Student Workbook For:

**D:BASE III PLUS**

**CONCEPTS & BASIC USES**

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# INTRODUCTION TO DBASE III PLUS

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LETTER TO STUDENT

Dear Student,

This is your class guide to using dBASE III Plus. There is no substitute for a program’s documentation so this guide should be used in conjunction with the documentation.

We have extracted many of the basic commands of dBASE III Plus from the documentation and arranged them in the order in which you might encounter them in a working session.

We believe that learning is an active process and this belief is expressed in our curriculum design.

The workbook contains an outline of the topics covered in this course. It also contains exercises which you will be performing in class and that we recommend you review after class.

This workbook is not intended to be used as a stand-alone tutorial. Thus, we have not included every single detail in a particular process. The workbook was designed to be used along with the instructor, who will provide additional information about using the program as well as basic concepts about this type of software.

We require that you listen, think, try out procedures in class, and, hopefully, as a result, understand them.

Your time in class is the perfect opportunity to ask questions. We also suggest that you write notes in the workbook and use class time to clarify any questions you might have.

Through a combination of the components below, we will help you to discover the power of this package to help you utilize it in your daily work:

- Expert Instruction
- Workbook
- Hands-On Experience with Modern Equipment
- Your own effort

The instructor, the workbook, and you, the student, must work together actively to complete the learning process. This triumvirate forms a system in the same way that the individual components of a computer form a system.

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Introduction to dBASE III Plus, Rev: October 14, 1987
When you leave class you must spend time reviewing class topics and working on the computer, otherwise you will not retain very much of what you learn in this course and you will not be adequately prepared to progress to a more sophisticated level of understanding of this software.

We hope you enjoy this learning experience and welcome your constructive comments.

Sincerely,

The Staff of Future Enterprises

NOTE: You may notice as you go through this workbook that the bottom of each page includes a revision date and that all pages may not have the same revision date. For example, one page may have been revised on August 25, 1987 and another page may have been revised on September 16, 1987. A later date simply indicates that the information on that page is more recent.
CONCEPTS & BASIC USES

Hands-on exercises include database design, creating a database structure, adding, editing and deleting records, displaying and querying the database, creating and using index files, sorting files, creating labels and/or mailing lists, and using the printer with dBASE III Plus.

DATA RETRIEVAL & MANIPULATION

This class focuses on querying the database to learn how to more skillfully retrieve and use data from your database. Hands-on exercises include substring searching, querying with higher level commands including .AND., .OR., and .NOT., using date functions, counting, summing and averaging data, and setting up formulas in dBASE III Plus.

REPORT CREATION

This class will use dBASE III Plus' standard report generator to create reports. Reports will be created to: perform calculations, compare dates, generate with subtotals and obtain summary reports. A variety of dBASE functions will be used in these reports. You will also learn how you can enhance a dBASE report in a word processor, such as Microsoft Word or WordStar.

DEVELOPING APPLICATIONS IN DBASE III PLUS

Two four-hour sessions. This special course is for those designing and writing database management systems using dBASE III Plus' programming language. Topics covered include when and how to use a multiple-file system, basic programming constructs, and how to create and use memory variables in dBASE III Plus programs. Students will also be introduced to programs which generate reports and lists, menu programs, and data-entry programs. (An out-of class assignment will be due at the second class.)
SEMINAR OBJECTIVES

To convey basic concepts of data base management.

To familiarize trainees with the concepts necessary to create, add, edit, delete, and begin querying and managing data in the database.

To possess a basic understanding of the applications of dBASE III Plus.

To perform the functions of creating files, putting data into files, editing data in files, retrieving data and modifying a database structure.

MEASURABLE OBJECTIVES

At the end of this class you should know how to:

1. Load dBASE III Plus.
2. Create a database structure.
3. Add data to a database.
4. Edit a record.
5. Display and print a database structure.
6. Modify a database structure.
7. Delete records.
8. Query the database to get information from:
   - Character fields
   - Numeric fields
   - Logical fields
   - Date fields
   - Memo fields
9. Create, print and modify a label form.
10. Create, print and modify a report form.

12. Create and update an index file.
WHAT IS AN ELECTRONIC DATABASE?

A database is, essentially, a collection of interrelated information that consists of files, records and fields.

We all use manual data bases - the telephone book, checkbooks, and library card catalogs. Electronic data bases are also collections of interrelated information, but information that allows access in a wider variety of ways than most manual systems because the information is manipulated electronically. A complete electronic Data Base Management System consists of a file management component and a query language which is either unique to the DBMS or is the host language of the computer.

The glory of using an electronic Database Management System comes from the ease of manipulating the information. With an electronic DBMS you can quickly access information in a variety of ways; it is often possible, for example, to retrieve more information with less known initially than manual retrieval systems require. For example, with an electronic database of names and addresses you could locate the complete name and address of an individual if you had only the phone number, or if you had only the first name and a partial address. Such a retrieval would be almost impossible with most manual systems.

In addition, electronic databases enable you to manipulate the display of data into a variety of formats.

Finally, a query language, which is either unique to the software program or is in the computer's language, is generally a part of a full-fledged database management system.

"Man has a need to store and manipulate data on a level beyond human comprehension."

These are the words of James Martin, world renowned expert on Information Processing. He is speaking to the urgency of demand for DBMS on microcomputers. Once you get started with electronic Database Management Systems you discover an endless array of possibilities for using them.
ADVANTAGES OF MICROCOMPUTER DBMS SYSTEMS

Electronic databases have become very popular because of the great advantages they offer over manual systems. Although the specific benefits of a data base system will vary from program to program, some of the advantages listed below will be present in any program:

1. Centralized control of data
2. Organize data with simplicity
3. Reduce the amount of redundancy
4. Alleviate inconsistencies common to manual systems
5. Permit shared usage of data
6. Reduce cost in comparison to mainframe or minicomputer DBMS systems
   a. Programmer cost
   b. Disk storage
7. Permit user access via an easy to use query language
TYPES OF ELECTRONIC DATABASE MANAGEMENT SYSTEMS

1. File Management Systems
2. Relational Database Management Systems
3. Network/Hierarchical Database Management Systems

FILE MANAGEMENT SYSTEMS

On a continuum, the File Management Systems (FMS) provide the most basic approach to DataBase Management Systems (DBMS). File Management Systems emphasize file definition as well as data entry and retrieval. They generally lack a query and development language. Their structure might be that of a basic spreadsheet, where data is contained within rows and columns, or it might be data structured in a format with rows or records and fields of data separated by commas.
**RELATIONAL DATABASE MANAGEMENT SYSTEMS**

Relational Database Management Systems (RDBMS) are a step up from File Management Systems. The data in a Relational Data Base is generally arranged in rows and columns, where each row is a record and the columns denote datafields. Unlike File Management Systems, RDBMS offer more extensive querying capabilities and in some cases an application development language which enables users to write programs for their own, personalized, database systems. Generally, RDBMS's are most suitable for database systems of three or fewer files.

**NETWORK/HIERARCHICAL DATABASE MANAGEMENT SYSTEMS**

Network/Hierarchical Database Management Systems (NDBMS) are the most powerful of the three categories. NDBMS are also more difficult for the inexperienced user. These systems are not file-oriented; thus very sophisticated applications programs can be developed without concern for the number of data files which can be handled by the system. Network Database Management Systems generally do not permit direct data retrieval. Therefore, you must program the system to retrieve information.
**DATABASE TERMINOLOGY**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command</td>
<td>Instruction to the computer.</td>
</tr>
<tr>
<td>Database</td>
<td>A collection of interrelated information.</td>
</tr>
<tr>
<td>Default</td>
<td>The automatic settings of the computer program. To change the default is to reset parameters.</td>
</tr>
<tr>
<td>Expression</td>
<td>An expression in dBASE III is a way of modifying a command. An expression list could be a field or list of fields; it could be a list of memory variables contained in a program. An expression in dBASE III could also be a numeric formula using either fields or memory variables.</td>
</tr>
<tr>
<td>Field</td>
<td>An item of information in a database record. For example, a person’s last name might be one field, the person’s phone number another field. The fieldname is the name used to refer to a particular datafield; fieldnames for the above fields of data could be lname, phone.</td>
</tr>
<tr>
<td>File</td>
<td>A collection of data on a disk accessed by a unique name. Sequence of records with identical forms, each containing a series of fields.</td>
</tr>
<tr>
<td>Index</td>
<td>A table of record keys which are pointers to the complete database and assist in rapid record retrieval.</td>
</tr>
<tr>
<td>Key</td>
<td>A unique identifier for a record.</td>
</tr>
<tr>
<td>Record</td>
<td>A group of related fields of information treated as a unit.</td>
</tr>
<tr>
<td>Query</td>
<td>To pose a question to or inquire about something from the database.</td>
</tr>
</tbody>
</table>
AN OVERVIEW OF DBASE III PLUS

CHARACTERISTICS OF DBASE III PLUS

BRIEF HISTORY

dBASE II is a software program that was written by Wayne Ratliff in 1980 and marketed by Ashton-Tate. dBASE III Plus is the most recent version of this program, written specifically for the 16-bit computer with the MS-DOS operating system. (The dBASE III program was completely re-written in the C Language; dBASE II was written in Assembly Language.)

ORGANIZATION

dBASE III Plus is a relational database program. As such, it organizes a database file as a table of rows and columns. The rows, known as records, are composed of fields or columns. A record, for example, might contain a variety of information about one person. Fields, on the other hand, would contain the same type of information about different people. For instance, the company's name could be one field, 'address' might be a second field, 'city' the third and so on.

SPECIFICATIONS ON THE SIZE AND CAPACITY OF DBASE III FILES

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum records per file</td>
<td>1 billion</td>
</tr>
<tr>
<td>Maximum characters per file</td>
<td>2 billion</td>
</tr>
<tr>
<td>Maximum fields per record</td>
<td>128</td>
</tr>
<tr>
<td>Maximum characters per record</td>
<td>4,000</td>
</tr>
<tr>
<td>Maximum characters per text field</td>
<td>254</td>
</tr>
<tr>
<td>Maximum characters per memo field</td>
<td>5,000</td>
</tr>
<tr>
<td>Maximum characters per memo file</td>
<td>512,000</td>
</tr>
<tr>
<td>Maximum characters per date field</td>
<td>8</td>
</tr>
<tr>
<td>Index key length</td>
<td>100</td>
</tr>
</tbody>
</table>

NUMERIC ACCURACY

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.9 digits</td>
<td></td>
</tr>
<tr>
<td>999,999,999,999,999.9</td>
<td></td>
</tr>
<tr>
<td>Largest number</td>
<td>1 x 10+308</td>
</tr>
<tr>
<td>Smallest positive number</td>
<td>1 x 10-307</td>
</tr>
</tbody>
</table>

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Introduction to dBASE III Plus, Rev: January 13, 1988
MEMORY VARIABLES

256 Active Memory Variables

6,000 Total Characters
GETTING STARTED WITH DBASE III

INSTALLING DBASE III

The dBASE III Plus program consists of two diskettes. System Disk 1 is a 'copy-protected' disk which does not contain the MS-DOS operating system; System Disk 2 is copyable. Make a backup copy of System Disk 2 and store the original in a safe place.

System Disk 1 contains a CONFIG.SYS file. To use dBASE III, you must boot up your operating system with a disk containing this configuration file.

ENTERING DBASE III

After loading the operating system, and having reached the A-prompt A> (the operating system's starting point), with the dBASE III System Disk 1 in drive A, and your working disk in drive B, type:

DBASE

Then press RETURN.

You will be prompted to accept the licensing agreement by pressing RETURN.

You will be prompted again by dBASE to remove System Disk 1 and replace it with System Disk 2 and then press RETURN.
THE DBASE III PLUS ASSIST MODE

When you enter dBASE III Plus, you are in the ASSIST mode.

While you are in the ASSIST mode you are presented with options that you step through, generally by pressing cursor arrow keys to get from one level to another in a command. You can also access main commands in the ASSIST mode by typing the first character of a command.

If you wish to choose a command that is highlighted, simply press RETURN.

EXITING THE ASSIST MODE

Press the Esc (ESCAPE) key.

When you press Esc you will enter the COMMAND mode and the cursor will be positioned at the dot prompt.

RETURNING TO THE ASSIST MODE

The ASSIST mode can be re-entered from the dot prompt by typing: ASSIST

NOTE: You may also press the [F2] function key to access the ASSIST mode.
THE DBASE III PLUS COMMAND MODE

In dBASE III's COMMAND mode, your cursor will be positioned next to a period. The period is dBASE III's dot-prompt. The dot prompt is similar to the "->" prompt used by the operating system because it means that you can issue a command to dBASE III. In most cases you will know that your command has been executed if dBASE responds with another dot-prompt.

THE LANGUAGE OF DBASE III

dBASE III has its own language. As with other languages, the dBASE language has syntax and vocabulary which must be learned and utilized. Some computer programs are more helpful or 'user-friendly' than others. dBASE II was particularly sparse in the degree of help it offered to the user, but it would always let you know if you typed the wrong word, misspelled a word, or forgot a comma or apostrophe when it was required. dBASE III Plus has come a long way in providing you with a more friendly, more helpful environment.

The dBASE III language has a dictionary of over 100 English words and responds to approximately 180 commands. Commands are brief, to the point, and verb-oriented. For example, if you wish to quit or end your session with dBASE III the command is simply QUIT.

HOW TO STRUCTURE A COMMAND IN DBASE III

Commands in dBASE III always begin with a verb (the command itself) and then may be followed with various optional expressions or conditions.

The syntax structure is as follows:

VERB [scope] [expression list] [FOR/WHILE condition]

For example:

.DISPLAY all FOR lname='Jones'

.DISPLAY all fname,lname FOR lname='Jones'

.AVERAGE sales FOR product='computer'
There are about 50 SET commands in dBASE III which allow you to change the enviromental format, parameters or system defaults of dBASE III. For instance, you can turn a printing mode on and off with set commands.

. SET PRINT ON
  Turns the PRINT mode on so that you can get a hard copy of your data

. SET PRINT OFF
  Turns the PRINT mode off
CORRECTING OR MODIFYING A PREVIOUS COMMAND

If you want to correct or modify a previous command which you typed at the dot prompt:

Press the Up Arrow key until you see the command you want to revise positioned at the dot prompt.

Revise the command, then press RETURN.

You may use the Del or Backspace keys, the Ins key to turn Insert mode ON/OFF, or type over a command.

To see a list of the last 20 commands you issued, type the following:

.LIST HISTORY
HELP MENUS IN DBASE III PLUS

dBASE III Plus offers a lot of help through its Help menus and screens.

ACCESSING THE HELP MODE

To access the Help menus:

Press the [F1] function key

or

Type HELP at the dot prompt.

The dBASE III Help main menu will appear on your screen:

```
Help Main Menu
1 - Getting Started
2 - What is a . . .
3 - How Do I . . .
4 - Creating a Database File
5 - Using an Existing Database File
6 - Commands and Functions
```

Each menu or screen will indicate what command options are available to you.

Move the Cursor Arrow keys to highlight a selection or type the number of the selection, then press RETURN. Press the PgUp key to go to a previous screen. On some screens you can press [F10] to go to the previous menu.

EXITING THE HELP MODE

To get out of the HELP mode:

Press the Esc key

SPECIALIZED HELP

You can also get a particular help screen by indicating what command you require help with. For example:

```
.HELP create
```

would present you with information about the command CREATE.
CHANGING TO THE B DRIVE

When using a dual-disk, floppy-drive system, your first instruction to dBASE III should be to change from the A disk drive to the B disk drive. Remember that the dBASE III program is located on the disk in the A drive. Because you don't want to interfere with this program or run out of disk space while creating your own files, you need to change your position by switching to the other disk drive.

CHANGING TO THE B DRIVE IN THE ASSIST MODE

To change to the B Drive in the ASSIST mode, issue the command:

```
TOOLS Set drive
B:
```

CHANGING TO THE B DRIVE IN THE COMMAND MODE

To change to the B Drive in the COMMAND mode, from the dot prompt, type:

```
.SET DEFAULT TO B
```
You may type commands in dBASE III in any combination of upper and/or lower case letters. When issuing commands in dBASE III Plus at the dot prompt, you can type the entire word for the command or abbreviate it by typing only the first four letters. Thus you could also switch to the B drive with the following command:

`.SET DEFA TO B`
DESIGNING A DATABASE STRUCTURE

It is important to develop a design for the database before you start. It is possible to change the design or structure of your database later; but it is more efficient to plan your design well initially so that it will require fewer modifications later. With some practice you will understand the art of dBASE III database design.

In setting up your structure, one of the most important things to consider will be the types of reports you desire for the output of your data. Of course you will need to know what information you wish to have in your reports as well as some idea about the formats you desire for your reports.

In this Introduction to dBASE III Plus, your assignment is to create a small database of members of the class. Since you will be creating a mailing label and a mailing list you will have to make sure that your database is designed to produce this information. Write down the fields that should be included in the database. Some of them to consider are:

- First Name of Class Member
- Last Name of Class Member
- Address
- Phone

ESTABLISHING FIELD NAMES

You will need to convert these field names into names that dBASE III will accept. Field names may have up to 10 characters so in many cases you will need to abbreviate. Spaces may not be included in field names, but you can use an underline character (_) embedded within a name to suggest a space, such as zip_code. All names must begin with a letter. It is wise to use at least two separate fields for a person's name in case you want the option of displaying your data alphabetically by last name.
ESTABLISHING DATA TYPES

In addition to assigning a field name, you must tell dBASE what type of data will be contained in each field, i.e. (C)haracter, (N)umeric, (L)ogical, (D)ate, or (M)emo.

**Character fields**
Contain either letters, numbers or a combination of both. (A telephone number or zip code would fall under this category). Data entered as a character field will be left justified - that is, all the data will be lined up evenly along the lefthand margin. The width of a character field must be defined; it may be between 1 and 254 characters in length.

**Numeric fields**
Contain only numbers (and an optional decimal point, plus sign, or minus sign) and should be used when you plan to do calculations. Numbers labeled as numeric will be entered with right justification which will allow for consistent alignment of your figures. (You cannot enter either a $ sign or commas in this field). The width of the numeric field must be defined, including the number of decimal places you want to display.

**Logical fields**
Used when there are only two possible values - true or false. Either Y(es)/N(o) or T( rue)/F(alse) are acceptable when you enter data in a logical field. An example of this kind of data is a field named **active** which tells you whether a business contact is current or not/current. Logical fields are limited to a width of one, and it is not necessary to type the space allocation in the structure.

**Date fields**
Used to store dates. It is possible to create a data entry program to display the date in a variety of formats; however, the default format is: mm/dd/yy and the field width is always 8.

**Memo fields**
Designed to store large amounts of text. The data is stored in an ancillary file with a .DBT extension. Each memo field in a database uses up 10 characters per record. In the .DBT file, the data is stored in variable-length format. If no text is entered, 0 bytes are allotted; if data is entered, space is assigned in 512-byte blocks. The maximum number of bytes per memo field is 5,000.
DEFINING FIELD WIDTHS

When you set up your database structure you must also define the width or length of each of your fields.

A dBASE III database is a fixed-length, space delimited database, which means that whatever field width you establish will be reserved space to the computer. If you use less than the 10 spaces allotted for FNAME, the extra space will still be allocated on the disk.

DEFINING THE NUMBER OF DECIMAL PLACES

If you have a numeric type field, you may also wish to set the number (if any) of decimal places to appear to the right of the decimal.

The number, 312.50, would require a width of 6 since the decimal point and places must be included in the total width allocation.
CREATING A DATABASE

The CREATE command is used to define a database file in dBASE.

In the ASSIST mode, issue the command: CREATE database file

In COMMAND mode, type:

.CREATE

You will then be asked to enter a filename.

Type:

class

Field Name  Type  Width  Dec  Field Name  Type  Width  Dec
1  LNAME  Character  15
2  [character]  Character  [width]

Enter the field name.
DATABASE FILE NAMES

A filename in dBASE may have up to eight (8) characters or digits; no spaces or special symbols such as #, *, & are acceptable other than an underline (_) or dash (-).

When you create a database file in dBASE III Plus, the file name will automatically be given the filename extension of .DBF.

CREATING THE DATABASE STRUCTURE

To create a field name, simply type the name, then press RETURN to select the type of field. The default type of field is a Character or Text field. To select another type, simply press the SPACE bar until your selection appears, then press RETURN to select it. (You may also type the first character of each field type; i.e., C for Character, N for Numeric, L for Logical, D for Date, or M for Memo).

Next enter the number of characters you wish to allow for each field. If it is a logical field or a date field, you will not need to do this since these fields hold 1 character and 8 characters, respectively. A memo field also automatically assigns you a field width, which is 10 characters.

If your field is numeric, you may also wish to include the number of decimal places to the right of the decimal point.

If you make a mistake or wish to change something in your structure:

Move your cursor back up to the field where you wish to make a correction, then type over the incorrect entry.

INSERTING A FIELD

To insert a field:

Position your cursor where you wish the new field to be, then press Ctrl/N.

DELETING A FIELD

To delete a field:

Position your cursor on the field you wish to delete, then press Ctrl/U.
SAVING THE DATABASE STRUCTURE

When you have finished creating your database structure, press Ctrl/End. You will then be prompted to press RETURN. The following will then appear on the screen:

INPUT DATA RECORDS NOW? (Y/N)  (Type Y or N to respond)

N  will return you to the dot prompt or the ASSIST menus

Y  will take you into dBASE III's APPEND mode at record 1, where you can start adding data

With either response, you do not need to press RETURN after typing the letter.
USING A DATABASE FILE

In order to use a database file, you need to tell dBASE the name of the database file you wish to use or open.

In the ASSIST mode, issue the command:

SET UP database file

Select the correct drive, then press RETURN.

Select the file you wish to use, the press RETURN.

In COMMAND mode, type the following:

\.USE class

Then press RETURN.

Until you inform dBASE to \USE another file, dBASE will assume that all of your commands apply to the file currently open or in USE.
DISPLAYING THE STRUCTURE OF A DATABASE FILE

The command to display the structure of your database file in the ASSIST mode is:

The file structure will be displayed on the screen as well as the total number of characters used.

At the dot prompt, the command is:

.DISPLAY STRUCTURE

The file structure will be displayed on the screen as well as the total number of characters used.
To display the structure of your database file CLASS, type:

```
USE class
DISPLAY STRUCTURE
```

A structure such as the following will be displayed:

```
Structure for database: b:class.dbf
Number of data records: 11
Date of last update: 05/30/86

<table>
<thead>
<tr>
<th>Field name</th>
<th>Type</th>
<th>Width</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 TITLE</td>
<td>Character</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>2 FNAME</td>
<td>Character</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>3 LNAME</td>
<td>Character</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>4 COMPANY</td>
<td>Character</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>5 STREET</td>
<td>Character</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>6 SUITE</td>
<td>Character</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>7 CITY</td>
<td>Character</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>8 STATE</td>
<td>Character</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>9 ZIP</td>
<td>Character</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>10 PHONE</td>
<td>Character</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>11 FEMALE</td>
<td>Logical</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>12 MARRIED</td>
<td>Logical</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>13 SALARY</td>
<td>Numeric</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>14 DOB</td>
<td>Date</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>15 DATEATTD</td>
<td>Date</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>16 COMMENTS</td>
<td>Memo</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

** Total ** 203
```

To get a printout of your database file, type:

```
LIST STRUCTURE TO PRINT
```

Then press RETURN.

ESTIMATING YOUR DISK STORAGE NEEDS

To get an estimate of your disk storage needs using the database structure you have just created, multiply the total number of characters in the structure times the number of records you anticipate having in the datafile. This will give you an estimate of the required disk space for the database file; additional space would be required for the .dbt or memo file.
ADDING DATA TO THE DATABASE

THE APPEND COMMAND

dBASE III uses the word append to mean add or attach supplemental information to the database. One of the ways you can add additional records to your file is to be in the APPEND mode of operation.

In the ASSIST mode you can add records by issuing the command:

At the dot prompt, type:

.APEND

Then press RETURN.

While you are in the APPEND mode of dBASE III Plus, you can move the cursor around the current record, and, if you wish, you may also move back to view or edit a previous record.

MOVING THE CURSOR WITHIN A RECORD

To display the cursor movement and editing functions available to you, press [F1] to toggle on the Cursor Help Screen.
ADDING DATA TO A MEMO FIELD

1. Position your cursor on the Memo field.

2. Press Ctrl/Home.

3. You will be positioned on a blank screen in the dBASE III Word Processor.

4. Type the text to be included in the Memo field.

   Press [F1] to toggle on the Cursor Help Screen.

   This mode is like a word processor, so you have word-wrap, which means that you do not need to press RETURN at the end of each line, just at the end of a paragraph.

5. Press Ctrl/End to save the text and return to the rest of your record.

To continue adding records:

   Press PgDn.

To move back to a previous record:

   Press PgUp.

To exit the APPEND mode and save your records:

   Press Ctrl/End to store your work in a buffer.

   dBASE will transfer data to the disk automatically when the buffer fills up.
EDITING RECORDS

To edit records, you may go into the EDIT mode. In the ASSIST mode, issue the command: UPDATE Edit.

In COMMAND mode, type:

```
.EDIT 3
```

to indicate that you wish to edit record number 3.

At this point you can make corrections or other desired changes to record #3.

While you are in the EDIT mode, you can scroll or move back to a previous record or scroll ahead to the next record until you reach the end of the file.

Some of the editing functions available to you in dBASE III are:

- **Del**: Deletes character at the cursor
- **Ctrl/T**: Deletes a word (to the right)
- **Ctrl/Y**: Deletes a line or a field
- **Ins**: Toggles the INSERT mode ON/OFF
- **PgUp**: Reverses (moves back to a previous record)
- **PgDn**: Continues ahead to the next record
- **Ctrl/End**: Writes to disk or saves any changes you have entered and will return you to the dot-prompt or Assist menu
- **Esc**: Quits what you are doing without saving your most recent additions and edits and returns you to the dot-prompt
DELETING RECORDS

Records in dBASE III are deleted in two steps. The first step is to mark them for deletion. Records marked for deletion can then be permanently removed by packing the database.

MARKING RECORDS FOR DELETION

dBASE III marks records with the word DEL in the status line and an asterisk (*) in a list. A record may be marked for deletion in several ways:

DELETING RECORDS IN ASSIST MODE

In the ASSIST mode, select the UPDATE Delete command.

You may specify a scope for deleting:

DEFAULT  The record on which you are positioned
ALL     All of the records in the database
NEXT   A specified number of records beginning with the one on which you are positioned
RECORD A specified record number
REST    All the records beginning with the one on which you are positioned through the end of the file

You may also specify a scope condition to delete records.

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After specifying a scope, you must choose:

EXECUTE THE COMMAND
MARKING RECORDS FOR DELETION IN COMMAND MODE

You may delete a specific record, with a command such as:

.DELETE RECORD 4

To delete a record based on some specific information you know, structure the command as follows:

.DELETE FOR fieldname='specific data'

For example:

.DELETE FOR lname='Wolf'
.DELETE FOR state='DC'

You could also delete a group of records:

.DELETE NEXT 5

The above command would delete the record on which you were positioned plus the 4 records beyond that position. If you were located at record 1, you would be marking the first five records for deletion.

MARKING RECORDS FOR DELETION IN THE EDIT MODE

Ctrl/U will mark a record for deletion; another Ctrl/U will unmark it.

DISPLAYING RECORDS MARKED FOR DELETION

It is a good idea to get a display or list of all records that are marked for deletion before you absolutely delete them.

In COMMAND mode, the following will give you a list of records marked for deletion:

.LIST FOR DELETED()
RECALLING RECORDS MARKED FOR DELETION

To unmark deleted records in the ASSIST mode, issue the command:

```
UPDATE Recall
```

To unmark deleted records in COMMAND mode, type a command such as those below:

```
.RECALL RECORD 3
.RECALL ALL
.RECALL FOR state='VA'
```

How would you recall the record containing Mr. Wolf?
PERMANENTLY DELETING RECORDS

To permanently delete all records marked for deletion, type:

```
.PACK
```

dBASE will PACK your database file by recopying it, deleting all records marked for deletion and renumbering those that are left. You can visualize how the computer deletes records if you think of it as compressing your data after a record is removed. Instead of leaving a gap where the record or records were removed, the remaining records are moved up to fill in the gap and are renumbered. If record 10 was marked for deletion, the old record 11 would become the new record 10, and so on.

To mark all the records for deletion and then pack the file in one command, type:

```
.ZAP
```

Note: The ZAP command is powerful. Be careful!
MODIFYING THE DATABASE STRUCTURE

In order to add or delete field names, or change the width or type of a field you will need to modify your database structure. When you modify the structure of your database, dBASE III Plus places your data in a back-up file. When you re-save or end the modification process, dBASE III Plus will append the data in the back-up file to your original file with the modified structure. Unlike dBASE II, the modification process in dBASE III Plus has been greatly simplified. Nevertheless, before you make any changes to your database structure, it is advisable to first make a temporary copy of your database file as an additional back-up in case any problems occur during the modification process.

COPYING THE DATABASE

To make a back-up copy of your database file, use the following commands:

In the ASSIST mode, issue the command:

```
ORGANIZE Copy
```

In command mode at the dot prompt, type:

```
.USE dbffilename
.COPY TO new dbffilename
```

For example:

```
.USE class
.COPY TO citemp
```

MODIFYING THE STRUCTURE

When you have made a back-up copy of both your datafile and your memo file, then you may issue a command to modify the structure of your database.

In the ASSIST mode, choose the command:

```
MODIFY Database File
```
At the dot prompt, issue the following commands:

.USE dbfilename

.MODIFY STRUCTURE

The structure of your original database file will then appear on the screen, displayed in the same format as when you created the structure.

Add a new field by moving your cursor to the position where you wish to insert the new field and press Ctrl/N.

Practice deleting a field by issuing a Ctrl/U on another field.

Do NOT change field names at the same time that you make other changes because it will result in loss of data within that particular field. dBASE III would not know where to place data stored under the old field name.

Save this newly revised structure by pressing Ctrl/End.

It is a good idea to check the newly modified file to make sure that your records were appended successfully and that the modifications you made were those you intended.

Edit your records and add data to the field(s) which you added.
DISPLAYING DATA FROM THE DATABASE

In the ASSIST mode, select:

Set Up Create Update Position Retrieve Organize Modify Tools 05:12:16 pm

Display Report Label
List
Sum Average Count

Execute the command
Specify scope
Construct a field list
Build a search condition
Build a scope condition

Default scope
ALL
NEXT
RECORD
REST

To display a simple list of what is in your database in COMMAND mode, type:

.LIST

or

.DISPLAY ALL

The LIST command will cause all records to be displayed on the screen. The DISPLAY command will pause every 20 lines.

In order to control when the screen pauses, you can issue either command and press Ctrl/S to pause the screen. To re-start the scrolling, press any key. Another Ctrl/S will result in another pause.

To interrupt the display of records, press the Esc key.
To LIST or DISPLAY only specified fields of data:

```list
.fieldname1.fieldname2.fieldname3
```

For example, to display a list of data from the fields company and state, type:

```list
.company,.state
```

<table>
<thead>
<tr>
<th>Record#</th>
<th>company</th>
<th>state</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nationwide Telecommunications, Inc.</td>
<td>VA</td>
</tr>
<tr>
<td>2</td>
<td>Michele Soyka Horosko - Silversmith</td>
<td>PA</td>
</tr>
<tr>
<td>3</td>
<td>Jeffrey Miles Wolf - Photographer</td>
<td>OH</td>
</tr>
<tr>
<td>4</td>
<td>Future Enterprises, Inc.</td>
<td>DC</td>
</tr>
<tr>
<td>5</td>
<td>Osage Woodworks</td>
<td>OH</td>
</tr>
<tr>
<td>6</td>
<td>Osage Woodworks</td>
<td>OH</td>
</tr>
<tr>
<td>7</td>
<td>Classical Glass</td>
<td>VA</td>
</tr>
<tr>
<td>8</td>
<td>Jewelry by Elaret</td>
<td>MA</td>
</tr>
<tr>
<td>9</td>
<td>TeleVista</td>
<td>VA</td>
</tr>
<tr>
<td>10</td>
<td>The Turning Post</td>
<td>UT</td>
</tr>
<tr>
<td>11</td>
<td>Crystal Creations</td>
<td>MA</td>
</tr>
</tbody>
</table>
PRINTING A LIST OF RECORDS

To print a list of records, type:

.LIST TO PRINT

Another way to display a list of data from the database is:

.SET PRINT ON
.LIST company, state
.SET PRINT OFF

Notice that the field headings are displayed above each column of data when you issue the LIST command. The default setting is to have the headings displayed. You may, however, wish to eliminate the headings. To do this, type:

.SET HEADING OFF
.list lname, company

To turn your headings back on, type:

SET HEADING ON

Also notice that dBASE automatically gives you a list of your record numbers. To generate a list without your record numbers being displayed, type:

.LIST OFF

or

.LIST OFF fieldname1, fieldname2, fieldname3
QUERYING THE DATABASE

Querying is a term which means to issue a request for information from the database.

RETRIEVING DATA FROM CHARACTER FIELDS

You can display a list of records based on some specific information you know, using a command structured as follows:

. LIST FOR fieldname='specific data'

For example:

. LIST FOR lname='Castro'

LIST FOR or DISPLAY FOR will generate a list of all data in the record(s) that meet the specified condition.

The example above asks for a list of all records with the last name "Castro". You may use apostrophes or single-quotation marks (those pointing to the left ONLY on the IBM-PC keyboard), double-quotation marks, or square brackets, i.e. ' ', " or [ ]. The specific data you request, such as "Castro", must be typed exactly the way it was typed in the database record. dBASE III Plus is case-sensitive, so you must be consistent in typing your data and in querying your database.

It is also possible to list a few of the fields from a record. Issue the following commands:

. LIST fname,lname,state FOR lname='Castro'

. LIST company FOR state='VA'

<table>
<thead>
<tr>
<th>Record#</th>
<th>company</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nationwide Telecommunications, Inc.</td>
</tr>
<tr>
<td>7</td>
<td>Classical Glass</td>
</tr>
<tr>
<td>9</td>
<td>TeleVista</td>
</tr>
</tbody>
</table>
RETRIEVING DATA FROM NUMERIC FIELDS

When searching for data that is in a numeric field, you do not use quotation marks to delimit the data.

.LIST FOR salary=50000

For example:

.LIST lname,salary FOR salary=50000

How would you get a listing of all the class members in the database who make an imaginary salary of more than $50000?

Note: The symbol for "greater than" is >.
RETRIEVING DATA FROM LOGICAL FIELDS

To search for data in logical fields, a slightly different syntax is required. To ask for information that is true, use the following syntax:

.LIST FOR logicalfieldname

To generate a list of all the companies in your database who are members, i.e. where the logical field Member is true, type:

.LIST company FOR member

Record#   company
1         Nationwide Telecommunications, Inc.
2         Michele Soyka Horosko - Silversmith
3         Jeffrey Miles Wolf - Photographer
4         Osage Woodworks
5         Classical Glass
6         Jewelry by Elaret
7         The Turning Post
8         Crystal Creations

To request information that is NOT true, i.e. false, the command is structured as follows:

.LIST FOR .NOT. logicalfieldname

To find out which companies in your database are not members, type:

.LIST company FOR .NOT. married
RETRIEVING DATA FROM DATE FIELDS

In some respects Date fields in dBASE III Plus function as numeric fields. Like numeric fields, data from Date fields is searched without using the quotation marks or apostrophes. In addition, Date fields can be added or subtracted like numeric fields.

THE DATE FUNCTIONS

The dBASE III program provides a number of date functions to manipulate date fields. They are:

- **DATE()** System date
- **CTOD()** Character to date conversion
- **DTOC()** Date to character conversion
- **MONTH()** Month of year
- **DAY()** Day of month
- **YEAR()** Year
- **DOW()** Day of week
- **CMONTH()** Calendar month
- **CDOW()** Calendar day of week

What follows are some examples of queries that you might use to search for information from date fields.

SEARCHING FOR A PARTICULAR MONTH

```
.LIST company, dateattd FOR MONTH(dateattd)=1
```

<table>
<thead>
<tr>
<th>Record#</th>
<th>company</th>
<th>dateattd</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nationwide Telecommunications, Inc.</td>
<td>01/15/83</td>
</tr>
<tr>
<td>8</td>
<td>Jewelry by Elaret</td>
<td>01/05/84</td>
</tr>
</tbody>
</table>

If you wish to query for a particular month using the calendar name, you can do so by using the date function **CMONTH**, which converts the date to a character form.

```
.LIST company, dateattd FOR CMONTH(dateattd)=’January’
```

<table>
<thead>
<tr>
<th>Record#</th>
<th>company</th>
<th>dateattd</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nationwide Telecommunications, Inc.</td>
<td>01/15/83</td>
</tr>
<tr>
<td>8</td>
<td>Jewelry by Elaret</td>
<td>01/05/84</td>
</tr>
</tbody>
</table>
SEARCHING FOR A PARTICULAR TIME OF YEAR

You might also want to see if class members attended more classes during one part of the year in comparison to another time of year. In order to produce a list from the data base CLASS of those people who attended during any month after March (the third month of the year), you would issue the following command:

```
.LIST lname FOR MONTH(dateattd) > 3
```

If you want to list information for a particular date, issue the following command:

```
.LIST company, dateattd FOR DTOC(dateattd) = "07/01/85"
```

To display a list of records who attended prior to July 1, 1985, issue the following command:

```
.LIST company, dateattd FOR dateattd < CTOD("07/01/85")
```

If you want to display a list of records or class members who are in attendance today, use the DATE() function:

```
.LIST company, dateattd FOR dateattd = DATE()
```
**CHANGING THE FORMAT OF A DATE**

You can also display date variables in other formats with the date functions such as those used below:

```
.LIST CMONTH(dateattd),DAY(dateattd),YEAR(dateattd)
```

Sometimes it is necessary to convert date-type data to character strings.

**CONVERTING A DATE TO A CHARACTER**

The Date-To-Character conversion function - DTOC() performs this function. For instance, the Label-Generating program of dBASE III will accept only character-type data. Using the DTOC() function, however, with dates will enable you to display a date field, such as that below:

```
? "Today's Date is "+DTOC(DATE())
```
QUERY

Can you tell what format a date will be in as a result of the following command?

```
.LIST OFF CDOW(dob)+", "+CMONTH(dob)+" "+SUBSTR(DTOC(dob),4,2)+", 19"+
SUBSTR(DTOC(dob),7,2)
```

HINT: SUBSTR(fieldname),4,2) tells dBASE to display part of a string of characters beginning at position 4, 2 characters in length.
RETREIVING DATA FROM MEMO FIELDS

You can display information from a Memo field by simply issuing the command LIST followed by the field name.

For example:

.LIST comments

The above command will produce a list of all of the data contained within the Memo field COMMENTS.

In dBASE III Plus you can find a word or phrase when you are positioned in a record's Memo field.
SEARCHING WITH .AND., .OR. AND .NOT.

These connecting terms are actually called *Boolean Operators*, or *Logical Operators*. They function very much as they would in normal English. In dBASE III, the connectors - .AND., .OR. and .NOT. must always be surrounded by periods. Connectors are used to establish the parameters of a condition in which you are querying.

```
.LIST fname, lname, phone FOR fname='Suzanne' .and. city='Dumfries'
Record#    fname     lname    phone
       7    Suzanne    Camm  (703)670-0711

.LIST fname, lname, phone FOR lname='Marinich'
Record#    fname     lname    phone
        4    Marsha    Marinich  (202)393-2420
        9    Joseph    Marinich  (703)521-0807

.LIST fname, lname, phone FOR lname='Marinich'.AND. fname='Marsha'
Record#    fname     lname    phone
        4    Marsha    Marinich  (202)393-2420
```

Try the following queries using Boolean operators.

```
.LIST FOR lname='Adair' .AND. fname='James'

.LIST FOR city='Arlington' .OR. city='Columbus'

.LIST state FOR .NOT. state='VA'

.LIST lname, dateattd FOR month(dateattd)=5.AND. YEAR(dateattd)=1984

.LIST FOR city='Vienna' .OR. city='Arlington'

.LIST company, state, zip FOR city='Wash' .AND..NOT. zip='20036'
```
SETTING PRECEDENCE IN A DBASE QUERY

Parentheses should be used to group sections of long commands or commands with mixed Boolean operators to establish the order of precedence. The normal precedence is:

.NOT.

.AND.

.OR.
SUBSTRING SEARCHING - $  

A string is simply a collection of characters (including spaces, digits and letters) used as data. A substring is a portion of any specific string. To do a search on any portion of a string, you must enclose the string of characters you are searching for in either double or single quotation marks, and follow the search string with a dollar sign ($). The literal translation of $ is "contained in".

The syntax of a substring search is:

```
.LIST FOR 'string of characters'$fieldname
```

Some examples are:

```
.LIST FOR 'ton'$city

.LIST lname, street FOR 'N.W.'$street

.LIST FOR fname='Oonna' .AND. 'Leesburg'$street
```
RELATIONAL OPERATORS

Searching with =, >, <, >=, <=, and <>

<  Less than
>  Greater than
=  Equal
<= Less than or equal to
>= Greater than or equal to
<> Not equal to

Some examples of how these operators can be used are:

.LIST company,zip FOR zip > '20016'
.LIST company,zip FOR zip > '20001'.AND. zip < '20036'
.LIST FOR lname > 'C'
.LIST lname,city,state FOR state < 'DC'
.LIST lname,salary FOR salary >= 30000
MATHEMATICAL OPERATORS

+  Addition
-  Subtraction
*  Multiplication
/  Division
** or ^  Exponentiation
()  To group sections of a mathematical function

dBASE can perform mathematical calculations with the LIST command and a mathematical operator.

For example:

.LIST lname, salary, salary*1.05

Mathematical operators can also be used with date-type data fields. Try the following commands:

.LIST DATE() + 15
MATHEMATICAL COMMANDS

COUNTING

.COUNT FOR state='DC'
.COUNT FOR city='Wash' .AND..NOT. female

SUMMING UP

.SUM fieldname1,fieldname2,fieldname3

.SUM salary FOR YEAR(eod)=1983
.SUM salary FOR .NOT. female
.SUM salary FOR city="Alexandria"

AVERAGING

.AVERAGE salary

In ASSIST mode, issue the RETRIEVE command to access the COUNT, SUM or AVERAGE commands.
THE SET FILTER TO COMMAND

The SET FILTER TO command allows you to make a database appear as if it contained only records meeting a specified condition. You might, for example, wish to work with your database so that it displayed only those records which were from a particular state, zip code, or those records with projects that are not completed:

To turn the filtering condition on:

.SET FILTER TO condition

For example:

.USE dbfilename
.SET FILTER TO NOT.female
.LIST lname, female

To turn the Filter OFF:

.SET FILTER TO

Then press RETURN.
POSITIONING YOURSELF WITHIN THE DATABASE

.GO TOP
This will move you to record 1

.GO BOTTOM
This will move you to the end of the file

.GOTO #
This will move you to a particular record number

For example:

GO 3

DISPLAY

This command positions you at record 3, and then displays record 3

.DISPLAY RECORD #
This will also display a particular record

.SKIP +1
Moves you forward a record

.SKIP -1
Moves you back to a previous record
LOCATING FOR A SPECIFIED CONDITION

The LOCATE FOR command will position you at the first record which meets the condition you specify.

An example of this command is:

```
.LOCATE FOR state='VA'

.DISPLAY

.CONTINUE
```

positions you at the first record where the state is 'VA'
displays the first record located
positions you at the next record that meets the condition
CHANGING THE DEFAULT SETTINGS WITH SET COMMANDS

Some people are annoyed by the beep or bell that dBASE gives you when you reach the end of a field. To turn the bell off, type:

.SET BELL OFF

When you fill up a data field, dBASE will automatically take you to the next field. If you do not like this option, issue the following command:

.SET CONFIRM ON

When SET CONFIRM is ON, you will have to press RETURN to go to the next field.

To see what your current settings are, type:

.LIST STATUS

or

.DISPLAY STATUS

Another command to display and change SET commands is:

.SET

This will display a menu of current settings. Move your cursor to a setting and switch the setting to another setting by pressing RETURN. Press Esc to return to the dot prompt.
REPLICATING RECORDS

To replicate records:

.SET CARRY ON

.APPEND

Change the appropriate data.

Press Ctrl/PgDn to go to the next record.

Press Ctrl/End to save the record(s).

To turn off replication, type:

.SET CARRY OFF

To replicate a record (other than the last one in the database):

.GO #

.SET CARRY ON

.INSERT

Change the appropriate data.

Press Ctrl/End.

.SET CARRY OFF
BROWSING THROUGH THE DATABASE

Browsing through the database will give you a different viewpoint of it. In this mode you can see up to 17 of your records displayed in columns and rows, the form in which those records are stored. You may edit records and/or mark records for deletion in the BROWSE mode.

You may also add new records in BROWSE mode.

To browse your database file from the ASSIST mode, issue the command:

UPDATE Browse

In COMMAND mode, type:

.BROWSE

Cursor movements which work in the Browse mode are as follows:

- **Left Arrow**
  - Moves a character to the left

- **Right Arrow**
  - Moves a character to the right

- **Ctrl/Left Arrow**
  - Pans the window left one field

- **Ctrl/Right Arrow**
  - Pans the window right one field

- **PgUp**
  - Scrolls the database up

- **PgDn**
  - Scrolls the database down

- **Ctrl/Y**
  - Deletes a field of data

- **Ctrl/U**
  - Toggles record deletion on and off

- **Ctrl/End**
  - Saves changes and exits Browse mode

- **Esc**
  - Exits without saving changes
Within the BROWSE mode you can select various options to position yourself at particular records, lock certain fields so they do not move on the screen, or freeze your cursor at a field so that only that field is edited. To get to the Options menu:

Press Ctrl/Home.

Your options are:

**Bottom** Positions your cursor at the last record in the database  
**Top** Positions your cursor at the first record in the database  
**Lock** Locks certain fields at the LEFT SIDE of your screen so they remain stationary when you pan your window  
**Record No.** Positions your cursor at a specified record number  
**Freeze** Freezes your position so you can edit just one field  

If you are browsing an index file, an additional option will appear:

**Find** Finds the specified character string in a key field.

To display the cursor and editing functions available in Browse mode, press [F1].

Another way of using the browse command is to specify just certain fields for browsing.

For example:

```
.BROWSE FIELDS fieldname1,fieldname2,fieldname3

.BROWSE FIELDS lname, position, salary
```

The fields you choose to browse do not have to be in the order that they occur in your database.
When you reach the end of the file in the BROWSE mode, dBASE III will ask you if you wish to add records. If you respond with Y, you will be taken automatically into a BROWSE/APPEND mode.

To save your edits and exit the BROWSE mode:

Press Ctrl/End.
GLOBAL EDITING FEATURES OF DBASE III PLUS

THE CHANGE COMMAND

The CHANGE command is another way of editing a record or group of records in your database.

To edit just one or two fields in your entire file, the command is:

.CHANGE all FIELDS fieldnamel,fieldname2

Change the appropriate data.

Press Ctrl/End.

For example:

.CHANGE all FIELDS lname, salary

To edit a particular group of records, type:

.GO #
.CHANGE next # FIELDS fieldnamel,fieldname2

For example:

.GO 4
.CHANGE next 3 FIELDS lname, salary, dob

To edit only records that meet a specific condition, type:

CHANGE all FIELDS fieldnamel,fieldname2 FOR fieldname = 'specific data'

For example:

.CHANGE all FIELDS company,dateattd FOR .NOT. completed
THE REPLACE COMMAND

The syntax of the REPLACE command is:

.REPLACE ALL fieldname WITH 'new data' FOR fieldname = 'specific data'

Examples:

.REPLACE ALL zip WITH '20004' FOR zip='20001'
.REPLACE ALL salary WITH salary*1.05
.REPLACE ALL salary WITH salary*1.05 FOR female
.REPLACE ALL dateattd WITH DATE()+30

The following command allows you to replace data from a field that has been inconsistently entered in upper, lower and upper and lower case format to upper case.

.REPLACE ALL fieldname WITH UPPER(fieldname)

For example:

.REPLACE ALL state WITH UPPER(state)

You can convert characters to lower case with the following command:

.REPLACE ALL fieldname WITH LOWER(fieldname)

For example:

.REPLACE ALL state WITH LOWER(state)
INDEXING AND SORTING IN DBASE III PLUS

WHAT ARE INDEXES AND SORTED FILES?

Both Indexed files and Sorted files in dBASE III offer ways of rearranging the data in a database file so that it is either numerically or alphabetically arranged.

The SORT command creates an entirely new database (.DBF) file, takes somewhat longer to create, and uses more space on the disk. (If the sorted database contains a memo field, then a new .dbt file will also be created.) A file that has been sorted maintains no direct relationship to the original database file. The records in the sorted database will receive new record numbers.

An indexed file can only be used in relationship to the original database file. An index file takes up less space on the disk and can be created more quickly than a sorted file. Index files can be kept up-to-date, as long as the index has been opened before any changes (edits, additions, deletions) are made to the database.

It is more advantageous to use an index file, especially if your database is rather large. Using a sorted file takes up crucial space on your disk because it creates a duplicate database file.

A Snapshot of the Database

![Diagram showing the relationship between the original database and the sorted database.]

Sorted database
- Reorders of records
- Sorts in Ascending/descending
- Slower in creation than indexing
- Uses more space
- No direct interactive relationship

The Original Database
CREATING AND USING INDEX FILES

When you create an index file in dBASE III, you can see your data arranged in alphabetic or sequential order, from A-Z or 1-999. You do not have the option of indexing in descending order - only in ascending order.

CREATING INDEX FILES

Creating an index creates a new file that contains the key field entry and the corresponding record number (in indexed order) for each record in the database. The index retains an association with the original database; the record numbers in the original database file are retained.

dBASE III will give the newly created index file a filename extension of .NDX.

Multiple fields can be used as index keys; however, the field or fields should be limited to no more than 100 characters.
To Create an index file in the ASSIST mode:

Select the ORGANIZE Index command.

To create an index file in COMMAND mode, use the following syntax:

```
.INDEX ONfieldname TOindexfilename
```

Examples:

```
.INDEX ON lname TO clnames
.INDEX ON zip TO clzip
.INDEX ON lname + fname TO names
```

The index key can be any character, numeric, or date expression involving one or more fields in the database file. It is usually a single field.

Enter an index key expression: [NOTE]
**Using Index Files**

To use your newly-indexed file, type a command in the syntax that follows:

```
.USE original dbffilename INDEX indexfilename
```

Example:

```
USE class INDEX clnames
USE class INDEX clzip
or
.USE dbffilename
.SET INDEX TO indexfilename
```

Example:

```
USE class
SET INDEX TO clnames
```

Multiple indexes can be used by typing:

```
.USE dbffilename INDEX indexfilename1,indexfilename2
.USE class INDEX clnames,clzip
or
.SET INDEX TO clnames,clzip
```
**UPDATING INDEX FILES**

To keep the index file up-to-date with the .dbf file, it must be used while any changes are being made to the original file. Otherwise, any deletions or corrections you make while you are using your database file alone will not automatically affect your various index files and would result in the index files being out of sync with the database file. Therefore, either attach your index files to the database file when making the corrections, or index the files again using the command:

```
INDEX ON fieldname TO indexfilename.
```

**THE REINDEX COMMAND**

In addition, dBASE III has the command, REINDEX, which may also be used to update index files.

```
.USE dbfilename INDEX indexfilename
.REINDEX
```
SEARCHING FOR DATA WITHIN AN INDEX FILE

All of the normal querying commands can be used when you are in an index file. Some additional commands, however, are also available for querying: FIND and SEEK.

To position yourself quickly to a particular place in an indexed file, using the field name on which the file is indexed, type:

```
USE class INDEX clnames
.FIND Campbell
```

This would move you to the first person with the last name Campbell, if the file was indexed on the last name field.

The command SEEK is used in a manner similar to the FIND command, but requires quotation marks, apostrophes or square brackets around character strings.

```
USE class INDEX clnames
.SEEK 'Campbell'
```

or

```
USE class INDEX clno
.SEEK 100
```
THE SET UNIQUE ON COMMAND

The SET UNIQUE ON command is an interesting one, which is used in conjunction with the INDEX command. SET UNIQUE is usually off. It can be turned on, however, prior to the creation of an index. It will cause an index to be created where no duplications occur for the key field.

For example, if your database contains multiple records for a particular company and you wish to send a mailing to only one person in each company, create an index on company with SET UNIQUE ON; then run your labels:

```
.USE class
.SET UNIQUE ON
.INDEX ON company TO clcomp
.LIST company
```
CREATING AND USING SORTED FILES

To sort your database using the last name, type a command with the following syntax:

```
.SORT ON fieldname TO new dbfilename
```

Example:

```
.SORT ON lname TO Inamesrt
```

would create a new database with all the last names listed in alphabetical order. A sort will generally be produced in ascending order, i.e. low to high or A-Z. If you want the names to be sorted in descending order (from the letter Z-A, type the following:

```
.SORT ON lname TO Inamesrt descending
```

To view your records in alphabetical order, you must USE the new sorted database:

```
. USE Inamesrt
```

Unlike dBASE II, dBASE III allows you to sort on multiple fields and, if you wish, specify only particular fields for descending sorted order. For example:

```
.SORT ON zip/D,lname,fname TO zipsort
```

The above command will give you a new database arranged first by zip code, with higher numbers first; then under each identical zip code will arrange the records alphabetically by last name, then first name in normal A-Z, ascending, order.

SORTING A DATABASE IN ASSIST MODE

To sort a database in ASSIST mode, select the menu item:

```
ORGANIZE Sort
```
THE DBASE III PLUS LABEL GENERATOR

You can create labels quickly and easily with the DBASE III label generator. You must have a database file open to create or use this feature.

The label generator creates a file with an .LBL extension.

CREATING LABELS

To create a label in COMMAND or ASSIST mode issue the command:

```
.CREATE LABEL
```

Enter a filename:

```
PREDETERMINED USER: 3 9/16 x 1 1/16 in x 2

Label width: 36
Label height: 5
Left margin: 0
Lines between labels: 2
Spaces between labels: 2
Labels across page: 2
```

Enter an expression. Fill for a field name. Finish with end.

```
CREATE LABEL: 01-10-84 CLASS.LBL Ext: 2/6
```

Option: contents: Exist

```
Label contents: FRAME.LWMC
2: COMPANY
4: STATE
6: CITY STATE 212P
```

Press the delete key to delete record(s). Press enter to insert record(s).

```
CREATE LABEL: 01-10-84 CLASS.LBL Ext: 2/6
```

Set up Create Update Position Retrieve Modify Tools

```
List Display Report Label
```

Command: LABEL: POND:\E:

ASSIST 09-20 CLASS Ext: 2/6

Display this database file using an existing label format.
To set up a label format, you will need to indicate the width and height of your labels, your left margin, how many lines between labels, the number of labels across, and the number of spaces between labels if you are using more than 'one-up' labels.

If you wish, you can select a variety of standard label types by pressing *RETURN* with *OPTIONS PREDEFINED SIZE* highlighted.

The range specifications for labels are as follows:

<table>
<thead>
<tr>
<th>Specification</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width of label</td>
<td>1-120 characters</td>
</tr>
<tr>
<td>Height of label</td>
<td>1-16 lines</td>
</tr>
<tr>
<td>Left margin</td>
<td>0-250 spaces</td>
</tr>
<tr>
<td>Lines between labels</td>
<td>0-16 lines</td>
</tr>
<tr>
<td>Number of labels across</td>
<td>1-52</td>
</tr>
<tr>
<td>Spaces between labels</td>
<td>0-120</td>
</tr>
<tr>
<td>Total width of all labels</td>
<td>250 characters</td>
</tr>
</tbody>
</table>

To save your label and return to the dot prompt or the Assist menus, press: *Ctrl/End*.

**DISPLAYING THE LABELS**

To display the label, type:

```
.LABEL FORM lblfilename
```

**PRINTING THE LABELS**

To print it, type:

```
.LABEL FORM lblfilename TO PRINT
```

**MODIFYING THE LABELS**

To change or modify an existing label format, type:

```
.MODIFY LABEL lblfilename
```
CREATING A REPORT

In order to create a report form, issue the command:

.CREARE REPORT

Enter a new report filename:

dBASE will give the filename extension of .FRM.

After entering the filename, you will be taken into a REPORT FORM CREATION mode.

Select the Options menu to set up the page layout of the report, i.e. Page title, margins, line spacing.

Select the Groups menu to group part of your data so that you can get subtotals.
Define the Column contents, such as the fields of data you want to include in each column and the headings you want to appear above each column in the Columns menu.

If you wish to go to previous screens while defining your report, simply press PgUp to move to a previous page or PgDn to go to the next page.

<table>
<thead>
<tr>
<th>Options</th>
<th>Groups</th>
<th>Columns</th>
<th>Locate</th>
<th>Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contents:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heading</td>
<td>Width</td>
<td>Decimal places</td>
<td>Total this column</td>
<td></td>
</tr>
</tbody>
</table>

- Report Format
...

SAVING A REPORT

Issue the command:

EXIT Save

DISPLAYING A REPORT

To run a report from the ASSIST mode, issue the command:

RETRIEVE Report

To run a report in COMMAND mode, type:

.REPORT FORM rptfilename

FUTURE ENTERPRISES, INC.
Introduction to dBASE III Plus, Rev: October 14, 1987
SUBTOTALS IN REPORTS

In order to have your subtotal or group data display properly, you will have to have an indexed file whose key field is the same as the subtotal or group field.

MODIFYING A REPORT

Type:

.MODIFY REPORT rntfilename

Press Ctrl/End to save.
PRINTING A REPORT

To print a report, type:

```
.REPORT FORM rptfilename TO PRINT
```

or

```
.SET PRINT ON
.REPORT FORM rptfilename
.SET PRINT OFF
```

PREVENTING A FORM FEED

Typing NOEJECT in your command to print a report will eliminate the ejected paper that normally precedes a printed report. The command would be as follows:

```
.REPORT FORM rptfilename NOEJECT TO PRINT
```

ELIMINATING THE REPORT DATE AND PAGE NUMBER

In order to eliminate the page number and system date on your report form, issue the command:

```
.REPORT FORM rptfilename PLAIN TO PRINT
```

You could put an additional heading or title on your report with the following command:

```
.REPORT FORM rptfilename HEADING "Weekly Report for " + DTOC(DATE())
```
COMMAND OR PROGRAM FILES

If it is necessary to print-out or display data from a database in a format other than that possible with the LIST command, the LABEL command or dBASE III's standard REPORT FORM commands, you will need to create your own program.

In this exercise you will be extracting information from the CLASS.DBF in a mailing list format.

CREATING A PROGRAM

To create a program in dBASE III, you enter the PROGRAMMING mode by typing:

.MODIFY COMMAND

You will then be asked for a filename. The name you request will automatically be given a filename with an extension of .PRG (program).

Enter the file name: LIST, then press RETURN. You now should be in dBASE III's word processor.

Type the following program as it is written below (without the line numbers). Syntax is very important to dBASE. If your program is not written in the correct dBASE III syntax and in a logical sequence, you will not get the expected results. An explanation of each command line follows the program to help you understand dBASE's programming language.
LIST.prg

8/15/84

2* THIS IS A MAILING LIST PROGRAM USING AN INDEX FILE
3* CALLED CLZIP ATTACHED TO THE DATABASE FILE
4* CLASS.DBF
5
6 USE CLASS INDEX CLZIP
7 GOTO TOP
8 SET TALK OFF
9 SET HEADING OFF
10 DO WHILE .NOT. EOF()
11
12 ? TRIM(FNAME), LNAME
13 ? COMPANY
14 ? ADDRESS
15
16 IF ADDRESS2 <> ","
17 ? ADDRESS2
18  ENDIF
19
20 ? TRIM(CITY) + ",", STATE, ZIP
21 ?
22 ?
23 SKIP
24 ENDDO

NOTE: The line numbers above are for explanation purposes only.

An asterisk (*) at the beginning of a programming line in dBASE III is interpreted as a comment or remark statement. In other words dBASE III will ignore the words that follow since it does not recognize them as part of a command. Good programmers use these comment statements at the beginning of every program to identify the program name, creator, date of creation and/or revision and purpose.

This line is empty to serve as a separator between your comments and the actual program. It is not necessary to do this, but it makes your program easier to read.

dBASE III needs to know the name of the .dbf and/or .ndx file in order to retrieve the appropriate data.

FUTURE ENTERPRISES, INC.

Introduction to dBASE III Plus, Rev: November 27, 1987
Line 7  This command positions dBASE at the first record in the file. Note that goto is one word.

Line 8  'Talk' in dBASE III occurs in the messages that appear on your screen, such as "09 records indexed". By turning the talk off, you not only do away with these responses, but the display of record numbers is also eliminated.

Line 9  SET HEADING OFF prevents the field names from printing.

Lines 10-24  These command lines - beginning with DO WHILE and ending with ENDDO perform a loop, i.e. a process that will continue while the condition is true.

Line 10  The literal translation of this statement is: Do this procedure while not end of file. In other words, continue until you get to the end of the file.

Line 12  Whenever you use a '?', you are telling dBASE III to display what follows. So at this point the program tells dBASE to display the field names (fname and lname) for each record with the extra blank spaces at the end of the field fname trimmed. The comma between the field names separates the fields and causes a space to print.

Line 13-14  Display the company name and address for each record (on separate lines).

Lines 16-18  Form a conditional statement, an IF-ENDIF statement.

Line 16  You may not have data in the ADDRESS2 field for every record. Therefore, you need an "if" statement to provide a condition. If ADDRESS2 does not equal nothing, in other words, if there is an ADDRESS2 in a record:

Line 17  Print the data from the field ADDRESS2. (If there isn't an ADDRESS2, then the program will proceed to line 20.)

Line 18  Endif concludes the "if" statement

Line 20  Display the city, state and zip in the following format for each record: City, State Zip. The + joins two character strings together. The first comma following city is between quotation marks, indicating to dBASE that you want this comma printed.
Lines 21-22 The ? marks produce blank lines between names and addresses.

Line 23 The Skip command tells dBASE to skip to the next record.

Line 24 Enddo (one word) completes the DO loop which You started earlier with your Do While statement. The program will not be complete without it.

To save the program and return to the dot-prompt, type Ctrl/W or Ctrl/End.

RUNNING A PROGRAM

To run the program (from the dot prompt), issue a command with the following syntax:

.DO prgfilename

Example:

DO list

EDITING A PROGRAM

To edit the program, the syntax is:

.MODIFY COMMAND prgfilename

Example:

.MODIFY COMMAND list
EDITING FUNCTIONS IN THE DBASE WORD PROCESSOR

Some of the editing functions available to you in dBASE III's word processor are:

* **Home**
  Moves cursor a word to the left

* **End**
  Moves cursor a word to the right

* **Ctrl/R or PgUp**
  Moves the cursor to the previous screen

* **Ctrl/C or PgDn**
  Moves the cursor to the next screen

* **Del**
  Deletes a character at the cursor

* **Ctrl/T**
  Deletes a word (to the right)

* **Ctrl/Y**
  Deletes a line or a field

* **Ins**
  Turns INSERT mode ON/OFF

* **Ctrl/W or Ctrl/End**
  Saves any changes you have entered and return to the dot-prompt

* **Ctrl/Q**
  Quits what you are doing without saving any of your work and return to the dot-prompt.

Two useful new features have been incorporated into the DBASE III word processor:

* **Ctrl/KR**
  Allows you to read a file into your present one

* **Ctrl/KW**
  Allows you to write your current file to a new file

PRINTING A PROGRAM

To get a printout of your program, the command is:

```
.TYPE prgfilename TO PRINT
```
FILE MANAGEMENT

FILE MANAGEMENT IN ASSIST MODE

In the ASSIST mode of dBASE III Plus, file management commands are located in the Tools menu.

Set up Create Update Position Retrieve Organize Modify

Tools: 12:34:28 am

Set drive
Copy file
Directory
Rename
Erase
List structure
Import
Export

Ahl Database Files
.mdx Index Files
.fst Format Files
.lbl Label Files
.frn Report Files
txt Text Files
.vue View Files
qry Query Files
scr Screen Files
*. All Files

Command: DIR B:

Position selection bar - t. Select - <t>
Select a file type.
**FILE MANAGEMENT IN COMMAND MODE**

**DISPLAYING DIRECTORIES WITHIN DBASE III**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIR or LIST FILES</td>
<td>Displays a list of .DBF files, including the number of records in each</td>
</tr>
<tr>
<td>.DIR *<em>.</em></td>
<td>Displays a list of all files on the logged disk drive</td>
</tr>
<tr>
<td>.LIST FILES LIKE *<em>.</em></td>
<td>Displays a list of all files on the logged disk drive</td>
</tr>
<tr>
<td>.DIR A:*.**</td>
<td>Displays a list of all files on drive A</td>
</tr>
<tr>
<td>.DIR *.NDX</td>
<td>Displays a list of all index files on the logged disk drive</td>
</tr>
</tbody>
</table>
COPYING FILES

.COPY FILE oldfilename.ext TO newfilename.ext

This procedure copies a file to another file; it will overwrite or replace an existing file with the same name. You cannot copy an open file with the above command. Memo (.DBT) files are not copied automatically when a database (.DBF) file is copied using the above command.

To copy an open database file and its memo file, issue the following command:

. USE dbffilename

.COPY TO newdbffilename

It is sometimes desirable to copy only particular fields of data. To do this, type:

.COPY FIELDS fieldname1,fieldname2 TO newdbffilename

Another way of copying a database would be to copy for a particular condition:

.COPY TO newfilename FOR fieldname = 'specific data'

Example:

COPY TO mdclient FOR state = 'MD'
RENAME FILES

.RENAME oldfilename.ext TO newfilename.ext
You must include the filename extensions with this command.
You CANNOT rename an open database file.

DELETING FILES

.ERASE filename.ext
You must include the filename extension with this command.
You CANNOT erase an open file.
**CLOSING FILES AND EXITING DBASE III PLUS**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>.USE with no filename</td>
<td>Closes out the file currently in use</td>
</tr>
<tr>
<td>.CLOSE DATABASES</td>
<td>Closes all open database files</td>
</tr>
<tr>
<td>.CLOSE INDEX</td>
<td>Closes index files in the database currently in use</td>
</tr>
<tr>
<td>.CLEAR ALL</td>
<td>Closes all database files and index files; clears out all memory variables</td>
</tr>
<tr>
<td>.QUIT</td>
<td>Closes all open files and exits dBASE III</td>
</tr>
</tbody>
</table>

---

FUTURE ENTERPRISES, INC.
Introduction to dBASE III Plus, Rev: October 14, 1987
THE STANDING PEOPLE
unique wood crafts
Rt. 1 Box 402
Timberville, VA 22853
(703) 896-6711
John Robson Ricci Ash

Michele Soyka Horosko
SILVERSMITH
Michele Soyka Horosko
P.O. Box 702
Washington, PA 15301
412-222-4763

FUTURE ENTERPRISES, INC.
Center of Information Technology Education
Marsha Marinich
President

1351 Pennsylvania Ave., N.W., Suite 1221
Washington, D.C. 20004
(202) 464-7176

TeleVista
Joseph S. Marinich
Operating Officer

3219 Columbia Pike, Suite 203A
Arlington, Virginia 22204
(703) 521-0807
A Service of Mercure Telecommunications, Inc.

OSAGE WOODWORKS
(614) 261-6350
James Adair
James Fairly
3232 N. High Street
Columbus, Ohio 43202

Classical Glass
Stained glass creations
Suzanne Camm
1-703-670-0711
15527 Barrington Place
Dumfries, VA 22026

Fine Handcrafted Jewelry
by Elarat
Specializing in Australian Opal
Larry Areskog
P.O. Box 212
Newburyport, Mass. 01950
617-465-3125

JEWELRY
SILVERSMITH

Osage Woodworks
(614) 261-6350
James Adair
James Fairly
3232 N. High Street
Columbus, Ohio 43202

THE TURNING POST
WOOD ART OBJECTS
DECORATIVE & STRUCTURAL
WOOD TURNING
3066 North 150 East
No. Ogden, Utah 84404
Phone (801) 782-5109

THE
TURNING POST
WOOD ART OBJECTS
DECORATIVE & STRUCTURAL
WOOD TURNING
3066 North 150 East
No. Ogden, Utah 84404
Phone (801) 782-5109

CLEAD CHRISTIANSEN
Owner and Craftsman

THE TURNING POST
WOOD ART OBJECTS
DECORATIVE & STRUCTURAL
WOOD TURNING

Spun and Blown Glass
H. P. Vangor
Telephone: 613-567-8542
172 Bliss Road
Lancaster, PA 17603
### CONTRACTOR EMPLOYEE BIOGRAPHICAL DATA SHEET

**INSTRUCTIONS:**
Submit in triplicate to contracting officer.
See reverse for Contractor Certification.

### CONTACTOR EMPLOYEE BIOGRAPHICAL DATA SHEET

**CONTRACTOR EMPLOYEE BIOGRAPHICAL DATA SHEET**

(SEE PRIVACY ACT STATEMENT ON REVERSE)

1. **Name (Last, First, Middle)**
   - Holmes, Angela D.
2. **Contractor's Name**
   - Wendell Willis Associates
3. **Address (Include ZIP Code)**
   - 11 Stonebridge Circle
   - Washington, DC 20036
4. **Contract No.**
   - 83-1127
5. **Position Under Contract**
   - Economist
6. **Proposed Salary**
   - 26,000
7. **Country of Assignment**
   - Gambia
8. **Duration of Assignment**
   - 85 Days
9. **Telephone Number**
   - 202-352-1112
10. **Marital Status**
    - Married
11. **Names and Ages of Dependents to Accompany Individual (if applicable)**
    - U.S.

### NAME AND LOCATION OF INSTITUTION

<table>
<thead>
<tr>
<th>NAME AND LOCATION OF INSTITUTION</th>
<th>MAJOR SUBJECTS</th>
<th>Credits Completed</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York University, NYC</td>
<td>Economics</td>
<td>BS 1965</td>
<td></td>
</tr>
<tr>
<td>Columbia University, NYC</td>
<td>Economics</td>
<td>KA 1972</td>
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</tr>
</tbody>
</table>

### EMPLOYMENT HISTORY

1. Give last three (3) years. Continue on reverse to list all employment related to duties of proposed assignment.
2. Salary definition: basic periodic payment for services rendered. Exclude bonuses, profit-sharing arrangements, commissions, consultant fees, extra or overtime work payments, overseas differential, or quarters, cost of living or dependent education allowances.

<table>
<thead>
<tr>
<th>POSITION TITLE</th>
<th>EMPLOYER'S NAME AND ADDRESS</th>
<th>Dates of Employment (Mo., Ye.)</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Assist.</td>
<td>Wendell Willis Associates</td>
<td>1979-1980</td>
<td>20,000</td>
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<tr>
<td>Research Assoc.</td>
<td>1801 17th St., N.W. Washington, DC</td>
<td>1980-1982</td>
<td>24,500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1982-1983</td>
<td>26,000</td>
</tr>
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### SPECIFIC CONSULTANT SERVICES (give last three (3) years)

<table>
<thead>
<tr>
<th>SERVICE PERFORMED</th>
<th>EMPLOYER'S NAME AND ADDRESS</th>
<th>Dates of Employment (Mo., Day)</th>
<th>DAILY RATE</th>
</tr>
</thead>
</table>

### LANGUAGE PROFICIENCY

<table>
<thead>
<tr>
<th>LANGUAGE</th>
<th>Speaking</th>
<th>Reading</th>
<th>Writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>French</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Portuguese</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

### CERTIFICATION:

To the best of my knowledge, the above facts as stated are true and correct.

Signature of Employee

Date

AID 1420-17 (5-80)
**CONTRACTOR EMPLOYEE BIOGRAPHICAL DATA SHEET**

*(SEE PRIVACY ACT STATEMENT ON REVERSE)*

1. **Name (Last, First, Middle)**
   - **Mr.**  
   - **Mrs.**  
   - **Miss**  
   - **Ms.**  
   - **M. Johnson, Richard J.**

2. **Contractor's Name**
   - Development International, Inc.

3. **Address (Include ZIP Code)**
   - 1712 Forest Lane  
   - Springfield, VA 37021

4. **Contract No.**
   - 83-1127

5. **Position Under Contract**
   - Agricultural Economist

6. **Proposed Salary**
   - $45,000

7. **Country of Assignment**
   - Gambia

8. **Duration of Assignment**
   - 90 Days

9. **Telephone Number**
   - 713-792-290

10. **Marital Status**
   - Married

11. **Names and Ages of Dependents to Accompany Individual (if applicable)**
   - Gwendolyn, wife, 40

12. **Date of Birth**
   - 2/15/31

13. **Place of Birth**
   - Atlanta, GA

14. **Citizenship (if non-U.S. citizen, give status)**
   - U.S.

15. **EDUCATION** *(include all secondary, business college or university training)*

   **NAME AND LOCATION OF INSTITUTION**
   - University of Florida, Tampa
   - History
   - University of Missouri, Columbus
   - Agric. Econ.

   **MAJOR SUBJECTS**
   - **Degree**
     - BA 1950
     - PHD 1956

16. **EMPLOYMENT HISTORY**

   1. Give last three (3) years. Continue on reverse to list all employment related to duties of proposed assignment.

2. **Salary definition - basic periodic payment for services rendered.**

   Exclude bonuses, profit-sharing arrangements, commissions, consultant fees, extra or overtime work payments, overseas differential, or quarters, cost of living or dependent education allowances.

<table>
<thead>
<tr>
<th>POSITION TITLE</th>
<th>EMPLOYER’S NAME AND ADDRESS</th>
<th>Dates of Employment (Mo., Yr.)</th>
<th>Salary From To Dollars Per.</th>
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</thead>
<tbody>
<tr>
<td>Sr. Research Assoc.</td>
<td>Development International 8301 Leesburg Pike McLean, VA</td>
<td>1979-1980</td>
<td>40,000</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>1980-1982</td>
<td>42,000</td>
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<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>1982-1983</td>
<td>45,000</td>
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17. **SPECIFIC CONSULTANT SERVICES** *(give last three (3) years)*

<table>
<thead>
<tr>
<th>SERVICE PERFORMED</th>
<th>EMPLOYER’S NAME AND ADDRESS</th>
<th>Dates of Employment (Mo., Yr.)</th>
<th>Daily Rate From To</th>
</tr>
</thead>
</table>

18. **LANGUAGE PROFICIENCY**

   **LANGUAGE**
   - Spanish

   **Speaking**
   - Fair

   **Reading**
   - X

   **Writing**
   - X

   **Understanding**
   - X

19. **Special Qualifications (honors, professional societies, special licenses, publications, research, special skills, and relevant education not previously mentioned; use reverse side of form, if necessary)**

20. **CERTIFICATION:**

   To the best of my knowledge, the above facts as stated are true and correct.

   **Signature of Employee**

   **Date**
CONTRACTOR EMPLOYEE BIOGRAPHICAL DATA SHEET

(SEE PRIVACY ACT STATEMENT ON REVERSE)

INSTRUCTIONS: Submit in triplicate to contracting officer. See reverse for Contractor Certification.

1. Name (Last, First, Middle) □ Mr. □ Mrs. □ Miss □ Ms. Wiggins, Jane M.

2. Contractor's Name Action Enterprises, Inc.

3. Address (include ZIP Code) 5408 Massachusetts Ave. Washington, DC 20036


5. Position Under Contract Nutritionist

6. Proposed Salary 38,000

7. Country of Assignment Thailand

8. Duration of Assignment 120 Days

9. Telephone Number 202-387-5081

10. Marital Status □ Married □ Single Other (specify)

11. Names and Ages of Dependents to Accompany Individual (if applicable)

12. Date of Birth 10/11/28

13. Place of Birth Great Britain

14. Citizenship (if non-U.S. citizen, give visa status) British - U.S. resident

15. EDUCATION

<table>
<thead>
<tr>
<th>NAME AND LOCATION OF INSTITUTION</th>
<th>MAJOR SUBJECTS</th>
<th>Credits Completed</th>
<th>Type of Degree</th>
<th>Date of Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amherst</td>
<td>Nutrition</td>
<td></td>
<td>BS</td>
<td>1950</td>
</tr>
<tr>
<td>Columbia University</td>
<td>Biochemistry</td>
<td></td>
<td>PHD</td>
<td>1956</td>
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</tbody>
</table>

16. EMPLOYMENT HISTORY

1. Give last three (3) years. Continue or reverse to list all employment related to duties of proposed assignment.

2. Salary definition - basic periodic payment for services rendered. Exclude bonuses, profit-sharing arrangements, commissions, consultant fees, extra or overtime work payments, overseas differential, or quarters, cost of living or dependent education allowances.

<table>
<thead>
<tr>
<th>POSITION TITLE</th>
<th>EMPLOYER'S NAME AND ADDRESS</th>
<th>Dates of Employment (Mo., Yr.)</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Assoc.</td>
<td>Action Enterprises, Inc.</td>
<td>1979 - 1980</td>
<td>35,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1981 1982.</td>
<td>38,000</td>
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17. SPECIFIC CONSULTANT SERVICES (give last three (3) years)

<table>
<thead>
<tr>
<th>SERVICE PERFORMED</th>
<th>EMPLOYER'S NAME AND ADDRESS</th>
<th>Dates of Employment (Mo., Day)</th>
<th>DAILY RATE</th>
</tr>
</thead>
</table>

18. LANGUAGE PROFICIENCY

<table>
<thead>
<tr>
<th>LANGUAGE</th>
<th>Speaking</th>
<th>Reading</th>
<th>Writing</th>
<th>Understanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>French</td>
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<td></td>
</tr>
<tr>
<td>Thai</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

19. Special Qualifications (honors, professional societies, special licenses, publications, research, special skills, and relevant education not previously mentioned; use reverse side of form, if necessary)

20. CERTIFICATION: To the best of my knowledge, the above facts as stated are true and correct.

Signature of Employee

Date

AID 1420-17 (5-80)
**CONTRACTOR EMPLOYEE BIOGRAPHICAL DATA SHEET**  
*(SEE PRIVACY ACT STATEMENT ON REVERSE)*

1. **Name (Last, First, Middle)**
   - Miller, Sylvia A.

2. **Contractor's Name**
   - Development International, Inc.

3. **Address (Include ZIP Code)**
   - 88 Winston Court
   - Alexandria, VA 22037

4. **Contract No.**
   - 83-0789

5. **Position Under Contract**
   - Nutritionist

6. **Proposed Salary**
   - $38,000

7. **Country of Assignment**
   - Lebanon

8. **Duration of Assignment**
   - 55 Days

9. **Names and Ages of Dependents to Accompany Individual (if applicable)**
   - Jonathan, husband, 43
   - Christina, daughter, 15

10. **Telephone Number (Include area code)**
    - 703-573-1133

11. **Marital Status**
    - Married

12. **Date of Birth**
    - 10/01/43

13. **Place of Birth**
    - Salt Lake City, UT

14. **Citizenship (if non-U.S. citizen, give visa status)**
    - U.S.

**15. EDUCATION (Include all secondary, business college or university training)**

<table>
<thead>
<tr>
<th>NAME AND LOCATION OF INSTITUTION</th>
<th>MAJOR SUBJECTS</th>
<th>Credits Completed</th>
<th>Type of Degree</th>
<th>Date of Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of California, San Diego</td>
<td>Chemistry, Nutrition</td>
<td></td>
<td>BS</td>
<td>1965</td>
</tr>
</tbody>
</table>

**16. EMPLOYMENT HISTORY**

1. Give last three (3) years. Continue on reverse to list all employment related to duties of proposed assignment.
2. Salary definition - basic periodic payment for services rendered. Exclude bonuses, profit-sharing arrangements, commissions, consultant fees, extra or overtime work payments, overseas differential, or quarters, cost of living or dependent education allowances.

<table>
<thead>
<tr>
<th>POSITION TITLE</th>
<th>EMPLOYER'S NAME AND ADDRESS</th>
<th>Dates of Employment (Mo., Ye.)</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Assist</td>
<td>Development International</td>
<td>1979-1981</td>
<td>$28,000</td>
</tr>
<tr>
<td>Research Assoc.</td>
<td>8301 Leesburg Pike</td>
<td>1981-1982</td>
<td>$30,000</td>
</tr>
<tr>
<td>Sr. Research Assoc.</td>
<td>McLean, VA</td>
<td>1982-1983</td>
<td>$38,000</td>
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</tbody>
</table>

**17. SPECIFIC CONSULTANT SERVICES (give last three (3) years)**

<table>
<thead>
<tr>
<th>SERVICE PERFORMED</th>
<th>EMPLOYER'S NAME AND ADDRESS</th>
<th>Dates of Employment (Mo., Day)</th>
<th>DAILY RATE</th>
</tr>
</thead>
</table>

**18. LANGUAGE PROFICIENCY**

<table>
<thead>
<tr>
<th>LANGUAGE</th>
<th>Speaking</th>
<th>Reading</th>
<th>Writing</th>
<th>Understanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**19. Special Qualifications**

- Honors, professional societies, special licenses, publications, research, special skills, and relevant education not previously mentioned; use reverse side of form, if necessary.

**20. CERTIFICATION:**
To the best of my knowledge, the above facts as stated are true and correct.

Signature of Employee

Date
**CONTRACTOR EMPLOYEE BIOGRAPHICAL DATA SHEET**

(SEE PRIVACY ACT STATEMENT ON REVERSE)

1. **Name (Last, First, Middle)**
   - McMillan, John Edward

2. **Contractor's Name**
   - Action Enterprises, Inc.

3. **Address (include ZIP Code)**
   - 1117 Johnston Ct.
   - Arlington, VA 37002

4. **Contract No.**
   - 83-2307

5. **Position Under Contract**
   - Agricultural Economist

6. **Proposed Salary**
   - 37,500

7. **Country of Assignment**
   - Somalia

8. **Duration of Assignment**
   - 200 Days

9. **Telephone Number (include area code)**
   - 703-850-7531

10. **Marital Status**
    - Married

12. **Date of Birth**
    - 12/17/32

13. **Place of Birth**
    - Montreal

14. **Citizenship**
    - Canada

15. **EDUCATION**

<table>
<thead>
<tr>
<th>NAME AND LOCATION OF INSTITUTION</th>
<th>MAJOR SUBJECTS</th>
<th>Credits Completed</th>
<th>Type of Degree</th>
<th>Date of Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Michigan</td>
<td>Economics</td>
<td></td>
<td>BA</td>
<td>1952</td>
</tr>
<tr>
<td>University of Wisconsin</td>
<td>Agric. Econom.</td>
<td></td>
<td>PHD</td>
<td>1956</td>
</tr>
</tbody>
</table>

16. **EMPLOYMENT HISTORY**

   1. Give last three (3) years. Continue on reverse to list all employment related to duties of proposed assignment.
   2. Salary definition - basic periodic payment for services rendered.
      Exclude bonuses, profit-sharing arrangements, commissions, consultant fees, extra or overtime work payments, overtime differential, or quarters, cost of living or dependent education allowances.

<table>
<thead>
<tr>
<th>POSITION TITLE</th>
<th>EMPLOYER'S NAME AND ADDRESS</th>
<th>Dates of Employment (Mo., Yr.)</th>
<th>Salary</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>1100 K St., N.W. Washington, DC</td>
<td>1981-1982</td>
<td>36,000</td>
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<tr>
<td></td>
<td></td>
<td>1982-1983</td>
<td>37,500</td>
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17. **SPECIFIC CONSULTANT SERVICES (give last three (3) years)**

<table>
<thead>
<tr>
<th>SERVICE PERFORMED</th>
<th>EMPLOYER'S NAME AND ADDRESS</th>
<th>Dates of Employment (Mo., Yr.)</th>
<th>Daily Rate</th>
</tr>
</thead>
</table>

18. **LANGUAGE PROFICIENCY**

<table>
<thead>
<tr>
<th>LANGUAGE</th>
<th>Speaking</th>
<th>Reading</th>
<th>Writing</th>
<th>Understanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

19. **SPECIAL QUALIFICATIONS**

   - Honors, professional societies, special licenses, publications, research, special skills, and relevant education not previously mentioned; use reverse side of form, if necessary

20. **CERTIFICATION**

   - Signature of Employee
   - Date

AID 1420-17 (5-80)
**CONTRACTOR EMPLOYEE BIOGRAPHICAL DATA SHEET**

(SEE PRIVACY ACT STATEMENT ON REVERSE)

**INSTRUCTIONS:**
Submit in triplicate to contracting officer. See reverse for Contractor Certification.

1. **Name (Last, First, Middle) XX Mr. ☐ Mrs. ☐ Miss ☐ Ms.**
   Burrows, Alan G.

2. **Contractor’s Name**
   American University

3. **Address (include ZIP Code)**
   6819 Wilson St.
   Bethesda, MD 20793

4. **Contract No.**
   83-2307

5. **Position Under Contract**
   Cultural Advisor

6. **Proposed Salary**
   $25,000

7. **Country of Assignment**
   Somalia

8. **Duration of Assignment**
   ’180 Days

9. **Telephone Number**
   202-367-9795

10. **Marital Status**
    Married ☐ Single ☐ Other (specify)

11. **Names and Ages of Dependents to Accompany Individual (if applicable)**
    - Samantha, wife, 30
    - Jason, son, 5

12. **Date of Birth**
    3/18/47

13. **Place of Birth**
    Devon, England

14. **Citizenship (if non-U.S. citizen, give visa status)**
    British - green card

15. **EDUCATION** (include all secondary, business college or university training)
    - Northwestern University, Chicago
      Humanities - BA 1970
    - Cornell University, Ithaca NY
      Anthropology - PhD 1978

16. **EMPLOYMENT HISTORY**
1. Give last three (3) years. Continue on reverse to list all employment related to duties of proposed assignment.
2. Salary definition: basic periodic payment for services rendered. Exclude bonuses, profit-sharing arrangements, commissions, consultant fees, extra or overtime work payments, overseas differential, or quarters, cost of living or dependent education allowances.

<table>
<thead>
<tr>
<th>POSITION TITLE</th>
<th>EMPLOYER’S NAME AND ADDRESS</th>
<th>Dates of Employment (Mo. Yr.)</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postdoctoral Fellow</td>
<td>American University/Wash. Anthropology Dept. / DC</td>
<td>1978-1979</td>
<td>$17,000 yr.</td>
</tr>
<tr>
<td>Research Fellow</td>
<td>University of Illinois Chicago, IL</td>
<td>1979-1980</td>
<td>$20,000</td>
</tr>
<tr>
<td>Assoc. Professor</td>
<td>American University Washington, DC</td>
<td>1980-1982</td>
<td>$25,000</td>
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</tbody>
</table>

17. **SPECIFIC CONSULTANT SERVICES** (give last three (3) years)

<table>
<thead>
<tr>
<th>SERVICE PERFORMED</th>
<th>EMPLOYER’S NAME AND ADDRESS</th>
<th>Dates of Employment (Mo. Yr.)</th>
<th>DAILY RATE</th>
</tr>
</thead>
</table>

18. **LANGUAGE PROFICIENCY**

<table>
<thead>
<tr>
<th>LANGUAGE</th>
<th>Speaking</th>
<th>Reading</th>
<th>Writing</th>
<th>Understanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bengali</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

19. **Special Qualifications** (honors, professional societies, special licenses, publications, research, special skills, and relevant education not previously mentioned; use reverse side of form, if necessary)

20. **CERTIFICATION:** To the best of my knowledge, the above facts as stated are true and correct.
    Signature of Employee
    Date

AID 1420-17 (5-80)
CONTRACTOR EMPLOYEE BIOGRAPHICAL DATA SHEET

(SEE PRIVACY ACT STATEMENT ON REVERSE)

1. Name (Last, First, Middle) Mr. Mrs. Miss Ms. Flynn, James W.

2. Contractor's Name Wendell Willis Associates

3. Address (include ZIP Code) 931 Brynwood Lane Columbia, MD 29707


5. Position Under Contract Biochemist

6. Proposed Salary 30,000

7. Country of Assignment Gambia

8. Duration of Assignment 117 Days

9. Telephone Number 301-673-3302

10. Marital Status Married Single Other (specify)

11. Names and Ages of Dependents to Accompany Individual (if applicable) Johanna, wife, 26

Jeffrey, son, 2

12. Date of Birth 9/10/55

13. Place of Birth East Lansing, MI

14. Citizenship (if non-U.S. citizen, give visa status) U.S.

U.S.

15. EDUCATION

NAME AND LOCATION OF INSTITUTION

University of Michigan, Ann Arbor

University of Colorado, Boulder

MAJOR SUBJECTS

Chemistry

Biochemistry

CREDITS COMPLETED Type of Degree Date of Degree

Semesters Hours Quarter Hour

BS 1975

PHD 1979

16. EMPLOYMENT HISTORY

1. Give last three (3) years. Continue on reverse to list all employment related to duties of proposed assignment.

2. Salary definition - basic periodic payment for services rendered. Exclude bonuses, profit-sharing arrangements, commissions, consultant fees, extra or overtime work payments, overseas differential, or quarters, cost of living or dependent education allowances.

POSITION TITLE

Consultant

" "

" "

EMPLOYER'S NAME AND ADDRESS

Wendell Willis Associates

1801 17th St., N.W.

Washington, DC

Dates of Employment (Mo., Yr.) From To Dollar Per.

1980 1981 25,000 yr.*

1981 1982 28,000 *

1982 1983 30,000 *

17. SPECIFIC CONSULTANT SERVICES (give last three (3) years)

SERVICE PERFORMED

EMPLOYER'S NAME AND ADDRESS

Dates of Employment (Mo., Day) From To DAILY RATE

18. LANGUAGE PROFICIENCY

LANGUAGE

French

Speaking X Good X

Reading X X

Writing X

Understanding X

19. Special Qualifications ( honors, professional societies, special licenses, publications, research, special skills, and relevant education not previously mentioned; use reverse side of form, if necessary)

20. CERTIFICATION: To the best of my knowledge, the above facts as stated are true and correct.

Signature of Employee

Date

AID 1420-17 (3-80)