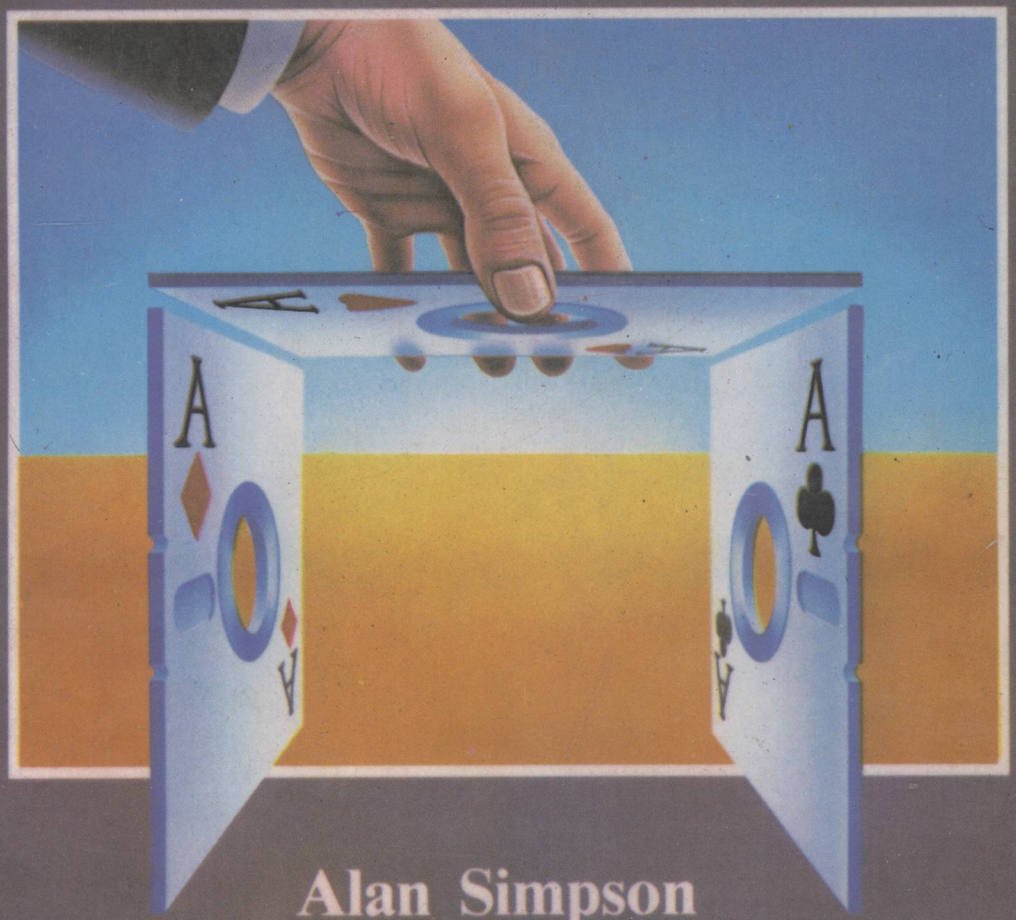
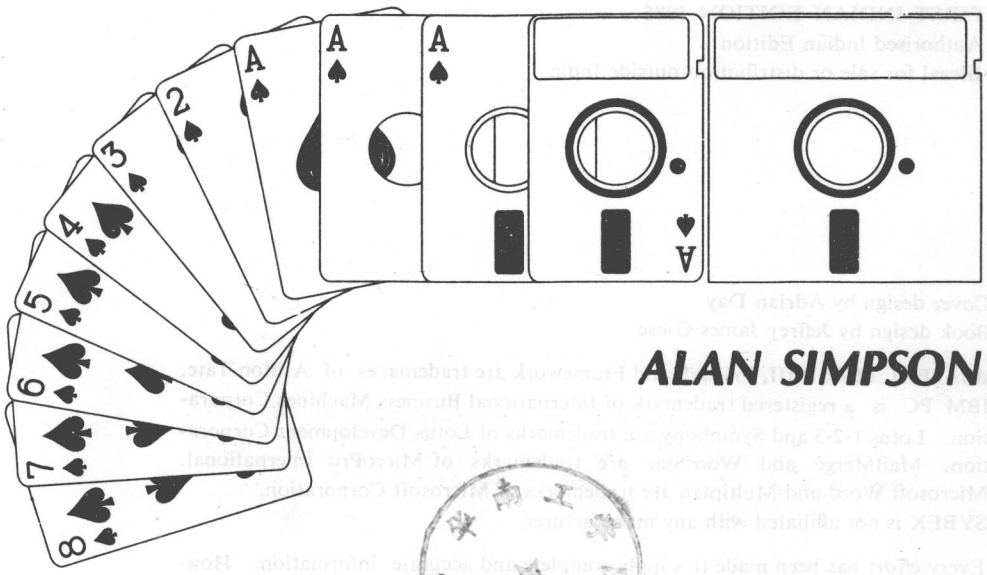
SYBEX

Advanced Techniques in dBASE III



Alan Simpson

ADVANCED TECHNIQUES IN dBASE III™



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INTRODUCTION

If you want to write a custom software system in dBASE III, then this book is for you. The emphasis of the book is on practical business programming; writing programs that get the job done, quickly and efficiently. The book presents working business systems that not only perform useful business tasks, but also demonstrate programming techniques that can be used in many business applications.

Unlike most programming books, this book provides step-by-step descriptions of virtually every technique used in every program. Therefore, you don't need to try to figure out "what's going on" from a mass of dBASE III commands—it's already been done for you. As the rationale for each routine in a large software system is revealed, the mystery of programming dwindles. And as the mystery dwindles, your own ability to create custom software systems grows.

WHO THIS BOOK IS FOR

This book is not intended for the computer novice. However, familiarity with the basic commands used in either dBASE II or III will be sufficient background. No prior programming experience is necessary.

STRUCTURE OF THE BOOK

The book is divided into six major sections. The first four chapters discuss general programming considerations, and emphasize techniques for maximizing the speed and performance of a software system. These chapters also provide firm advice for planning ahead and getting the most out of dBASE III's many capabilities.

The second part (chapters 5–10) presents a custom software system for managing a single database. The system is designed to manage data on a membership database, but the techniques presented can be used to manage any single database. The system is specifically designed for the novice programmer, and teaches the basics of creating user-friendly, "menu driven" systems, using index files for maximum speed, creating and using custom screens and reports, and other basic programming techniques universal to all business applications.

Chapters 11–15 present an inventory management system, and demonstrate more advanced techniques for managing multiple databases.

Chapters 16–20 discuss an Accounts Receivable software system. This system demonstrates additional techniques for managing multiple databases, and advanced programming techniques that are unique to dBASE III.

Chapter 21 discusses some handy programs that are useful when working with dBASE III, and also presents some advanced "tips and techniques" for solving tricky programming problems and modifying existing software to better suit your needs.

The last part consists of appendices. Appendix A describes differences between dBASE II and dBASE III, and is intended for readers who are upgrading from dBASE II to III. Appendix B describes techniques you can use to interface dBASE III data with other popular software systems, including Microsoft Word and WordStar (both very effective in creating form letters), dBASE II, Multiplan, Framework, Lotus 1-2-3, and Symphony. Appendix C presents a summary of dBASE commands and cursor control keys for quick reference.

For consistency, the book assumes that you are using an IBM PC or similar computer with two floppy disk drives, A and B. In drive A you should store the dBASE III system disk, and in drive B store the databases and programs you develop. To ensure that the files you create are always stored on drive B, you might want to set up a CONFIG.DB file, as discussed in Appendix A.

If you are using a hard disk system, you'll want to store both dBASE III and the files you create on the same directory. In this case, you don't need to change the default drive as long as you access dBASE from the DOS C> prompt and the appropriate directory.

HOW TO BUY THE PROGRAMS IN THIS BOOK

If you wish to purchase the programs in this book, send a check or money order for $25.00 to:

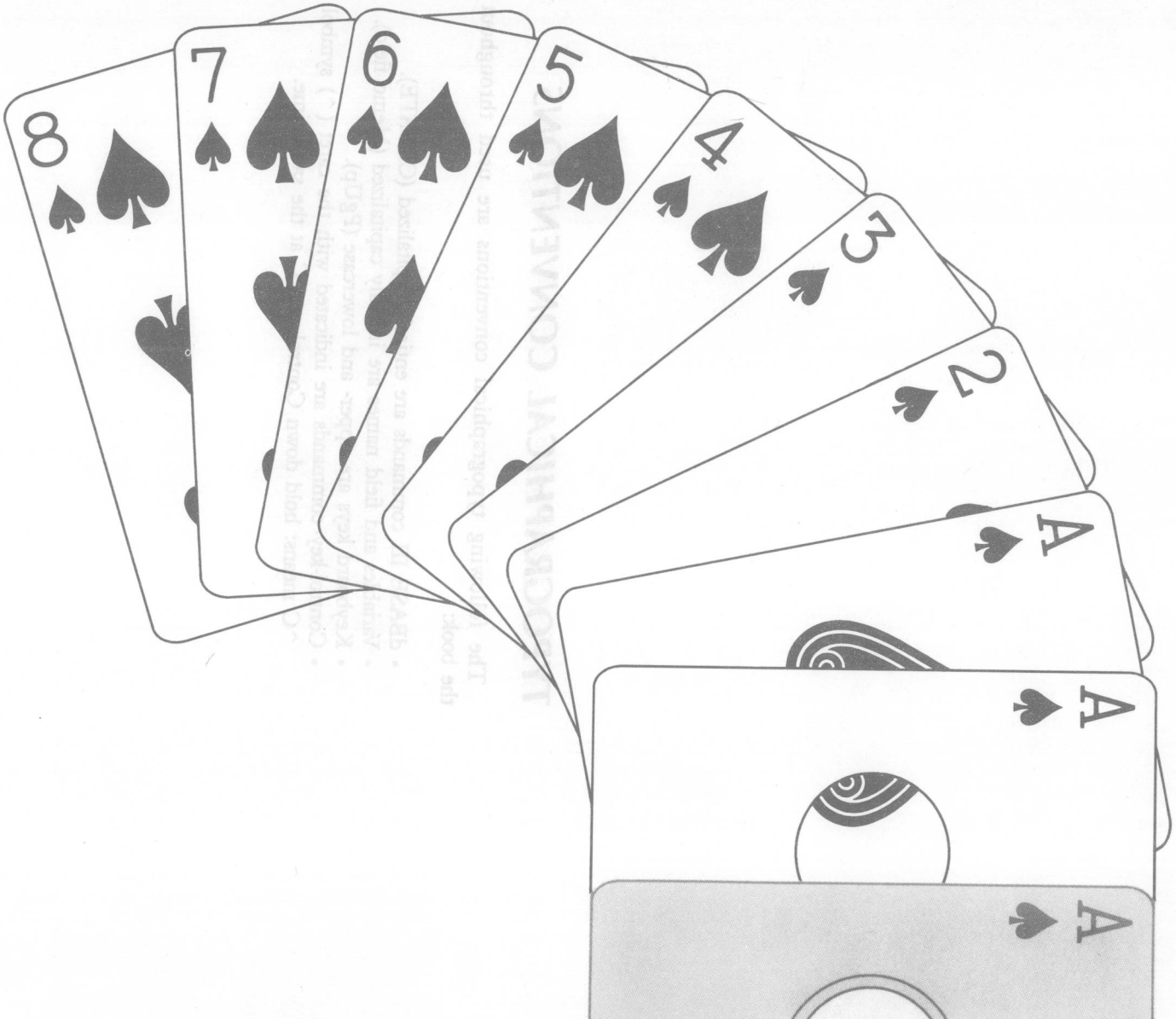
IBM Data Files
P.O. Box 2802
La Jolla, CA 92038-2802

(California residents please add 6% sales tax). Make the check payable to *IBM Data Files,* and be sure to specify that you wish to buy the programs from Alan Simpson's *Advanced Techniques in dBASE III* book. These programs are currently available in 5-1/4 inch double-sided, double-density, PC-DOS Version 2.1 disk format only (IBM PC and XT format).

TYPOGRAPHICAL CONVENTIONS

The following typographical conventions are used throughout the book:

- dBASE III commands are entirely capitalized (CREATE).
- Variables and field names are initially capitalized (Memo field).
- Keyboard keys are upper- and lowercase (PgUp).
- Control-key commands are indicated with the caret (^) symbol. ^C means: hold down Control and C at the same time.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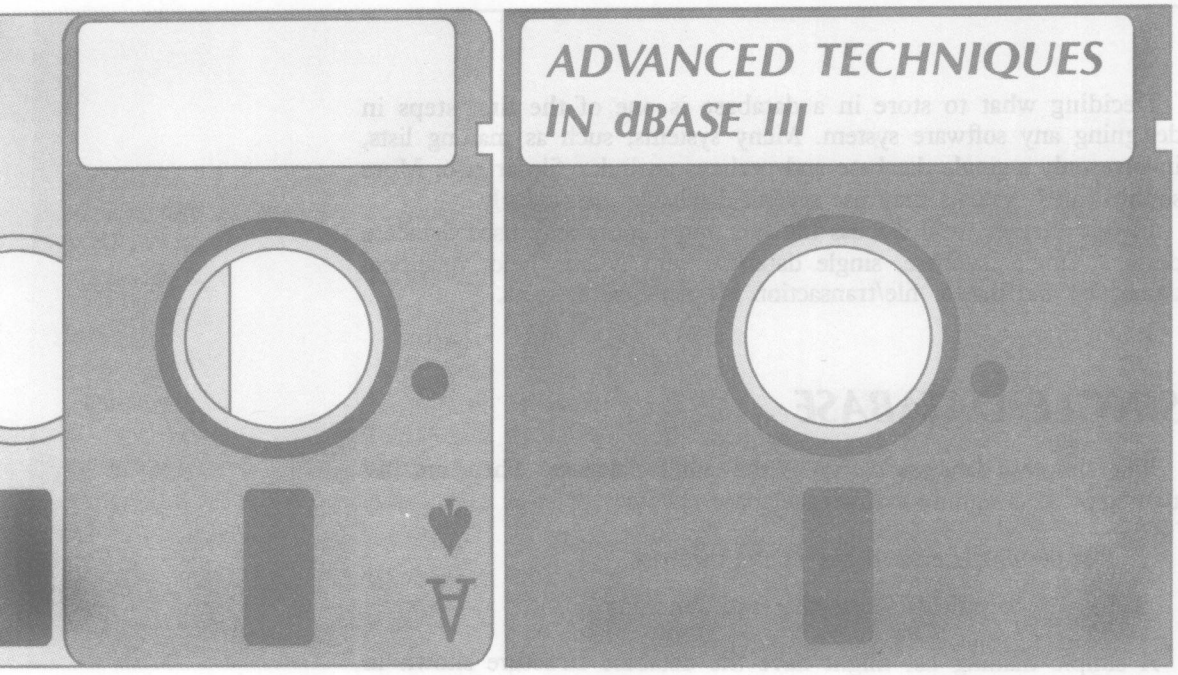

CHAPTER 1

dBASE III DATABASE DESIGNS

Deciding what to store in a database is one of the first steps in designing any software system. Many systems, such as mailing lists, involve only a single database and perhaps an index file or two. More sophisticated systems may use several databases interactively.

In this chapter we'll discuss the four most commonly used database designs: single database, single database with Memo field, relational databases, and master file/transaction file database systems.

SINGLE DATABASE

The simplest database design is the single database. There are just two steps to designing a single database system:

1. Decide what fields to put in the database.
2. Identify key fields for sorting and searching.

A simple mailing list might have the database structure shown in Figure 1.1.

```
Structure for database : C:mail.dbf

Field  Field name  Type        Width     Dec
    1  LNAME       Character      20
    2  FNAME       Character      20
    3  COMPANY     Character      20
    4  ADDRESS     Character      25
    5  CITY        Character      20
    6  STATE       Character       5
    7  ZIP         Character      10
    8  EXP_DATE    Date            8
```

FIGURE 1.1: A sample mailing list database

Notice that the first and last names are in two separate fields. This is so the database can be sorted by last name only. If there were just a single name field called Name, and the data were stored like this,

Mr. James L. Bower
Andy Zapplbey
Claudia Allen

there would be no way to properly sort the database by last name. By storing the first and last names in separate fields, you can sort by last name (or last name plus first name), and use the sorted file to locate records quickly.

Also notice that the address information is separated into distinct fields: City, State, and Zip. Once again, this is so that the data can be sorted or accessed easily on the basis of any of these independent pieces of information. In general, always break the information in a database into as many distinct fields as possible, since this allows the greatest freedom in sorting and searching.

To create the mailing-list database we've just discussed, type the CREATE command with the name of the file:

```
CREATE Mail
```

dBASE III displays a form on which to enter the name, data type, width, and decimal places for each field in the database. When you've completed this screen, enter several sample records, so you can test the index files we'll be creating next.

Now we need to identify key fields for sorting and searching. Mailing lists generally require two sort orders: by last and first names, for printing a directory or looking up individual records, and by zip code, for bulk mailing. To maintain these sort orders permanently, we'll store them in index files. First create an index file of last and first names:

```
USE Mail
INDEX ON LName + FName to NAMES
```

Then create the index file of zip codes:

```
USE Mail
INDEX ON Zip TO Zips
```