

ZIMCO INSTITUTE OF MANAGEMENT

DATA BASE

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WHAT IS A DATABASE

A data base is a collection of data, so structured that it can be utilised in relation to the needs of various applications without actually being organised specifically to suit any particular one of them.

This means that files do not have to be designed in order to satisfy any particular needs. One set of files is therefore suitable to hold all the information relating to all organisational activities.

DATA BASE ATTRIBUTES:

The data base must be:

- (i) independent of programs.
- (ii) able to offer the full range of data inter-relationships (different applications will need different associated facts - one may need to associate John Bull with a telephone number, where as another with his previous experience)
- (iii) usable by any of the range of programs used for applications.

COMMUNICATING WITH THE DATABASE

Same databases have their own computer languages associated with them which allow the user to access and retrieve data. eg DBASE III PLUS.

THE DATABASE MANAGEMENT SYSTEM (DBMS)

The database Management system is a complex software system which constructs, expands and maintains the database. It also provides the interface between the User and the data in the database.

TYPES OF DBMS

There are several types of DBMS one of which is dBASE III PLUS.

dBASE III PLUS is not only a complete DBMS but it also includes a programming language called dBASE.

With this programming language, you can create customised applications for your specific needs.

Programming in its simplest form means collecting a series of commands together into a program file, saving it to the disk, and then performing the commands by running the program file.

TYPES OF DISK FILES

1. Database files
2. Database memo files
3. Index files
4. Command or procedure files
5. Format files
6. Label files
7. Memory files
8. Report form files
9. Text output files
10. Catalog files
11. Query files
12. Screen files
13. View files.

DISK FILE NAMES

A file must be assigned a two-part file identification. A file-name & an extension. A unique file-name is assigned by the user. The extension indicates the file's type. The extension consists of a period (.) and any of the following letter combinations:

.dbf or .DBF	Database file .
.dbt or .DBT	Database memo file.

.ndx	or	.NDX	Index file
.prg	or	.PRG	Command or procedure file.
.fmt	or	.FMT	Format file
.lbl	or	.LBL	Label file
.mem	or	.MEM	Memory file
.frm	or	.FRM	Report form file
.txt	or	.TXT	Text output file
.cat	or	.CAT	Catalog file
.qry	or	.QRY	Query file
.scr	or	.SCR	Screen file
.vue	or	.VUE	View file.

FILE-NAME

Consists of up to 8 characters.

TYPES OF DATA FIELDS

Character (or text) fields.

Memo fields

Numeric fields

Logical fields

Date fields

CHARACTER & MEMO FIELDS

Store text which include, numerals letters, symbols and blank spaces. However a character field stores short-text whilst a memo field stores large-block of text. In addition stored text is used differently.

NUMERIC FIELDS

Numeric fields are of two types

INTEGER - whole numbers

DECIMAL - may contain decimal digits

the sign + or - are considered part of the field if present.

LOGICAL FIELDS

That represents either of the two states T or F.

DATE FIELD

Format MM/DD/YY

Date values must be used only as dates in data manipulation. They cannot be treated as normal Alphanumeric strings. They need conversion to be used in formulas.

DATABASE FILES

The contents of a database file consist of information in one of four forms:

- (i) A string of Alphanumeric characters.
- (ii) A logical character: T for "TRUE" or F for "FALSE", or Y for "YES" or N for "NO".
- (iii) A numeric value such as 135.78 or -25.89.
- (iv) A date in the form of mm/dd/yy.

New database files can be created by choosing the CREATE/DATABASE file option from the "Assistant menu" or by entering the CREATE command at the dot prompt.

DATABASE MEMO FILE

It is similar to a database file and is used to store large blocks of text. It provides auxiliary storage to the database file as the text may be used as a data field.

INDEX FILES

An index file provides the necessary working space for indexing according to a specified field .ie data will be sorted according to the specified key.

COMMAND OR PROCEDURE FILES

This is a command program file. A command file may be created with the text-editing program that is part of DBASE III PLUS or with a WORDPROCESSING program in non-document mode.

FORMAT FILES

A format file stores custom screen forms that are used along with the data items in a database for data entry & custom report generation. The contents of a format file are created by choosing the create/format menu options or by running a batch file of dbase III plus commands.

LABEL FILES

Label files contain information used for printing labels with the LABEL command. A label file is similar to a format file, stores the specifications for printed labels. The specs can include the WIDTH & the HEIGHT of a label, the spacing between labels, and so forth. The contents of a label can be created by selecting the CREATE/LABEL menu options or by entering the MODIFY LABEL command at the dot prompt.

MEMORY FILES

A memory file stores the contents of active memory variables. Memory variables represent temporary memory locations that can hold the results of computations. The results stored in memory variables can be used again in subsequent processing. These values are "saved" in a memory file with the SAVE command; the RESTORE command is used to "read" the values from disk and store them in memory variables. A memory variable may be used to keep track of the last invoice no. issued.

REPORT FORM FILES

Report form files contain information used for generating reports with the REPORT command. Information in a report form file specifies the contents of reports and their format, such as the information which is to appear in the report heading and the data items that are to be used in the report. Report form files are created with the CREATE/REPORT menu options or with the MODIFY REPORT command.

TEXT OUTPUT FILES

A text output file stores "text" that can be "shared" with other computer programs. For instance, a table of data created with dbase III PLUS can be written to a text output file. After you've exited from dbase III PLUS, that file can be read by other software, such as a word-processing program or another database-management program. A text output file provides a link for information exchange among different computer programs.

CATALOG FILES

Holds the names of a set of related dbase files and their related operational files (such as format, report form, and label files).

QUERY FILES

Contain information about filtering conditions for displaying data records in an existing dbase file. A query file is created with the CREATE/QUERY menu options. Once it has been created, a query file can be saved for future use.

SCREEN FILES

Contain information related to the screen layout of a custom data-entry form. Although the dbase III commands used to create the form are stored in a format file, the screen file contents are needed to modify the data-entry form by means of the MODIFY/FORMAT menu options.

VIEW FILES

View files contain information used for relating different dbase files. View files hold the names of dbase files and their associated indexes, format files, and other information defining the relationships among all the files.

CREATING A DATABASE FILE

If you want to create a new database file named **EMPLOYEE** by entering commands from the dot prompt, you enter:

.CREATE B: EMPLOYEE

NB:

When in the first menu level of the Assistant menu press the Esc key to enter dot prompt mode.

You can return to the Assistant menu by typing **ASSIST** at the dot prompt.

ENTERING THE DATA FIELD NAME

After you have entered the create file command at dot prompt, the field definition form for the database structure appears on the screen. The cursor appears at the beginning of a data field on the field definition form. The name of the data field can be entered. A data field name can contain up to 10 characters, the first of which must be a letter. The remaining characters may be letters, numerals or underscores. The definition form provides space for 10 characters in a field name. When that space is filled, the cursor automatically moves to the form's next data field, and a beep sounds. You can enter a field name with fewer than 10 characters. Pressing enter after the last character of the field name causes the cursor to move to the next item on the form, and no beep is heard.

ENTERING THE DATA FIELD TYPE

In **dBASE III Plus**, you can define five types of data fields in which to store different kinds of information. The five field types are

- C** - Character/text fields.
- N** - Numeric fields.
- D** - Data fields.
- L** - Logical fields.
- M** - Memo fields.

To define the field type, enter one of the five letters (C,N,D,L or M) when the cursor is in the field type. The default field type is a character/text field, you can select it by pressing Enter. By pressing the space bar, you can choose a field type other than the one displayed. Each time you press the space bar, a different field type appears in the Type column. When the appropriate type appears, press Enter to select it.

ENTERING THE DATA FIELD WIDTH

The width of a data field is the maximum number of characters allowed in the field.

CHARACTER/TEXT AND MEMO FIELDS

The field width determines the length of the text that can be entered in the field. All letters, numeric digits, symbols and spaces are considered part of the text. Although you cannot sort the information in a memo field, you may want to use a memo field to store a large section of text that you do not plan to manipulate later. The contents of a memo field are saved in a separate file on the disk, thus conserving memory space.

DATE FIELD

It is always eight characters wide and stores the numeric codes for the month, the day, the year and the slashes that separate the codes. The standard format is mm/dd/yy.

LOGICAL FIELD

The width of this field is one character.

NUMERIC FIELD

The width of a numeric field is defined in two ways. First you define the maximum number of digits allowed in the value, including the sign and the decimal point if those are to be used. Then you define the number of digits to appear to the right of the decimal point. Eg to store values up to 9999.99, you set the width of the field to SEVEN and define TWO decimal places. An integer value does not require decimal places defined in the field width. Commas or dollar signs cannot be entered as part of the value.

When all the fields are defined, you terminate the process by pressing the Enter key or the Ctrl-End Keystroke combination. After you press either of those keystrokes, the following message will be displayed:

"Press Enter to confirm - any other key to resume"

If you press Enter, the data structure is saved, and the following prompt appears at the bottom of the screen:

"Input data records now? (Y/N)"

ENTERING DATA IN A DATABASE FILE

If you press Y, the program displays the data-entry form for the file you have just defined; eg after you have defined the EMPLOYEE database file structure, dBASE III Plus displays the first data-entry form for that file. You then position the cursor in the desired field and enter data in the space provided on the entry form. When the field is full, the cursor moves to the next field. If your data item does not fill the field, you can move the cursor to the next field by pressing Enter after you enter the last character of the data item.

As soon as the last data field is filled, a new data-entry form is displayed. During data entry, each data record is assigned a record number.

During data entry, you can use the PGUp and PgDn keys to move between data records. Press PgUp key to return to the previous record, to proceed to the next record, press the PgDn key.

TERMINATING THE DATA-ENTRY PROCESS

Data entered in a database file is saved record by record. As soon as the last field of a data record has been completed, that record is added to the database file. Then you can terminate the data-entry process. To terminate data-entry, you can press Enter when the cursor is on the first field of a new data-entry form. You can also use the Ctrl-End combination to end the data-entry process. Ctrl-End saves the displayed data record and returns the program to the dot prompt. If Ctrl-End is pressed before all data fields are filled, the empty data fields are filled with blank spaces. If you press Ctrl-End when all the field in the entry form are blanks a new empty record will be added to the database.

The Esc key can be used in dBASE III Plus to stop any function in progress and return to the dot prompt. When Esc key is pressed the computer discards anything that is not saved.

SETTING UP AN EXISTING DATABASE FILE

Before you append to a file it must be already active otherwise it must be activated. By typing the command:

.use <database file name>.

eg

.use EMPLOYEE

Only active database files are stored in RAM. The use command retrieves <the contents of a file from auxiliary storage and stores its contents in RAM. Although several database files may remain active, only one active file can be used at a time. Because only database files can be accessed with USE, you do not need to enter the extension. DBF. After the USE command has been executed the dot prompt appears on the screen.