USING dBASE III® PLUS

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Using dBASE III® PLUS

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To Judie, Nikki, and Jarel

About the Author

Edward Jones of Herndon, Virginia, is a consultant in the area of microcomputer applications and database design. As owner of J.E. Jones Associates, Jones has developed client applications in dBASE for a number of Baltimore–Washington, D.C., area clients, including Lawyers' Committee for Civil Rights, Edison Electric Institute, and American Industrial Arts Students Association. Jones is also a free-lance writer and newspaper columnist. During the past four years his articles have been published in *Lotus* magazine, *Popular Computing*, *Business Computing*, and *Signature* magazine. His newspaper column, written under the "Brian Starfire" pseudonym, appears on a nationally syndicated basis. Before pursuing a full-time consulting and writing career, Jones was employed by IBM and Xerox, where he was involved in training and writing documentation for microcomputer-based products.

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Introduction

Many changes have taken place in the few years between the introduction of dBASE II and the introduction of dBASE III PLUS. When dBASE II was introduced, microcomputers were largely the province of dedicated hobbyists who were challenged by the task of learning in-depth programming skills. By the time dBASE III PLUS came along, however, thousands of business professionals were using microcomputers in their day-to-day working environment.

These professionals do not all wish to become programmers, but they do have one thing in common: they want to put the power of the personal computer and of software packages like dBASE III PLUS to use. This book is for them.

Using dBASE III PLUS covers the topics that you'll need to know to put dBASE III PLUS to work in your business. Chapters 1 and 2 introduce dBASE III PLUS and the concepts of database design. Creating, changing, and rearranging your database and using entry forms are the topics of Chapters 3, 4, 5, and 6. Chapter 7 shows you how to produce reports of your data. Chapter 8 details the use of Query files to refine your searches. In Chapters 9 through 14 you learn how to use command files to automate many operations that are time-consuming when performed manually. Chapter 15 shows you how to improve your dBASE III PLUS programs. In Chapter 16 you learn to bridge the gap between dBASE III PLUS and other popular software, including Lotus 1-2-3 and WordStar. Samples of programs that you can use with dBASE III PLUS are provided in Chapter 17. Chapter 18 provides informa-

tion on converting dBASE II databases and programs to dBASE III PLUS formats. Chapter 19 describes the use of dBASE III PLUS on a local area network (LAN). Chapter 20 briefly discusses various utility packages that are included with dBASE III PLUS or are offered by other software distributors. These utility programs can help you write, test, and format your programs. Appendix A provides a glossary of dBASE III PLUS commands.

The best way to learn dBASE III PLUS is to use it. This book presents a series of exercises that explain the various dBASE III PLUS commands and then has you use those commands in a practical application. Using your copy of dBASE III PLUS, you should follow along with the examples.

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Introduction to dBASE III PLUS

Chapter 1

Although *database management* is a computer term, it can also apply to the ways in which information is catalogued, stored, and used. At the center of any information management system is a database. Any collection of related information grouped together as a single item, like Figure 1-1, is a *database.* Metal filing cabinets with customer records, a card file of names and phone numbers, and a notebook with a penciled listing of a store inventory are all databases. However, a cabinet or a notebook does not make a database; the way information is organized makes it a database. Objects like cabinets and notebooks only aid in organizing information, and dBASE III PLUS is one such aid.

Information in a database is organized and stored in a table with rows and columns. In Figure 1-1, for example, a mailing list in database form, each row contains a name, an address, a phone number, and a customer number. Each row is related to the others because they all contain the same types of information. And because the mailing list is a collection of information arranged in a specific order—a column of names, a column of addresses, a column of customer numbers—it is a database.

Name	Address	City	State	ZIP	Phone No.	Cust. No.
J. Billings	2323 State St.	Bertram	CA	91113	234-8980	0005
R. Foster	Rt. 1 Box 52	Frink	CA	93336	245-4312	0001
L. Miller	P.O. Box 345	Dagget	CA	94567	484-9966	0002
B. O'Niell	21 Way St. Apt. C	Hotlum	CA	92346	555-1032	0004
C. Roberts	1914 19th St.	Bodie	CA	97665	525-4494	0006
A. Wilson	27 Haven Way	Weed	CA	90004	566-7823	0003

Figure 1-1. A simple database

Rows in a database file are called *records*, and columns are called *fields*. As an illustration, compare a database file to an address filing system kept in a box of 3 × 5 file cards (Figure 1-2). Each card in the box is a single record, and each category of information on a card is a field. Fields can contain any type of information that can be categorized. In the card box, each record contains six fields: a name, address, city, state, ZIP code, and phone number. Since every card in the box has the same type of information, the card box is a database file. Figure 1-3 identifies a record and a field in the mailing-list database.

In theory, any database is arranged in such a way that information is easy to find. In Figure 1-3, for example, names are arranged alphabetically. If you want to find the phone number of a customer, simply locate the name and read across to the corresponding phone number.

You are already interested in how a computerized database management system can make information storage and retrieval more efficient than a traditional filing system, and you will find that dBASE III PLUS offers many advantages. A telephone book,

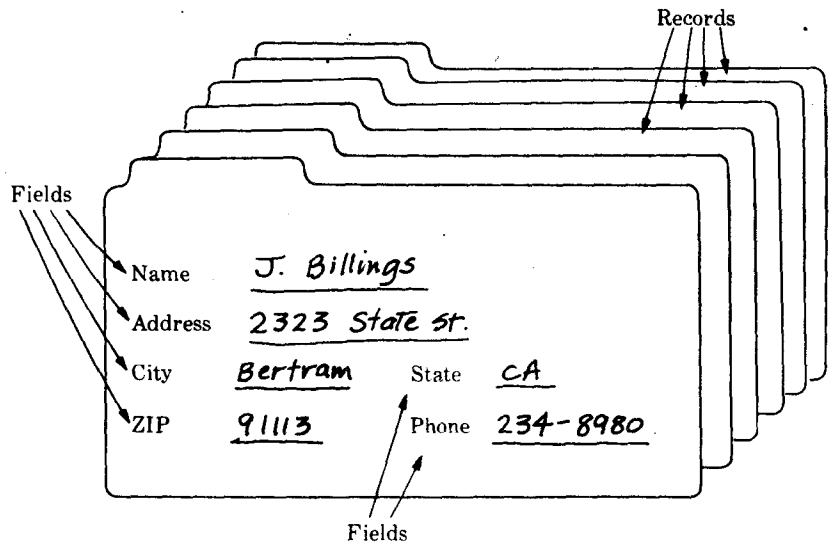

Figure 1-2. Each card represents a record; information is separated into fields

Field

Name	Address	City	State	ZIP	Phone No.	Cust. No.
J. Billings	2323 State St.	Bertram	CA	91113	234-8980	0005
R. Foster	Rt. 1 Box 52	Frink	CA	93336	245-4312	0001
L. Miller	P.O. Box 345	Dagget	CA	94567	484-9966	0002
B. O'Niell	21 Way St. Apt. C	Hotlum	CA	92346	555-1032	0004
C. Roberts	1914 19th St.	Bodie	CA	97665	525-4494	0006
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Record

Figure 1-3. Records and fields of a database

for instance, is fine for finding telephone numbers; but if all you have is an address and not the name of the person who lives there, the phone directory becomes fairly useless for finding that person's phone number. A similar problem plagues office filing systems: if the information is organized by name and you want to find all the clients located in a particular area, you could be in for a tedious search. In addition, organizing massive amounts of information into written directories and filing cabinets can consume a great deal of space. A manual database can also be difficult to modify. For example, adding a new phone number to the listing may mean rearranging the list. If the phone company were to assign a new area code, someone would have to search for all phone numbers having the old area code and then replace it with the new one.

When a database is teamed with a computer, many of these problems are eliminated. A computerized database provides speed: finding a phone number from among a thousand entries takes less than two seconds, and sorting a database with a hundred items requires less than two minutes. A computerized database is compact: a database with over 10,000 items can be stored on a small disk. A computerized database is flexible: it has the ability to examine information from a number of angles, so you, for example, could automatically search for a phone number by name or address.

Tasks that would be time consuming to accomplish manually are more practical with the aid of the computer. In principle, a database in a computer is not different from a database recorded on paper and filed in cabinets. But the computer does the tedious work of maintaining and accessing a database, and does it fast. A computerized database that can do all this is known as a database management system, or *DBMS* for short.

RELATIONAL DATABASES

There are a number of ways to store information in a computer, but not all of these are true database management systems.

A word processing program can be used to organize data in the form of a list; however, it will offer only limited flexibility. *You* still have to sort, rearrange, and access the information.

A step above word processing are the simple file managers. File managers are relatively inexpensive programs that use database files to store information. Most file managers can also do sorting and other clerical tasks.

Database managers also store information in database files, but in addition to being more sophisticated than file managers, they can access information from more than two database files simultaneously, whereas a file manager can access only one database file at a time. Being able to work on only one database file can be severely limiting. If the file manager is accessing information from one file, but needs three fields of information from a second file, the file manager can't continue unless the second database file is available. Only after the file manager is finished with the first database file can it proceed to the second database file. But what good is this when the file manager needs information from both database files simultaneously? The only solution is to duplicate the three fields from the second database file into the first database file. Fortunately, this is not a problem with a database manager like dBASE III PLUS.

Suppose the mailing list stores customer information for a warehouse that distributes wholesale kitchen appliances. The warehouse would also have a separate database for customer orders, which would include fields for customer number, merchandise number, price per unit, quantity ordered, and total cost. The mailing list and customer order databases are relational because they have the customer number field in common (Figure 1-4). By searching for the customer number in the mailing list and matching it to the customer number in the order form, the database manager can determine who the purchaser is and where the purchaser is located from one database, and what the purchaser ordered and the total cost of the purchase from the other database. A database manager that draws information from different databases linked by a common field is called a *relational database manager.*

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