tablesONLINE
ISPF Users Manual

Release 5.1

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Preface

What This Manual is About

This manual provides an overview of the concepts and facilities found in tableBASE.

In addition to introducing tableBASE, this document also explains the power and convenience of using tables.

Who This Manual is For

This manual is intended for:

- Managers of Information Services
- Systems Analysts
- Programmers, and
- End-Users, who are not familiar with tables or tableBASE.

Additional tableBASE References

This manual is one of several that describe tableBASE, the others are:

- tableBASE Batch Utilities Manual
- tableBASE Programmer's Guide
- tableBASE Administrator's Guide
- tablesONLINE/CICS User Manual
- tableBASE VTS Server Guide
- tableBASE Installation Manual
- tableBASE Workshop Manual

Chapter 1 Introduction

This chapter introduces tablesONLINE, explains its relationship to tableBASE, briefly describes tables and lists methods to access tableBASE tables.

tablesONLINE and tableBASE

tablesONLINE is a user interface for tableBASE, a software product that automates the creation, maintenance and processing of tables. More specifically, tablesONLINE is menu-driven software that lets you work with tables that are stored in tableBASE libraries.

Uses of tablesONLINE

For any tableBASE application, you can use tablesONLINE to interactively work with tables. You can also use tablesONLINE as an interactive data entry and validation system to create and maintain tables that are used by other application programs. In addition, tablesONLINE is designed such that end users with well-documented table-driven programs can reconfigure software without assistance from technical personnel.

tablesONLINE sees tables in pairs, each consisting of a data table and a View. The data table contains data and the View defines the format of the data in the table. From the user's perspective, the data table and the View appear as one table.

Accessing tableBASE Tables

In a batch environment, tablesONLINE is one of several ways to access tableBASE tables. The other methods are:

TBDRIVER - a program intended for application developers for the interactive testing of TBLBASE calls. It can be used for testing command sequences before committing the sequence to program logic.

TBLBASE - an Application Program Interface (API) which issues tableBASE calls from within batch programs. Note that releases of tableBASE prior to Release 5.0 invoked the TBCALL Application Program Interface from user batch programs. This earlier API, TBCALL, continues to be supported in all releases. For details on the APIs that you can use in both batch and online environments please consult the tableBASE Programmer's Guide.

TBEXEC - a batch table manipulation utility.

TBPRINT - a batch table printing utility.

TBDEFPRT - a batch table definition print utility.

TBDRIVER and tablesONLINE together can operate as a complete interactive table access facility. For more information refer to the chapter on TBDRIVER in the Programmer's Guide.

The utility programs, TBEXEC and TBDEFPRT, are integrated into the ISPF facility so that most functionality is available through the online facility.

Data tables created by tableONLINE can be used by TBEXEC and by applications that request tableBASE services via a tableBASE API. For example, you can use tablesONLINE for interactive data entry and validation and then access the table with batch application software or TBEXEC. For more information about this subject, refer to the tableBASE Programmer's Guide and the Batch Utilities Manual.

Care must be taken if you are a user of both tablesONLINE/ISPF and tablesONLINE/CICS as certain features available in the CICS environment are not available in the ISPF environment. These features, which are fully described in the tablesONLINE/CICS User's Guide, are:

- use of an edit pattern
- use of a display mask
- use of any "Field Edit Action"
- use of lowercase "v", "p" or "m" in "Display Attribute".

If you attempt to edit a View which contains one of the above features, an error message will be issued and the edit will be prevented. Note that the table itself can be edited.

Chapter 2
Getting Started with tablesONLINE

This chapter explains how to invoke tablesONLINE, lists some ISPF commands and briefly describes the Programmable Function (PF) keys.

Invoking tablesONLINE

How you invoke tablesONLINE depends on how tablesONLINE was installed at your site. The most common method of installation is to include tablesONLINE as an option on the ISPF/PDF Primary Option Menu, as illustrated in Figure 2-1. tablesONLINE is shipped as option W, although the installer may choose another character or it may be invoked from a menu subordinate to the primary menu.

```
----------------------  ISPF/PDF PRIMARY OPTION MENU  ------------------------
OPTION  ===>
                                                          USERID   - DKLD01
                                                          DATE     - 96.352
                                                          TIME     - 09:06
   0  ISPF PARMS  - Specify terminal and user parameters
   1  BROWSE      - Display source data or output listings
   2  EDIT        - Create or change source data
   3  UTILITIES   - Perform utility functions
   4  FOREGROUND  - Invoke language processors in foreground
   5  BATCH       - Submit job for language processing
   6  COMMAND     - Enter TSO command or CLIST
   7  DIALOG TEST - Perform dialog testing
   8  SDSF        - Spool Display and Search Facility
   I  VDC INFO    - Vanier Data Centre information
   J  JES MASTER  - JMS spool dataset interface      NOT AVAILABLE YET
   R  RESTORE     - User Restore Facility
   M  INFO/MAN    - Vanier Data Centre change management
   T  TUTORIAL    - Display information about ISPF/PDF
   W  tableBASE   - Invoke tablesONLINE
   X  EXIT        - Terminate ISPF using log and list defaults

Enter END command to terminate ISPF.

                                                            LINE 1  COL 6
```

Figure 2-1: ISPF/PDF Primary Option Menu

To invoke tablesONLINE, choose option W on the ISPF/PDF Primary Option Menu.

The tablesONLINE Primary Menu appears, as illustrated in Figure 2-2.

```
---------------------- tablesONLINE PRIMARY MENU (5.1) ----------------------
COMMAND ===>

                                                          USERID - DKLD01
                                                          DATE   - 1996/12/17
                                                          TIME   - 09:20
                                                          TSOPREFIX- DKLD01

 1  BROWSE TABLE  - Display a table using full screen (ISPF Browse)
 2  BROWSE ROWS   - Display rows in a table
 3  EDIT ROWS     - Add, change or delete rows in a table
 4  DEFINE TABLE  - Add/chg/del a table and/or view or create Alternate
 5  UTILITIES     - Manipulate tables
 6  TBDRIVER      - Process TBLBASE commands



   Press HELP on any screen for online help text.

   Press END to end tablesONLINE.


                                                            LINE 1  COL 1
```

Figure 2-2: tablesONLINE Primary Menu

If you select Option 6, the tablesONLINE Driver Screen, as illustrated in Figure 2-3, will appear.

For more information on the Driver see the Programmer's Guide.

```
-------------------- tablesONLINE TBDRIVER ---------------------------------
COMMAND ===>


Define the operational requirements of TBDRIVER:


NAME OF LIBRARY           ===> 'DKLTBT.V5R0M0.TBSYSLB'
                                 ( enter DIAGNOSTIC  or blank to execute
                                   driver in test mode )

NAME OF COMMAND DATA SET  ===>
                                        (Blank assumes online input)

HARDCOPY DESIRED?         ===> N        (Enter 'Y' for "YES"
                                         Default = display on screen)



Press END to return to tablesONLINE Primary menu.




                                                          LINE 11 COL 26
```

Figure 2-3: tablesONLINE TBDRIVER

Commands

Because tablesONLINE is an ISPF application, most ISPF commands are supported. The following is a list of some common commands.

- You can exit any menu and return to the previous menu by typing END or pressing PF3 (END).
- You can invoke an online help facility by typing HELP or pressing PF1 (HELP). Every screen has separate online help text.
- You can bypass a screen by giving a two-part response on the higher-level screen. For example, you can type W.6 on the ISPF/PDF Primary Option Menu instead of selecting option W on the ISPF/PDF Primary Option Menu and then option 6 on the tablesONLINE Primary Menu.
- You can type an equal sign followed by an option on any ISPF/PDF Menu to access that option For example, on any screen, typing =W.6 invokes the tablesONLINE Utilities menu.
- With the KEYS command, you can redefine PF keys and see a display of the PF keys that are currently active and their functions.
- You can scroll one full screen forward or backward using PF7 (UP) or PF8 (DOWN) when you are on any of the following tablesONLINE screens - Select Row, Edit Row or Browse Row. If you want to scroll less than a full screen, type the number of rows you want to scroll on the command line and press PF7 or PF8.

PF Keys

While you are working with tablesONLINE, you use ISPF PF keys. In addition, the tablesONLINE commands, GETCOUNT and INSCOUNT, can be included as PF keys. Figure 2-4 on the following page illustrates a typical tablesONLINE PF key definition where PF4 has been assigned to the command GETCOUNT.

GETCOUNT

Use GETCOUNT to retrieve the next row, the previous row or any row by count while you are in the tablesONLINE Row Edit screen or the tablesONLINE Row Browse screen. GETCOUNT retrieves one row at a time. To skip forward more than one row, type GETCOUNT +n, where n is the number of rows. To skip backward one or more rows, type GETCOUNT -n, where n is the number of rows.

If you want to retrieve a specific row, type GETCOUNT n, where n is the position of the row in the table.

INSCOUNT

Insert by Count is used to add a row, in a specific position, to a **user-ordered table**.

```
PF Key Definitions and Labels - Primary Keys
Command ===>

Number of PF Keys  . . 24                          Terminal type  . . 3278

PF1 . . . HELP
PF2 . . . SPLIT
PF3 . . . END
PF4 . . . GETCOUNT
PF5 . . . RFIND
PF6 . . . RCHANGE
PF7 . . . UP
PF8 . . . DOWN
PF9 . . . SWAP
PF10  . . LEFT
PF11  . . RIGHT
PF12  . . RETRIEVE

PF1  Label  . .           PF2  Label  . .           PF3  Label  . .
PF4  Label  . .           PF5  Label  . .           PF6  Label  . .
PF7  Label  . .           PF8  Label  . .           PF9  Label  . .
PF10 Label  . .           PF11 Label  . .           PF12 Label  . .

Press ENTER key to display alternate keys.  Enter END command to exit.
                                                              LINE 1  COL 1
```

Figure 2-4: tablesONLINE PF Key Definition

Chapter 3
Editing and Browsing Rows in Tables

This Chapter explains how to edit rows in a table. Editing and browsing tables are identical operations, except that in browse mode, you cannot modify the rows. To browse a table, choose the browse option, instead of the edit option.

Selecting a Table

To select a table, choose option 3 (Edit Rows) on the tablesONLINE Primary Menu. The tablesONLINE Row Edit screen appears, as illustrated in Figure 3-1.

```
---------------------- tablesONLINE ROW EDIT --------------------------------
COMMAND ===>


Please identify the table required by entering the parameters below:


NAME OF LIBRARY     ===> 'DKLTBT.V5R0M0.MAINLIB'
NAME OF TABLE       ===> EXAMPLE
SPECIAL VIEW NAME   ===>                 (Optional)
GENERATION NUMBER   ===> 0               (Default is most recent)
WRITE PASSWORD      ===>                 (If password protected)









Press END to return to the tablesONLINE Primary Menu.


                                                              LINE 1  COL 14
```

Figure 3-1: tablesONLINE Row Edit

Name of Library

Type the name of the library that contains the table enclosed in single quotes. The default is the library that you previously specified. This field is blank if this is your first tablesONLINE session. If the quotes are omitted, the name is automatically prefixed with your TSOPREFIX (or USERID).

Name of Table

Type the name of the table that you want to edit. The default is the table that you previously specified. This field is blank if this is your first tablesONLINE session.

Special View Name

To specify a View name other than the one which would be generated by tablesONLINE, use this field. This field is optional.

Generation Number

Specify the generation number of the table. The default is the most recent generation.

A generation is a version of the table. Every time you edit and store a table, a new version is created and stored in the library as the most recent generation. The number of generations retained is specified in the table definition.

You can specify either '0', which is the same as the default or current generation, a signed number or an unsigned number.

A signed number is relative to the current generation. For example, -1 would be the previous generation.

An unsigned number is an absolute generation. For example, if you specify 3, you would select the third generation of the table.

Write Password

Type the write password if the table has one.

Selecting a Row

After you select a table, the next step is to select a row in the table. When you press Enter on the tablesONLINE Row Edit screen, the tablesONLINE Identify Row screen appears, as illustrated in Figure 3-2.

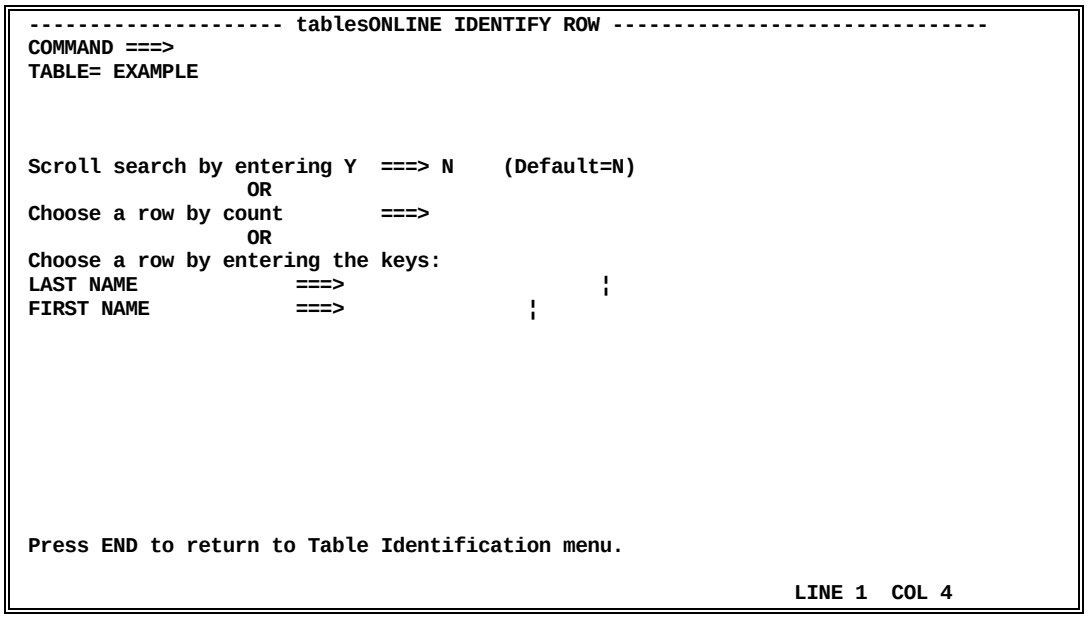


Figure 3-2: tablesONLINE Identify Row

Scroll/Search

The scroll/search option lets you select an individual row or scroll the rows. Choose Y to scroll the rows or N to edit a specific row.

If you choose Y, the tablesONLINE Select Row by key screen appears, as illustrated in Figure 3-3. Place the cursor beside the row you want to edit and type S(Select). The tablesONLINE Row Edit screen appears, as illustrated in Figure 3-4.

If you choose N, you can select a row for editing either by its position in the table or by its key as illustrated in Figure 3-2.

Row Location (COUNT)

To identify a row by its relative location (relative to the first row) in the table, use this field.

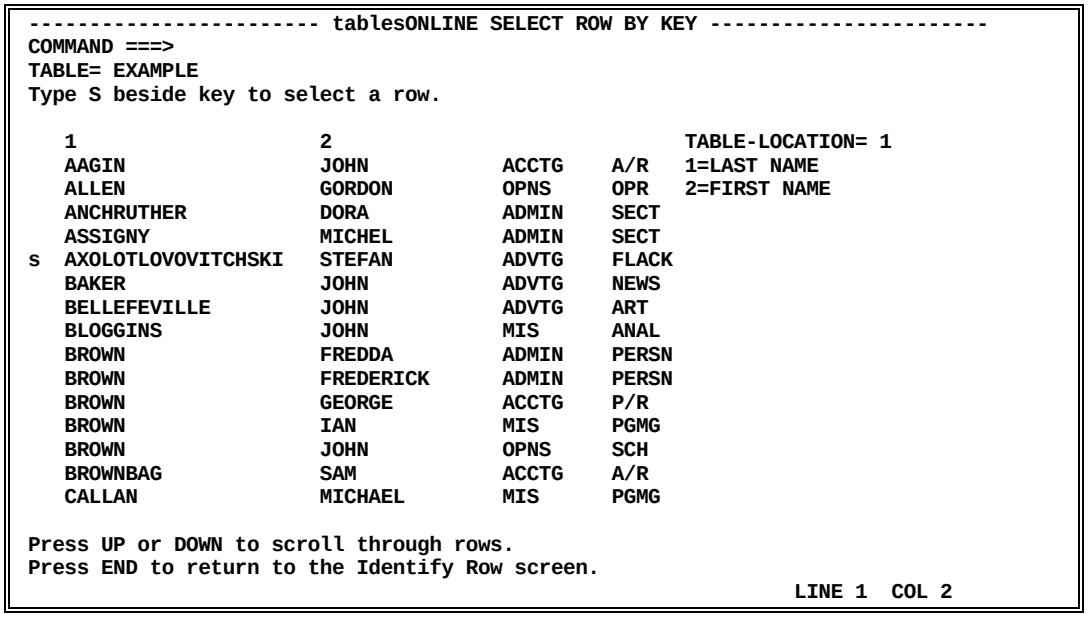
Keys

This is a list of the key fields. To identify a row by its key fields, type the values. If you specify a key that does not exist, you are given an option to create a row. If the row you identify is found in the table, the tablesONLINE Row Edit screen appears, as illustrated in Figure 3-4.

To create new rows, specify values in the Key(s) field.

Duplicate Keys Allowed

This field is only displayed if the value you specified for the Duplicate Keys Ind field on the tablesONLINE Table Parameters Edit screen is Y. Specify N if the table cannot have two or more rows with identical keys. Specify Y if the table can have rows with identical keys.



```
 ----------------------- tablesONLINE SELECT ROW BY KEY ----------------------
COMMAND ===>
TABLE= EXAMPLE
Type S beside key to select a row.

   1                    2                          TABLE-LOCATION= 1
   AAGIN                JOHN           ACCTG    A/R   1=LAST NAME
   ALLEN                GORDON         OPNS     OPR   2=FIRST NAME
   ANCHRUTHER           DORA           ADMIN    SECT
   ASSIGNY              MICHEL         ADMIN    SECT
s  AXOLOTLOVOVITCHSKI   STEFAN         ADVTG    FLACK
   BAKER                JOHN           ADVTG    NEWS
   BELLEFEVILLE         JOHN           ADVTG    ART
   BLOGGINS             JOHN           MIS      ANAL
   BROWN                FREDDA         ADMIN    PERSN
   BROWN                FREDERICK      ADMIN    PERSN
   BROWN                GEORGE         ACCTG    P/R
   BROWN                IAN            MIS      PGMG
   BROWN                JOHN           OPNS     SCH
   BROWNBAG             SAM            ACCTG    A/R
   CALLAN               MICHAEL        MIS      PGMG

Press UP or DOWN to scroll through rows.
Press END to return to the Identify Row screen.
                                                          LINE 1  COL 2
```

Figure 3-3: tablesONLINE Select Row by Key

Editing a Row

After you select a row, the tablesONLINE Edit Row screen appears, as illustrated in Figure 3-4. The fields of the row you selected are displayed.

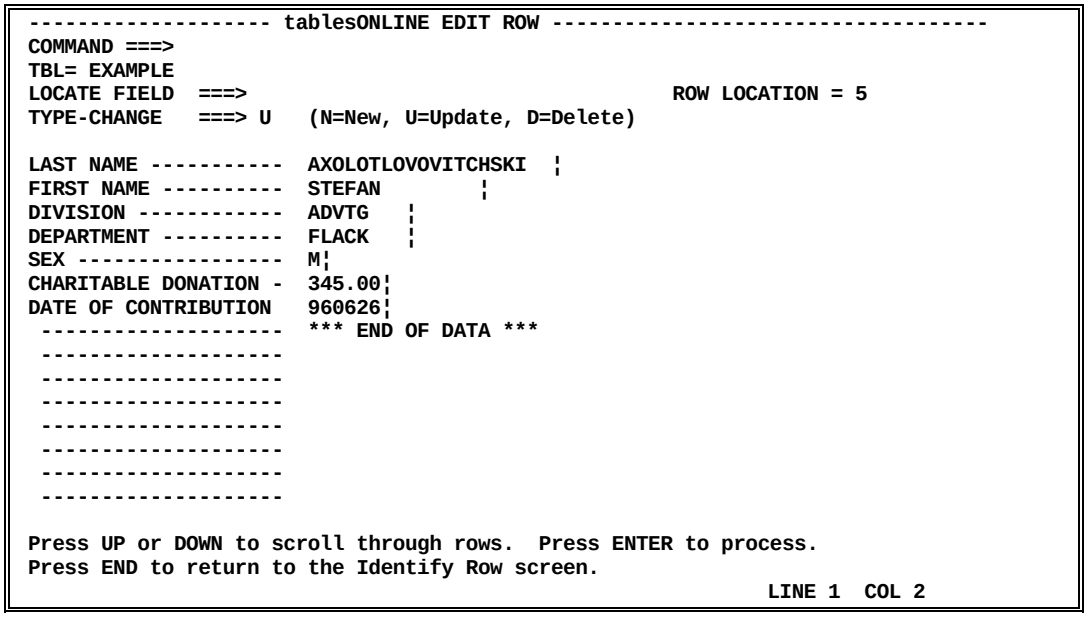


Figure 3-4: tablesONLINE Edit Row

In this example, all the fields are displayed on one screen. If there are more than fifteen fields, scroll through them with the PF keys. To see a specific field, type its name in the Locate field and press PF5 or the RFIND key. This field name must be identical to the field name in the View.

Type-Change

Values for this field are N (New), U (Update) or D (Delete). If the row already exists in the table, tablesONLINE inserts a U in this field. If the row does not exist, tablesONLINE inserts an N. Specify D to delete an existing row. Specify N if you are creating a row by using an existing row as a model.

Note: When you press Enter, invalid data remains on the screen. To process your input, you must correct invalid data and press Enter. To exit the screen without processing, press PF3.

Exiting the Editor

To exit the tablesONLINE Edit Row screen and process your changes, press Enter. To exit the tablesONLINE Edit Row screen and ignore your changes, press PF3 or type END. In both cases, you return to the screen where you selected the row.

If you modified the table, when you finish exiting the edit screens, the tablesONLINE Save/Cancel screen appears, as illustrated in Figure 3-5. To save your changes, either select S (Save) and press Enter, or press PF3. If you do not want to save your changes, select C (Cancel) and press Enter.

```
------------------------ tablesONLINE SAVE TABLE -----------------------------
COMMAND ===>
TABLE NAME: EXAMPLE

Changes have been made to this table.

SELECT OPTION ===>


   S=SAVE   - Save the changes
   C=CANCEL - Cancel the changes









Select option and press ENTER to return to Table Identification menu.

                                                                  LINE 7  COL 4
```

Figure 3-5: tablesONLINE Save Table

Chapter 4
Table Definition

Chapter Four introduces table definition and Alternate Index creation. It shows the user how to edit or browse table parameters, Views and table characteristics. This chapter also explains how to delete table generations and Views.

Introduction to Table Definition

tablesONLINE requires detailed information about the format of the tables on which it operates. For example, to display a field tablesONLINE must know where the data is within a row, how to label the field, and whether to interpret the data as text characters, binary integers, dates or other data types.

This table-defining information is maintained in two places. Some information, such as table organization, search method and row size, specifies table characteristics and is stored in the data table. You define tables by editing the table definition block of data tables. Other table-defining information specifies row characteristics and is stored in a View. You define rows by editing tablesONLINE Views.

tablesONLINE sees tables in pairs, each consisting of a data table and a View that contains the data definitions. A data table may have more than one associated View. Each View defines a different perspective of the data table. To the user, each View appears as a separate table. Similarly, a View may be associated with more than one data table.

The following are the categories of table-defining information.

Row Layout

Row layout information is stored in Views, one View row for each field.

- Field size and format for display
- Field size and format for storage
- Field-level editing and validation information

tablesONLINE System Characteristics of Table

This information is stored in a special View row called the trailer.

- Row-level validation
- Table-level validation

tableBASE Definition of Table

This information is specified in the definition block in the data table.

- General table characteristics such as organization and search method

Note: Field display order cannot be defined in ISPF; fields are displayed in layout order. In CICS, however, field display order can be specified. **A View defined in CICS loses its display order when it is edited in ISPF.**

Selecting a Table

To select a table to work with, choose option 4 (Define Table) on the tablesONLINE Primary Menu. The Identify Table screen appears, as illustrated in Figure 4-1.

```
-------------------- tablesONLINE IDENTIFY TABLE ----------------------------
COMMAND ===>

Identify the library required:

NAME OF LIBRARY     ===> 'TBASE.V5R0M0.C04.MAINLIB'


Enter data for table being defined:

NAME OF TABLE       ===> EXAMPLE
GENERATION NUMBER   ===> 0              (Default is most recent)
WRITE PASSWORD      ===>                (If password protected)

                  -OR-

Enter data for Alternate Index:

ALTERNATE TABLE     ===>
READ PASSWORD       ===>                (If Data table is password protected)

Press END to return to the tablesONLINE Primary Menu.


                                                              LINE 1  COL 10
```

Figure 4-1: tablesONLINE Identify Table

Name of Library

Type the name of the library, enclosed in single quotes, that contains the table/Alternate.

To select a Table/View, fill in the 'name of table' and other fields (if required), leaving the fields for defining Alternates blank. To create/modify an alternate table, fill in the alternate table field (and password, if required). You can specify the data table for which you are creating an Alternate definition by entering a data table name in the 'name of table' field. This will fill in the 'Base table name' in the Define Alternate parameters menu.

Name of Table

Type the name of the table.

To name a data table, follow this format:

Byte Position	Value
1	Uppercase alpha character
2-7	Uppercase alpha or numeric character
8	Uppercase alpha or numeric character or #

If you are creating a View, type the name of the associated data table. tablesONLINE automatically generates the View name by changing a bit of the first byte of the data table name. This results in a lower case letter.

If you are creating a dynamic View, name the table by replacing the last characters of the data table name with the dynamic view suffix value. This is a field within the row that uniquely identifies it's format.

To use the definition of an existing View as a model, follow these steps:

1. Go to the tablesONLINE Field Definition Utility Menu.
2. Select option 2 (Copy View).
3. Copy the View to a new name.
4. Go to the tablesONLINE Table Definition option, Option 4 on the primary menu.
5. Select the new name as the table to be defined.

Note: When you create a new View for an existing data table, ensure that the data in the table fits the new field definitions. tablesONLINE does not check this for you.

Generation Number

Specify the generation number of the table. This field applies only to data tables.

Write Password

Type the write password if the table has one. This field applies only to data tables.

Alternate Table

Type the name of the Alternate Index table. See the naming convention for *Name of Table* on previous page.

Read Password

Type the Read Password of the data table which may be required if the data table is password protected. tablesONLINE makes an existence and validity check.

Selecting an Option

After you select a table to work with, the tablesONLINE Define Table screen appears, as illustrated in Figure 4-2.

The tablesONLINE Define Table screen has seven options. Options 1 to 3 deal with defining tables. It is recommended that they are performed in sequence because tablesONLINE fills in values calculated from previous options. Options 4 and 5 let you browse table and View definitions. Options 6 and 7 let you delete data tables and Views.

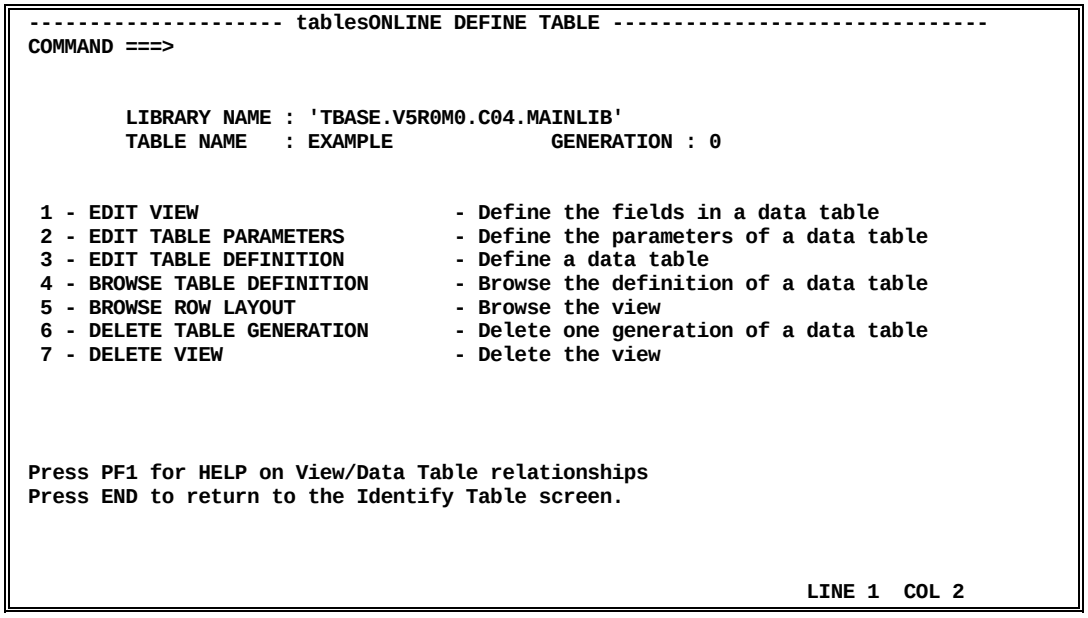


Figure 4-2: tablesONLINE Define Table

Editing a View

To create or change a View, choose option 1 (Edit Row Layout) on the tablesONLINE Define Table screen. The tablesONLINE Edit View screen appears, as illustrated in Figure 4-3.

```
--------------------------- tablesONLINE EDIT VIEW --------------------------
COMMAND ===>
TABLE NAME: EXAMPLE                  LOCATE FIELD  ===>

 ID   NAME                   KEY    LEN  FORMT ATTR   LEN  FORMT   EDIT EXIT
                             IND      (DISPLAY)     (TABLE-ENTRY)    NAME
00010 LAST NAME___________    Y     20___ X     _      20___ U      _________
00020 FIRST NAME__________    Y     14___ X     _      14___ U      _________
00030 DIVISION____________    N     8____ X     _      8____ U      _________
00040 DEPARTMENT__________    N     8____ X     _      8____ U      _________
00050 SEX_________________    N     1____ X     S      1____ U      _________
00060 CHARITABLE DONATION_    N     6____ 2     _      5____ N      _________
00070 DATE OF CONTRIBUTION    N     6____ A     V      6____ A      _________
_____ ____________________    _     _____ _     _      _____ _      _________
_____ ____________________    _     _____ _     _      _____ _      _________
_____ ____________________    _     _____ _     _      _____ _      _________
_____ ____________________    _     _____ _     _      _____ _      _________
_____ ____________________    _     _____ _     _      _____ _      _________
_____ ____________________    _     _____ _     _      _____ _      _________
_____ ____________________    _     _____ _     _      _____ _      _________
_____ ____________________    _     _____ _     _      _____ _      _________

Press UP or DOWN to scroll through fields. Press ENTER to process.
Press END to return to the Define Table screen.
                                                              LINE 1  COL 4
```

Figure 4-3: tablesONLINE Edit View

The ID column orders the rows in the View and consequently must match the order of the fields in the data table row. When you press Enter, the rows are ordered according to the numbers you type in this column.

Name

Type the name of the field you are defining.

Key Indicator (Key Ind)

Specify whether or not the field is part of the key and whether or not the field is affected by a dynamic view suffix. Values are N, Y, S and B. N is the default. The following table explains these values.

Value	Is field part of key?	Does field affect dynamic views?
N	NO	NO
Y	YES	NO
S	SUFFIX	YES
B	BOTH	YES

tableBASE requires that key fields be together. An error message is issued if you specify Y or B for a field that is not beside the other key fields. If you specify S or B, you must specify a display length from 1 to 7.

Key Fields

Fields which are part of the key determine the order of the Rows. For example, a table, for employee information, with Last Name as the key would order the rows by an alphabetic list of employee last names.

Dynamic View Suffix

A single data table can have more than one row layout. This is achieved by an extra field in each row called the dynamic view suffix. The suffix can be from one to eight characters in length. The value in the dynamic view suffix field is appended to the View name, thereby providing a different View for each row with a different dynamic suffix value.

To define a table with different row layouts, add an extra field to the rows that require a dynamic view suffix. This field must be in the same position in every row. If the specified View exists, it defines the data in the row. If not, tablesONLINE attempts to use the View whose name is generated from the data table name. This View is also used if the value of the dynamic view suffix is a blank.

Format (Display)) and Format (Table-Entry)

Specify the format of the data when displayed, in the Format (Display) field. Specify the format of the data when stored, in the Format (Table-Entry) field. The following table shows valid combinations of these fields. Error messages are issued for invalid combinations.

Display Format	Displayed As	Field Format	Stored As
X	Alpha-numeric	**X**	Entered
		U	Uppercase
Y	Hexadecimal	**X**	Binary
N	Numeric	**N**	Zoned decimal
0	Leading zeroes	**P**	Packed decimal
1	1 decimal place	**F**	Binary fullword
2	2 decimal places	**H**	Binary halfword
:	**:**		
9	9 decimal places		
A	yymmdd/yyyymmdd	**A**	Dates are
B	mmddyy/mmddyyyy	**B**	edited and
C	ddmmyy/ddmmyyyy	**C**	converted to
D	yyddd/yyyyddd	**D**	FIELD
E	ddmmmyy/ddmmmyyyy	**E**	FORMAT

To view the same data in different ways, change the value in the Format (Display) field and leave the value in the Format (Table-Entry) field. For example, if you specify X for Format (Display) and X for Format (Table-Entry), then ABC would be displayed as ABC. If you specify Y for Format (Display) in this example, you would see the hexadecimal value of ABC which is C1C2C3.

When you specify a value for Format (Display), Format (Table-Entry) is set to a default. The following table shows the Format (Display) value and the associated Format (Table-Entry) default value. Format (Display), if not entered, will default to X and U respectively.

Display Format Entered	Default Field Format	Default Rule
X	**U**	Translate lowercase alphabetics to uppercase
Y	**X**	Pack hex digits into characters, unedited
N,0,1,2,...9	**N**	Store numbers as zoned decimal
A	**A**	
B	**B**	Store dates in format used on input;
C	**C**	if LENGTHs are not entered, they
D	**D**	will default to the shorter lengths
E	**E**	(e.g., year represented as YY)

If neither DISPLAY nor STORAGE FORMAT is entered, they default to 'X' and 'U' respectively.

Length (Display)) and Length (Table-Entry)

Specify the length of the data when displayed, in the Len (Display) field. Specify the length of the data when stored, in the Len (Table-Entry) field. The following table shows valid values for these fields. Lengths for DISPLAY and STORAGE FORMAT are:

Display Format	Display Length		Field Format	Field Length
X	1 - 50		**X**	Same as display
			U	
Y	2 - 50 (even lengths)		**X**	1 - 25
N	1 - 17 (including sign)		**N**	display digits
0	1 - 16 (no sign)	**P**		(display digits + 1)/2
1	2 - 18 (including sign		**F**	4 (display length
:	& decimal point)			limited to 9 digits)
9	10 - 18 " "		**H**	2 (display length
				limited to 5 digits)
A	6/8 yymmdd/yyyymmdd		**A**	6/8
B	6/8 mmddyy/mmddyyyy		**B**	6/8
C	6/8 ddmmyy/ddmmyyyy		**C**	6/8
D	5/7 yyddd/yyyyddd		**D**	5/7
E	7/9 ddmmmyy/ddmmmyyyy		**E**	7/9

Attributes (Display)

Specify how the data in the field is displayed and whether or not edits are allowed. Values are a blank, N, S, F and C. A blank is the default.

A blank specifies that the field is displayed and can be edited.

N specifies that the field is not displayed with this VIEW. Suppressed fields are useful when you want to restrict what fields certain users can see.

S specifies that the field is not displayed when you are scrolling the rows on the tablesONLINE Select Row screen. However, when you select the row, all the fields are displayed on the tablesONLINE Row Edit screen. Suppressing fields on the tablesONLINE Identify Row screen is useful when you do not want to see fields that are not relevant to your row selection criteria.

F specifies that the field is a 'filler' field; i.e., it is storage allocated for future expansion.

C specifies that the field is a comment field and requires no storage.

Edit Exit Name Field

To invoke an exit program for a specific field, type the exit program name. The functions of exit programs are outlined in the Programmer's Guide.

Editing Table Parameters

To define parameters of the table, choose option 2 (Edit Tbl Parameters) on the tablesONLINE Define Table screen. The tablesONLINE Edit Table Parameters screen appears, as illustrated in Figure 4-4.

```
------------------- tablesONLINE EDIT TABLE PARAMETERS -----------------------
COMMAND ===>

LIBRARY NAME             : 'TBASE.V5R0M0.C04.MAINLIB'
VIEW NAME                : EXAMPLE


DATA TABLE NAME          ===>
DUPLICATE KEYS ALLOWED?  ===>              (Y=Yes, N=No)   ( Default=N )
ITEM EXIT PGM NAME       ===>
TABLE EXIT PGM NAME      ===>


ROW SIZE                 : 62
KEY LOCATION             : 1
KEY SIZE                 : 34




Press ENTER to process.
Press END   to return to the Define Table screen.


                                                              LINE 1  COL 29
```

Figure 4-4: tablesONLINE Edit Table Parameters

Library Name

This field names the library that contains the table. You cannot change this field, it is information only.

View Name

This field names the View. You cannot change this field, it is information only.

Data Table Name

If the View you are defining is an alternate view, type the name of the data table; otherwise, leave this field blank.

Duplicate Keys Allowed

Specify N if the table cannot have rows with duplicate keys. Specify Y if the table can have rows with duplicate keys. N is the default. Blank means that the decision will be deferred to the time of table edit

Item Exit Pgm Name and Table Exit Pgm Name

If you want to specify an exit program for a row or table, use these fields. The function of exit programs is outlined in the Programmer's Guide.

Dynamic Suffix Locn

If the table uses a dynamic view suffix, this field indicates the location of the dynamic view suffix in the row. If the table does not use a dynamic view suffix, this field does not appear on the screen. You cannot edit this field.

Row Size, Key Location and Key Size

Row Size, Key Location and Key Size are values that tablesONLINE calculates from the View information. You cannot edit these fields.

Defining a Table

To define general characteristics of the table, choose option 3 (Edit Table Definition) on the tablesONLINE Define Table screen. The tablesONLINE Edit Table Definition screen appears, as illustrated in Figure 4-5.

If you are defining a new table, the fields are initialized to default values. To process your input, you must press Enter. If you press PF3 (END) to exit the screen and you do not press Enter, the table definition is not processed.

```
------------------- tablesONLINE EDIT TABLE DEFINITION -----------------------
COMMAND ===>


TABLE NAME: EXAMPLE    ORGANIZATION  ===> S     SEARCH METHOD  ===> B
    Organizations  (R=Random, U=User Control, S=Sequential, D=Desc Seq, H=Hash)
    Search Methods (S=Serial, Q=Queued Seq, B=Binary, C=Tree Binary, H=Hash)

TRUE OR POINTER   ===> P          (T=True, P=Pointer)
STORAGE MODE CODE ===> R          (R=Resident, P=Paged)
READ PASSWORD     ===>
WRITE PASSWORD    ===>
NUMBER OF ROWS    ===> 30         (Estimate when defining new table)
GENERATIONS       ===> 8
EXPANSION FACTOR  ===> 200        (Default of 200 is 20.0 percent)
LOWER DENSITY     ===> 500        (Default of 500 is 50.0 percent)
UPPER DENSITY     ===> 800        (Default of 800 is 80.0 percent)

ROW SIZE          ===> 62         (These fields are calculated
KEY SIZE          ===> 34          from field definitions. Press
KEY LOCATION      ===> 1           HELP for more information.   )

Press ENTER to process.
Press END to return to the Define Table screen.
                                                          LINE 1  COL 17
```

Figure 4-5: tablesONLINE Edit Table Definition

The following descriptions are an overview of the fields on the tablesONLINE Edit Table Definition screen. For more information, see the tableBASE Concepts and Facilities Manual.

Table Name

This field names the table you are defining. You cannot edit this field.

Organization

Specify the organization of the table. Values are R, U, S, D and H. R is the default.

R (Random)
New rows are added to the end of the table. When a row is deleted, the last row moves to the vacated position. This organization keeps overall data movement to a minimum. Searching must be done with the serial method.

U (User-ordered)
The order of the rows is controlled by the user. Searching must be done with the serial method.

S (Sequential)
Rows are ordered by key in ascending sequence. Various search techniques can be used. Insertion and deletion tend to be slower than random and user-ordered organization because rows must be moved to maintain the sequence.

D (Descending)
This is the same as sequential order, except rows are ordered in descending order.

H (Hashed)
Rows are organized by arithmetic operations on the key fields.

Search Method

Specify the search method of the table. Values are S, Q, B, C and H.

S (Serial)
Starts at the first row and searches the table until a match is found or the end of the table is reached. Serial search is useful when rows can be ordered by frequency of access and when the table is small and, consequently, does not require a more complex search.

Q (Queued)
A form of serial search where each search starts where the previous search finished. Queued search works only with sequential or descending tables.

B (Binary)
Compares the key to the middle row of an ascending or descending sequential table to determine which half of the table might contain the row, then compares the key to the middle row of that half to determine which quarter of the table might have the row and so on.

C (Tree Binary)
A variation of BINARY search where indexes are stored to speed up finding the rows needed for comparisons. This method is inefficient if the table size changes often because the index tree must be rebuilt frequently.

Note: Tree binary is faster than binary if there is no more than one insertion or deletion for every five table accesses.

H (Hash)
Table is searched by a hash function.

Provided that the table becomes neither full enough to cause problems nor large enough to cause heavy paging activity, retrieval time remains constant for any table size.

Organization and search method are closely related. For most applications, you need only specify the organization and tablesONLINE will fill in the search method with a default value.

The following table shows the search methods which are valid with each table organization.

		Search Method				
		S Serial	**B Binary**	**C Tree Binary**	**Q Queued**	**H Hash**
Organization						
R	Random	Default	------	------	------	------
U	User Ordered	Default	------	------	------	------
S	Sequential	------	Default	OK	OK	------
D	Descending Sequential	------	Default	OK	OK	------
H	Hashed	------	------	------	------	Default

True vs. Pointer Tables

Specify whether this table is a T(True) table or a P (Pointer) table. The default is T.

A true table stores and retrieves rows in the manner specified by its organization and search method. A pointer table accesses rows through an index. To the user, however, access to a pointer table and a true table are identical.

In order to be able to define alternate indexes on a table so as to allow table searches based on a different key, the data table must be a pointer table.

A pointer table requires both space for a table to hold the pointers and extra computation to maintain and use the index. Pointer tables are useful when the rows are very large. For example, a sequential pointer table may be the solution when row sequence is required and updates to a true table involve moving too much data. Maintaining the sequence in a pointer table requires moving only pointers which is much more efficient if the table rows are very large.

Storage Mode Code

Specify the storage mode of the table. Values are R(Resident) and P(Paged) . R is the default.

Resident storage specifies that the complete table resides in storage. Paged storage specifies that only the portion of the table currently being accessed is held in memory. For the user, however, access to paged and resident tables are identical.

Paged storage mode is useful only for very large tables. If you specify P for the Storage Mode Code field, specify H(Hashed) for the Organization field and H(Hash) for the Search Method field. Also, the Row Size must be 1000 or less.

Multiple generations are handled differently for resident tables and for paged tables. For a resident table, each generation is the complete table. For a paged table, only the updated pages are stored to create a new generation. Unchanged pages are stored only once regardless of the number of generations.

Note: A paged table cannot be expanded by the Expansion Factor field. To expand paged tables, you can use the batch utility TBEXEC.

Read Password

To specify that the table has a read password, type the password. The default is a blank which specifies that a password is not required to look at the table.

Write Password

To specify that the table has a write password, type the password. The default is a blank which specifies that a password is not required to update the table unless a read password has been supplied. In that event the read password will be needed to update the table.

Number of Rows

Estimate the number of rows the table will contain. The estimate is used for initial space allocation for the table. If the table has been populated, then this field shows the number of rows contained in the table.

Note: The maximum number of rows for resident tables depends on the row size and the maximum table size your TSO address space can hold.

Generations

Specify the number of generations of the table to be kept.

Up to nine generations of a table can be stored in the tableBASE library. For resident tables, disk space overhead increases in proportion to the number of generations. Generations for paged tables take less space because pages that do not change from one generation to the next are not stored.

Expansion Factor

The expansion factor is the percentage with which the table expands when it reaches the maximum number of rows. For example, if a 100-row table has a 20 percent expansion factor, space is allocated for 120 rows. When the table reaches 120 rows, space is allocated for 144 rows and so on. This does not apply to hashed tables.

Lower Density and Upper Density

These two fields apply only to hashed tables. tablesONLINE allocates space for a hashed table so that the specified number of rows results in the specified Lower Density field. For example, if 50 percent lower density is specified with a 100-row table, the space allocated for the table is for 200 rows.

When the density of a table reaches the specified Upper Density, space is allocated to bring the table to the specified Lower Density. For example, if 80 percent upper density and 50 percent lower density are specified for a 200-row table, when the table reaches 160 rows, it is expanded to have space for 320 rows.

Row Size, Key Size and Key Location

These three integers indicate the length of the table row and where the key is located within the row. The following table shows the minimum value, maximum value and default value for row Size, Key Size and Key Location.

Field Name:	Minimum Value:	Maximum Value:	Default Value:
ROW SIZE	1	32767 (1000 for paged)	1
KEY SIZE	1	smaller of 256 or ROW SIZE	1
KEY LOCATION	1	ROW SIZE - KEY SIZE + 1	1

If you previously defined the View, tablesONLINE will fill in the values for these fields. If you have not defined the View, you have to calculate the values.

Deleting a Table Generation

To delete a generation of a table, choose option 6 (Delete Table Generation) on the tablesONLINE Define Table screen. When you press Enter, the specified table generation is deleted.

You cannot delete a View with this option if its associated data table exists.

Creating an Alternate:Index

To create an alternate key definition of a data table enter the alternate table name and the password if applicable on the tablesONLINE Identify Table Screen Figure 4-1. After you enter the Alternate Table Name the tablesONLINE Define Alternate Parameters screen appears, as illustrated below.

```
------------------- tablesONLINE DEFINE ALTERNATE PARAMETERS -----------------
COMMAND ===>

LIBRARY NAME           : 'TBASE.V5R0M0.C04.MAINLIB'
ALTERNATE TABLE NAME   : EXAMALT


BASE TABLE NAME     ===> EXAMPLE

TABLE ORGANIZATION  ===> s
SEARCH METHOD       ===> b
KEY LOCATION        ===> 1
KEY LENGTH          ===> 34




Press ENTER to process.
Press END to return to the Define Alternate Table screen.




                                                              LINE 1  COL 8
```

Figure 4-6: tablesONLINE Define Alternate Parameters

Library Name

This field names the library that contains the table. You cannot change this field, it is information only.

Alternate Table Name

This field names the Alternate Index. You cannot edit this field, it is information only.

Data Table Name

Enter the name of the data table of the Alternate Index you are defining.

Organization

Specify how the Alternate Index is organized. The default is taken from the data table. Possible values are R, U, S, D and H.

Search Method

Specify the search method of the Alternate Index. The default is taken from the data table. Possible values are S, Q, B, C and H.

Key Location and Key Length

These two fields indicate where the key is located within the row.

Chapter 5
Utilities

Introduction to the Utilities

Utilities are operations, performed on tables, that you select with the Utility screens.

To access the Utility screens, choose option 5 (Utilities) on the tablesONLINE Primary Menu. The tablesONLINE Utility Menu appears, as illustrated in Figure 5-1. Select a utility and press Enter.

```
------------------------ tablesONLINE UTILITY MENU (5.1) --------------------
COMMAND ===>

   1  PRINT DIRECTORY  - Print a list of tables in a library
   2  PRINT DEFINITION - Print the definition of a table
   3  PRINT CONTENTS   - Print the contents of a table
   4  COPY TABLE       - Copy tables to another library
   5  DEFINE LIBRARY   - Create a new library
   6  EXPAND LIBRARY   - Expand a library into a new library
   7  LOAD TABLE       - Load a table from a dataset
   8  UNLOAD TABLE     - Unload a table to a dataset
   9  RENAME TABLE     - Change the name of a table
   A  EMPTY TABLE      - Create an empty generation of a table
   B  REORGANIZE TABLE - Reorganize a paged table
   C  UNPAGE TABLE     - Make a paged table resident
   D  PAGE TABLE       - Make a resident table paged
   E  DELETE TABLE     - Delete all generations of a table
   F  CHANGE PASSWORD  - Change the read or write password of a table
   G  VIEW UTILITIES   - Access the utilities for Views



   Press END to return to the tablesONLINE Primary Menu.

                                                          LINE 1  COL 2
```

Figure 5-1: tablesONLINE Utility Menu

When you press Enter on a Utility screen, processing and error messages appear. When three asterisks (***) appear after the messages, press Enter to continue.

When you print a report on a Utility screen, the information is automatically put into a dataset that you can browse. When you exit the dataset, an ISPF screen with JCL job cards that you can modify appears. To print the report, press Enter. To exit the screen without printing the report, press PF3(END).

Printing a Library Directory

To print a list of the tables in a library, choose option 1 (Print Directory) on the tablesONLINE Utility menu. The tablesONLINE Print Directory screen appears, as illustrated in Figure 5-2.

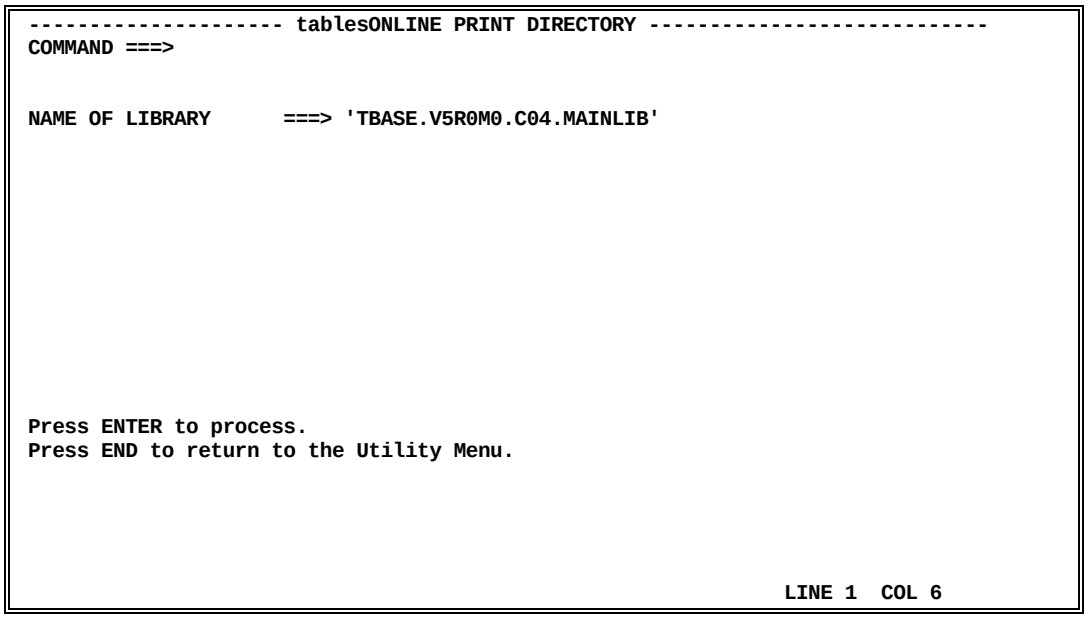


Figure 5-2: tablesONLINE Print Directory

Name of the Library

Type the name of the library, enclosed in single quotes, of which you are printing the directory.

Printing a Table Definition

To print the definition of the current generation of a table, choose option 2 (Print Definition of a Table) on the tablesONLINE Utility Menu. The tablesONLINE Print Table Definition utility screen appears, as illustrated in Figure 5-3.

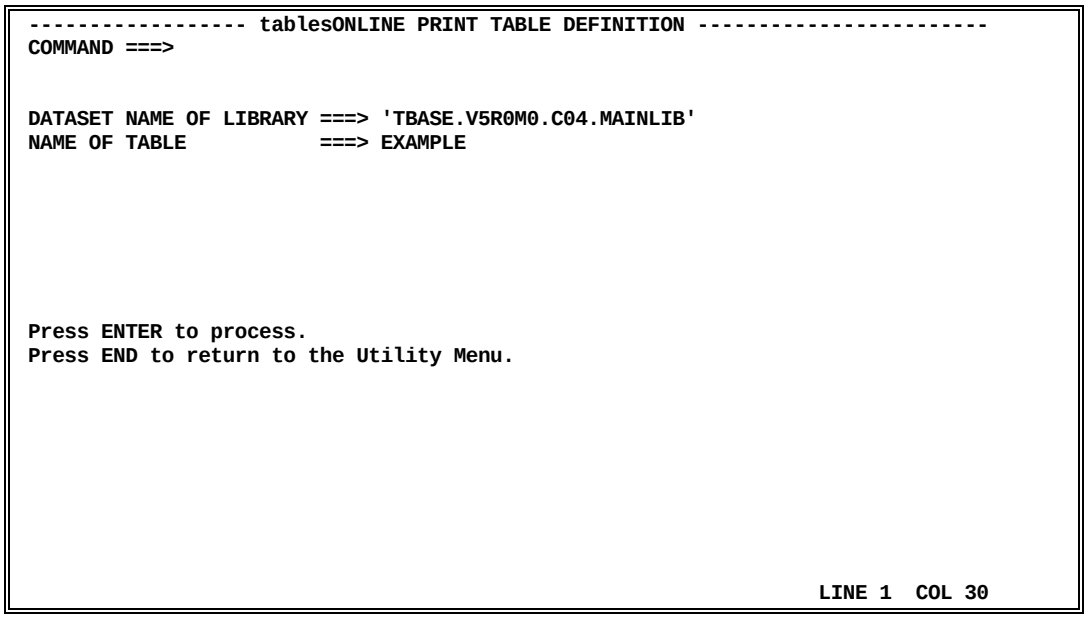


Figure 5-3: tablesONLINE Print Table Definition

Dataset Name of Library

Type the name of the library, enclosed in single quotes.

Name of Table

Type the name of the table whose definition you are printing

Printing a Table

To print the contents of a table, choose option 3 (Print Contents) on the tablesONLINE Utility Menu. The tablesONLINE Print Table Contents utility screen appears, as illustrated in Figure 5-4.

```
------------------- tablesONLINE PRINT TABLE CONTENTS ------------------------
COMMAND ===>


DATASET NAME OF LIBRARY ===> 'TBASE.V5R0M0.C04.MAINLIB'
NAME OF TABLE           ===> EXAMPLE
GENERATION NUMBER       ===>                (Default is most recent)
READ PASSWORD           ===>                (If password protected)


FORMAT OF REPORT        ===> C              (C=Char, H=Hex, B=Both, Default=C)
CHARACTERS PER LINE     ===>                (Default=100)
STARTING ROW NUMBER     ===> 1              (Default=1)
NUMBER OF ROWS          ===>                (Default=ALL)
STARTING CHARACTER      ===> 1              (Default=1)
NUMBER OF CHARACTERS    ===>                (Default=ALL)



Press ENTER to process.
Press END to return to the Utility Menu.



                                                          LINE 1  COL 33
```

Figure 5-4: tablesONLINE Print Table Contents

Dataset Name of Library

Type the name of the library, enclosed in single quotes, that contains the table.

Name of Table

Type the name of the table that you are printing.

Generation Number

Specify the generation number of the table. The current generation is the default.

Read Password

Type the read password if the table has one.

Format of Report

Specify the print format. Values are C(Character), H(Hexadecimal) and B(Both). C is the default.

Characters per Line

Specify the number of characters to be printed on a line. The default is 100 characters.

Starting Row Number

Specify the row number where the printing starts. The default is 1.

Number of Rows

Specify the number of rows to be printed. ALL is the default.

Starting Character

Specify the position of the character where the printing starts. The default is 1 which is the first character in the row.

Number of Characters

Specify the number of characters to be printed. Default if ALL.

Copying Tables

To copy tables within a library or to another library, choose option 4(Copy) on the tablesONLINE Utility Menu. The tablesONLINE Copy Table utility screen appears, as illustrated below. If you need to increase the size of your library, see the Expand Library Utility.

```
 ---------------------- tablesONLINE COPY TABLE -----------------------------
COMMAND ===>


------- FROM ----------

NAME OF LIBRARY         ===> 'TBASE.V5R0M0.C04.MAINLIB'
NAME OF TABLE           ===> EXAMPLE     (Specify ALL to copy the library)
GENERATION NUMBER       ===>             (Specify ALL to copy all generations)
PASSWORD                ===>


------- TO ------------

LIBRARY (If different)  ===> 'DKLTBT.V5R0M0.MAINLIB'
TABLE   (If different)  ===> NEWEXAM




Press ENTER to process.
Press END to return to the Utility Menu.

                                                                LINE 1  COL 4
```

Figure 5-5: tablesONLINE Copy Table

Name of Library

Type the name of the library, enclosed in single quotes, that contains the table.

Name of Table

Type the name of the table you are copying. Specify ALL to copy all the tables in the library.

Generation Number

Specify the generation number of the table. Specify ALL to copy all generations of a table. The default is the current generation.

Password

Type the read password if the table has one.

Library (If Different)

To copy tables within a library, leave this field blank and specify a table name in the Table field. To copy a table to another library, specify the name of the library you are copying to.

Table (If Different)

Type the name of the new table.

Creating a Library

To create a new library, choose option 5 (Define Library) on the tablesONLINE Utility Menu. The tablesONLINE Define Library utility screen appears, as illustrated in Figure 5-6. This facility generates and submits a batch job which will allocate a new tableBASE library and then initialize it.

```
------------------- tablesONLINE DEFINE LIBRARY -----------------------------
COMMAND ===>


DATASET NAME OF LIBRARY ===> 'TBASE.V5R0M0.C04.NEWLIB'

UNIT TYPE               ===> 3390       (Generic Group name or Unit address)
VOLUME SERIAL NUMBER    ===>            (BDAM: Blank for system default volume)
                                          (VSAM: Must be supplied)
                                          (Specify minimum of 10)
NUMBER OF BLOCKS        ===> 868
TYPE OF LIBRARY          ===> VSAM       (BDAM (default) or VSAM)









Press ENTER to process.
Press END to return to the Utility Menu.

                                                                LINE 2  COL 16
```

Figure 5-6: tablesONLINE Define Library

Dataset Name of Library

Type the name of the library, enclosed in single quotes, that you are creating.

Unit Type

Specify the type of disk unit where this library will reside.

Volume Serial Number

Specify the volume serial number of the disk pack where the library will reside. This is required for tableBASE VSAM libraries.

Number of Blocks

Specify the number of 3120-byte blocks to be allocated for the library. There should be at least 20 blocks to a library.

Type of Library

Specify whether the library organization is BDAM or VSAM. The default organization is BDAM.

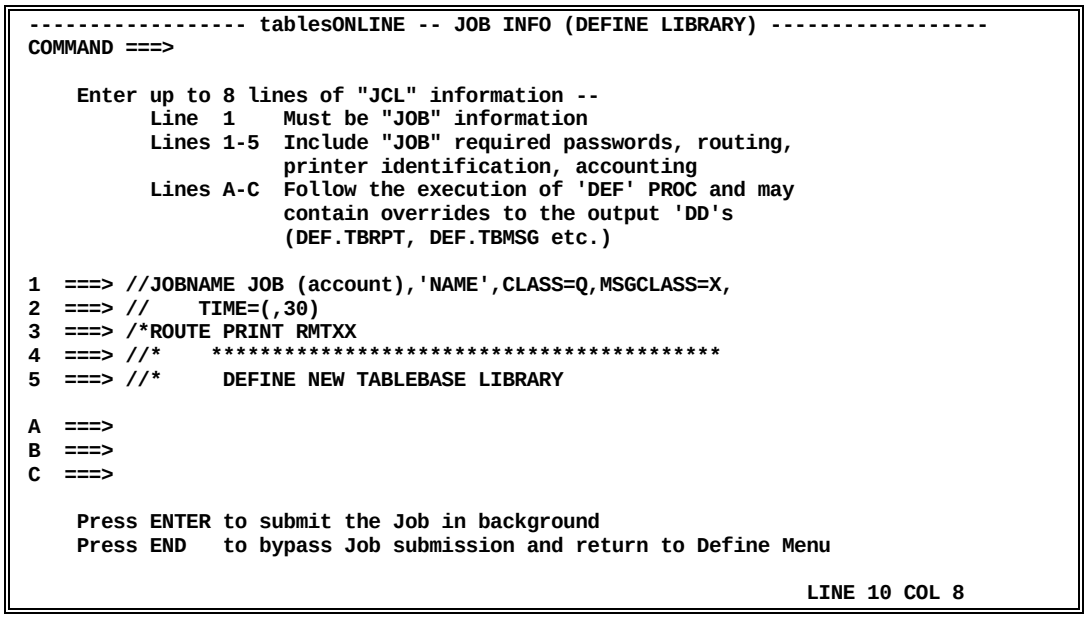


Figure 5-7: tablesONLINE Define Table Library Definition

Note: The Define Table Library Utility submits a batch job to do the definition. When the enter key is pressed, a screen to input JCL is displayed; enter the Job information and hit enter on this screen in order to do the definition. See Figure 5.7.

Expanding a Library

The Expand Library function copies an entire library, without modification, into a larger empty library. This allows the new library to be used to replace the original with all the same data but with more space for future table data. To expand a library, you must first create a new, larger library. See "Creating a Library". After you have defined the new library, choose option 6 (Expand Library) on the tablesONLINE Utility Menu. The tablesONLINE Expand Library utility screen appears, as illustrated in Figure 5-8. This utility should not be used with libraries defined in tableBASE release 4.1 or earlier.

Note: The expand utility does not affect the table statistics (date and time the table generation was created) whereas the copy utility resets them.

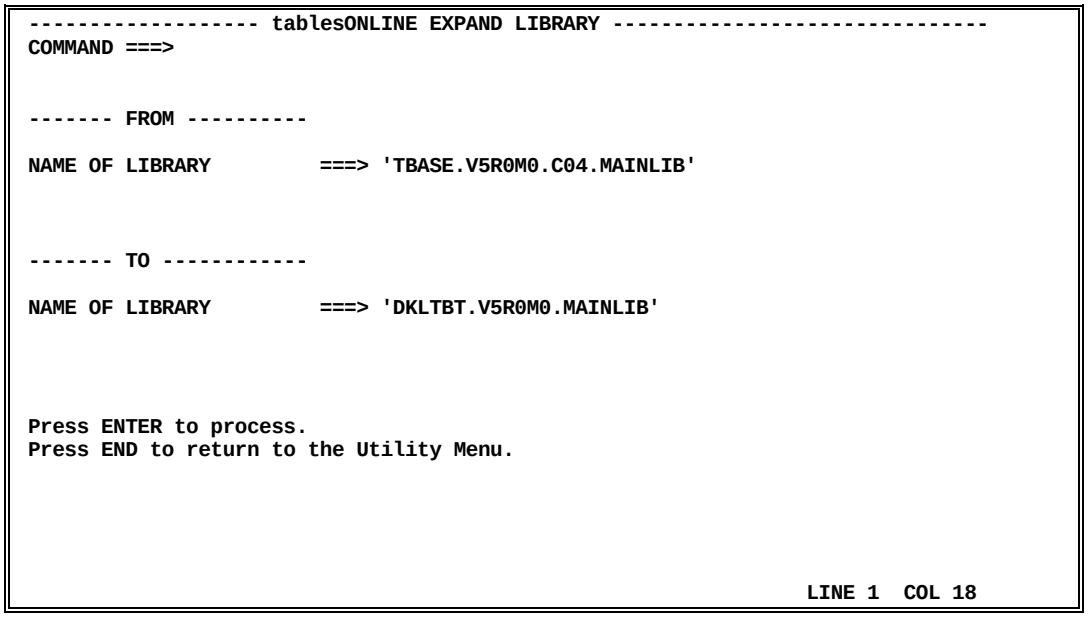


Figure 5-8: tablesONLINE Expand Library

Name of Library (From)

Type the name of the library, in single quotes, that you are expanding.

Name of Library (To)

Type the name of the new expanded library, in single quotes.

Loading a Table

Option 7 (Table Load) on the tablesONLINE Utility Menu allows a data table to be populated with data from a standard sequential dataset. When the load is complete, each record selected from the input dataset will become a row in the data table. When Option 7 is selected, the tablesONLINE Load Table utility screen appears, as illustrated in Figure 5-9.

```
---------------------- tablesONLINE LOAD TABLE ----------------------
COMMAND ===>


------- FROM ----------
INPUT DATASET NAME      ===> 'DKLD01.USER.TEMP(example)'
STARTING RECORD NUMBER  ===> 1               (Default=1)
NUMBER OF RECORDS       ===>                 (Default=ALL)
STARTING CHARACTER      ===> 1               (Default=1)


------- TO ------------
NAME OF LIBRARY         ===> 'TBASE.V5R0M0.C04.MAINLIB'
NAME OF TABLE           ===> EXAMPLE       (Table must exist)
GENERATION NUMBER       ===>               (Default creates a new generation)
WRITE PASSWORD          ===>               (If password protected)




Press ENTER to process.
Press END to return to the Utility Menu.

                                                          LINE 16 COL 79
```

Figure 5-9: tablesONLINE Load Table

Input Dataset Name

Type the name of the dataset that contains the sequential file you are loading to a table.

Starting Record Number

Specify the record number where the loading is to start. Leave blank or 1 to start with the first record.

Number of Records

Specify the number of records you are loading. Leave blank to load the entire file.

Starting Character

Specify the position of the character in the record where the loading starts. Leave blank or 1 to start at the beginning of the record.

Name of Library

Type the name of the library, in single quotes, that contains the table that is to be loaded.

Name Of Table

Type the name of the table that is to be loaded.

Generation Number

Specify the generation number of the table. The default is that a new generation is to be created. Only in exceptional situations will this entry be used to rebuild a prior generation.

Write Password

Type the write password if the table has one.

Unloading a Table

Option 8 (Table Unload) on the tablesONLINE Utility Menu copies the data from a table into a standard sequential dataset. When the unload is complete, each selected row in the table will become a record in the dataset. The tablesONLINE Unload Table screen appears, as illustrated in Figure 5-10.

```
---------------------- tablesONLINE UNLOAD TABLE -----------------------------
COMMAND ===>


------- FROM ----------
NAME OF LIBRARY       ===> 'TBASE.V5R0M0.C04.MAINLIB'
NAME OF TABLE         ===> EXAMPLE
GENERATION NUMBER     ===>                  (Default is most recent)
READ PASSWORD         ===>                  (If password protected)
STARTING ROW NUMBER   ===>                  (Default=1)
NUMBER OF ROWS        ===>                  (Default=ALL)
STARTING CHARACTER    ===>                  (Default=1)


------- TO ------------
OUTPUT DATASET NAME   ===> 'DKLD01.USER.TEMP(example)'




Press ENTER to process.
Press END to return to the Utility Menu.

                                                              LINE 1  COL 17
```

Figure 5-10: tablesONLINE Unload Table

Name of Library

Type the name of the library in single quotes that contains the table.

Name of Table

Type the name of the table that is being unloaded.

Generation Number

Specify the generation of the table. The default is the current one.

Read Password

Type the read password if the table has one.

Starting Row Number

Specify the number of the row in the table where the unloading starts. The default (1) will start unloading from the first row.

Number of Rows

Specify the number of rows to be unloaded from the table.

Starting Character

Specify the byte position in the row where the records going to the output data set are to begin.

Output Dataset Name

Specify the name of the dataset to which you are unloading the table.

Renaming a Table

To rename a table, choose option 9 (Rename) on the tablesONLINE Utility Menu. The tablesONLINE Rename Table screen appears, as illustrated in Figure 5-11.

```
---------------------- tablesONLINE RENAME TABLE ----------------------------
COMMAND ===>


------ FROM -----------
NAME OF LIBRARY    ===> 'TBASE.V5R0M0.C04.MAINLIB'
NAME OF TABLE      ===> EXAMPLE
WRITE PASSWORD     ===>               (If password protected)


------- TO ------------
NEW NAME OF TABLE  ===>









Press ENTER to process.
Press END to return to the Utility Menu.

                                                              LINE 2  COL 27
```

Figure 5-11: tablesONLINE Rename Table

Name of Library

Type the name of the library, in single quotes, that contains the table.

Name of Table

Type the name of the table you are renaming.

Write Password

Type the write password if the table has one.

New Name of Table

Type the new name of the table.

Clearing a Table

To clear the contents of a table, choose option A (Empty table) on the tablesONLINE Utility Menu. The tablesONLINE Empty Table screen appears, as illustrated in Figure 5-12. When you fill in the fields and press Enter, tablesONLINE clears the contents of the table and stores a new empty generation of the table in the library.

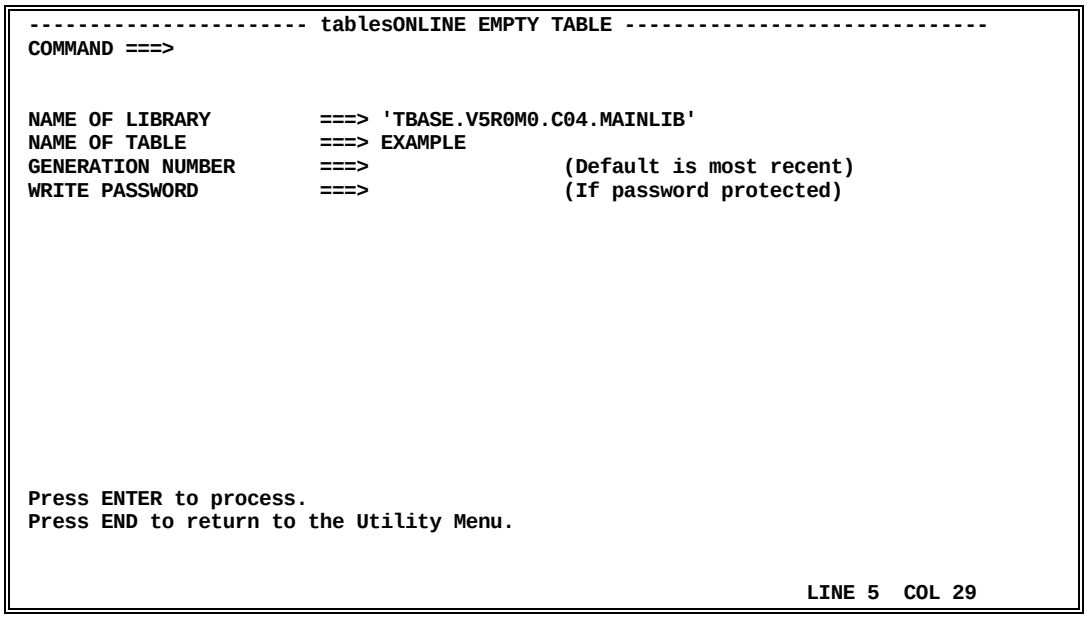


Figure 5-12: tablesONLINE Empty Table

Name of Library

Type the name of the library, in single quotes, that contains the table.

Name of Table

Type the name of the table you wish to empty.

Generation Number

Specify the generation number of the table, you wish to empty. The current generation is the default.

Write Password

Type the write password if the table has one.

Reorganizing a Paged Table

Unlike resident tables, paged tables are not automatically expanded. To expand a paged table that has become too dense, choose option B(Reorg) on the tablesONLINE Utility Menu. The tablesONLINE Reorganize Paged Table utility screen appears, as illustrated in Figure 5-13. The table will be reorganized to its lower density.

```
-------------------- tablesONLINE REORGANIZE PAGED TABLE ----------------------
COMMAND ===>

NAME OF LIBRARY         ===> 'TBASE.V5R0M0.C04.MAINLIB'
NAME OF TABLE           ===> EXAMPLE
GENERATION NUMBER       ===>
WRITE PASSWORD          ===>              (If password protected)


  This may take a long time to process if the table is large.









Press ENTER to process.
Press END to return to the Utility Menu.

                                                                LINE 1  COL 32
```

Figure 5-13: tablesONLINE Reorganize Paged Table

Name of Library

Type the name of the library, in single quotes, that contains the table.

Name of Table

Type the name of the table that you are reorganizing.

Generation Number

Specify the generation number of the table. The current generation is the default.

Write Password

Type the write password if the table has one.

Making a Paged Table Resident

To change a table with paged storage mode to resident storage mode, choose option C (Unpage) on the tablesONLINE Utility Menu. The tablesONLINE Make a Paged Table Resident screen appears, as illustrated in Figure 5-14.

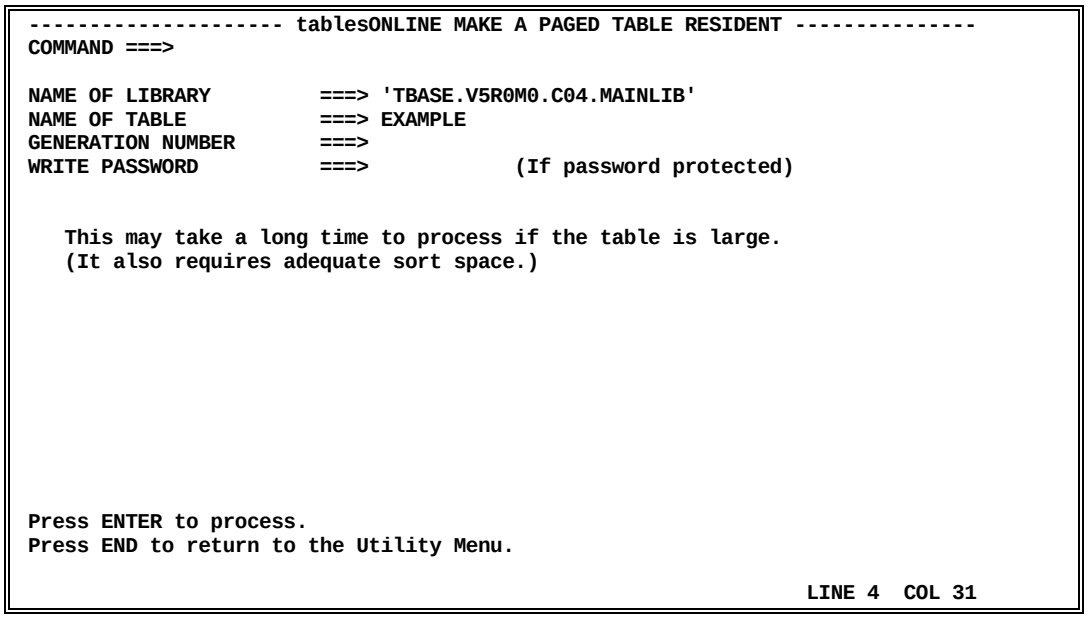


Figure 5-14: tablesONLINE Make a Paged Table Resident

Name of Library

Type the name of the library, in single quotes, that contains the table.

Name of Table

Type the name of the table that you are changing.

Generation Number

Specify the generation number of the table that is to be used as the input. The default is the current generation.

Write Password

Type the write password if the table has one.

Making a Resident Table Paged

To change a table with resident storage mode to paged storage mode, choose option D (Page) on the tablesONLINE Utility Menu. The tablesONLINE Making a Resident Table Paged screen appears, as illustrated in Figure 5-15.

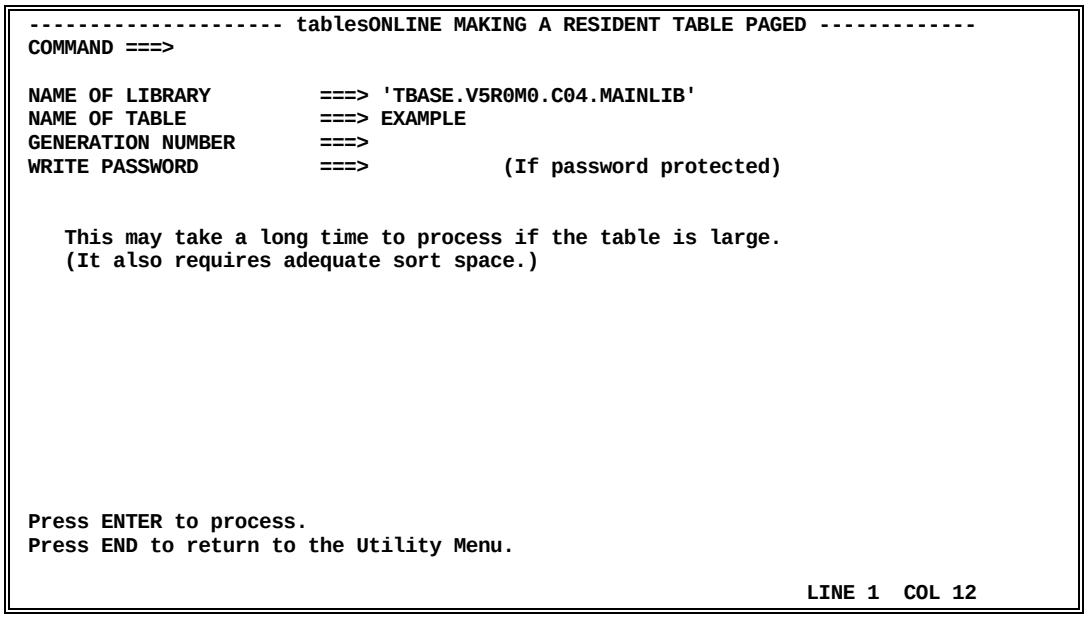


Figure 5-15: tablesONLINE Making a Resident Table Page

Name of Library

Type the name of the library, in single quotes, that contains the table.

Name of Table

Type the name of the table that you are changing.

Generation Number

Specify the generation number of the table. that is to be used as input. The default is the current generation.

Write Password

Type the write password if the table has one.

Deleting a Table

To delete all generations of a table and the associated Views, choose option E (Delete) on the tablesONLINE Utility Menu. The tablesONLINE Delete Table screen appears, as illustrated in Figure 5-16.

```
---------------------- tablesONLINE DELETE TABLE -----------------------------
COMMAND ===>


NAME OF LIBRARY     ===> 'TBASE.V5R0M0.C04.MAINLIB'
NAME OF TABLE       ===> EXAMPLE
WRITE PASSWORD      ===>             (If password protected)


       This deletes all generations of a data table
       and the associated view.









Press ENTER to process.
Press END to return to the Utility Menu.




                                                                LINE 1  COL 26
```

Figure 5-16: tablesONLINE Delete Table

Name of Library

Type the name of the library, in single quotes, that contains the table.

Name of Table

Type the name of the table that you are deleting.

Write Password

Type the write password if the table has one.

Changing a Password

To change the read or write password of a table, choose option F (Change Passwords) on the tablesONLINE Utility Menu. The tablesONLINE Change Table Password screen appears, as illustrated in Figure 5-17.

Note: When you change the password, a new generation of the table is created which must be accessed by the new password.

```
--------------- tablesONLINE CHANGE TABLE PASSWORD --------------------------
COMMAND ===>




NAME OF LIBRARY         ===> 'TBASE.V5R0M0.C04.MAINLIB'
NAME OF TABLE           ===> EXAMPLE
CURRENT WRITE PASSWORD  ===>              (If password protected)


---- NEW PASSWORDS ----

READ  PASSWORD          ===>              (Leave blank for no password)
WRITE PASSWORD          ===>              (Leave blank for no password)







Press ENTER to process.
Press END to return to the Utility Menu.

                                                              LINE 1  COL 9
```

Figure 5-17: tablesONLINE Change Table Password

Name of Library

Type the name of the library, in single quotes, that contains the table.

Name of Table

Type the name of the table whose password you are changing.

Current Password

Type the current write password of the table.

Read Password

Type the new read password of the table. The default is blank which specifies that a password is not required to read the table.

Write Password

Type the new write password of the table. The default is blank which specifies that a password is not required to update the table.

View Utilities

To work with utilities that operate on Views, choose option G (View Utilities) on the tablesONLINE Utility Menu. The tablesONLINE View Utility Menu screen appears, as illustrated in Figure 5-18.

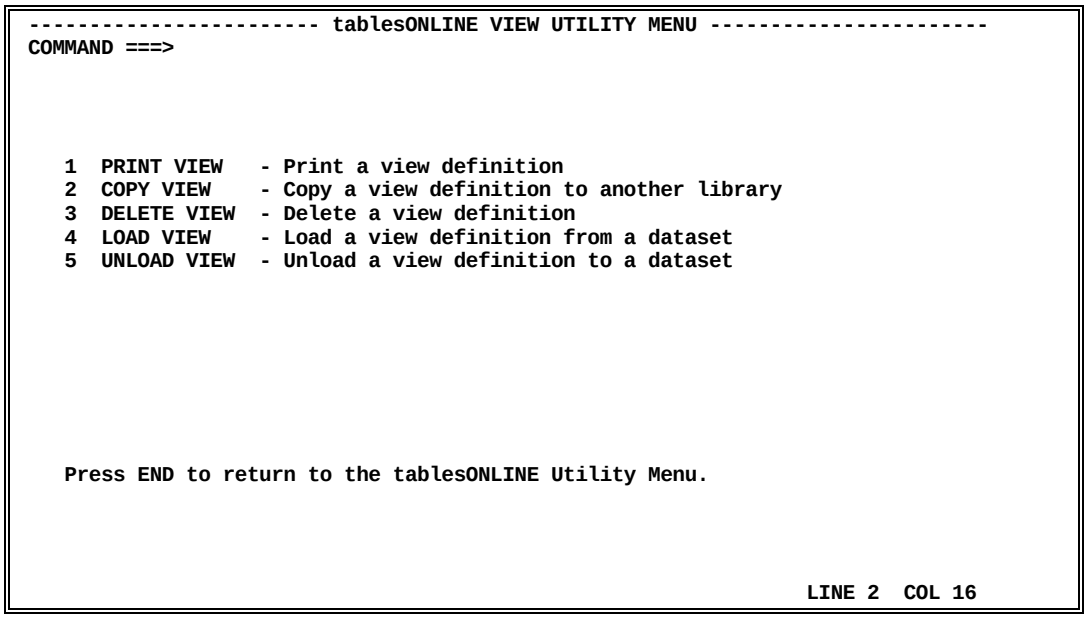


Figure 5-18: tablesONLINE View Utility Menu

Printing Views

To print Views, choose option 1 (Print View) on the tablesONLINE View Utility Menu. The tablesONLINE Print View screen appears, as illustrated in Figure 5-19

```
 -------------------- tablesONLINE PRINT VIEW DEFINITIONS --------------------
COMMAND ===>


  NAME OF LIBRARY    ===> 'TBASE.V5R0M0.C04.MAINLIB'

  SELECT or EXCLUDE  ===> S         (S=Select, E=Exclude) Default=S

  NAME OF TABLE  ===> EXAMPLE       (Specify ALL to print all VIEWs in library)
  NAME OF TABLE  ===>
  NAME OF TABLE  ===>
  NAME OF TABLE  ===>
  NAME OF TABLE  ===>
  NAME OF TABLE  ===>

BY FIELD NAME SEQUENCE ?  ===> N    (N=No, Y=Yes) Default=N


Press ENTER to process.
Press END to return to the View Utility Menu.




                                                              LINE 1  COL 22
```

Figure 5-19: tablesONLINE Print View

Name of Library

Specify the library, in single quotes, that contains the Views you are printing.

Select or Exclude

Choose E (Exclude) to print all the Views in the library excluding the ones specified. Choose S (Select) if you want to print the specified Views.

Name of Table

You can select or exclude up to six Views. Identify the Views by typing the names of the associated data tables. To print all the tables in a library, specify ALL in the first entry of the Name of Table field.

Note: Because ALL has a specific meaning in the first entry of the Name of Table field only, it can be specified as a table name in entries two to six only.

By Field Name Sequence

To print the report in field name sequence, specify Y (yes). The default is N (no) for the fields to be printed as defined in the Row.

Copying Views

To copy Views within a library or to another library, choose option 2 (Copy View) on the tablesONLINE View Utility Menu. The tablesONLINE Copy View Definition screen appears, as illustrated in Figure 5-20.

This option will not overwrite a View. If you try to copy a View to a name which already exists, the View is not copied and an error message appears.

```
---------------------- tablesONLINE COPY VIEW DEFINITION ----------------------
COMMAND ===>


------- FROM ----------

NAME OF LIBRARY         ===> 'TBASE.V5R0M0.C04.MAINLIB'
NAME OF TABLE           ===> EXAMPLE
GENERATION NUMBER       ===>             (Specify ALL to copy all generations)



------- TO ------------

LIBRARY (If different)     ===> 'DKLTBT.V5R0M0.MAINLIB'
TABLE NAME (If different)  ===> NEWEXAM




Press ENTER to process.
Press END to return to the View Utility Menu

                                                                LINE 16 COL 41
```

Figure 5-20: tablesONLINE Copy View Definition

Name of Library

Type the name of the library, enclosed in single quotes, that contains the view.

Name of Table

Type the name of the View that you are copying. Specify ALL to copy all tables in the library.

Generation Number

Specify the generation number of the table. Specify ALL to copy all generations of a table. The default is the current generation. This will not be frequently used.

Library

To copy Views within a library, leave this field blank and specify a View name in the Table field. To copy a View to another library, specify the library you are copying to.

Table Name

Type the name of the new View if the name is changed.

Deleting Views

To delete a View, choose option 3 (Delete View) on the tablesONLINE View Utility Menu. The tablesONLINE Delete View Definition screen appears, as illustrated in Figure 5-21.

Note: This utility deletes only the View; the Delete Table utility deletes both the View and the associated data table.

```
--------------------- tablesONLINE DELETE VIEW DEFINITION --------------------
COMMAND ===>


NAME OF LIBRARY         ===> 'TBASE.V5R0M0.C04.MAINLIB'
NAME OF TABLE           ===> EXAMPLE
PASSWORD                ===>



   This deletes only the View, not the associated data table.









Press ENTER to process.
Press END to return to the View Utility Menu.

                                                              LINE 1  COL 2
```

Figure 5-21: tablesONLINE Delete View Definition

Name of Library

Type the name of the library, in single quotes, that contains the View.

Name of Table

Type the name of the View that you are deleting.

Password

Type the password if the View has one.

Loading Views

Option 4 (Load View) on the tablesONLINE View Utility Menu allows a View to be created from field definition information in a standard sequential dataset. On selecting this option, the tablesONLINE Load View Definition screen appears, as illustrated in Figure 5-22.

To load a View, the associated data table must exist in the same library.

```
---------------------- tablesONLINE LOAD VIEW DEFINITION ----------------------
COMMAND ===>


------- FROM ----------
INPUT DATASET NAME      ===> 'DKLD01.USER.VIEW(EXAMPLE)'



------- TO ------------
NAME OF LIBRARY         ===> 'TBASE.V5R0M0.C04.MAINLIB'
NAME OF TABLE           ===> EXAMPLE    (Table must exist)









Press ENTER to process.
Press END to return to the View Utility Menu.


                                                                LINE 5  COL 66
```

Figure 5-22: tablesONLINE Load View Definition

Input Dataset Name

Type the name of the dataset that contains the data you are loading to create the View.

Name of Library

Type the name of the library that contains the View.

Name of Table

Type the name of the View you are loading to.

Unloading Views

Option 5 (Unload View) on the tablesONLINE View Utility Menu copies the formatting information contained in a View to a standard sequential dataset. It is the opposite function to Option 4 (Load View). On selecting Option 5, the tablesONLINE Unload View Definition appears, as illustrated in Figure 5-23.

```
--------------------- tablesONLINE UNLOAD VIEW DEFINITION ---------------------
COMMAND ===>


------- FROM ----------
NAME OF LIBRARY         ===> 'TBASE.V5R0M0.C04.MAINLIB'
NAME OF TABLE           ===> EXAMPLE




------- TO ------------
OUTPUT DATASET NAME     ===> 'DKLD01.USER.VIEW(EXAMPLE)'




Press ENTER to process.
Press END to return to the View Utility Menu.


                                                              LINE 1  COL 49
```

Figure 5-23: tablesONLINE Unload View Definition

Name of Library

Type the name of the library that contains the View.

Name of Table

Type the name of the View that you are unloading.

Output Dataset Name

Type the name of the dataset to which you are copying the view definition.

Appendix A

This appendix will walk you through a simple tablesONLINE exercise. You will define a table, add rows to it, and reorganize it by creating an alternate index.

The Assignment

Your boss asked you to set up a table that contains the charitable contribution of each employee. Each month the employee donating the most money gets a calculator and the department that contributes the most gets a free lunch. In the following exercise, you create a table showing the Charitable Contributions of ABC Employees.

Invoking tablesONLINE

Your first step is to invoke tablesONLINE. At your site tablesONLINE is installed as an option on the ISPF/PDF Primary Option Menu as illustrated in Figure A-1.

```
----------------------  ISPF/PDF PRIMARY OPTION MENU  -----------------------
OPTION  ===>
                                                          USERID   - DKLD01
                                                          DATE     - 96.352
                                                          TIME     - 09:06
   0  ISPF PARMS  - Specify terminal and user parameters
   1  BROWSE      - Display source data or output listings
   2  EDIT        - Create or change source data
   3  UTILITIES   - Perform utility functions
   4  FOREGROUND  - Invoke language processors in foreground
   5  BATCH       - Submit job for language processing
   6  COMMAND     - Enter TSO command or CLIST
   7  DIALOG TEST - Perform dialog testing
   8  SDSF        - Spool Display and Search Facility
   I  VDC INFO    - Vanier Data Centre information
   J  JES MASTER  - JMS spool dataset interface      NOT AVAILABLE YET
   R  RESTORE     - User Restore Facility
   M  INFO/MAN    - Vanier Data Centre change management
   T  TUTORIAL    - Display information about ISPF/PDF
   W  tableBASE   - Invoke tablesONLINE
   X  EXIT        - Terminate ISPF using log and list defaults

Enter END command to terminate ISPF.

                                                            LINE 1  COL 6
```

Figure A-1: ISPF/PDF Primary Option Menu

To invoke tablesONLINE, choose option W on the ISPF/PDF Primary Option Menu.

Choose option W to access the tablesONLINE Primary Menu, as illustrated in Figure A-2.

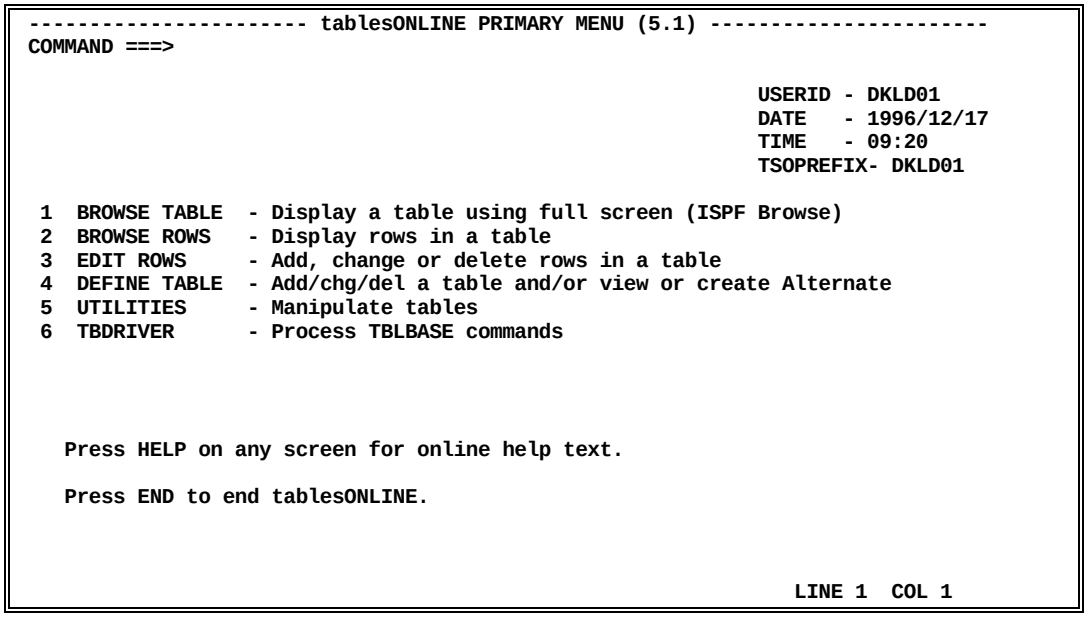


Figure A-2: tablesONLINE Primary Menu (5.1)

You want to create a table, so choose option 4 (Define Table) and press Enter. Assuming that the library in which the table is to reside has already been defined.

Note: In this example, you will be working with a library and a table that has been distributed. If you wish to experiment you can do so by choosing other names.

The tablesONLINE Identify Table screen appears, as illustrated in Figure A-3.

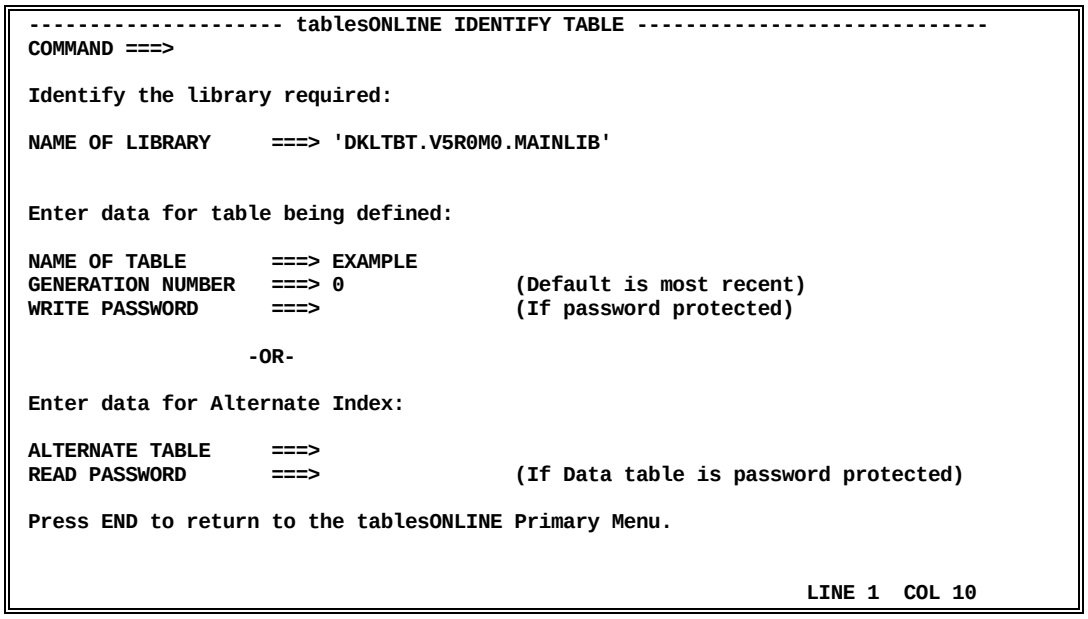


Figure A-3: tablesONLINE Identify Table

This screen appears with the names of the table and library that you worked with in the previous tablesONLINE session.

Name your table 'EXAMPLE'. Type this name in the Name of Table field. In the Name of Library field, specify a library that already exists. Use the library, 'YOUR. PREFIX.TBASE.MAINLIB' that is distributed with the tablesONLINE package. If you want to put your table in a new library, you will have to define it before specifying it here.

The Generation and Password fields apply only to existing tables, not to ones that have not been defined yet. Leave these fields blank.

When you press Enter, the tablesONLINE Define Table menu screen appears, as illustrated in Figure A-4.

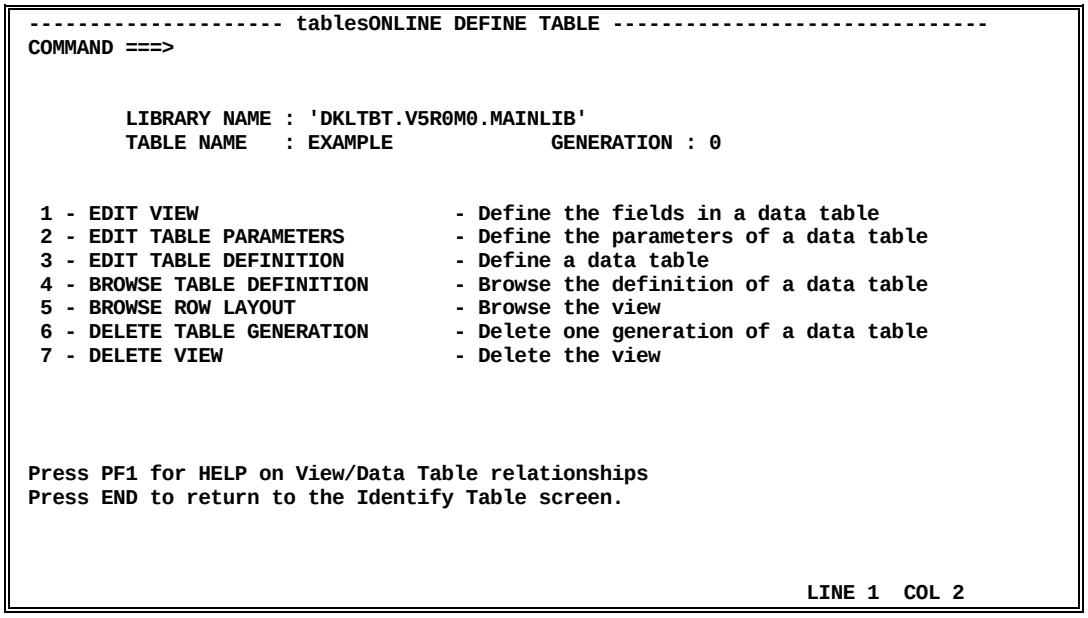
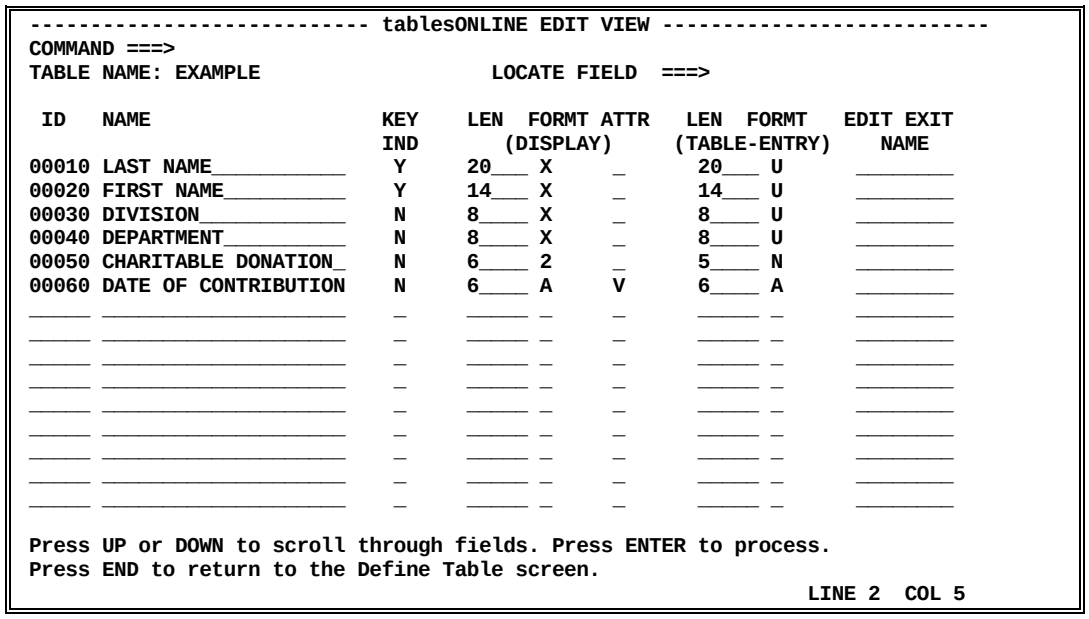


Figure A-4: tablesONLINE Define Table

This screen contains the options to define the table. It is better to perform these options in sequence because tablesONLINE calculates the Key Location, Key Length and Row Size fields from values specified in previous options. Choose option 1 (Edit Row Layout).

When you press Enter, the tablesONLINE Edit View screen appears, as illustrated in Figure A-5.



```
--------------------------- tablesONLINE EDIT VIEW --------------------------
COMMAND ===>
TABLE NAME: EXAMPLE                    LOCATE FIELD  ===>

 ID   NAME                    KEY    LEN  FORMT ATTR   LEN  FORMT   EDIT EXIT
                              IND      (DISPLAY)     (TABLE-ENTRY)    NAME
00010 LAST NAME_____________   Y     20___ X     _     20___ U      _________
00020 FIRST NAME____________   Y     14___ X     _     14___ U      _________
00030 DIVISION______________   N     8____ X     _     8____ U      _________
00040 DEPARTMENT____________   N     8____ X     _     8____ U      _________
00050 CHARITABLE DONATION_     N     6____ 2     _     5____ N      _________
00060 DATE OF CONTRIBUTION     N     6____ A     V     6____ A      _________
_____ ______________________   _     _____ _     _     _____ _      _________
_____ ______________________   _     _____ _     _     _____ _      _________
_____ ______________________   _     _____ _     _     _____ _      _________
_____ ______________________   _     _____ _     _     _____ _      _________
_____ ______________________   _     _____ _     _     _____ _      _________
_____ ______________________   _     _____ _     _     _____ _      _________
_____ ______________________   _     _____ _     _     _____ _      _________
_____ ______________________   _     _____ _     _     _____ _      _________

Press UP or DOWN to scroll through fields. Press ENTER to process.
Press END to return to the Define Table screen.
                                                            LINE 2  COL 5
```

Figure A-5: tablesONLINE Edit View

To provide the information that your boss requested, your table should contain the name, department, division, charitable contribution and date of the contribution for each ABC employee.

Your first step is to list the field names in the Name column. Include First Name, Last Name, Division, Department, Charitable Contribution and Date of Contribution.

To order your rows, type numbers in the ID column.

You want the table to be ordered alphabetically by employee names. Therefore, specify Y in the Key Ind field for Last Name and First Name. For the other fields, specify N.

Specify the number of characters of each field when it is displayed in the Length (Display) field.

Since the date is in the format YYMMDD, specify a length of 6 for the Date of Contribution field because the date is always six characters.

Specify that the format of the fields when displayed is X (text). The format of the date is A which specifies that it appears in the order of the year, the month and the day.

When you finish filling in this information, press Enter to make the defaults for the other fields to appear. Leave the Edit Exit Name field blank because you are not invoking an exit program.

Press Enter to process your information and press PF3 (END) to return to the Define Table screen where you choose option 2 (Edit Table Parameters) to define the parameters of the table.

When you press Enter, the Edit Table Parameters screen appears, as illustrated in Figure A-6.

```
------------------- tablesONLINE EDIT TABLE PARAMETERS -----------------------
COMMAND ===>

LIBRARY NAME             : 'DKLTBT.V5R0M0.MAINLIB'
VIEW NAME                : EXAMPLE


DATA TABLE NAME          ===>
DUPLICATE KEYS ALLOWED?  ===>              (Y=Yes, N=No)   ( Default=N )
ITEM EXIT PGM NAME       ===>
TABLE EXIT PGM NAME      ===>


ROW SIZE                 : 61
KEY LOCATION             : 1
KEY SIZE                 : 34




Press ENTER to process.
Press END   to return to the Define Table screen.


                                                              LINE 1  COL 30
```

Figure A-6: tablesONLINE Edit Table Parameters

The screen appears with the View Name and Library Name fields filled in. You do not specify a View name because tablesONLINE generates it from the name of the table that you specified in the Identify Table screen.

The Data Table Name field applies only if the View we are defining is for a different view of a table. You are using the default view name, so leave this field blank.

Specify N (No) for the Duplicate Keys Indicator field because you do not want your table to have rows with identical keys. Because you select N, the Duplicate Keys Indicator field will not appear on the Identify Row screen. If you choose Y (Yes), however, the Duplicate Keys Indicator field would appear on the Identify Row screen, thereby letting you change the Y to N; no duplicate allowed for the duration of the edit.

Leave the Row Exit Program Name and Table Exit Program Name fields blank because you are not invoking an exit program.

The last three fields are values that tablesONLINE calculates from the values you entered on the tablesONLINE View Edit screen. You cannot change these values.

Since you did not modify any values, press PF3 (END) to return to the tablesONLINE Define Table screen where you choose option 3 (Edit Table

Definition) to define general characteristics of your table. When you press Enter, the tablesONLINE Edit Table Definition screen appears, as illustrated in Figure A-7.

```
------------------- tablesONLINE EDIT TABLE DEFINITION -----------------------
COMMAND ===>


TABLE NAME: EXAMPLE    ORGANIZATION  ===> S     SEARCH METHOD  ===> B
    Organizations  (R=Random, U=User Control, S=Sequential, D=Desc Seq, H=Hash)
    Search Methods (S=Serial, Q=Queued Seq, B=Binary, C=Tree Binary, H=Hash)

TRUE OR POINTER   ===> P          (T=True, P=Pointer)
STORAGE MODE CODE ===> R          (R=Resident, P=Paged)
READ PASSWORD     ===>
WRITE PASSWORD    ===>
NUMBER OF ROWS    ===> 30         (Estimate when defining new table)
GENERATIONS       ===> 5
EXPANSION FACTOR  ===> 200        (Default of 200 is 20.0 percent)
LOWER DENSITY     ===> 500        (Default of 500 is 50.0 percent)
UPPER DENSITY     ===> 800        (Default of 800 is 80.0 percent)

ROW SIZE          ===> 61         (These fields are calculated
KEY SIZE          ===> 34          from field definitions. Press
KEY LOCATION      ===> 1           HELP for more information.   )

Press ENTER to process.
Press END to return to the Define Table screen.
                                                              LINE 1  COL 26
```

Figure A-7: tablesONLINE Edit Table Definition

This screen appears with the name of the table you are defining in the Table Name field. If the table does not exist, tablesONLINE fills in default values for all the fields and a prompt message is displayed, prompting the operator to press Enter. To get the defaults for the other fields, press Enter.

Change the R (Random) to S (Sequential) in the Organization field because you want the rows in your table ordered in ascending order, not in the order that you add them to the table. Now your table will be ordered alphabetically by employee names.

Because S (Serial) search is usually less efficient for sequential tables, you change this value to B (Binary), in the Search Method field.

Since pointer tables are useful for large tables and your table is small, you leave the T(True) default in the Organization field.

Leave the password fields blank because you do not want to specify that a password is required either to look at or to update the table.

The Number of Rows field serves two purposes. First, when a table is being defined, this field allocates space for the table. When Enter is pressed, the value specified in this field is used by tableBASE to initially allocate space for the table. Secondly, after the table is defined, it contains the number of rows in the table. If the table has no rows, then this field is blank. Specify 40 in this field because your company has 25 employees, allowing some space for future expansion.

You can specify that up to nine generations of a table are kept. Specify 8 in the Generation field.

Leave the default for the Expansion Factor field. It controls the automatic expansion of the table when it becomes too full.

Leave the Upper and Lower Density fields blank because they apply only to hash tables.

The last three fields are calculated from the values you entered on the View Edit screen so do not change them.

For an explanation of each of these values, refer to Chapter Four.

After filling in the fields on this screen either by entering values or by leaving the defaults, press Enter to process your definition. Then press PF3 (END) to return to the tablesONLINE Define Table screen where you choose option 4 (Browse Table Definition) and press Enter.

The tablesONLINE Browse Table Definition screen appears, as illustrated in Figure A-11.

```
------------------- tablesONLINE BROWSE TABLE DEFINITION ----------------------
COMMAND ===>

TABLE NAME: EXAMPLE    ORGANIZATION  ===> S     SEARCH METHOD  ===> B
    Organizations  (R=Random, U=User Control, S=Sequential, D=Desc Seq, H=Hash)
    Search Methods (S=Serial, Q=Queued Seq, B=Binary, C=Tree Binary, H=Hash)


TRUE OR POINTER   ===> P       (T=True, P=Pointer)
STORAGE MODE CODE ===> R       (R=Resident, P=Paged)
READ PASSWORD     ===>
WRITE PASSWORD    ===>
NUMBER OF ROWS    ===> 30
GENERATIONS       ===> 5
EXPANSION FACTOR  ===> 200     (A value of 200 implies 20.0 percent)
LOWER DENSITY     ===> 500     (A value of 500 implies 50.0 percent)
UPPER DENSITY     ===> 800     (A value of 800 implies 80.0 percent)

ROW SIZE          ===> 61
KEY SIZE          ===> 34
KEY LOCATION      ===> 1

Press END   to return to the Define Table screen

                                                              LINE 2  COL 15
```

Figure A-8: tablesONLINE Browse Table Definition

You can look at the definition of the table but you cannot edit the rows on this screen. After you see the table definition, press PF3 (END) to return to the tablesONLINE Define Table screen. Choose option 5 (Browse Row Layout) and press Enter to see the row layout of the table you created. The tablesONLINE Browse View Definition screen appears, as illustrated in Figure A-9.

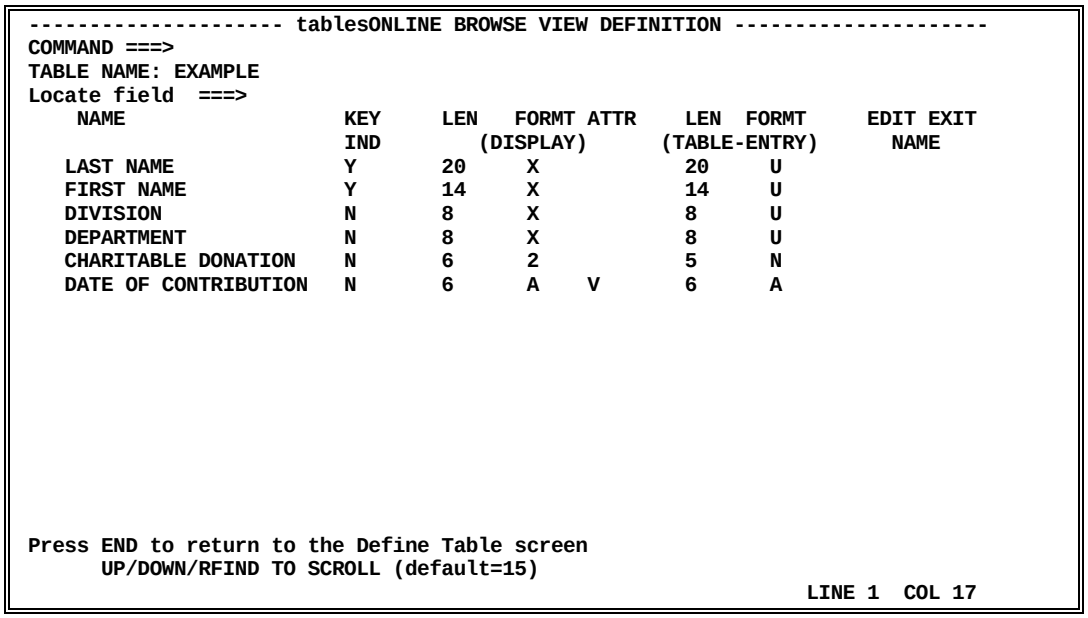


Figure A-9: tablesONLINE Browse View Definition

Browse the row layout of your table and then press PF3 (END) to return to the tablesONLINE Define Table screen. You are not going to try options 6 and 7 because you do not want to delete your table, instead press PF3 (END) to exit the tablesONLINE Define Table screen.

The tablesONLINE Save Table screen appears, as illustrated in Figure A-10, when a table is created or updated.

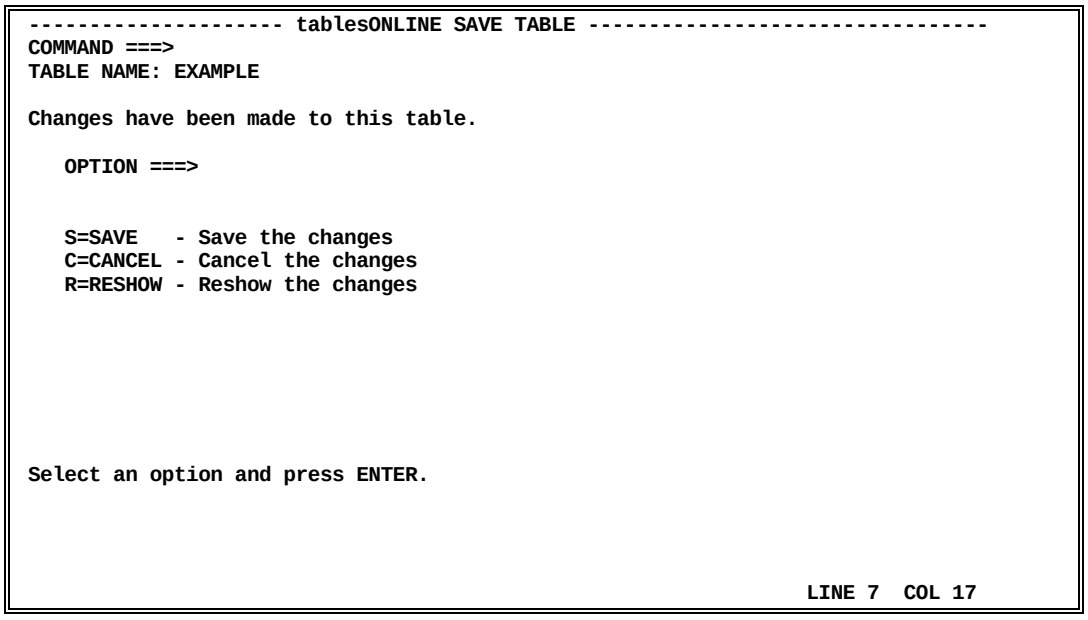


Figure A-10: tablesONLINE Save Table

You now have the option of deleting your changes, saving them or returning to the Define Table screen. Choose S to save your table and press Enter.

tablesONLINE checks your definition for errors. It finds none and your definition is saved. The tablesONLINE Identify Table screen with a message in the top right corner tells you that your table was saved.

Your boss requests that the sex of each employee be added to the table. To include the new information, you have to update the View by adding a row for employee sex. Choose option 1 (Edit Row Layout) on the Define Table screen and press Enter.

The tablesONLINE Edit View screen appears, as illustrated in Figure A-11.

```
--------------------------- tablesONLINE EDIT VIEW --------------------------
COMMAND ===>
TABLE NAME: EXAMPLE                   LOCATE FIELD  ===>

 ID   NAME                    KEY    LEN  FORMT ATTR   LEN  FORMT   EDIT EXIT
                              IND      (DISPLAY)     (TABLE-ENTRY)    NAME
00010 LAST NAME___________     Y     20___ X     _      20___ U      _________
00020 FIRST NAME__________     Y     14___ X     _      14___ U      _________
00030 DIVISION____________     N     8____ X     _      8____ U      _________
00040 DEPARTMENT__________     N     8____ X     _      8____ U      _________
00050 CHARITABLE DONATION_     N     6____ 2     _      5____ N      _________
00060 DATE OF CONTRIBUTION     N     6____ A     V      6____ A      _________
00045 sex_________________     n     1____ x     s      _____ _      _________
_____ _____________________    _     _____ _     _      _____ _      _________
_____ _____________________    _     _____ _     _      _____ _      _________
_____ _____________________    _     _____ _     _      _____ _      _________
_____ _____________________    _     _____ _     _      _____ _      _________
_____ _____________________    _     _____ _     _      _____ _      _________
_____ _____________________    _     _____ _     _      _____ _      _________
_____ _____________________    _     _____ _     _      _____ _      _________
_____ _____________________    _     _____ _     _      _____ _      _________

Press UP or DOWN to scroll through fields. Press ENTER to process.
Press END to return to the Define Table screen.
                                                              LINE 8  COL 35
```

Figure A-11: tablesONLINE Edit View

Add a field named Sex to the bottom of the Name column. Specify that it is not part of the key and that it is 1 character in length. Because you know that the Sex field should always contain an alphabetic value, specify X (alphanumeric) in the Format (Display) field. Then type number 45 in the ID column. The 'S' in the Attribute (Display) will suppress this field on the Select row by key screen. Press Enter to process your new addition. Note that the sex field has been appropriately moved after Department, using the ID field for the collating sequence. The default values have been filled in for the length and format (Table-Entry) fields. This is illustrated in Figure A-12. Press PF3 (END) to return to the tablesONLINE Define Table screen.

When you press Enter, the Sex field is moved to the line after the Department field.

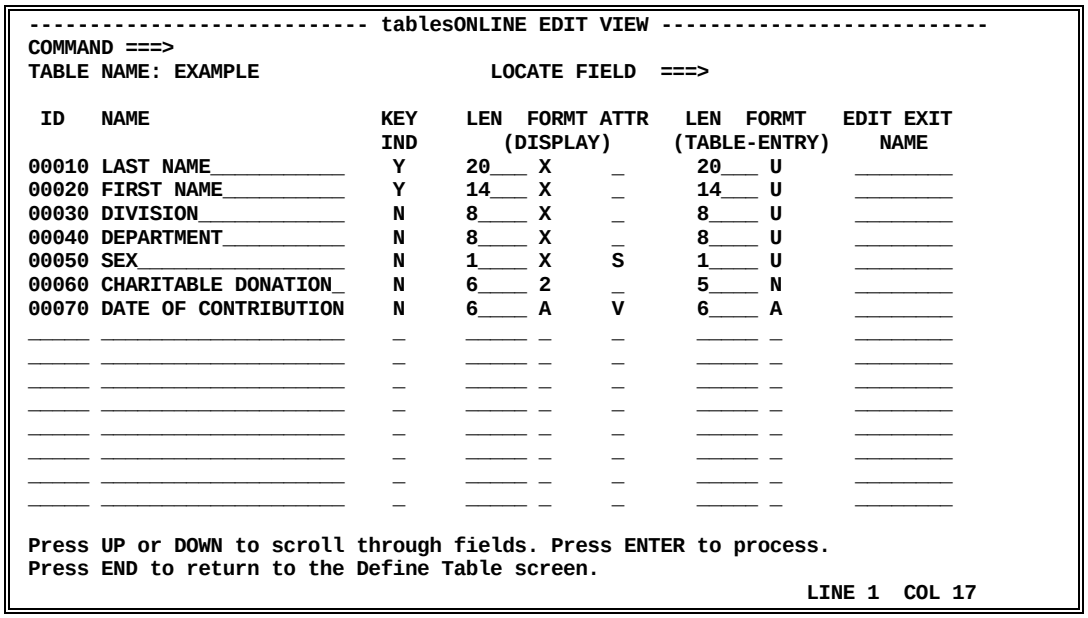


Figure A-12: tablesONLINE Edit View

Press PF3 (END) to return to the tablesONLINE Define Table screen.

Choose option 3 (Edit Table Definition) to process the change in row size. The Edit Table Definition screen appears. A message tells you that the row size has changed. To process your changes, press Enter, the message disappears.

Press End twice to return to the tablesONLINE Identify Table screen. Because you modified your table by adding the Sex field, the tablesONLINE Save Table screen appears. Choose S to save your changes and press Enter. The tablesONLINE Define Table screen appears with the message (Table Saved) in the top right corner, confirming that the table was updated and your changes were saved. Press PF3 (END) to return to the tablesONLINE Primary Menu.

Now that you are finished defining the format of the table, you want to enter data. To add rows to the table, choose option 3 (Edit Rows). When you press Enter, the tablesONLINE Row Edit screen appears, as illustrated in Figure A-13.

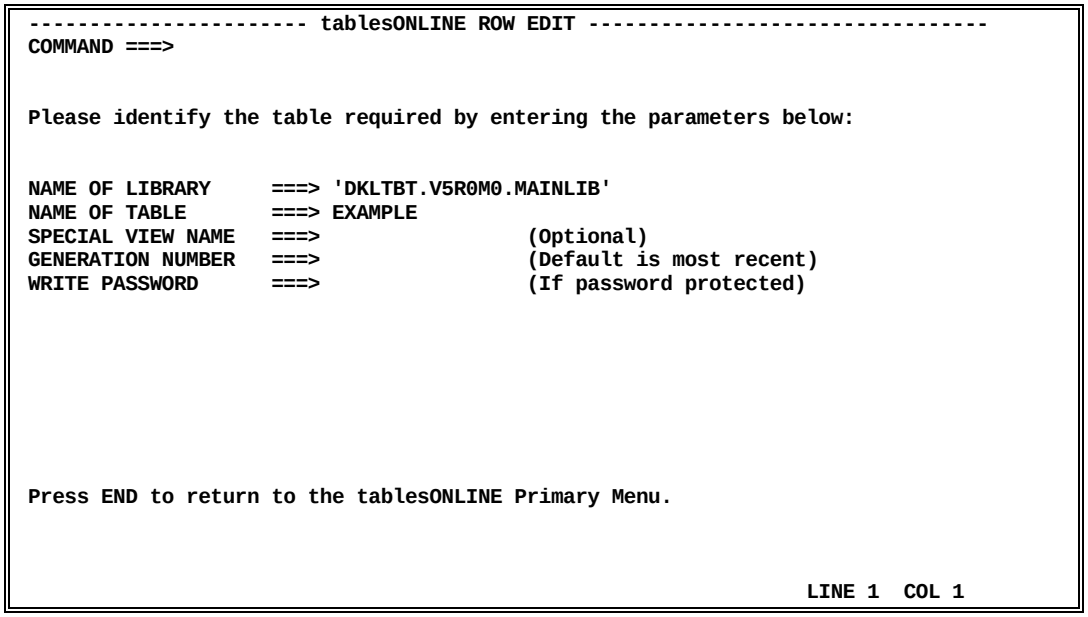


Figure A-13: tablesONLINE Row Edit

Fill in the name of the table and the name of the library. Because your View is not a special View, a View name other than the one defaulted to by tablesONLINE, leave the Special View Name field blank. Because you did not specify a password for the table on the Edit Table Definition screen, leave the Password field blank. Leave the default for the Generation field.

Press Enter to access the tablesONLINE Identify Row screen, as illustrated in Figure A-14.

```
-------------------- tablesONLINE IDENTIFY ROW -----------------------------
COMMAND ===>
TABLE= EXAMPLE



Scroll search by entering Y  ===> N    (Default=N)
                  OR
Choose a row by count        ===>
                  OR
Choose a row by entering the keys:
LAST NAME             ===> brownbag           ¦
FIRST NAME            ===> sam          ¦









Press END to return to Table Identification menu.

                                                                LINE 13 COL 34
```

Figure A-14: tablesONLINE Identify Row

This screen appears with the names of the keys. Fill in the information for your first row by typing the first and last name of an employee. These are the key fields of your table. Press Enter and the following screen appears.

```
-------------------- tablesONLINE EDIT ROW ----------------------------------
COMMAND ===>
TBL= EXAMPLE
LOCATE FIELD  ===>                                    ROW LOCATION = 1
TYPE-CHANGE   ===> N   (N=New, U=Update, D=Delete)

LAST NAME -----------  BROWNBAG           ¦
FIRST NAME ----------  SAM          ¦
DIVISION ------------         ¦
DEPARTMENT ----------         ¦
SEX -----------------   ¦
CHARITABLE DONATION -        ¦
DATE OF CONTRIBUTION         ¦
 -------------------  *** END OF DATA ***
 -------------------
 -------------------
 -------------------
 -------------------
 -------------------
 -------------------
 -------------------

Press UP or DOWN to scroll through rows.  Press ENTER to process.
Press END to return to the Identify Row screen.
                                                                LINE 1  COL 12
```

Figure A-15: tablesONLINE Edit Row

This screen lists the field names on the left. Beside each field name is an area for data entry. The value for each field cannot be longer than the number of characters specified for it. Type data for each field and then tab to the next one.

When you are finished typing data in the fields, press Enter for processing. If you had specified that a user exit program be invoked, it would be called now. tablesONLINE checks that your data adheres to the restrictions that you specified in the definition of the table. An error is encountered if there is a discrepancy between how you defined your data and what you enter for data. For example, if you type an alphabetic character in a field that you specified in the field definition table could only contain a numeric value, an error message informs you that there is invalid data. You would have to correct the data before you could process the row.

tablesONLINE, however, encounters no errors during its validation. The row is saved and the Identify Row screen appears, as illustrated in Figure A-14.

The message (Row Added) in the top right corner of the screen tells you that the row was processed.

Press Enter to access the Row Edit screen again so that you can add another row.

```
------------------- tablesONLINE EDIT ROW ----------------------------------
COMMAND ===>
TBL= EXAMPLE
LOCATE FIELD  ===>                                    ROW LOCATION = 1
TYPE-CHANGE   ===> U   (N=New, U=Update, D=Delete)

LAST NAME -----------  BROWNBAG            ¦
FIRST NAME ----------  SAM           ¦
DIVISION ------------  ACCTG   ¦
DEPARTMENT ----------  A/R     ¦
SEX -----------------  M¦
CHARITABLE DONATION -  143.00¦
DATE OF CONTRIBUTION   961217¦
 -------------------   *** END OF DATA ***
 -------------------
 -------------------
 -------------------
 -------------------
 -------------------
 -------------------
 -------------------

Press UP or DOWN to scroll through rows.  Press ENTER to process.
Press END to return to the Identify Row screen.
                                                          LINE 2  COL 19
```

Figure A-16: tablesONLINE Edit Row

The Edit Row screen appears with the values you entered for the previous row. Change the Type-Change field from U (Update) to N (New) so that you can create a row by using the old row as a base. This is an efficient method of populating tables because it avoids retyping data that does not change.

After you specify information for the row, press Enter to return to the Identify Row screen where you specify the key field values for the next row that you want to process. Repeat this process until you add all the rows.

Instead of pressing Enter which returns you to the Identify Row screen, you could type GETCOUNT to process the current row and present the next row to be added or updated on the Edit Row screen.

When you have finished adding rows, press Enter or PF3 (END) to return to the Identify Row screen. Specify Y for the Scroll option so that you can scroll through the rows. When you press Enter, the tablesONLINE Select Row by Key screen appears, as illustrated in Figure A-17.

```
----------------------- tablesONLINE SELECT ROW BY KEY ----------------------
COMMAND ===>
TABLE= EXAMPLE
Type S beside key to select a row.

   1                    2                              TABLE-LOCATION= 1
   AAGIN                JOHN           ACCTG    A/R    1=LAST NAME
   ALLEN                GORDON         OPNS     OPR    2=FIRST NAME
   ANCHRUTHER           DORA           ADMIN    SECT
   ASSIGNY              MICHEL         ADMIN    SECT
   AXOLOTLOVOVITCHSKI   STEFAN         ADVTG    FLACK
   BAKER                JOHN           ADVTG    NEWS
   BELLEFEVILLE         JOHN           ADVTG    ART
   BLOGGINS             JOHN           MIS      ANAL
   BROWN                FREDDA         ADMIN    PERSN
   BROWN                FREDERICK      ADMIN    PERSN
   BROWN                GEORGE         ACCTG    P/R
   BROWN                IAN            MIS      PGMG
   BROWN                JOHN           OPNS     SCH
   BROWNBAG             SAM            ACCTG    A/R
   CALLAN               MICHAEL        MIS      PGMG

Press UP or DOWN to scroll through rows.
Press END to return to the Identify Row screen.
                                                          LINE 3  COL 1
```

Figure A-17: tablesONLINE Select Row by Key

The TABLE-LOCATION field tells you what position in the table the first row on the screen is. You are at the first row in the table. The key fields are listed under this field. The two left columns display the key values of the rows in your table.

If your table had more than 15 rows, you could scroll through them with PF7 (UP) or PF8 (DOWN).

You receive a phonecall with some good news for one of ABC's employees. Sam Brownbag increased his donation! You select the row with his employee information by typing an S beside the row and pressing Enter. The Edit Row screen appears with Sam's information. Change his donation amount from 143.00 to 243.00. You get so carried away by Sam's enthusiasm that you make a typographical error. When you press Enter to process the updated row, an error message appears. You correct the invalid format and press Enter to process. No error message appears this time. Press PF3 (END) until you arrive at the tablesONLINE Save Table screen.

Choose S and press Enter to save your change to the table, in this case, Brownbag Sam's charitable donation amount. Press END to return to the tablesONLINE Primary Menu where you choose option 1 (Browse Table) to see the table that you defined. When you press Enter, the tablesONLINE Browse Table screen appears, as illustrated in Figure A-18.

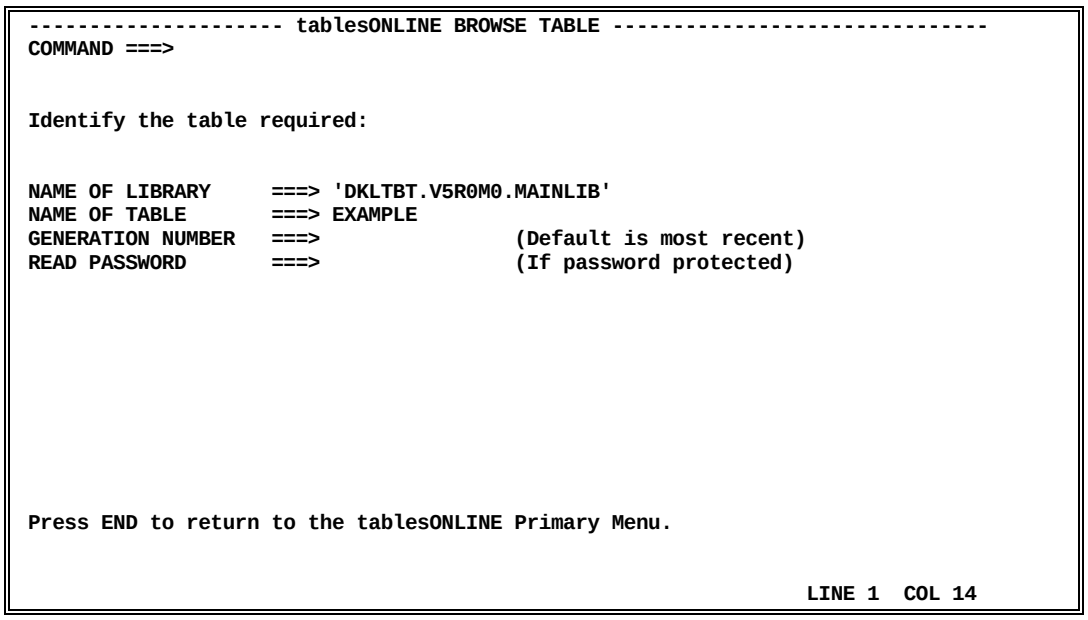


Figure A-18: tablesONLINE Browse Table

This screen appears with the name of the last table you worked with. Because this is the table that you want to browse, press Enter.

A screen with the data in your table appears, as illustrated in Figure A-19.

```
Menu  Utilities  Compilers  Help


------------------------------------------------------------------------------
BROWSE    DKLD01.T164021.EXAMPLE                    Line 00000000 Col 001 062
Command ===>                                          Scroll ===> PAGE
******************************** Top of Data ********************************
AAGIN               JOHN          ACCTG   A/R     F15600870626
ALLEN               GORDON        OPNS    OPR     K18000870626
ANCHRUTHER          DORA          ADMIN   SECT    F15300870626
ASSIGNY             MICHEL        ADMIN   SECT    M08300870626
AXOLOTLOVOVITCHSKI  STEFAN        ADVTG   FLACK   M34500870626
BAKER               JOHN          ADVTG   NEWS    M13000870626
BELLEFEVILLE        JOHN          ADVTG   ART     M12500870626
BLOGGINS            JOHN          MIS     ANAL    M23000870626
BROWN               FREDDA        ADMIN   PERSNL  F16000870626
BROWN               FREDERICK     ADMIN   PERSNL  M16000870626
BROWN               GEORGE        ACCTG   P/R     M14300870626
BROWN               IAN           MIS     PGMG    M21000870626
BROWN               JOHN          OPNS    SCH     M09700870626
BROWNBAG            SAM           ACCTG   A/R     M24300961217
CALLAN              MICHAEL       MIS     PGMG    M18000870626
DALE                TERENCE       OPNS    OPR     M09500870626
DUMAS               SAMANTHA      ACCTG   P/R     F27000870626
FUTA                MARY          OPNS    OPR     F12000870626
GALSWORTHY          SARAH         ACCTG   A/R     F13200870626
                                                          LINE 1  COL 1
```

Figure A-19: tablesONLINE ISPF Browse Table

The field names do not appear because only the data in the table is loaded to a dataset to be browsed with the ISPF browser. You can use the UP, DOWN, RIGHT and LEFT keys to scroll through the screen. You could also use the ISPF HEX ON command to see the hexadecimal values of your rows.

While you are browsing your table, the phone rings. It's the boss requesting a list of names of the employees in each department. This request requires that the table be reorganized by changing the field definition.

Type =W.4 on the command line to access the tablesONLINE Define Table option. The tablesONLINE Identify Table screen as illustrated in Figure A-20 appears.

```
-------------------- tablesONLINE IDENTIFY TABLE ----------------------------
COMMAND ===>

Identify the library required:

NAME OF LIBRARY     ===> 'TBASE.V5R0M0.C04.MAINLIB'


Enter data for table being defined:

NAME OF TABLE       ===> EXAMPLE
GENERATION NUMBER   ===>                (Default is most recent)
WRITE PASSWORD      ===>                (If password protected)

                  -OR-

Enter data for Alternate Index:

ALTERNATE TABLE     ===>
READ PASSWORD       ===>                (If Data table is password protected)

Press END to return to the tablesONLINE Primary Menu.


                                                                LINE 12 COL 27
```

Figure A-20: tablesONLINE Identify Table

You do not need to change any values on this screen, so press Enter. Choose option 1 (Edit View) to edit your field definition. When you press Enter, the tablesONLINE Edit View screen appears, as illustrated in Figure A-21.

```
--------------------------- tablesONLINE EDIT VIEW --------------------------
COMMAND ===>
TABLE NAME: EXAMPLE                  LOCATE FIELD  ===>

 ID   NAME                   KEY    LEN  FORMT ATTR   LEN  FORMT   EDIT EXIT
                             IND       (DISPLAY)     (TABLE-ENTRY)    NAME
00010 LAST NAME___________    n     20___ X     _     20___ U      _________
00020 FIRST NAME__________    n     14___ X     _     14___ U      _________
00030 DIVISION____________    y     8____ X     _     8____ U      _________
00040 DEPARTMENT__________    y     8____ X     _     8____ U      _________
00050 SEX_________________    N     1____ X     S     1____ U      _________
00060 CHARITABLE DONATION_    N     6____ 2     _     5____ N      _________
00070 DATE OF CONTRIBUTION    N     6____ A     V     6____ A      _________
_____ ____________________    _     _____ _     _     _____ _      _________
_____ ____________________    _     _____ _     _     _____ _      _________
_____ ____________________    _     _____ _     _     _____ _      _________
_____ ____________________    _     _____ _     _     _____ _      _________
_____ ____________________    _     _____ _     _     _____ _      _________
_____ ____________________    _     _____ _     _     _____ _      _________
_____ ____________________    _     _____ _     _     _____ _      _________
_____ ____________________    _     _____ _     _     _____ _      _________

Press UP or DOWN to scroll through fields. Press ENTER to process.
Press END to return to the Define Table screen.
                                                          LINE 9  COL 40
```

Figure A-21: tablesONLINE Edit View

To reorder your table, change the keys from employee names to the department and division of each employee by changing the values in the Key Indicator field. Specify Y for the Division and Department fields and N for the Last Name and First Name fields. Press Enter to process your changes.

Now you have to update the table definition to match the new row definition. Press PF3 (END) to return to the tablesONLINE Define Table screen where you choose option 3 (Edit Table Definition) to redefine your table definition. When you press Enter, the tablesONLINE Edit Table Definition screen appears.

```
------------------- tablesONLINE EDIT TABLE DEFINITION -----------------------
COMMAND ===>
                   ITEM SIZE/KEY SIZE/KEY LOCATION HAS      CHANGED, HIT ENTER.

TABLE NAME: EXAMPLE    ORGANIZATION  ===> S     SEARCH METHOD  ===> B
    Organizations  (R=Random, U=User Control, S=Sequential, D=Desc Seq, H=Hash)
    Search Methods (S=Serial, Q=Queued Seq, B=Binary, C=Tree Binary, H=Hash)

TRUE OR POINTER   ===> P          (T=True, P=Pointer)
STORAGE MODE CODE ===> R          (R=Resident, P=Paged)
READ PASSWORD     ===>
WRITE PASSWORD    ===>
NUMBER OF ROWS    ===> 30         (Estimate when defining new table)
GENERATIONS       ===> 8
EXPANSION FACTOR  ===> 200        (Default of 200 is 20.0 percent)
LOWER DENSITY     ===> 500        (Default of 500 is 50.0 percent)
UPPER DENSITY     ===> 800        (Default of 800 is 80.0 percent)

ROW SIZE          ===> 62         (These fields are calculated
KEY SIZE          ===> 16          from field definitions. Press
KEY LOCATION      ===> 35          HELP for more information.   )

Press ENTER to process.
Press END to return to the Define Table screen.
                                                              LINE 3  COL 21
```

Figure A-22: tablesONLINE Edit Table Definition

The changes you made to your row definition do not need to be reflected here so you do not change any values. tablesONLINE has changed the Key Location and Key Size fields for you. Press Enter to process the new changes. Then press PF3 (END) to access the Identify Table screen. A message in the top right corner tells you that your table was updated. Your table is now ordered by employee division and department, not by employee first and last name.

The tablesONLINE Save Table Definition screen appears because you changed your table. Choose S (Save) and press Enter.

Return to the tablesONLINE Identify Table screen. Press PF3 (END) to access the tablesONLINE Primary Menu where you choose option 1 (Browse Table). Press Enter on the Browse Table screen, then the following screen appears.

You will notice that the order of the rows has changed. The employees are now ordered by department and by division, not by name.

Since your table is a quick reference both to find out which employees are in each department and to determine which employees have contributed the most to charity, the same data is required in two different organizations. One option is to

reorganize your table depending on what the request is, every time you access it. The other option is to create an alternate index definition for the table.

Identify the Alternate table name on the tablesONLINE Identify Table screen, Option 4 on the tablesONLINE Primary Menu.

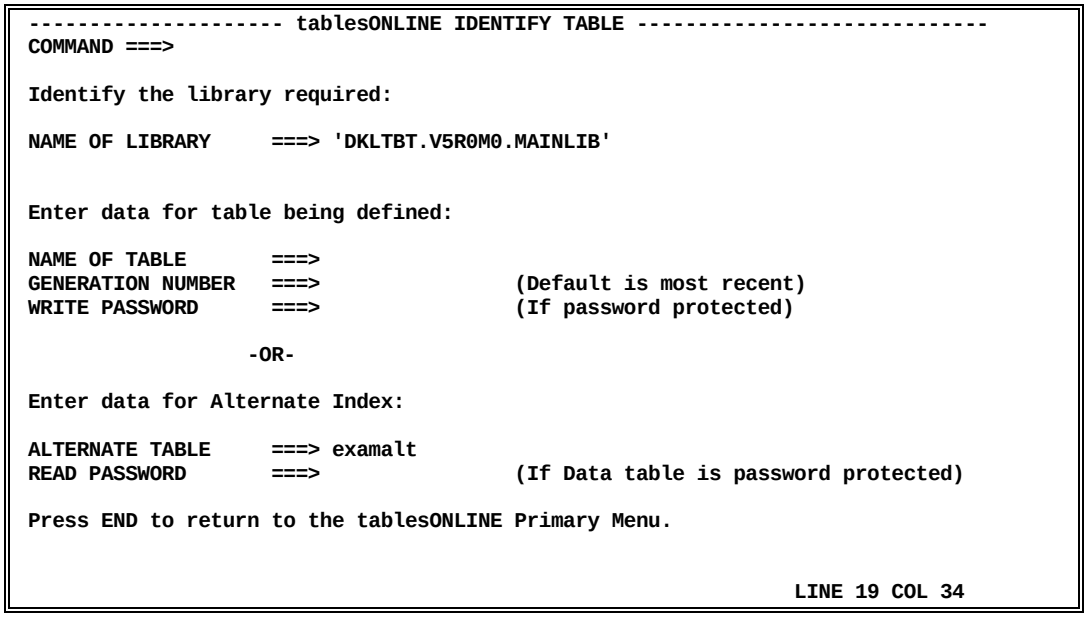


Figure A-23: tablesONLINE Identify Table

You want to create a table that is organized so that it shows the Charitable Contribution and Date of Contribution for each employee. Name the table EXAMALT.

The Identify Table screen illustrated in Figure A-23 of the Define Table option is used to identify the alternate table name.

When you press Enter, the tablesONLINE Define Alternate Parameters screen appears, as illustrated in Figure A-24.

The Library Name and Alternate Table Name fields are filled in. Specify the name of the base table, which is EXAMPLE. Enter values for the other fields.

```
------------------- tablesONLINE DEFINE ALTERNATE PARAMETERS -----------------
COMMAND ===>

LIBRARY NAME           : 'DKLTBT.V5R0M0.MAINLIB'
ALTERNATE TABLE NAME   : EXAMALT


BASE TABLE NAME     ===> EXAMPLE

TABLE ORGANIZATION  ===> S
SEARCH METHOD       ===> B
KEY LOCATION        ===> 52
KEY LENGTH          ===> 11




Press ENTER to process.
Press END to return to the Define Alternate Table screen.




                                                              LINE 1  COL 1
```

Figure A-24: tablesONLINE Define Alternate Parameters

After you have defined an alternate table, you have to define its associated View. Rather than create a new View, it is easier to copy the View for the table EXAMPLE and then modify it. Press END to access the tablesONLINE Primary Menu where you choose option 5 (Utilities). The tablesONLINE Utilities screen appears. Choose option G (View Utilities) and the View Utility Menu appears. Choose option 2 (Copy View) and the Copy View Definition screen appears, as illustrated in Figure A-25.

```
---------------------- tablesONLINE COPY VIEW DEFINITION ----------------------
COMMAND ===>


------- FROM ----------

NAME OF LIBRARY         ===> 'DKLTBT.V5R0M0.MAINLIB'
NAME OF TABLE           ===> EXAMPLE
GENERATION NUMBER       ===>             (Specify ALL to copy all generations)



------- TO ------------

LIBRARY (If different)     ===> 'DKLTBT.V5R0M0.MAINLIB'
TABLE NAME (If different)  ===> examalt




Press ENTER to process.
Press END to return to the View Utility Menu

                                                             LINE 16 COL 41
```

Figure A-25: tablesONLINE Copy View Definition

In the Name of Library field, type the name of the library that contains the base table. In the Name of Table field, type the name of the base table, EXAMPLE. Leave the Generation Number field blank which implies that the current generation is used as the default generation.

Leave the Library (if different) field blank because you are storing your alternate table in the same library as the base table. Type the name of your alternate table, EXAMALT, in the Table Name field.

Press Enter to process this screen. A message appears telling you that the copy was successful. Your next step is to edit the View called EXAMALT so that it shows you an alternate index of the table.

Type =W.4 on the command line to access the Define Table screen. Choose option 1 (Edit View). When you press Enter, the tablesONLINE Edit View screen appears, as illustrated in Figure A-26.

```
--------------------------- tablesONLINE EDIT VIEW --------------------------
COMMAND ===>
TABLE NAME: EXAMALT                   LOCATE FIELD  ===>

 ID   NAME                    KEY    LEN  FORMT ATTR   LEN  FORMT   EDIT EXIT
                              IND      (DISPLAY)     (TABLE-ENTRY)    NAME
00010 LAST NAME___________     N     20___ X     _      20___ U      _________
00020 FIRST NAME__________     N     14___ X     _      14___ U      _________
00030 DIVISION____________     n     8____ X     _      8____ U      _________
00040 DEPARTMENT__________     n     8____ X     _      8____ U      _________
00050 SEX_________________     N     1____ X     S      1____ U      _________
00060 CHARITABLE DONATION_     y     6____ 2     _      5____ N      _________
00070 DATE OF CONTRIBUTION     y     8____ A     V      8____ A      _________
_____ ____________________     _     _____ _     _      _____ _      _________
_____ ____________________     _     _____ _     _      _____ _      _________
_____ ____________________     _     _____ _     _      _____ _      _________
_____ ____________________     _     _____ _     _      _____ _      _________
_____ ____________________     _     _____ _     _      _____ _      _________
_____ ____________________     _     _____ _     _      _____ _      _________
_____ ____________________     _     _____ _     _      _____ _      _________
_____ ____________________     _     _____ _     _      _____ _      _________

Press UP or DOWN to scroll through fields. Press ENTER to process.
Press END to return to the Define Table screen.
                                                              LINE 6  COL 19
```

Figure A-26: tablesONLINE Edit View

You want to order your table so that the boss can figure out who gets a calculator this month. Change the values in the Key Ind field so that Charitable Donation and Date of Contribution are your new keys.

Press Enter to process your new definition. Then press PF3 (END) to return to the Define Table screen. Choose option 4 (Browse Table Definition) to see the new definition you created. The X in the Storage Mode Code field tells you that this table is an alternate index. To exit this screen, press PF3 (END).

Press END to return to the Define Table screen. A message appears that tells you that the View was updated.

When you press PF3 (END), the tablesONLINE Save Table screen appears. Choose S to save your table. Now that you have created an alternate index of your table, it can be viewed like a regular table.

Choose option 1 (Browse Table) to see your alternate table.

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