLUS, he found it took him only 10-25 percent of the time it would have taken to write the same program in BASIC or Pascal.

Database managers mean improved program reliability. Programs are shorter and can be developed with fewer errors. Integration of the data flow is automatic. Bill found his programs often ran the first time correctly, and most programs were only one or two pages long. If he had used BASIC, C, or Pascal, he would have spent many hours chasing problems in programs that were many pages in length.

Database managers also mean improved data reliability since they can prevent an incorrect type of entry. For example, if the department code is always a number, any nonnumeric entry could be rejected.

TYPES OF DATABASE MANAGEMENT SYSTEMS

There are several types of tools available today for information management. Many of these could most accurately be called indexing systems or file management systems.

The simplest and most inexpensive tools are the indexing systems designed to work with existing high-level languages (such as C). These products make it possible for a programmer to add indexing capability to a program that formerly had only sequential or random access (see Chapter 8 for more on this). One popular example is the Access Manager sold by Digital Research. Indexing systems are all inexpensive products, but they require programming expertise to use.

On the next level are the multifile managers. These vary in cost, some less expensive than many indexing systems. Many file managers include some type of indexing system. They also include extra features, varying with the particular product, such as report generators and routines to add or update data in the files. Most of these products can generally be used by someone with very little computer experience. PFS:File is an example of this type of product.

Finally, there are the true database management systems. Most of the better database management systems are one of three types: hierarchical, network, or relational. The hierarchical is a special case of the network system,