tablesONLINE/ISPF User's Guide

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Preface

This guide describes tablesONLINE/ISPF, the online user interface to tableBASE in an Interactive System Productivity Facility (ISPF) environment.

Who This Guide is For

This guide is intended for:

- managers of information services
- systems analysts
- programmers
- end users, who are familiar with tables, tableBASE, and ISPF

What is Covered in This Guide

This guide explains how to use tablesONLINE/ISPF. It discusses how to define tables, how to navigate through rows while editing or browsing them, and how to use the utilities, such as expanding a library, changing a password, renaming tables, and printing contents of a table or library.

What You Should Know to Use This Guide

Knowledge of TSO/ISPF and tableBASE aids in the understanding of this document.

The following terms are used throughout this guide. Descriptions are provided to make them more familiar.

Term	Description
Data Table	The raw data. Each Data Table has a table definition (DT-BLOCK) that is used to generate the Index for the Data Table. Also referred to as a base or primary table.
Index	An Index is defined for each Data Table. A Data Table Index is generated dynamically when a table is opened based on the information in the table definition (DT-BLOCK).

Term	Description
Alternate Index	An Alternate Index is an Index that may be defined for a Data Table. The Alternate Index has a table definition (ALT-DEFINITION) that defines the key, organization, and search order. Each Data Table may have as many Alternate Indexes as desired or none.
Delivered defaults	Refer to the defaults that are delivered with the product.
Installation defaults	Refer to the defaults set at installation time, which may or may not be the same as the delivered defaults.

In addition, tablesONLINE uses these terms:

Term	Description
View	A View provides the field, edit, and display attributes for a Data Table with its Index. Referred to in previous releases as a Field Definition Table (FDT).
Alternate Index View	An Alternate Index View is identical to a View but applies to a Data Table with its Alternate Index.

What This Guide Contains

The introduction presents tablesONLINE/ISPF, explains its relationship to tableBASE, briefly describes tables, and identifies tableBASE table access methods.

Chapter 2 describes how to start tablesONLINE/ISPF, explains the commands available, and introduces optional PF keys specialization.

Chapter 3, Editing and Browsing Tables, describes the facilities for manipulating Data Tables.

Chapter 4,Table Definition, shows how to define Data Tables and Views, the building block of tablesONLINE.

The guide concludes with a description of the utilities available that perform a variety of tasks.

Naming Protocol

Version 6 features the new tableBASE naming protocol. All tableBASE executables begin with DK1 for easy identification, a prefix that has been reserved for exclusive use with IBM.

Aliases are retained so that no changes are required to your existing applications.

Release 6.1.1 modules should be used to entirely replace earlier Version 6 modules.

What's New in Version 6

There are no noticeable changes to tablesONLINE/ISPF for Version 6. If you require an updated user editor to take advantage of the new features available in Version 6 consider tablesONLINE/CICS.

Additional tableBASE References

This guide is one of several that describe tableBASE; others include:

- Release Notes
- tableBASE Concepts and Facilities
- tableBASE Installation Guide
- tableBASE Batch Utilities Guide
- tableBASE Administration Guide
- tableBASE Programming Guide
- tablesONLINE/CICS User's Guide
- Quick Reference Guide

1 Introduction

The tablesONLINE/ISPF system is a user interface for the tableBASE system. It is a memory-resident table management system that automates the creation, processing, and maintenance of tables. It is menu-driven software designed to work with tables stored in tableBASE libraries. tablesONLINE/ISPF is an optional component of tableBASE.

Uses of tablesONLINE/ISPF

tablesONLINE/ISPF can be used to interactively work with tables for any tableBASE application. It can also be used as an interactive data entry and validation system to create and maintain tables used by other application programs. In addition tablesONLINE/ISPF is designed so that non-technical end users with well-documented table-driven programs can reconfigure software without assistance from technical personnel.

Accessing tableBASE Tables

tablesONLINE/ISPF is one of several ways to access tableBASE tables in a batch environment. Other access methods available for use are:

1. TBLBASE, the tableBASE API (application program interface) that issues tableBASE calls from within batch programs.

2. TBDRIVER, a program intended for application developers to interactively test TBLBASE calls. It can be used to test command sequences before committing the sequence to program logic.

3. TBEXEC, a batch table manipulation utility.

4. TBPRINT, a batch table printing utility.

5. TBDEFPRT, a batch table definition print utility.

Together, TBDRIVER and tablesONLINE/ISPF can operate as a complete interactive table-access facility. For more information refer to the chapter on TBDRIVER in the Programming Guide.

TBEXEC and TBDEFPRT are two utility programs that have been integrated into the tablesONLINE/ISPF facility so that most of the functionality they provide is available through the online facility.

Data tables created by tablesONLINE/ISPF can be used by TBEXEC and by applications that request tableBASE services via TBLBASE. For example, tablesONLINE can be used for interactive data entry and validation, and then, the table(s) can be accessed with either batch application software or TBEXEC. For more information, see the tableBASE Programming Guide and the tableBASE Batch Utilities Guide.

Certain features available in the CICS environment are not available in the ISPF environment. These features are:

- edit pattern
- Display Mask
- any field-edit action
- use of lowercase v, p, or m characters in the Display Attribute field

An error message is issued and the edit prevented if an attempt to edit a View that contains one of the above features is made. Note that the table itself can be edited. These features are fully described in the tablesONLINE/CICS User's Guide.

2 Getting Started with tablesONLINE/ISPF

This chapter tells you how to start the tablesONLINE/ISPF software.

Invoking tablesONLINE/ISPF

There is more than one way to invoke tablesONLINE/ISPF. As shown in Figure 2-1, invoking tablesONLINE/ISPF is an option on the **ISPF Primary Option Menu**. The delivered default is Option W - Invoke tablesONLINE, however its installer may choose another character, or, it may be invoked from a subordinate menu.

```
  Menu  Utilities  Compilers  Options  Status  Help
--------------------------------------------------------------------------------
                          ISPF Primary Option Menu
Option ===>

0  Settings      Terminal and user parameters          User ID . : BILL0
1  View          Display source data or listings       Time. . . : 09:40
2  Edit          Create or change source data          Terminal. : 3278
3  Utilities     Perform utility functions             Screen. . : 1
4  Foreground    Interactive language processing       Language. : ENGLISH
5  Batch         Submit job for language processing    Appl ID . : ISR
6  Command       Enter TSO or Workstation commands     TSO logon : TB600
7  Dialog Test   Perform dialog testing                TSO prefix: BILL
8  LM Facility   Library administrator functions       System ID : PROD
9  IBM Products  IBM program development products      MVS acct. : ACCT#
10 SCLM          SW Configuration Library Manager      Release . : ISPF 5.2
11 Workplace     ISPF Object/Action Workplace
M  More          Additional IBM Products
W  tableBASE     Invoke tablesONLINE

     Enter X to Terminate using log/list defaults
```

Figure 2-1: ISPF Primary Option Menu

To invoke tablesONLINE/ISPF, choose Option W - Invoke tablesONLINE on the **ISPF Primary Option menu**. The **tablesONLINE PRIMARY MENU** appears, as illustrated in Figure 2-2.

```
---------------------- tablesONLINE PRIMARY MENU (6.0) ----------------------
COMMAND ===>

                                                          USERID - BILL0
                                                          DATE   - 2003/09/04
                                                          TIME   - 10:57
                                                          TSOPREFIX- BILL

 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.
```

Figure 2-2: tablesONLINE PRIMARY MENU

The first three options on the **tablesONLINE PRIMARY MENU** are used to edit Data Tables.

Option 1 - BROWSE TABLE is used to view the table as a conventional ISPF dataset. This option will not be discussed in this guide.

Option 2 - BROWSE ROWS is used to review—but not change—a table.

Option 3 - EDIT ROWS enables is used to alter rows in a table.

Option 4 - DEFINE TABLE lets a table be defined as either a Data Table or a View.

Options 5 - UTILITIES is an additional facilities that encompass a range of utilities, like copying or printing a table.

Option 6 initiates the **tablesONLINE TBDRIVER** screen, as illustrated in Figure 2-3. For more information on TBDRIVER see *tableBASE Programming Guide, Release 6.0.3*.


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


Define the operational requirements of TBDRIVER:

LIBRARY NAME     ===> 'TBTEST.V600.BILL.MAINLIB'
                                    (Enter DIAGNOSTIC or blank to execute
                                     driver in test mode)

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

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



Press END to return to tablesONLINE Primary menu.
```

Figure 2-3: tablesONLINE TBDRIVER Screen

Note: The VE command can be issued from the tablesONLINE Primary Menu. The purpose of this command is to provide the current level of your tablesONLINE/ISPF application interface.

Commands

Because tablesONLINE/ISPF is an ISPF application, the commands available are typical ISPF commands that are issued by a PF key or as a typed command. For example:

- typing END or pressing <PF3> exits any menu and returns to the previous menu.
- typing HELP or pressing <PF1> invokes an online help facility. Every screen has separate online help text.
- giving a two-part response on a higher-level screen bypasses a lower screen. For example, typing W.6 on the **ISPF Primary Option Menu** makes the **tablesONLINE TBDRIVER** screen appear (instead of selecting Option W - Invoke tablesONLINE from the **Primary Option Menu**, and then Option 6 - TBDRIVER on the **tablesONLINE PRIMARY MENU**).
- typing an equal sign (=) followed by an option from any ISPF menu accesses that option. For example, typing =W.6 on any screen invokes the **tablesONLINE Utilities Menu**.
- On **Select Row**, **Edit Row**, or **Browse Row** screens, pressing <PF7> (UP) or PF8 (DOWN) scrolls one full-screen forward or backward. To scroll less than a full screen, type the number of rows on the command line and press <PF7> or <PF8>.

All available commands are displayed on screen except the KEYS command, which is used to redefine PF keys and view a display of active PF keys and functions. Entering the KEYS command displays the **PF Key Definition and Labels - Primary Keys** screen, see Figure 2-4.

```
                PF Key Definitions and Labels - Primary Keys
Command ===>
                                                                More:     +
Number of PF Keys . . . 24                        Terminal type  . . 3278
Enter "/" to select . .           (Enable EURO sign)

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  . .
```

Figure 2-4: tablesONLINE PF Key Definition and Labels - Primary Keys Screen

A PF key can be associated with any command, whether the command is applicable to tablesONLINE/ISPF, ISPF itself, or TSO. The GETCOUNT command is assigned to <PF4> in the above example

The association of keys and commands is performed using the keys that are presented vertically on screen. Assigning a particular label to the key is enabled by the horizontal presentation of the keys. This label will be shown when a PF key is displayed on a screen.

3
Editing and Browsing Rows

This chapter details the procedures for editing and browsing rows using tablesONLINE/ISPF software.

Select a Table

Select either Option 2 or Option 3 on the **tablesONLINE PRIMARY MENU** (see Figure 3-1).

```
 ----------------------- tablesONLINE PRIMARY MENU (6.0) -----------------------
COMMAND ===>

                                                              USERID - BILL0
                                                              DATE   - 2003/09/04
                                                              TIME   - 10:57
                                                              TSOPREFIX- BILL

 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.
```

Figure 3-1: tablesONLINE PRIMARY MENU

Note: For display purposes, tables/rows with hash or random organization are shown in ascending sequential order for Option 1 (Browse Table). Similarly, rows with hash organization are shown in ascending sequential order for Option 2

(Browse Rows) and Option 3 (Edit Rows). This is for display purposes only, and does not affect the actual row organization.

When selecting Option 2 or Option 3, the system displays a screen like the one shown in Figure 3-2.

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


Please identify the table required by entering the parameters below:


NAME OF LIBRARY     ===> 'DKLTBT.V6R0M0.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.
```

Figure 3-2: tablesONLINE ROW EDIT Screen

Below is a description of the parameters.

Name of Library

The name of the library that contains the table is typed in this field, enclosed in single quotes. If the quotes are omitted, the name is automatically prefixed with the TSOPREFIX (or USERID).

The default value is blank for the first tablesONLINE session, else the library previously specified.

Name of Table

The name of the table to be edited or browsed is typed in this field. The default is blank for the first tablesONLINE/ISPF session, else the table name previously specified.

Special View Name

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 a user's perspective, the Data Table and the View appear as one table. For purposes of tablesONLINE, however, they are defined as separate entities.

Unless a special View name is specified here, tablesONLINE generates a View name based on the specified table name. Use the Special View Name field to specify a View name other than the one generated by tablesONLINE/ISPF.

Generation Number

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

A generation is a version of a table. Every time a table is edited and stored, 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.

A positive number indicates an absolute generation number (range 1 to 255), for example, if 3 is specified the third generation of the table is selected. A zero or negative number (range 0 to -9) indicates a relative generation (relative to the most recently stored generation), for example, -1 is the previous generation.

Write Password

If the table has a write password it is entered in the Write Password field.

Select a Row

Once a table has been selected, the next step is to select a row in the table.

The **tablesONLINE IDENTIFY ROW** screen appears (see Figure 3-3) when <Enter> is pressed from the **tablesONLINE ROW EDIT** screen.

```
---------------------- 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             ===>                    ¦
FIRST NAME            ===>               ¦









Press END to return to Table Identification menu.
```

Figure 3-3: tablesONLINE IDENTIFY ROW Screen

There are three options to select rows:

1. the Scroll Search field is used to display all of the rows, from which one can be selected.

2. the Choose a Row by Count field is used to select the row(s) based on table position.

3. the Choose a Row by Entering the Keys field is used to selects a row based on its key value.

Scroll and Search

The Scroll and Search field allows one or more individual rows be scrolled and selected. Enter Y to scroll rows or N to edit a specific row.

If Y is entered, the **tablesONLINE SELECT ROW BY KEY** screen appears (see Figure 3-4).

```
------------------------ 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
s  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.
```

Figure 3-4: tablesONLINE SELECT ROW BY KEY Screen

To edit a row, place the cursor beside the row to be edited, and type S, as shown in Figure 3-4 beside the name Baker. The **tablesONLINE EDIT ROW** screen appears, as shown in Figure 3-5.

If N is inserted, a row can be selected for editing either by its position in the table or by its key.

Choose a Row By Count

To select a row by its relative location enter the count of the row in the Choose a Row by Count field. The relative location is in relation to the first row of the table.

Choose a Row by Key

To select a row by its key field, type the key value in the Last Name and First Name fields of the **tablesONLINE Identify Row** screen**,** shown in Figure 3-2.

When the selected row is found in the table, the **tablesONLINE ROW EDIT** screen appears, as illustrated in Figure 3-4.

If a key is specified that does not exist, an option to create a row is given.

Duplicate Keys Allowed

If Y is specified in the Duplicate Keys Ind field on the **tablesONLINE TABLE PARAMETERS EDIT** screen, the Duplicate Keys Allowed field is displayed.

Specify N in the Duplicate Keys Allowed field if the table cannot have two or more rows with identical keys.

Specify Y if the table can have rows with identical keys.

Edit a Row

After a row has been selected, the **tablesONLINE EDIT ROW** screen appears, as shown in Figure 3-5. The fields of the selected row are displayed.

```
---------------------- tablesONLINE EDIT ROW -----------------------------------
COMMAND ===>
TBL= EXAMPLE
LOCATE FIELD  ===>                                    ROW LOCATION = 5
TYPE-CHANGE   ===> U   (N=New, U=Update, D=Delete)

LAST NAME -----------  BAKER      ¦
FIRST NAME ----------  JOHN        ¦
DIVISION ------------  ADVTG   ¦
DEPARTMENT ----------  FLACK   ¦
SEX -----------------  M¦
CHARITABLE DONATION -  345.00¦
DATE OF CONTRIBUTION   20010626¦
 --------------------  *** END OF DATA ***
 --------------------
 --------------------
 --------------------
 --------------------
 --------------------
 --------------------
 --------------------

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

Figure 3-5: tablesONLINE EDIT ROW Screen

In this example, all the fields are displayed on one screen. Use <PF7> to scroll up and <PF8> to scroll down if there are more than 15 fields displayed on screen.

Field

To see a specific field, type its name in the Locate field and press <PF5> or the RFIND key. The field name must be identical to the field name in the View.

Type-Change

Valid values for the Type-Change field are:

- N (New)
- U (Update)
- 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. If you want to create a new row by using an existing row as a model, type N in the Type-Change field.

After you have specified the type of change, enter the data for the row.

Note: When <Enter> is pressed, any invalid data remains on the screen and must be corrected. To process the input, press <Enter>. To exit the screen without processing the input, press PF3.

PF Keys

While working with tablesONLINE/ISPF, PF keys are used. Additionally, two tablesONLINE/ISPF commands — GETCOUNT and INSCOUNT — can be included as PF keys.

GETCOUNT

GETCOUNT is used to retrieve the next row, the previous row, or any row, by count, from the **tablesONLINE ROW EDIT** screen (see Figure 3-2) or the **tablesONLINE ROW BROWSE** screen. GETCOUNT retrieves one row at a time.

Type +n (n represents the number of rows) and press the GETCOUNT key to skip forward more than one row. Type –n and press the GETCOUNT key to skip backward one or more rows.

Type n (n represents the position of the row in the table) and press the GETCOUNT key to retrieve a specific row.

INSCOUNT

INSCOUNT is used to add a row, in a specific position, to a user-ordered table.

Exit the Editor

To process changes and exit the **tablesONLINE EDIT ROW** screen (see Figure 3-2), press <Enter>.

To ignore changes and exit the **tablesONLINE EDIT ROW** screen (see Figure 3-2), press <PF3>or type END.

Either exit method returns the user to the screen where the row had been selected.

If the table was modified, the **tablesONLINE SAVE TABLE** screen as shown in Figure 3-6 appears, once the edit screens are complete.

To save changes, either select S (Save) and press <Enter>, or press <PF3>.

To abort 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.
```

Figure 3-6: tablesONLINE Save Table Screen

4
Table Definition

This chapter tells you how to define tables using the tablesONLINE/ISPF software.

How Table Definitions Work

tablesONLINE/ISPF 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, the names of the field(s), 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: the Data Table and the View.

Data table characteristics, such as table organization, search method, and row size are stored in a Data Table, which is defined by editing the table-definition block of the Data Table.

Other table-defining information specifies row characteristics and is stored in the View. Rows are defined in tablesONLINE Views.

tablesONLINE sees tables in pairs, each consisting of a Data Table and a View that contains the data definitions. Each table accessed by tablesONLINE must have both a data component and a View component. The name of each Data Table has the format shown in Table 4-1.

Table 4-1: Data Table Format

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

tablesONLINE automatically generates the View name by changing a bit of the first byte of the Data Table name, resulting in a lowercase letter.

A Data Table may have more than one associated View. Similarly, a View may be associated with more than one Data Table. Each View defines a different perspective of the Data Table. To the user, each View appears as a separate table.

There are three categories of table-defining information: row layout, tablesONLINE system characteristics, and tableBASE table definition.

Row Layout Information

Row layout information, such as:

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

are stored in Views, one View row for each field.

tablesONLINE System Characteristics of Table

tablesONLINE system characteristics of a table, such as:

- row-level validation
- table-level validation

are stored in a special View row called the trailer.

tableBASE Definition of Table

General table characteristics, such as organization and search method are specified in the definition block in the Data Table.

Note: A View that has been defined in tablesONLINE/CICS loses its display order when it is edited in tablesONLINE/ISPF.

Unlike tablesONLINE/CICS, field display order cannot be defined in tablesONLINE/ISPF therefore fields are displayed in layout order.

Select a Table

To select a table, choose Option 4 - DEFINE TABLE on the **tablesONLINE PRIMARY MENU** (see Figure 3-1). The **tablesONLINE IDENTIFY TABLE** screen appears, as shown in Figure 4-1.

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

Identify the library required:

NAME OF LIBRARY     ===> 'TBASE.V6R0M0.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 INDEX     ===>
READ PASSWORD       ===>                 (If Data table is password protected)

Press END to return to the tablesONLINE Primary Menu.
```

Figure 4-1: tablesONLINE IDENTIFY TABLE Screen

On this screen, either a Data Table or Alternate Index is specified.

Name of Library

Type the name of the library (in single quotes) that contains the table or Alternate Index in the Name of Library field.

Name of Table

Enter the name of the Data Table or View to be selected in the Name of Table field.

If creating an Alternate Index definition, enter the name of the Data Table for which the Alternate definition is being made. This entry populates the Data Table Name field of the **tablesONLINE DEFINE ALTERNATE PARAMETERS** screen, which is shown on Figure 4-6.

If 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 its format.

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

1. Go to the **tablesONLINE VIEW UTILITY MENU** (see Figure 5-15).

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 **tablesONLINE PRIMARY MENU** (see Figure 3-1).

5. Select the new name as the table to be defined.

Note: Ensure that the data in the table fits the new field definitions when a new View for an existing Data Table is created. tablesONLINE/ISPF does not check this.

Generation Number

Specify the generation number of the table in this field, which only applies to Data Tables.

Write Password

Type the write password (if the Data Table has one) in this field.

Alternate Index

To create or modify an Alternate Index, fill in the Alternate Index field and password if one is required. See the naming convention for Name of Table on the 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.

Select an Option

Once a table has been selected, press <Enter>. The **tablesONLINE DEFINE TABLE** screen appears, as illustrated in Figure 4-2.

Seven options are available:

- Options 1-3 deal with defining tables and Views. These options should be performed in sequence because tablesONLINE fills in values calculated from previous options.
- Options 4 and 5 are for browsing table and View definitions.
- Options 6 and 7 are for deleting Data Tables and Views.

```
---------------------- tablesONLINE DEFINE TABLE ------------------------------
COMMAND ===>


        LIBRARY NAME : 'TBASE.V6R0M0.C04.MAINLIB'
        TABLE NAME   : EXAMPLE             GENERATION : 0


 1 - EDIT VIEW                    - Define the fields in a data table
 2 - EDIT TABLE PARAMETERS        - Define the parameters of a data table
 3 - EDIT TABLE DEFINITION        - Define a data table
 4 - BROWSE TABLE DEFINITION      - Browse the definition of a data table
 5 - BROWSE ROW LAYOUT            - Browse the view
 6 - DELETE TABLE GENERATION      - Delete one generation of a data table
 7 - DELETE VIEW                  - Delete the view




Press PF1 for HELP on View/Data Table relationships
Press END to return to the Identify Table screen.
```

Figure 4-2: tablesONLINE DEFINE TABLE Screen

Edit a View

To create or change a View, choose Option 1 - EDIT VIEW on the **tablesONLINE DEFINE TABLE** screen. The **tablesONLINE EDIT VIEW** screen appears, as illustrated in Figure 4-3.

Each field in the View is defined on this screen. To move quickly to a desired field, use the Locate Field.

```
--------------------------- 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.
```

Figure 4-3: tablesONLINE EDIT VIEW Screen

Edit View Fields

The following section describes the fields of the Edit View screen.

ID

The ID column orders the rows in the View and consequently must match the order of the fields in the Data Table row. When <Enter> is pressed, the rows are ordered according to the numbers typed in this column. A number must be entered in this column for each field defined.

Name

The name of the field being defined is typed in the Name field.

Key Indicator (Key Ind)

This dual-purpose field is used to denote the field as being:

- a key field, and

whether it contains a Dynamic View Suffix.

Values are N, Y, S, and B. The default is N. Table 4-2 explains these values.

Table 4-2: Key Indicator Description

Value	Is field part of key?	Does field affect dynamic views?
N	No	No
Y	Yes	No
S	No	Yes
B	Yes	Yes

tableBASE requires that key fields be contiguous. An error message is issued if Y or B is specified for a field that is not contiguous to the other key fields. If S or B is specified, a display length from 1-8 characters (the length of the Dynamic View Suffix) must be specified.

Key Fields

Fields that are part of the key determine the order of the rows within the table. For example, a table containing employee information with Last Name as the identified 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 using an extra field in each row. This field, called the Dynamic View Suffix, can be 1-8 characters in length.

When tablesONLINE processes a row containing a Dynamic View Suffix, it checks the value in the Dynamic View Suffix field against the last characters in the View name to determine whether the current View applies to the row. For example, if the suffix was 02 and the View name was TABLE02, the current View would be applied to the row. If the View name was TABLE03, the View would not be applied to the current row. Using the Dynamic View Suffix, there may be a different View for each row with a different dynamic suffix value.

To define a table with different row layouts, an extra field must be added 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 (see Table 4-3).

Specify the format of the data, when *stored*, in the Format (Table-Entry) field (see Table 4-3).

Table 4-3: Display/Field Format Combinations

Display Format	Displayed As	Field Format	Stored As
X	Alphanumeric	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 Format.
E	ddmmmyy/ddmmmyyyy	E	

To view the same data in different ways, place different values in the Format (Display) field and Format (Table-Entry) fields. For example, if X is specified for Format (Display) and X for Format (Table-Entry), then ABC is displayed as ABC. However, if Y is specified for Format (Display) in this example, the hexadecimal value of ABC is shown, which is C1C2C3.

When a value is specified 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 (see Table 4-4).

Table 4-4: Display Formats

Display Format Entered	**Default Field Format**	**Default Rule**
X	U	Translate lowercase alphabetic characters to upper case.
Y	X	Pack hex digits into characters, unedited.
N,0,1,2 to 9	N	Store numbers as zoned decimal.
A B C D E	A B C D E	Store dates in format used on input, if LENGTHs are not entered, they will default to the shorter lengths like 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. Table 4-5 shows valid values for these fields.

Table 4-5: Display/Field Length Combinations

Display Format	Display Length	Field Format	Field Length
X	1 - 50	X	Same as display
		U	Same as display
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 and decimal point)	F	4 (display length limited to 9 digits)
:		H	2 (display length limited to 5 digits)
9	10 - 18 (including sign and decimal point)		
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)

Attributes specify how the data in the field is displayed and whether or not edits are allowed. Valid values are:

- a blank, which is the default. It specifies that the field is displayed and can be edited.
- N, which specifies that the field is not displayed with this View. Suppressed fields are useful because they restrict fields that users see.
- S, which specifies that the field is not displayed when the rows on the **tablesONLINE Select Row** screen are being scrolled. However, when the row is selected, all the fields are displayed on the **tablesONLINE Row Edit** screen. Suppressing fields on the **tablesONLINE Identify Row** screen is useful to not display fields that are irrelevant to the row selection criteria.
- F, which specifies that the field is a filler field — it is storage-allocated for future expansion.
- C, which 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 tableBASE Programming Guide.

Edit Table Parameters

To define or edit table parameters, choose Option 2 - EDIT TABLE PARAMETERS from the **tablesONLINE Define Table** screen (see Figure 4-2). The **tablesONLINE EDIT TABLE PARAMETERS** screen appears, as shown in Figure 4-4

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

LIBRARY NAME              : 'TBASE.V6R0M0.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.
```

Figure 4-4: tablesONLINE EDIT TABLE PARAMETERS Screen

Library Name

This field names the library that contains the table and cannot be changed. It is for information only.

View Name

The View Name field names the View. It cannot be changed, it is information for only.

Data Table Name

If defining an Alternate Index View, the name of the Data Table is typed in the Data Table Name field, else this field is left 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

To specify an exit program for a row or table, use these fields. The function of exit programs is outlined in the tableBASE Programming Guide.

Dynamic Suffix Locn

When a dynamic suffix field is being defined (Key Ind field is S or B), the prompt Dynamic Suffix Locn will appear on the screen. It 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. This field cannot be edited.

Row Size, Key Location, and Key Size

Row Size, Key Location, and Key Size are values that tablesONLINE/ISPF calculates from the View information. These fields cannot be edited.

Define a Table

To define general characteristics of the Data Table, choose Option 3 - EDIT TABLE DEFINITION on the **tablesONLINE DEFINE TABLE** screen (see Figure 4-2). The **tablesONLINE EDIT TABLE DEFINITION** screen appears, as illustrated in Figure 4-5. The fields are initialized to default values if defining a new table. Press <Enter> to process input. If <PF3> is pressed to exit the screen and <Enter> is not pressed, 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          (P=Pointer, T=True, Default=P)
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.
```

Figure 4-5: tablesONLINE EDIT TABLE DEFINITION Screen

The following descriptions provide an overview of the fields on the **tablesONLINE Edit Table Definition** screen (see Figure 4-5). For more information, see the tableBASE Programming Guide.

Table Name

This field names the table that is being defined. This field cannot be edited.

Organization

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

R (Random)

New rows are added to the end of the table if a table has Random organization. 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 sequence.

H (Hash)

Rows are organized by arithmetic operations on the key fields.

Search Method

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

S (Serial)

A Serial search 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)

A Binary search 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 (Bounded Binary)

The bounded binary search process compares the search key to the endpoints of an Index to determine if the search key is within the Index range. If the search key is not within the range, then the system returns a "not found" message. If the search key is within the range, then a binary search process is used to find the key position.

A bounded binary search is a fast technique for performing inserts into ordered data.

The table organization must be ascending or descending S (Sequential).

Note: Any screen reference to "Tree Binary" indicates that the search method is Bounded Binary.

H (Hash)

During a Hash search, the table is searched by a hash function.

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

Organization and search method are closely related. For most applications, only the organization needs to be specified, and tablesONLINE fills in the search method with a default value.

Table 4-6 shows the search methods that are valid with each table organization.

Table 4-6: Search Method and Table Organization

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

True or Pointer

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

In Version 6, the table is maintained internally as a Pointer regardless of whether T or P is entered in this field.

The Data Table must be a Pointer table to be able to define Alternate Indexes on a table so as to allow table searches based on a different key.

Storage Mode Code

The only possible value is R (Resident) in the Storage Mode Code field.

Note: In prior releases, setting P (Paged) was supported to allow very large tables to be maintained a page at a time. With the use of Data Spaces, it is more efficient to let the operating system handle paging.

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, although the write password is blank, the read password will be needed to update the table.

Number of Rows

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

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

Generations

Specify the number of generations of the table to be kept in this field. Up to nine generations of a table can be stored in the tableBASE library.

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 field 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 the location of the key within the row. Table 4-7 shows the minimum value, maximum value, and default value for Row Size, Key Size, and Key Location.

Table 4-7: Sizes

Field Name	Minimum Value	Maximum Value	Default Value
ROW SIZE	1	32767	1
KEY SIZE	1	smaller of 256 or ROW SIZE	1
KEY LOCATION	1	ROW SIZE - KEY SIZE + 1	1

If the View has been previously defined, tablesONLINE will fill in the values for these fields. If the View has not been defined, these values have to be calculated.

Delete a Table Generation

To delete a generation of a table, choose Option 6 - DELETE TABLE DEFINITION on the **tablesONLINE DEFINE TABLE** screen (see Figure 4-2). When <Enter> is pressed, the specified table generation is deleted.

A View cannot be deleted with this option if its associated Data Table exists.

Create an Alternate Index

To create an alternate key definition of a Data Table, type the Alternate Index name and the password (if applicable) on the **tablesONLINE IDENTIFY TABLE** screen (Figure 4-1), and press <Enter>. The **tablesONLINE DEFINE ALTERNATE PARAMETERS** screen appears, see Figure 4-6.

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

LIBRARY NAME           : 'TBASE.V6R0M0.C04.MAINLIB'
ALTERNATE INDEX NAME   : EXAMALT


DATA 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 Index screen.
```

Figure 4-6: tablesONLINE DEFINE ALTERNATE PARAMETERS Screen

Library Name

The Library Name field names the library that contains the table. This field cannot be changed. it is information only.

Alternate Index Name

The Alternate Index Name names the Alternate Index. This field cannot be edited. It is information only.

Data Table Name

Enter the name of the Data Table of the Alternate Index that is being defined.

Organization

Specify how the Alternate Index is organized in the Organization field. The default is taken from the Data Table. Possible values are R, U, S, D, and H. See “Define a Table” on page 39 for a description of these values.

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. See “Define a Table” on page 39 for a description of these values.

Key Location and Key Length

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

5 Utilities

There are several utility functions provided by tablesONLINE/ISPF. To access these functions, select Option 5 - UTILITIES on the **tablesONLINE PRIMARY MENU** (see Figure 3-1). The **tablesONLINE UTILITY MENU** appears, as illustrated in Figure 5-1. Select a utility and press <Enter>.

```
------------------------ tablesONLINE UTILITY MENU (6.0) --------------------
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  DELETE TABLE     - Delete all generations of a table
   C  CHANGE PASSWORD  - Change the read or write password of a table
   D  VIEW UTILITIES   - Access the utilities for Views



   Press END to return to the tablesONLINE Primary Menu.
```

Figure 5-1: tablesONLINE UTILITY MENU

When <Enter> is pressed on a utility screen, messages documenting processing and error notification appear. When three asterisks (***) appear after the messages, press <Enter> to continue.

When a report is printed on a utility screen, the information is automatically put into an ISPF dataset that can be browsed. When the dataset is exited, an ISPF screen with JCL job cards that can be modified appears.

To print the report, modify the JCL as appropriate and press <Enter>.

To exit the screen without printing the report, press <PF3> (END).

Print Directory

To print a list of the tables in a library, choose Option 1 - PRINT DIRECTORY on the **tablesONLINE UTILTIY MENU** (see Figure 5-1). The **tablesONLINE PRINT DIRECTORY** screen appears, as shown in Figure 5-2.

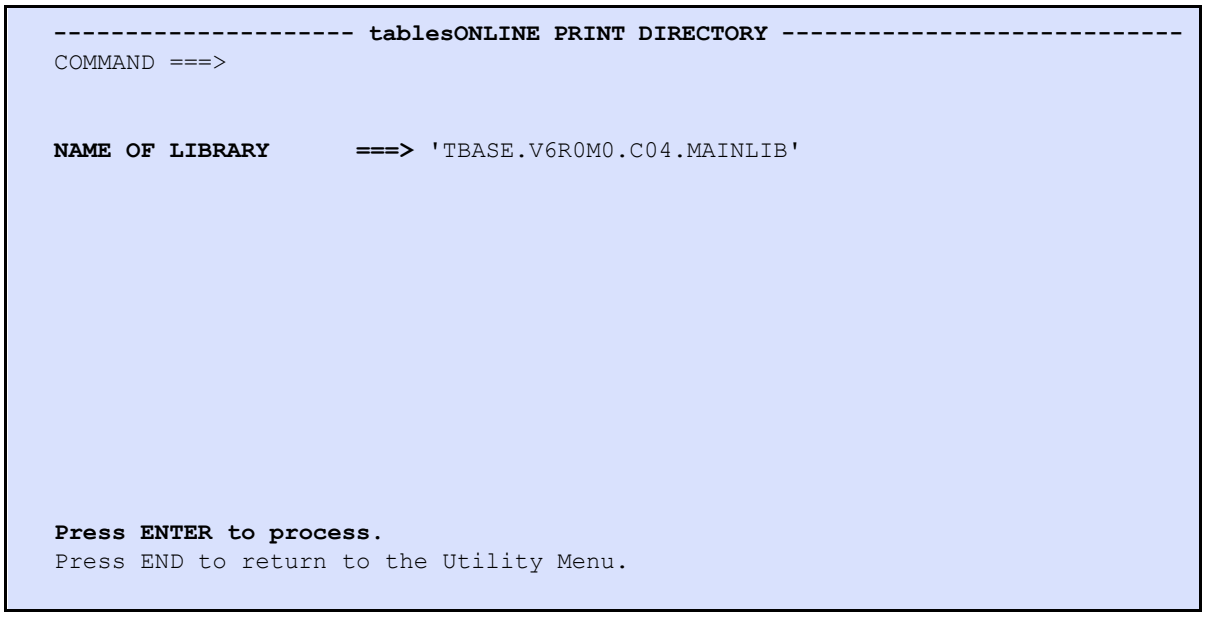

Figure 5-2: tablesONLINE PRINT DIRECTORY Screen

Name of Library

Type the name of the library for which the directory is to be printed in the Name of Library field. Enclose the name in single quotes.

Print Definition

To print the definition of the current generation of a table, choose Option 2 - PRINT DEFINITION on the **tablesONLINE UTILITY MENU** (see Figure 5-1). The **tablesONLINE PRINT TABLE DEFINITION** screen appears, as shown in Figure 5-3.

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


DATASET NAME OF LIBRARY ===> 'TBASE.V6R0M0.C04.MAINLIB'
NAME OF TABLE           ===> EXAMPLE









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

Figure 5-3: tablesONLINE PRINT TABLE DEFINITION Screen

Dataset Name of Library

Type the name of the library and enclose it in single quotes in this field.

Name of Table

Type the name of the table whose definition is being printed in this field.

Print Contents

To print the contents of a table, choose Option 3 - PRINT CONTENTS on the **tablesONLINE UTILITY MENU** (see Figure 5-1). The **tablesONLINE PRINT TABLE CONTENTS** screen appears, as illustrated in Figure 5-4.

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


DATASET NAME OF LIBRARY ===> 'TBASE.V6R0M0.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.
```

Figure 5-4: tablesONLINE PRINT TABLE CONTENTS Screen

Dataset Name of Library

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

Name of Table

Type the name of the table that is being printed in this field.

Generation Number

Specify the generation number of the table in this field. The current generation is the default.

Read Password

Type the read password if the table has one.

Format of Report

Specify the print format in this field. Valid 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 in this field. The default is 100 characters.

Starting Row Number

Specify the row number where the printing starts in this field. 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 within the row where the printing starts in this field. The default is 1 which is the first character in the row.

Number of Characters

Specify the number of characters in the row to be printed in this field. The default is ALL.

Copy Table

To copy tables within a library or to another library, choose Option 4 - COPY TABLE on the **tablesONLINE UTILITY MENU** (see Figure 5-1). The **tablesONLINE COPY TABLE** screen appears, see Figure 5-5. If a library requires an increase in size, see "Expand Library" on page 55.

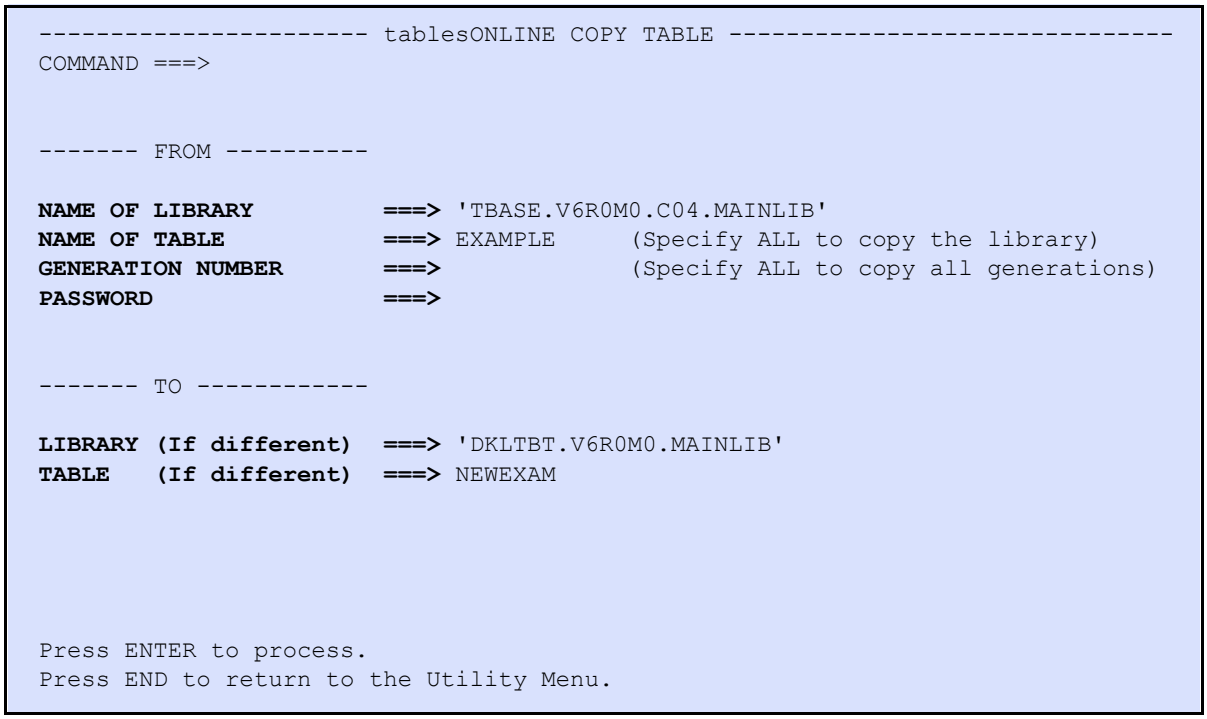

Figure 5-5: tablesONLINE COPY TABLE Screen

Name of Library

In the Name of Library field, the name of the library that contains the table is inserted, enclosed in single quotes.

Name of Table

The name of the table to be copied is specified in this field.Specify ALL to copy all the tables in the library.

Generation Number

Specify the generation number of the table to be copied in this field. 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 in this field.

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 the table is being copied to.

Table (If Different)

Type the name of the new table in this field.

Define Library

To create a new library, choose Option 5 - DEFINE LIBRARY on the **tablesONLINE UTILITY MENU** (see Figure 5-1). The **tablesONLINE DEFINE LIBRARY** screen appears, as shown 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.V6R0M0.C04.NEWLIB'

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









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

Figure 5-6: tablesONLINE DEFINE LIBRARY Screen

Dataset Name of Library

Type the name of the library that is being created, enclosed in single quotes.

Unit Type

Specify the type of disk unit where the library will reside in the Unit type field.

Volume Serial Number

Specify the volume serial number of the disk pack where the library will reside, in this field, required for tableBASE VSAM libraries.

Number of Blocks

Specify 3120 byte blocks to be allocated for the library in this field. There should be at least 15 blocks to a library.

Type of Library

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

The Define Table Library Utility submits a batch job to define the table. When <Enter> is pressed, the screen used to input JCL is displayed (see Figure 5-7); enter the job information and press <Enter> on this screen to define the table.

```
------------------ tablesONLINE -- JOB INFO (DEFINE LIBRARY) ------------------
COMMAND ===>

    Enter up to 8 lines of "JCL" information --
          Line  1    Must be "JOB" information
          Lines 1-5  Include "JOB" required passwords, routing,
                     printer identification, accounting
          Lines A-C  Follow the execution of 'DEF' PROC and may
                     contain overrides to the output 'DD's
                     (DEF.TBRPT, DEF.TBMSG etc.)

1  ===> //JOBNAME JOB (account),'NAME',CLASS=Q,MSGCLASS=X,
2  ===> //    TIME=(,30)
3  ===> /*ROUTE PRINT RMTXX
4  ===> //*    ****************************************
5  ===> //*     DEFINE NEW TABLEBASE LIBRARY

A  ===>
B  ===>
C  ===>

    Press ENTER to submit the Job in background
    Press END   to bypass Job submission and return to Define Menu
```

Figure 5-7: tablesONLINE JOB INFO (DEFINE LIBRARY) Screen

Expand 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 table data. To expand a library, a new, larger library must be created. See “Define Library” on page 53.

After the new library has been defined, select Option 6 - EXPAND LIBRARY on the **tablesONLINE UTILITY MENU** (see Figure 5-1). The **tablesONLINE EXPAND LIBRARY** 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 (the date and time that the table generation was created) whereas the Copy utility resets them.

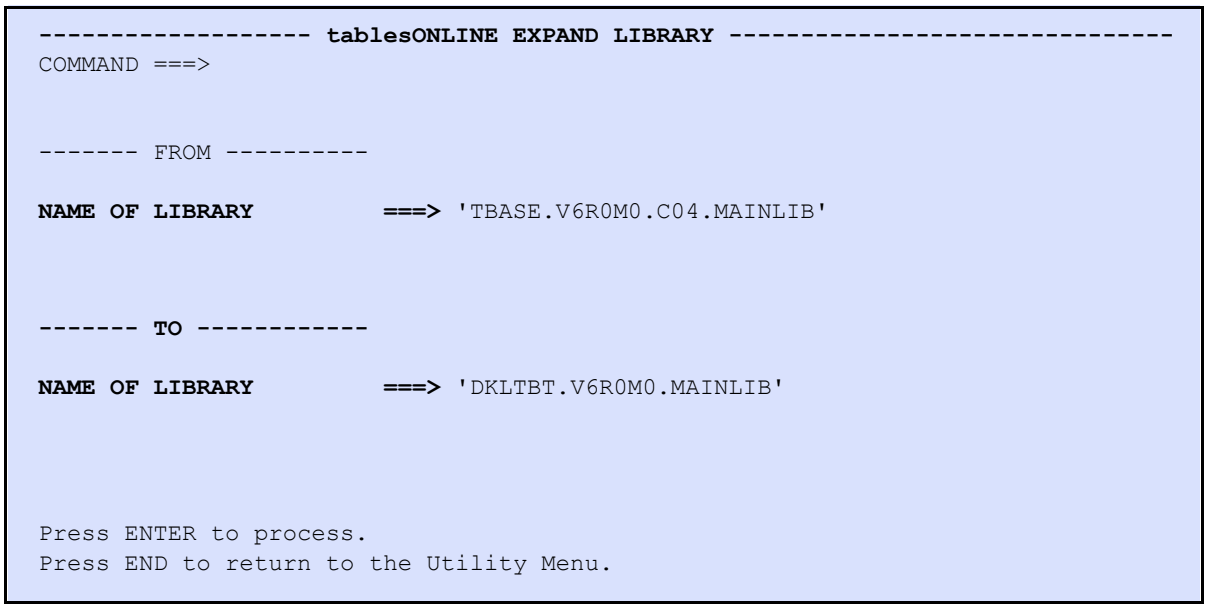

Figure 5-8: tablesONLINE EXPAND LIBRARY Screen

.From - Name of Library

Type the name of the library to be expanded in this field, enclosed in single quotes.

To - Name of Library

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

Load Table

Option 7 - LOAD TABLE on the **tablesONLINE UTILITY MENU** (see Figure 5-1) menu populates a Data Table with data from a standard sequential dataset. The Data Table must be defined prior to the load. Any data in the table will be overwritten by the loading process.

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** 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.V6R0M0.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.
```

Figure 5-9: tablesONLINE LOAD TABLE Screen

Input Dataset Name

Type the name of the dataset that contains the sequential file to be loaded to a table, in this field. The name is enclosed in single quotes.

Starting Record Number

In the Starting Record Number field, the record number in the dataset where the loading is to start is specified. To start at the first record, the field is either left blank or a 1 is entered.

Number of Records

The number of records that are being loaded is specified in this field. It is left blank to load the entire file.

Starting Character

Specify the position of the character in the record where the loading starts. To start at the beginning of the record, the field is left blank or a 1 is entered.

Name Of Library

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

Name Of Table

Type the name of the table that is to be loaded in this field.

Generation Number

Specify the generation number of the table in the Generation Number field. 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.

Unload Table

Option 8 - UNLOAD TABLE on the **tablesONLINE UTILTIY MENU** (see Figure 5-1) 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.V6R0M0.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.
```

Figure 5-10: tablesONLINE UUNLOAD TABLE Screen

Name of Library

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

Name of Table

Type the name of the table that is being unloaded in this field.

Generation Number

Specify the generation of the table in this field. The default is the current generation.

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 will start unloading from the first row.

Number of Rows

Specify the number of rows to be unloaded from the table. The default is all rows.

Starting Character

Specify the byte position in the row where the records going to the output dataset are to begin. The default is 1.

Output Dataset Name

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

Rename Table

To rename a table, select Option 9 - RENAME TABLE on the **tablesONLINE UTILTIY MENU** (see Figure 5-1). The **tablesONLINE RENAME TABLE** screen appears, as shown in Figure 5-11.

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


------ FROM -----------
NAME OF LIBRARY    ===> 'TBASE.V6R0M0.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.
```

Figure 5-11: tablesONLINE RENAME TABLE Screen

Name of Library

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

Name of Table

Type the name of the table you are renaming in the Name of Table field.

Write Password

Type the write password if the table has one.

New Name of Table

Type the new name of the table in this field.

Empty Table

To empty the contents of a table, select Option A - EMPTY TABLE on the **tablesONLINE UTILITY MENU** (see Figure 5-1). The **tablesONLINE EMPTY TABLE** screen appears, as illustrated in Figure 5-12. When the fields are populated and <Enter> is pressed, tablesONLINE clears the contents of the table and stores a new empty generation of the table in the library.

```
----------------------- tablesONLINE EMPTY TABLE -------------------------------
COMMAND ===>


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









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

Figure 5-12: tablesONLINE EMPTY TABLE Screen

Name of Library

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

Name of Table

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

Generation Number

Specify the generation number of the table to be emptied. The current generation is the default.

Write Password

Type the write password if the table has one.

Delete a Table

To delete all generations of a table and the associated Views, select Option E - DELETE TABLE on the **tablesONLINE UTILITY MENU** (see Figure 5-1). The **tablesONLINE DELETE TABLE** screen appears, as illustrated in Figure 5-13.

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


NAME OF LIBRARY     ===> 'TBASE.V6R0M0.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.
```

Figure 5-13: tablesONLINE DELETE TABLE Screen

Name of Library

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

Name of Table

Type the name of the table that is being deleted in this field.

Write Password

Type the write password if the table has one.

Change a Password

To change the read or write password of a table, choose Option F - CHANGE PASSWORD on the **tablesONLINE UTILITY MENU** (see Figure 5-1). The **tablesONLINE CHANGE TABLE PASSWORD** screen appears, as illustrated in Figure 5-14.

Note: When the password is changed, 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.V6R0M0.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.
```

Figure 5-14: tablesONLINE CHANGE TABLE PASSWORD Screen

Name of Library

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

Name of Table

Type the name of the table whose password is being changed in this field.

Current Write Password

Type the current write password of the table in this field.

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. However, if there is no write password and a read password exists, enter the read password in this field.

View Utilities

To work with utilities that operate on Views, select Option G - VIEW UTILITIES on the **tablesONLINE UTILITY MENU** (see Figure 5-1). The **tablesONLINE VIEW UTILITY MENU** screen appears, as illustrated in Figure 5-15.

```
------------------------ tablesONLINE VIEW UTILITY MENU -----------------------
COMMAND ===>



   1  PRINT VIEW   - Print a view definition
   2  COPY VIEW    - Copy a view definition to another library
   3  DELETE VIEW  - Delete a view definition
   4  LOAD VIEW    - Load a view definition from a dataset
   5  UNLOAD VIEW  - Unload a view definition to a dataset









   Press END to return to the tablesONLINE Utility Menu.
```

Figure 5-15: tablesONLINE VIEW UTILITY MENU Screen

Print View

To print Views, select Option 1 - PRINT VIEW on the **tablesONLINE VIEW UTILITY** menu (see Figure 5-15). The **tablesONLINE PRINT VIEW DEFINITIONS** screen appears, as illustrated in Figure 5-16

.

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


  NAME OF LIBRARY    ===> 'TBASE.V6R0M0.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.
```

Figure 5-16: tablesONLINE PRINT VIEW DEFINITIONS Screen

Name of Library

Specify the library that contains the Views being printed, enclosed in single quotes.

Select or Exclude

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

Name of Table

Up to six Views can be selected or excluded. 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 2-6 only.

By Field Name Sequence

To print the report in field name sequence, specify Y (Yes) in this field. The default is N (No) for the fields to be printed as defined in the row.

Copy View

To copy Views within a library or to another library, select Option 2 - COPY VIEW on the **tablesONLINE VIEW UTILITY MENU** (see Figure 5-15). The **tablesONLINE COPY VIEW DEFINITION** screen appears, as illustrated in Figure 5-17.

This option will not overwrite a View. If an attempt is made 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.V6R0M0.C04.MAINLIB'
NAME OF TABLE           ===> EXAMPLE
GENERATION NUMBER       ===>             (Specify ALL to copy all generations)



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

LIBRARY (If different)     ===> 'DKLTBT.V6R0M0.MAINLIB'
TABLE NAME (If different)  ===> NEWEXAM




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

Figure 5-17: tablesONLINE COPY VIEW DEFINITION Screen

Name of Library

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

Name of Table

Type the name of the View that is being copied. Specify ALL in this field to copy all tables in the library.

Generation Number

Specify the generation number of the table in this field. 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 to be copied to.

Table Name

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

Delete View

To delete a View, select Option 3 - DELETE VIEW on the **tablesONLINE VIEW UTILITY MENU** (see Figure 5-15). The **tablesONLINE DELETE VIEW DEFINITION** screen appears, as shown in Figure 5-18.

Notes: The Delete View 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.V6R0M0.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.
```

Figure 5-18: tablesONLINE DELETE VIEW DEFINITION Screen

Name of Library

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

Name of Table

Type the name of the View that is being deleted.

Password

Type the password if the View has one.

Load Views

Option 4 - LOAD VIEW on the **tablesONLINE VIEW UTILITY MENU** (see Figure 5-15) allows a View to be created from field definition information in a standard sequential dataset. After selecting this option, the **tablesONLINE LOAD VIEW DEFINITION** screen appears, as illustrated in Figure 5-19.

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.
```

Figure 5-19: tablesONLINE LOAD VIEW DEFINITION Screen

Input Dataset Name

Type the name of the dataset that contains the data being loaded to create the View.

Name of Library

Type the name of the library that contains the View in this field.

Name of Table

Type the name of the View being loading to in this field.

Unload View

Option 5 - UNLOAD VIEW on the **tablesONLINE VIEW UTILITY MENU** (see Figure 5-15) copies the formatting information contained in a View to a standard sequential dataset. It is the opposite function of Option 4 - LOAD VIEW. On selecting Option 5, the **tablesONLINE UUNLOAD VIEW DEFINITION** screen appears, as shown in Figure 5-20.

```
---------------------- 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.
```

Figure 5-20: tablesONLINE UNLOAD VIEW DEFINITION Screen

Name of Library

Type the name of the library that contains the View in this field.

Name of Table

Type the name of the View that you are unloading in this field.

Output Dataset Name

Type the name of the dataset that the View definition is being copied to.

6 tablesONLINE/ISPF Messages

This chapter lists all the tablesONLINE/ISPF messages.

Table 1: tablesONLINE / ISPF messages and error codes

Msg #	Short format	Long format	Meaning
MSG000	TBSYSLB ALLOCATION ERROR	TABLESONLINE/ISPF SYSTEM LIBRARY CANNOT BE ALLOCATED; SEE TBASE ADMIN	Contact system administrator.
MSG001	LIBRARY NOT ALLOCATED	LIBRARY IS ALREADY ALLOCATED OR IS NOT CATALOGUED OR DOES NOT EXIST	
MSG002	TABLE BASE ERROR &TBERR HELP=TBERROR	REFER TO TABLEBASE REFERENCE CARD OR PRESS HELP KEY AGAIN	
MSG003	INVALID GENERATON NUMBER	THE GENERATION NUMBER IS NOT LEFT JUSTIFIED NUMERIC (SIGNED)	
MSG005	TABLE IS EMPTY	TABLE CONTAINS NO ROWS, BROWSE IS SUPPRESSED	
MSG006	NEW TABLE DEFINED	ANEWTABLEHASBEENDEFINEDINSTORAGE	Information only.
MSG007	GENERATION DELETED	THE REQUESTED GENERATION OF TABLE &TABLE HAS BEEN DELETED	Information only.
MSG008	DEFINITION CHANGED	THE DEFINITION OF TABLE &TABLE HAS BEEN CHANGED SUCCESSFULLY	Information only.
MSG009	TABLE SAVED	THETABLEHASBEENSUCCESSFULLYSAVED	Information only.
MSG010	FIELD NAME IS MISSING	THE FIELD NAME IS MISSING FROM THE LINE IDENTIFIED	
MSG011	DISPLAY LEN SUBSTITUTED	THE DISPLAY LENGTH HAS BEEN SUBSTITUTED BY THE VALUE IN THE EDIT TABLE	Information only.
MSG012	DUPLICATE ROW MODIFIED	THIS ROW HAS A KEY THAT IS IDENTICAL TO ANOTHER ONE ON THE TABLE	
MSG013	TABLE IS NOT NEW	A TABLE WITH THIS NAME ALREADY EXISTS ON THIS LIBRARY	

Msg #	Short format	Long format	Meaning
MSG014	KEY FIELDS NOT TOGETHER	THE KEY FIELDS ARE SEPARATED BY NON-KEY FIELDS	
MSG015	TABLE LENGTH SUBSTITUTED	THE TABLE LENGTH HAS BEEN SUBSTITUTED BY THE VALUE IN THE EDIT TABLE	Information only.
MSG016	ROW SIZE CONFLICT	SUM OF FIELD LENGTHS IS NOT EQUAL TO THE DEFINITION ROW SIZE	
MSG017	KEY SIZE CONFLICT	SUM OF KEY FIELD LENGTHS IS NOT EQUAL TO THE DEFINITION KEY SIZE	
MSG018	KEY LOCATION CONFLICT	FIRST KEY FIELD LOCATION IS NOT EQUAL TO THE DEFINITION KEY LOCATION	
MSG019	NO KEY FIELD SPECIFIED	NO KEY FIELD WAS IDENTIFIED AND AT LEAST ONE MUST BE SPECIFIED	
MSG020	TOO MANY KEYS DEFINED	TOO MANY FIELDS HAVE BEEN IDENTIFIED AS KEY FIELDS, MAX 10 FIELDS	
MSG022	VIEW NOT FOUND	A VIEW DEFINITION MUST EXIST FOR THIS FUNCTION.	
MSG023	VIEW EMPTY	NO FIELDS HAVE BEEN DEFINED FOR THIS TABLE.	
MSG024	TOO MANY FIELDS DEFINED	TOO MANY FIELDS HAVE BEEN DEFINED FOR THIS TABLE, SYSTEM LIMITATION	
MSG025	ROW NOT FOUND	THE REQUESTED ROW WAS NOT FOUND IN THE TABLE	
MSG026	SCROLL VALUE INVALID	VALUE MUST BE U (UP), D (DOWN) OR E (EXECUTE) FOLLOWED BY A NUMBER	
MSG027	FORMAT(S) ARE INVALID	THE DISPLAY AND/OR TABLE FORMAT IS INVALID. PLS SEE HELP FOR FORMATS	Refer to HELP or tablesONLINE/ ISPF documentation.
MSG028	TABLE PARMS DO NOT EXIST	THE TRAILER ROW IN THE VIEW DEFINITION DOES NOT EXIST, GO TO OPTION 1	
MSG029	VIEW DEFINITION SAVED	ONLY THE VIEW HAS BEEN SAVED	Information only.
MSG030	COMMAND CONFLICT	INVALID OR ILLEGAL SEQUENCE OF COMMANDS	
MSG031	ROW DELETED	THE ROW SELECTED HAS BEEN DELETED FROM THE TABLE	Information only.
MSG032	ROW ADDED	THE NEW ROW HAS BEEN ADDED TO THE TABLE	Information only.
MSG033	ROW UPDATED	THE ROW SELECTED HAS BEEN UPDATED AS REQUESTED	Information only.
MSG034	DUPLICATE ROW ADDED	THE ROW KEY DUPLICATES AN EXISTING KEY BUT THE ROW WAS ADDED ANYWAY	
MSG035	DISPLAY LEN OUT OF RANGE	THE DISPLAY LENGTH MUST BE BETWEEN &DMINL AND &DMAXL	
MSG036	TABLE LEN OUT OF RANGE	THE TABLE LENGTH MUST BE BETWEEN &TMINL AND TMAXL	
MSG037	TABLE FORMAT CONFLICT	THE TABLE FORMAT SPECIFIED IS IN CONFLICT WITH THE DISPLAY FORMAT	
MSG038	ROW IS EMPTY	TABLE ROW IS EMPTY OR THIS ROW DOES NOT EXIST ON THE TABLE	
MSG039	VIEW NOT FOUND,BASE USED	VIEW WITH DYNAMIC VIEW SUFFIX NOT FOUND, BASE VIEW USED INSTEAD	

Msg #	Short format	Long format	Meaning
MSG040	ALLOCATION ERROR	UNABLE TO ALLOCATE &LIB USING PARAMETERS SPECIFIED	
MSG041	ALLOCATION FAILED	&MLIB, PROBABLY NOT CATALOGUED OR ALREADY ALLOCATED	
MSG042	COPY ERROR - SAME LIB	COPY MUST BE TO ANOTHER LIBRARY IF THE SAME MEMBER NAME IS USED.	
MSG043	ALLOCATION FAILED	ALLOCATION FAILED BECAUSE FROM DATASET OR MEMBER DOES NOT EXIST.	
MSG044	FUNCTION FAILED	INVALID TABLE NAME(S) OR PASSWORD.	Re-enter command, or contact system administrator.
MSG045	DATA IS NOT FORMAT	ERROR &TBERR OCCURRED CONVERTING DISPLAY DATA TO TABLE FORMAT.	
MSG046	RENAME ERROR - SAME NAME	RENAME MUST BE TO DIFFERENT MEMBER NAME.	
MSG047	HOOK PROGRAM NOT LOADED	INSUFFICIENT REGION STORAGE FOR TBHOOK GETMAIN	
MSG048	HOOK PROGRAM MISSING	TBULOAD DATASET NOT FOUND.	
MSG049	HOOK PROGRAM MISSING	TBULOAD DATASET COULD NOT BE OPENED.	
MSG050	DATE IS INVALID	ERROR &TBERR OCCURRED CONVERTING DISPLAY DATA TO TABLE FORMAT	
MSG051	DATA IS NOT NUMERIC	ERROR &TBERR OCCURRED CONVERTING DISPLAY DATA TO TABLE FORMAT	
MSG052	VALUE IS TOO HIGH	ERROR &TBERR OCCURRED CONVERTING DISPLAY DATA TO TABLE FORMAT	
MSG053	USER HOOK ERROR &TBERR	A USER HOOK RETURNED A NON-ZERO RETURN CODE	
MSG054	SERIOUS PROGRAM ERROR	ERROR &TBERR OCCURRED CONVERTING DISPLAY DATA TO TABLE FORMAT	
MSG055	ROW CONTAINS BAD DATA	ERROR &TBERR OCCURRED CONVERTING TABLE DATA TO DISPLAY FORMAT	
MSG056	EXIT PROGRAM MISSING	FIELD DEF SPECIFIES EXITNAME BUT EXIT PGM NOT FOUND IN LOAD LIBRARY	
MSG057	CANT INCREASE ROW SIZE	IF DATA EXISTS IN TABLE, CAN'T INCREASE ROW SIZE VIA TBONLINE	
MSG058	LOCATE FLDNAME NOT FOUND	LOCATE MODE: NO MATCH FOUND ON SUPPLIED LOOKUP KEY	
MSG059	LOCATE FLDNAME -NO KEY	LOCATE MODE: LOOKUP KEY WAS NOT SUPPLIED	
MSG060	VIEW NOT DELETED	A GENERATION OF THE TABLE IS STILL RESIDENT ON THE TABLE LIBRARY	
MSG061	VIEW DELETED	THE VIEW DEFINITION FOR TABLE &TABLE HAS BEEN DELETED	Information only.
MSG062	INSERT BY COUNT FAILED	INSERT BY COUNT CAN ONLY BE PERFORMED ON A TABLE WITH ORGANIZATION = U	
MSG063	COUNT OUTSIDE TABLE	THE COUNT SPECIFIED IS OUTSIDE THE TABLE: LAST ROW COUNT IS &LASTCNT	
MSG064	COUNT SET TO LAST ROW	THE COUNT SPECIFIED IS OUTSIDE THE TABLE: COUNT SET TO LAST ROW	
MSG065	COUNT PAST LAST ROW	THE COUNT SPECIFIED IS OUTSIDE THE TABLE: COUNT SET 1 PAST LAST ROW	

Msg #	Short format	Long format	Meaning
MSG066	COUNT NOT NUMERIC	THE COUNT ENTERED IS BLANK OR CONTAINS INVALID CHARACTERS.	
MSG067	ROW RELOCATED IN TABLE	THE UNCHANGED ROW IS RELOCATED TO ANOTHER LOCATION IN THE TABLE	
MSG068	DUPLICATE KEYS NOT OK	THE TABLE HAS A HASH ORGANIZATION AND DUPLICATE KEYS ARE NOT SUPPORTED	
MSG069	COMMAND UNCLEAR; REENTER	PROBABLY ENTER WAS PRESSED WITH INCOMPLETE DATA IN COMMAND LINE	
MSG070	VIEW NOT FOUND	THE VIEW DEFINITION FOR TABLE &TABLE IS NOT ON THE LIBRARY	
MSG071	THE TABLE IS NOT FOUND	THE TABLE &TABLE IS NOT ON THE LIBRARY	
MSG072	TABLE & VIEW NOT FOUND	NEITHER THE TABLE &TABLE NOR ITS VIEW ARE ON THE LIBRARY	
MSG073	INVALID PASSWORD	TABLE=&TBLNAM IS PASSWORD PROTECTED; PASSWORD SUPPLIED IS INVALID	
MSG074	ROW SIZE IS > 10,000	TABLES WITH ROW-SIZE > 10,000 CAN'T BE ACCESSED VIA TABLESONLINE/ISPF	
MSG075	TABLE EXISTS ON LIBRARY	TABLE = &ALTBL ALREADY EXISTS ON THE LIBRARY	
MSG076	BASE TABLE CANNOT BE ALT	BASE-TABLE CANNOT BE AN ALTERNATE TABLE	
MSG077	ALTERNATE INDEX CREATED	ALTERNATE INDEX HAS BEEN SUCCESSFULLY CREATED	Information only.
MSG078	ALTERNATE INDEX UPDATED	ALTERNATE INDEX HAS BEEN SUCCESSFULLY UPDATED	Information only.
MSG079	BASE TBL MUST BE POINTER	BASE-TABLE MUST BE OF POINTER TYPE INORDER TO CREATE AN ALT DEFINITION	
MSG080	CONVERSION COMPLETE	&CNTRC CONVERTED; &CNTRU UPDATED; &CNTRI NOT CONVERTED	Information only.
MSG081	NO TABLES IN LIBRARY	&LIB, HAS NO ISPF VIEWS IN IT	
MSG082	LIB(FROM) IS MANDATORY	FROM: LIBRARY NAME, IS A MANDATORY INPUT FIELD	
MSG083	INVALID PASSWORD	&CNTRC CONVERTED; &CNTRU UPDATED; &CNTRI NOT CONVERTED	
MSG084	ALLOCATION FAILED	LIBRARY=&MLIB, PROBABLY NOT CATALOGED OR DOES NOT EXIST	
MSG085	NO SPACE ON LIBRARY	&CNTRC CONVERTED; &CNTRU UPDATED; &CNTRI NOT CONVERTED	
MSG086	EXCLUDE=ALL NOT ALLOWED	ALL THE TABLES IN THE LIBRARY CANNOT BE EXCLUDED	
MSG087	TABLE DEFINITION UPDATED	THE DEFINITION OF THE TABLE HAS BEEN UPDATED	
MSG088	NEW VIEW DEFINED	A NEW VIEW HAS BEEN DEFINED	Information only.
MSG089	VIEW UPDATED	THE VIEW HAS BEEN UPDATED	Information only.
MSG090	DSPL AND TBLX LEN NOT EQ	DISPLAY AND TABLE LENGTHS MUST BE EQUAL	
MSG091	D-LEN = T-LEN + 1	DISPLAY LENGTH MUST BE EQUAL TO TABLE LENGTH PLUS ONE	
MSG092	D-LEN = (2 * T-LEN) <-1>	DISPLAY LENGTH MUST BE EQUAL TO TWO TIMES THE TABLE LENGTH (MINUS ONE)	

Msg #	Short format	Long format	Meaning
MSG093	D-LEN = 2 * T-LEN	DISPLAY LENGTH MUST BE EQUAL TO TWO TIMES THE TABLE LENGTH	
MSG094	D-LEN = T-LEN + 1 OR 2	DISPLAY LENGTH MUST BE EQUAL TO TABLE LENGTH PLUS ONE OR PLUS TWO	
MSG095	D-LEN = (2 * T-LEN) <+1>	DISPLAY LENGTH MUST BE EQUAL TO TWO TIMES THE TABLE LENGTH (PLUS ONE)	
MSG096	LENGTH FORMULA INVALID	AN INVALID LENGTH FORMULA HAS BEEN ENCOUNTERED IN THE EDIT TABLE	
MSG097	TBL DEFN CAN'T BE EDITED	TBL DEFN OF AN ALT TBL CAN'T BE EDITED, USE THE CREATE ALT OPTION	
MSG098	SUFFIX MUST BE 1-7 CHAR	THE DYNAMIC SUFFIX INDICATOR MUST BE A 1 TO 7 CHARACTER FIELD	
MSG099	ONLY ONE SUFFIX ALLOWED	IN A FIELD DEFINITION ONLY ONE SUFFIX FIELD IS VALID	
MSG100	CHANGES CANCELLED	CHANGES MADE TO THE TABLE WERE NOT SAVED	Information only.
MSG101	VIEW INCOMPATIBLE (CICS)	VIEW CONTAINS TBOL/CICS R5.0 FEATURES, EDITING MAY CORRUPT TABLE	Information only.
MSG102	VALIDATION ERROR	FIELD CONTAINS LOW VALUES, SPACES OR INVALID DATE	
MSG103	TABLEBASE ONLINE - PRODUCT CODE INVALID	TBONLINE - PROD CODE INVALID	
MSG104	TABLEBASE ONLINE - CUSTOMER CODE MISMATCH	CUSTOMER CODE MISMATCH	
MSG105	TBONLINE-LICENSE EXPIRED	TBONLINE - LICENSE EXPIRED	
MTB000	COMMAND WAS SUCCESSFUL	THE COMMAND WAS PROCESSED SUCCESSFULLY	Information only.
MTB001	INVALID COMMAND	THE SPECIFIED COMMAND IS INVALID	
MTB002	TABLE NOT OPEN	THE SPECIFIED TABLE MUST BE OPEN FOR THIS COMMAND	
MTB003	TABLE IS NOT CLOSED	THE COMMAND REQUIRES THAT THE TABLE BE CLOSED	
MTB004	FG NOT ALLOWED	FG COMMAND IS NOT ALLOWED; TABLE NOT SEQUENTIAL (S OR D)	
MTB005	NO SECONDARY TABLE	THE SEARCH CRITERION WAS NOT FOUND IN THE PRIMARY TABLE	
MTB006	COUNT IS INVALID	THE COUNT SPECIFIED IS INVALID	
MTB007	DSN / DDNAME CHANGED	DSN OR DDNAME HAS BEEN CHANGED. USE DV OR DW BEFORE STORE	Information only.
MTB008	INVALID GENERATION	THE GENERATION NUMBER SPECIFIED FOR THIS TABLE IS INVALID	
MTB009	TABLE NOT FOUND	THE TABLE COULD NOT BE FOUND IN THE LIBRARY(S) SEARCHED	
MTB010	CS PARAMETER INVALID	THE STATUS-SWITCHES PARAMETER HAS INVALID ENTRIES	
MTB011	GENERATIONS INVALID	THE NUMBER OF GENERATIONS TO KEEP IN THE DT MUST BE 1-9	
MTB012	TABLE NAME INVALID	THE TABLE NAME SPECIFIED IS INVALID	

Msg #	Short format	Long format	Meaning
MTB013	COMMAND INVALID	THE COMMAND IS INVALID IN THIS ENVIRONMENT	
MTB014	ROW-SIZE IS INVALID	THE ROW-SIZE SPECIFIED IS INVALID. MUST BE FROM 1-32767	
MTB015	KEY SIZE IS INVALID	THE KEY-SIZE SPECIFIED IS INVALID. MUST BE FROM 1-256	
MTB016	KEY LOCATION IS INVALID	THE KEY-LOCATION SPECIFIED IS INVALID. MUST BE IN THE ROW	
MTB017	KEY NOT WITHIN ROW	THE KEY WILL NOT FIT WITHIN THE ROW	
MTB018	TABLEBASE LIBRARY FULL	INSUFFICIENT SPACE IS AVAILABLE ON THE TABLEBASE LIBRARY	
MTB019	TABLE ALREADY EXISTS	THIS TABLE ALREADY EXISTS ON THE TARGET LIBRARY	
MTB020	MAXNMTAB EXCEEDED	THE MAXIMUM NUMBER OF OPEN TABLES SETTING IS EXCEEDED	
MTB021	ORGANIZATION INVALID	ORGANIZATION SPECIFIED IS INVALID, USE R,U,S,D,H OR BLANK	
MTB022	TABLEBASE ERROR: 22	TABLEBASE ERROR: 22	Call technical support.
MTB023	TABLEBASE ERROR: 23	TABLEBASE ERROR: 23	Call technical support.
MTB024	TABLEBASE ERROR: 24	TABLEBASE ERROR: 24	Call technical support.
MTB025	TABLEBASE ERROR: 25	TABLEBASE ERROR: 25	Call technical support.
MTB026	TABLEBASE ERROR: 26	TABLEBASE ERROR: 26	Call technical support.
MTB027	TABLEBASE ERROR: 27	TABLEBASE ERROR: 27	Call technical support.
MTB028	PAGED NOT ALLOWED	PAGED TABLES ARE NOT SUPPORTED. USE DK1TCNV TO CONVERT	
MTB029	LIBS NOT THE SAME	THE SECONDARY TABLE NOT ON SAME LIBRARY AS PRIMARY TABLE	
MTB030	PASSWORD INVALID	THE PASSWORD SUPPLIED IS INVALID	
MTB031	WRITE PASSWORD INVALID	THE WRITE PASSWORD IS EITHER MISSING OR INCORRECT	
MTB032	TABLE NOT OPENED WRITE	THE ST COMMAND REQUIRES THAT THE TABLE BE OPENED FOR WRITE	
MTB033	DIFFERENT GENERATION	A DIFFERENT GENERATION OF THE TABLE IS ALREADY OPEN	
MTB034	TABLEBASE ERROR: 34	TABLEBASE ERROR: 34	Call technical support.
MTB035	TABLEBASE ERROR: 35	TABLEBASE ERROR: 35	Call technical support.
MTB036	TABLEBASE ERROR: 36	TABLEBASE ERROR: 36	Call technical support.
MTB037	TABLEBASE ERROR: 37	TABLEBASE ERROR: 37	Call technical support.
MTB038	TABLEBASE ERROR: 38	TABLEBASE ERROR: 38	Call technical support.
MTB039	NEW NAME ALREADY EXISTS	RN COMMAND FAILED. THE NEW NAME ALREADY EXISTS ON LIBRARY	
MTB040	DDNAME DOESNT EXIST	THE LIBRARY DDNAME DOES NOT EXIST	
MTB041	SMC VALUE INVALID	THE STORAGE-MODE-CODE (SMC) SPECIFIED MUST BE R OR BLANK	
MTB042	TB-FORMAT INVALID	THE TBPARM SUBPARAMETER TB-FORMAT MUST BE EITHER 0 OR A	
MTB043	ESTIMATED ROWS INVALID	THE ESTIMATED NUMBER-OF-ROWS IN DT BLOCK IS OUT OF RANGE	

Msg #	Short format	Long format	Meaning
MTB044	EXPANSION FACTOR INVALID	THE EXPANSION-FACTOR SPECIFIED IN DT BLOCK MUST BE 1-999	
MTB045	TABLEBASE ERROR: 45	TABLEBASE ERROR: 45	Call technical support.
MTB046	TABLEBASE ERROR: 46	TABLEBASE ERROR: 46	Call technical support.
MTB047	TABLEBASE ERROR: 47	TABLEBASE ERROR: 47	Call technical support.
MTB048	TABLEBASE ERROR: 48	TABLEBASE ERROR: 48	Call technical support.
MTB049	TOO FEW PARAMETERS	THIS COMMAND REQUIRES MORE PARAMETERS THAN WERE GIVEN	
MTB050	DIRTYPE INVALID	DIRTYPE SPECIFIED FOR THE LD COMMAND MUST BE V,D,T, BLANK	
MTB051	DENSITY INVALID	THE DENSITY SPECIFIED IN THE DT BLOCK MUST BE FROM 1-999	
MTB052	TABLEBASE ERROR: 52	TABLEBASE ERROR: 52	Call technical support.
MTB053	TABLEBASE ERROR: 53	TABLEBASE ERROR: 53	Call technical support.
MTB054	TABLEBASE ERROR: 54	TABLEBASE ERROR: 54	Call technical support.
MTB055	SEARCH-METHOD INVALID	THE SEARCH-METHOD MUST BE EITHER S,Q,B,C,H	
MTB056	INCOMPATIBLE METH/ORG	SEARCH-METHOD IS INCOMPATIBLE WITH ORGANIZATION SPECIFIED	
MTB057	TABLEBASE ERROR: 57	TABLEBASE ERROR: 57	Call technical support.
MTB058	MODULE NOT FOUND	THE REQUESTED MODULE CANNOT BE FOUND IN THE LOADLIB	
MTB059	TABLEBASE ERROR: 59	TABLEBASE ERROR: 59	Call technical support.
MTB060	LIBRARY INVALID	THE SPECIFIED LIBRARY IS NOT SUITABLE	
MTB061	LIBRARY STATUS INVALID	THE LIBRARY STATUS IS INVALID SEE ERROR MSG 61 SUBCODES	
MTB062	LIBRARY FORMAT ERR	FORMAT OF SPECIFIED LIBRARY INCOMPATIBLE WITH VERSION 6	
MTB063	TABLEBASE ERROR: 63	TABLEBASE ERROR: 63	Call technical support.
MTB064	INVALID INDEX PARAMETER	THE INDEX PARAMETER SPECIFIED MUST BE P, T OR BLANK	
MTB065	TABLEBASE ERROR: 65	TABLEBASE ERROR: 65	Call technical support.
MTB066	TABLEBASE ERROR: 66	TABLEBASE ERROR: 66	Call technical support.
MTB067	TABLEBASE ERROR: 67	TABLEBASE ERROR: 67	Call technical support.
MTB068	COUNT TOO SMALL ON DU	THE COUNT VALUE IS TOO SMALL FOR DU COMMAND TO DUMP ROWS	
MTB069	TABLEBASE ERROR: 69	TABLEBASE ERROR: 69	Call technical support.
MTB070	TABLEBASE ERROR: 70	TABLEBASE ERROR: 70	Call technical support.
MTB071	LOCK WAIT EXCEEDED	WAIT FOR LOCK EXCEEDED LOCKTIMERC VALUE	
MTB072	TABLE UNAVAILABLE	THE TABLE IS UNAVAILABLE AT THIS TIME, WAIT=N IS IN EFFECT	
MTB073	NO UPDATING ALLOWED	THIS TABLE IS OPEN FOR READ, NO UPDATING ALLOWED	
MTB074	LOCK-LATCH INVALID	THE LOCK-LATCH SPECIFIED IS INVALID	
MTB075	ALLOC/DEALLOC FAILED	DYNAMIC ALLOCATION (AL) OR UN-ALLOCATION (UL) FAILED	

Msg #	Short format	Long format	Meaning
MTB076	PRIMARY TABLE ERROR	OPEN INDIRECT FAILED, PRIMARY NOT SEQUENTIAL OR KLOC NOT 9	
MTB077	TABLE NOT POINTER	ALTERNATE INDEX DEFINED FOR A TABLE THAT IS NOT A POINTER	
MTB078	ALLOC DISP INVALID	AL COMMAND FAILED, SHARE-STATUS PARAMETER MUST BE S OR O	
MTB079	TABLEBASE ERROR: 79	TABLEBASE ERROR: 79	Call technical support.
MTB080	DATA TABLE NOT OPEN	DATA TABLE NOT OPEN. USE OF ALTERNATE INDEX NOT ALLOWED	
MTB081	ALT DEF NOT FOUND	THE SPECIFIED ALTERNATE INDEX DEFINITION IS NOT FOUND	
MTB082	TABLEBASE ERROR: 82	TABLEBASE ERROR: 82	Call technical support.
MTB083	TABLE NOT POINTER	THE DATA TABLE INDEX SUBPARAMETER OF DT BLOCK MUST BE P	
MTB084	TABLEBASE ERROR: 84	TABLEBASE ERROR: 84	Call technical support.
MTB085	INVALID ALT COMMAND	THE COMMAND IS NOT VALID FOR ALTERNATE TABLE	
MTB086	OPEN INDEX FAILED	OPEN OF THE INDEX FAILED ON A LINKED TABLE IN A VTS-TSR	
MTB087	KEY-COUNT MUST BE 1	THE KEY-COUNT MUST BE 1 FOR DEFINITION OF ALTERNATE INDEX	
MTB088	TABLEBASE ERROR: 88	TABLEBASE ERROR: 88	Call technical support.
MTB089	ERROR IN TBOPT CARD	AN INVALID PARAMETER WAS ENCOUNTERED IN THE TBOPT FILE	
MTB090	INSUFFICIENT MEMORY	INSUFFICIENT MAIN STORAGE AVAILABLE. INCREASE REGION SIZE	
MTB091	I/O ERROR	I/O ERROR WHILE ATTEMPTING TO READ/ WRITE TO LIBRARY/FILE	
MTB092	INSUFF TSR SIZE	INSUFFICIENT TABLE SPACE REGION (TSR) SIZE	
MTB093	RF INCOMPLETE	THE RF COMMAND DID NOT COMPLETE	
MTB094	TABLEBASE ERROR: 94	TABLEBASE ERROR: 94	Call technical support.
MTB095	TRANSACTION FAILED	THE TRANSACTION (JOB STEP) FAILED	
MTB096	TABLEBASE ERROR: 96	TABLEBASE ERROR: 96	Call technical support.
MTB097	ML/LL LIST INVALID	THE ML OR LL PARAMETER LIST CONTAINS A REFERENCE TO A VTS	
MTB098	INSTALL PARMS INVALID	THE INSTALLATION PARMS ARE NOT VALID FOR THIS OPERATION	
MTB099	TABLEBASE ERROR: 99	TABLEBASE ERROR: 99	Call technical support.

For a complete set of messages, see the *tableBASE Programming Guide, Release 6.0.3* or the *tableBASE Quick Reference Guide, Release 6.0.3*.

Appendix A

Exercises

Overview

This appendix contains three simple tablesONLINE/ISPF exercises:

1. define a table
2. add rows to the table, and
3. reorganize the table by creating an Alternate Index.

The Assignment

The supervisor asked that a table be set up that contains the charitable contribution of each employee. Each month:

- the employee with the highest charitable contribution receives a calculator, and
- the department with the highest charitable contribution receives a free lunch.

In the following exercise, a table showing the charitable contributions of ABC employee will be created.

Invoke tablesONLINE/ISPF

The first step is to invoke tablesONLINE. tablesONLINE is installed as an option on the **ISPF Primary Option Menu** as illustrated in Figure A-1.

```
  Menu  Utilities  Compilers  Options  Status  Help
--------------------------------------------------------------------------------
                          ISPF Primary Option Menu
Option ===>

0  Settings      Terminal and user parameters          User ID . : BILL0
1  View          Display source data or listings       Time. . . : 09:40
2  Edit          Create or change source data          Terminal. : 3278
3  Utilities     Perform utility functions             Screen. . : 1
4  Foreground    Interactive language processing       Language. : ENGLISH
5  Batch         Submit job for language processing    Appl ID . : ISR
6  Command       Enter TSO or Workstation commands     TSO logon : TB600
7  Dialog Test   Perform dialog testing                TSO prefix: BILL
8  LM Facility   Library administrator functions       System ID : PROD
9  IBM Products  IBM program development products      MVS acct. : ACCT#
10 SCLM          SW Configuration Library Manager      Release . : ISPF 5.2
11 Workplace     ISPF Object/Action Workplace
M  More          Additional IBM Products
W  tableBASE     Invoke tablesONLINE

     Enter X to Terminate using log/list defaults
```

Figure A-1: ISPF Primary Option Menu Screen

In this situation to invoke tablesONLINE, choose Option W - tableBASE Invoke tablesONLINE on the **ISPF Primary Option Menu**. The **tablesONLINE PRIMARY MENU** appears.

```
----------------------- tablesONLINE PRIMARY MENU (6.0) -----------------------
COMMAND ===>

                                                          USERID - BILL0
                                                          DATE   - 2003/09/04
                                                          TIME   - 10:57
                                                          TSOPREFIX- BILL

 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.
```

Figure A-2: tablesONLINE PRIMARY MENU Screen

Define a Table Called EXAMPLE

Choose Option 4 - DDEFINE TABLE and press <Enter>. Assume that the library in which the table is to reside has already been defined. The **tablesONLINE IDENTIFY TABLE** screen appears, as illustrated in Figure A-3.

Note: A library and a table has been distributed with tableBASE installation material and is used in these exercises. To experiment, choose other names.

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

Identify the library required:

NAME OF LIBRARY     ===> 'TBASE.V6R0M0.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 INDEX     ===>
READ PASSWORD       ===>                (If Data table is password protected)

Press END to return to the tablesONLINE Primary Menu.
```

Figure A-3: tablesONLINE IDENTIFY TABLE Screen

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

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.

Name the table EXAMPLE by typing this name in the Name of Table field.

To put the table in a new library, the library has to be defined before specifying it there.

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

When <Enter> is pressed, the **tablesONLINE DEFINE TABLE** screen appears, as shown in Figure A-4.


```
---------------------- tablesONLINE DEFINE TABLE -----------------------------
COMMAND ===>


        LIBRARY NAME : 'TBASE.V6R0M0.C04.MAINLIB'
        TABLE NAME   : EXAMPLE             GENERATION : 0


 1 - EDIT VIEW                      - Define the fields in a data table
 2 - EDIT TABLE PARAMETERS          - Define the parameters of a data table
 3 - EDIT TABLE DEFINITION          - Define a data table
 4 - BROWSE TABLE DEFINITION        - Browse the definition of a data table
 5 - BROWSE ROW LAYOUT              - Browse the view
 6 - DELETE TABLE GENERATION        - Delete one generation of a data table
 7 - DELETE VIEW                    - Delete the view




Press PF1 for HELP on View/Data Table relationships
Press END to return to the Identify Table screen.
```

Figure A-4: tablesONLINE DEFINE TABLE Screen

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 VIEW.

When <Enter> is pressed, 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     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.
```

Figure A-5: tablesONLINE EDIT VIEW Screen

Define Fields in EXAMPLE

To provide the information that the supervisor requested, the table should contain the following data for each ABC employee:

- name
- department
- division
- charitable contribution
- date of the contribution

The first step is to list the field names in the Name column.

Type Last Name, First Name, Division, Department, Charitable Contribution, and Date of Contribution.

To order your rows, type numbers in the ID column, as shown in Figure A-5.

Specify Y in the Key Ind field for the Last Name and First Name fields, so that the table is ordered alphabetically by employee name. For the other fields, specify N.

Specify in the Length (Display) field the number of characters of each field when it is displayed. Note that donation will be displayed as a money field.

Since the date is in the format YYYYMMDD, specify a length of 8 for the Date of Contribution field because the date is always eight 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 year, month, and day.

Press <Enter> when finished to make the defaults for the other fields appear. Leave the Edit Exit Name field blank an exit program. is not being invoked.

Press <Enter> to process the information and press <PF3> (END) to return to the **tablesONLINE DEFINE TABLE** screen (see Figure A-4) where Option 2 - EDIT TABLE PARAMETERS was selected to define the parameters of the table.

When <Enter>, is pressed the **tablesONLINE EDIT TABLE PARAMETERS** screen appears, as illustrated in Figure A-6.

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

LIBRARY NAME              : 'TBASE.V6R0M0.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                  : 63
KEY LOCATION              : 1
KEY SIZE                  : 34




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

Figure A-6: tablesONLINE EDIT TABLE PARAMTERS Screen

Edit EXAMPLE Parameters

The screen appears with the View Name and Library Name fields filled in. tablesONLINE generates he View name from the name of the table that was specified in the **tablesONLINE IDENTIFY TABLE** screen (see Figure A-3), so it doesn't' need to be specified. The Data Table Name field applies only if the View being defined is for a different view of a table. Since the default View name is being used, leave this field blank.

Specify N (No) in the Duplicate Keys Indicator field so that the table does not have rows with identical keys. Because N is selected, the Duplicate Keys Indicator field does not appear on the **tablesONLINE IDENTIFY ROW** screen (see Figure A-14). If Y (Yes) is selected, the Duplicate Keys Indicator field does appear.

Leave the Item Exit Pgm Name and Table Exit Pgm Name fields blank an exit program is not being invoked.

The last three fields are values that tablesONLINE calculates from the values entered on the **tablesONLINE EDIT VIEW** screen (see Figure A-5). These values cannot be changed.

Press <Enter> and then press <PF3> (END) to return to the **tablesONLINE DEFINE TABLE** screen (see Figure A-4) and select Option 3 - EDIT TABLE DEFINITIONS to define general characteristics of the table. 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          (P=Pointer, T=True, Default=P)
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          ===> 63         (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.
```

Figure A-7: tablesONLINE EDIT TABLE DEFINITION Screen

Note: Any screen reference to "Tree Binary" indicates that the search method is Bounded Binary.

Define General Characteristics for EXAMPLE

This screen appears with the name of the table that is being defined in the Table Name field. If the table does not exist, tablesONLINE fills in default values for all the fields and a message is displayed, prompting the operator to press <Enter>.

In the Organization field, change the R (Random) to S (Sequential) so that the rows in the table are ordered in ascending order, not in the order they are added to the table. Now the table will be ordered alphabetically by employee names.

Change the Search Method field value to B (Binary), because S (Serial) search is usually less efficient for Sequential tables.

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

Leave the password fields blank because it is not a requirement (for this exercise) to specify a password is to look at or to update the table.

The Number of Rows field serves two purposes.

1. When a table is being defined, this field allocates space for the table. The value specified in this field is used by tableBASE to initially allocate space for the table.

2. After the table is defined, the Number of Rows field 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 the company used in this exercise has 25 employees, allowing some space for future expansion.

Specify 8 in the Generation field. Up to nine generations of a table are kept.

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

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

The last three fields are calculated from the values entered on the **tablesONLINE EDIT VIEW** screen (see Figure A-11**)** so they are not to change.

See Chapter 4 for an explanation of each of these values.

After filling in the fields on this screen either by entering values or by leaving the defaults, press <Enter> to process the definition. Press <PF3> (END) to return to the **tablesONLINE DEFINE TABLE** screen (see Figure A-4), select Option 4 - BROWSE TABLE DEFINITION and press <Enter>.

The **tablesONLINE BROWSE TABLE DEFINITIOIN** screen appears, as illustrated in Figure A-8.

```
------------------- 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          (P=Pointer, T=True, Default=P)
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          ===> 63         (These fields are calculated
KEY SIZE          ===> 34          from field definitions. Press
KEY LOCATION      ===> 1           HELP for more information.   )

Press END to return to the Define Table screen.
```

Figure A-8: tablesONLINE BROWSE TABLE DEFINITION Screen

Note: Any screen reference to "Tree Binary" indicates that the search method is Bounded Binary.

Browse Table Definition

The table definition can be viewed but the rows cannot be not edited on the **tablesONLINE BROWSE TABLE DEFINITION** screen (see Figure A-8).

After browsing the table definition, press <PF3> (END) to return to the **tablesONLINE DEFINE TABLE** screen (see Figure A-4). Select Option 5 - BROWSE ROW LAYOUT and press <Enter> to see the row layout of the table just created. The **tablesONLINE BROWSE VIEW DEFINITION** screen appears, as illustrated in Figure A-9.

```
---------------------- tablesONLINE BROWSE VIEW DEFINITION ----------------------
COMMAND ===>
TABLE NAME: EXAMPLE
Locate field  ===>
    NAME                   KEY     LEN   FORMT ATTR    LEN  FORMT     EDIT EXIT
                           IND        (DISPLAY)       (TABLE-ENTRY)      NAME
   LAST NAME               Y       20     X            20     U
   FIRST NAME              Y       14     X            14     U
   DIVISION                N       8      X            8      U
   DEPARTMENT              N       8      X            8      U
   CHARITABLE DONATION     N       6      2            5      N
   DATE OF CONTRIBUTION    N       8      A    V       8      A









Press END to return to the Define Table screen
      UP/DOWN/RFIND TO SCROLL (default=15)
```

Figure A-9: tablesONLINE BROWSE VIEW DEFINITION Screen

Browse the row layout of the table and then press <PF3> (END) to return to the **tablesONLINE DEFINE TABLE** screen (see Figure A-4). Options 6 and 7 of the **tablesONLINE DEFINE TABLE** screen will not be selected because the table will be deleted. Instead, press <PF3> (END) to exit the **tablesONLINE DEFINE TABLE** screen.

The **tablesONLINE SAVE TABLE** screen appears, as illustrated in Figure A-10.

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

Changes have been made to this table.

   OPTION ===>


   S=SAVE   - Save the changes
   C=CANCEL - Cancel the changes
   R=RESHOW - Reshow the changes









Select an option and press ENTER.
```

Figure A-10: tablesONLINE SAVE TABLE Screen

Save EXAMPLE

There are three options at this screen:

1. delete the changes

2. save the changes

3. return to the **tablesONLINE DEFINE TABLE** screen (see Figure A-4)

Choose S to save the table and press <Enter>.

tablesONLINE checks the definition for errors. It finds none and the definition is saved. A message in the top right corner of the **tablesONLINE IDENTIFY TABLE** screen (see Figure A-3) states the table was saved.

Add a Row to EXAMPLE

The supervisor requests that the sex of each employee be added to the table. To include the new information, the View will be updated by adding a new row to accommodate this request. Select Option 1 - EDIT VIEW on the **tablesONLINE DEFINE TABLE** screen (see Figure A-4) 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     8____ A      V      8____ 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.
```

Figure A-11: tablesONLINE EDIT VIEW Screen

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 one-character in length.

Because the Sex field should always contain an alphabetic value, specify X (alphanumeric) in the Format (Display) field.

Then type 45 in the ID column. The S in the Attribute (Display) will suppress this field on the **tablesONLINE SELECT ROW BY KEY** screen (see Figure A-17).

Press <Enter> to process the new addition.

The Sex field has been appropriately moved after the Department field, using the ID field for the collating sequence. The default values have been populated for the Length and Format (Table-Entry) fields. This is illustrated in the **tablesONLINE EDIT VIEW** screen (see Figure A-12).

```
---------------------------- 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     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.
```

Figure A-12: tablesONLINE EDIT VIEW Screen

Press <PF3> (END) to return to the **tablesONLINE DEFINE TABLE** screen (see Figure A-4).

Choose Option 3 - EDIT TABLE DEFINITION to process the change in row size. The **tablesONLINE EDIT TABLE DEFINITION** screen appears (see Figure A-7). A message displays stating that the row size has changed. To process changes, press <Enter>, and the message disappears.

Save Changes to EXAMPLE

Press <PF3> twice to return to the **tablesONLINE IDENTIFY TABLE** screen (see Figure A-3). Because the table has been modified with the addition of the Sex field, the **tablesONLINE SAVE TABLE** screen appears (see Figure A-10).

Choose S to save your changes and press <Enter>. The **tablesONLINE DEFINE TABLE** screen appears (see Figure A-4) with the message TABLE SAVED in the top right corner, confirming that the table was updated and the changes were saved. Press <PF3> (END) to return to the **tablesONLINE PRIMARY MENU** (see Figure A-2).

Now that the table format has been defined, it is time to enter data.

To add rows to the table, select Option 3 - EDIT ROW on the **tablesONLINE PRIMARY MENU** (see Figure A-2) and press <Enter>. The **tablesONLINE ROW EDIT** screen appears, as illustrated in Figure A-13.

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


Please identify the table required by entering the parameters below:


NAME OF LIBRARY     ===> 'DKLTBT.V6R0M0.MAINLIB'
NAME OF TABLE       ===> EXAMPLE
SPECIAL VIEW NAME   ===>                 (Optional)
GENERATION NUMBER   ===>                 (Default is most recent)
WRITE PASSWORD      ===>                 (If password protected)









Press END to return to the tablesONLINE Primary Menu.
```

Figure A-13: tablesONLINE ROW EDIT Screen

Type the name of the table and the name of the library in the appropriate fields of this screen. The Special View Name field is left blank because the View is not a special View.

Because a password for this table has not been specified, the Password field also left 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.
```

Figure A-14: tablesONLINE IDENTIFY ROW Screen

This screen appears with the names of the key fields. The first row is completed by typing the first and last name of an employee. These are the key fields of the table.

Press <Enter> and the **tablesONLINE EDIT ROW** screen appears as shown in Figure A-15.

```
-------------------- 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.
```

Figure A-15: tablesONLINE EDIT ROW Screen

Enter Data into EXAMPLE

The **tablesONLINE EDIT ROW** screen (see Figure A-15) lists the field names on the left, with an area for data entry to the right of each. The value for each field cannot be longer than the number of characters specified for it. Type data for one field, and then tab to the next field.

Press <Enter> to process the data when data entry is complete in all fields.

If the invocation of a user exit program had been specified, it would be called now. tablesONLINE checks that all data adheres to the restrictions that had been specified during table definition.

An error is encountered if there is a discrepancy between how data was defined, and how the data was entered. For example, if an alphabetic character is typed in a field that can only contain numeric values because of its field-definition table specification, an error message is displayed stating that there is invalid data. Invalid data requires correction before the row is processed.

tablesONLINE, however, encounters no errors during its validation of this exercise. The message ROW ADDED appears in the top right corner of the screen indicating that the row was processed. The row is saved and the **tablesONLINE IDENTIFY ROW** screen appears, as illustrated in Figure A-14.

Add Another Row to EXAMPLE

Press <Enter> at the **tablesONLINE IDENTIFY ROW** screen (see Figure A-14) to access the **tablesONLINE EDIT ROW** screen again (see Figure A-16), to 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   20030711¦
 -------------------   *** END OF DATA ***
 -------------------
 -------------------
 -------------------
 -------------------
 -------------------
 -------------------
 -------------------

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

Figure A-16: tablesONLINE EDIT ROW Screen

The **tablesONLINE EDIT ROW** screen (see Figure A-16) appears with the values that had been entered for the previous row.

Change the Type-Change field from U (Update) to N (New) so that a new row can be created by using the old row as a base. This is an efficient method of populating tables because it avoids the need to re-enter data that does not change.

After information for the row has been specified, press <Enter> to return to the **tablesONLINE IDENTIFY ROW** screen (see Figure A-14) where the key-field values for the next row to be processed are specified. Repeat this process until all the rows have been added.

Instead of pressing <Enter> which returns to the **tablesONLINE IDENTIFY ROW** screen (see Figure A-14), the GETCOUNT PF key may be pressed to process the current row and present the next row to be added or updated on the **tablesONLINE EDIT ROW** screen (see Figure A-16).

When the addition of rows is complete, press <Enter> or <PF3> (END) to return to the **tablesONLINE IDENTIFY ROW** screen (see Figure A-14). Specify Y in the Scroll Search field so that the rows can be scrolled. When <Enter> is pressed, the **tablesONLINE SELECT ROW BY KEY** screen appears, as shown 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.
```

Figure A-17: tablesONLINE SELECT ROW BY KEY Screen

The Table-Location field identifies the table position of the first row shown on the screen. In this case, it is the first row. The key fields are listed under this field. The two left-hand columns display the key values of the rows in the EXAMPLE table.

If a table has more than 15 rows, they are scrolled using <PF7> (UP) and <PF8> (DOWN).

Update a Row in EXAMPLE

Sam Brownbag, one of ABC's employees, has increased his donation. To process this change, select the row with his employee information by typing an S beside the row and pressing <Enter>.

The **tablesONLINE EDIT ROW** screen (see Figure A-16) appears containing Sam's information.

An attempt to change his donation amount from $143.00 to $243.00 is made, however a typographical error occurs. When <Enter> is pressed to process the updated row, an error message appears. The invalid format is corrected, and <Enter> is pressed to process. No error message appears this time. Press <PF3> (END) until the **tablesONLINE SAVE TABLE** screen appears (see Figure A-10).

Choose S and press <Enter> to save the table change of Sam Brownbag's charitable donation amount.

Press <PF3> to return to the **tablesONLINE PRIMARY MENU** (see Figure A-2) and select Option 1 - BROWSE TABLE, to see the EXAMPLE table.

When <Enter> is pressed, the **tablesONLINE BROWSE TABLE** screen appears, as illustrated in Figure A-18.

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


Identify the table required:


NAME OF LIBRARY     ===> 'DKLTBT.V6R0M0.MAINLIB'
NAME OF TABLE       ===> EXAMPLE
GENERATION NUMBER   ===>                (Default is most recent)
READ PASSWORD       ===>                (If password protected)









Press END to return to the tablesONLINE Primary Menu.
```

Figure A-18: tablesONLINE BROWSE TABLE Screen

Browse EXAMPLE

The **tablesONLINE BROWSE TABLE** screen appears (see Figure A-18) displaying the name of the last table that was manipulated. Press <Enter> as this is the correct table to browse.

A screen with table data appears, as shown in Figure A-19.

```
  Menu  Utilities  Compilers  Help
 ------------------------------------------------------------------------------
 BROWSE     BILL0.T164021.EXAMPLE                    Line 00000000 Col 001 062
 Command ===>                                                 Scroll ===> PAGE
******************************** Top of Data ********************************
AAGIN                JOHN          ACCTG   A/R     F1560020020712
ALLEN                GORDON        OPNS    OPR     M1800020020712
ANCHRUTHER           DORA          ADMIN   SECT    F1530020020712
ASSIGNY              MICHEL        ADMIN   SECT    M0830020020712
AXOLOTLOVOVITCHSKI   STEFAN        ADVTG   FLACK   M3450020020712
BAKER                JOHN          ADVTG   NEWS    M1300020020712
BELLEFEVILLE         JOHN          ADVTG   ART     M1250020020712
BLOGGINS             JOHN          MIS     ANAL    M2300020020712
BROWN                FREDDA        ADMIN   PERSNL  F1600020020712
BROWN                FREDERICK     ADMIN   PERSNL  M1600020020712
BROWN                GEORGE        ACCTG   P/R     M1430020020712
BROWN                IAN           MIS     PGMG    M2100020020712
BROWN                JOHN          OPNS    SCH     M0970020020712
BROWNBAG             SAM           ACCTG   A/R     M2430020030711
CALLAN               MICHAEL       MIS     PGMG    M1800020020712
DALE                 TERENCE       OPNS    OPR     M0950020020712
DUMAS                SAMANTHA      ACCTG   P/R     F2700020020712
FUTA                 MARY          OPNS    OPR     F1200020020712
GALSWORTHY           SARAH         ACCTG   A/R     F1320020020712
```

Figure A-19: tablesONLINE Browse EXAMPLE Screen

The field names do not appear on this screen because only the data in the table is loaded to a dataset to be browsed with the ISPF browser. UP, DOWN, RIGHT, and LEFT keys are used to scroll through the screen.

The ISPF HEX ON command can be used to see the hexadecimal values of the rows.

Change EXAMPLE Field Definition

While you are browsing the table, the supervisor requests 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 shown in Figure A-20.

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

Identify the library required:

NAME OF LIBRARY     ===> 'TBASE.V6R0M0.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 INDEX     ===>
READ PASSWORD       ===>                (If Data table is password protected)

Press END to return to the tablesONLINE Primary Menu.
```

Figure A-20: tablesONLINE IDENTIFY TABLE Screen

None of the values on this screen require a change, so press <Enter>. Choose Option 1 - EDIT VIEW to edit your field definition. When <Enter> is pressed, 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     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.
```

Figure A-21: tablesONLINE EDIT VIEW Screen

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 the table definition has to be updated to match the new row definition. Press <PF3> (END) to return to the **tablesONLINE DEFINE TABLE** screen (see Figure A-4) and select Option 3 - EDIT TABLE DEFINITION to redefine the table definition.

When <Enter> is pressed, the **tablesONLINE EDIT TABLE DEFINITION** screen appears, as shown in Figure A-22.

```
------------------- 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          ===> 64         (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.
```

Figure A-22: tablesONLINE EDIT TABLE DEFINITION Screen

The changes made to the row definition do not need to be reflected here, therefore no values need to be changed. tablesONLINE has changed the Key Location and Key Size fields on your behalf.

Press <Enter> to process the new changes, then <PF3> (END) to access the **tablesONLINE IDENTIFY TABLE** screen (see Figure A-3). A message in the top right corner states that the table was updated. The EXAMPLE table is now ordered by employee division and department, not by employee first name and last name.

Note: Any screen reference to "Tree Binary" indicates that the search method is Bounded Binary.

Save EXAMPLE and Browse Changes

The **tablesONLINE SAVE TABELE DEFINITION** screen (see Figure A-10) appears because the table was changed. Choose S (Save) and press <Enter>.

Return to the **tablesONLINE IDENTIFY TABLE** screen (see Figure A-23). Press <PF3> (END) to access the **tablesONLINE PRIMARY MENU** (see Figure A-2) where Option 1 - BROWSE TABLE was originally selected. Press <Enter> on the **tablesONLINE BROWSE TABLE** screen (see Figure A-18) and the **tablesONLINE IDENTIFY TABLE** screen appears (see Figure A-23).

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

Since EXAMPLE is a quick reference 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 EXAMPLE each time it is accessed, on a per-request basis. The other option is to create an Alternate Index definition for the table.

To identify the Alternate Index name select Option 4 - DEFINE TABLE on the **tablesONLINE PRIMARY MENU** (see Figure A-2). The **tablesONLINE IDENTIFY TABLE** screen (see Figure A-23) is displayed with the name of the alternate index in the **ALTERNATE INDEX** field.

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

Identify the library required:

NAME OF LIBRARY     ===> 'DKLTBT.V6R0M0.MAINLIB'


Enter data for table being defined:

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

                  -OR-

Enter data for Alternate Index:

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

Press END to return to the tablesONLINE Primary Menu.
```

Figure A-23: tablesONLINE IDENTIFY TABLE Screen

Define Alternate Parameters

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

The **tablesONLINE IDENTIFY TABLE** screen illustrated in Figure A-23 of the Define Table option is used to identify the Alternate Index name.

When <Enter> is pressed, the **tablesONLINE DEFINE ALTERNATE PARAMETERS** screen appears, as shown in Figure A-24.

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

LIBRARY NAME           : 'DKLTBT.V6R0M0.MAINLIB'
ALTERNATE INDEX NAME   : EXAMALT


DATA TABLE NAME     ===> EXAMPLE

TABLE ORGANIZATION  ===> S
SEARCH METHOD       ===> B
KEY LOCATION        ===> 35
KEY LENGTH          ===> 16




Press ENTER to process.
Press END to return to the Define Alternate Index screen.
```

Figure A-24: tablesONLINE DEFINE ALTERNATE PARAMETERS Screen

Type in the values for the Library Name and Alternate Index Name fields. Specify the name of the data table, which is EXAMPLE. Enter values for the other fields.

After an Alternate Index is defined, its associated View needs to be defined.

Rather than create a new View, it is easier to copy the View for the table EXAMPLE and then modify it.

Press <PF3> END to access the **tablesONLINE PRIMARY MENU** (see Figure A-2) and select Option 5 - UTILITIES. The **tablesONLINE UTILITY** screen appears (see Figure 5-1).

Select Option G - VIEW UTILITIES and the **tablesONLINE VIEW UTILITIES** menu appears (see Figure 5-15).

Select Option 2 - COPY VIEW and the **tablesONLINE COPY VIEW DEFINITION** screen appears, as illustrated in Figure A-25.

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


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

NAME OF LIBRARY         ===> 'DKLTBT.V6R0M0.MAINLIB'
NAME OF TABLE           ===> EXAMPLE
GENERATION NUMBER       ===>             (Specify ALL to copy all generations)



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

LIBRARY (If different)     ===> 'DKLTBT.V6R0M0.MAINLIB'
TABLE NAME (If different)  ===> examalt




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

Figure A-25: tablesONLINE COPY VIEW DEFINITION Screen

In the Name of Library field, type the name of the library that contains the data table.

In the Name of Table field, type the name of the data 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 the Alternate Index is being stored in the same library as the data table. Type the name of the Alternate Index, EXAMALT, in the Table Name (If Different) field.

Press <Enter> to process this screen. A message appears stating that the copy was successful.

Edit EXAMALT to Show Alternate Index

The next step is to edit the View called EXAMALT so that it shows an Alternate Index of the table.

Type =W.4 on the command line to access the **tablesONLINE DEFINE TABLE** screen (see Figure A-4). Select Option 1 - EDIT VIEW. When <Enter> is pressed, the **tablesONLINE EDIT VIEW** screen appears, as shown 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.
```

Figure A-26: tablesONLINE EDIT VIEW Screen

To order the table so that the supervisor can determine who gets a calculator this month, change the values in the Key Ind field so that Charitable Donation and Date of Contribution are the new keys.

Press <Enter> to process the new definition.

Press <PF3> (END) to return to the **tablesONLINE Define Table** screen, and choose Option 4 - BROWSE TABLE DEFINITION to see the new definition created.

The X in the Storage Mode Code field indicates that this table is an Alternate Index. To exit this screen, press <PF3> (END).

Press END to return to the **tablesONLINE DEFINE TABLE** screen (see Figure A-4). A message appears stating that the View was updated.

After pressing <PF3> (END), the **tablesONLINE SAVE TABLE** screen appears (see Figure A-10). Choose S to save the table. Now that an Alternate Index of the table has been created, it can be viewed like a regular table.

Choose Option 1 - BROWSE TABLE to see the Alternate Index.

