

SECTION 4

TABLES/AS SCREEN PROCESSING

PRIMARY OPTION MENU OPTION ==> 9 - SCREEN PROCESSING

OVERVIEW

The Screen Processor enables the execution of a screen designed to do prototyping, file maintenance activities, or inquiries to either TABLES/MS tables, IMS/VSAM, or DB2 databases.

Screens can be created which maintain tables or databases, create test data, or provide inquiry capabilities. Validation criteria can be defined before any updates take place. For example, a customer number can be validated to be present on the customer file before updating the order file.

One screen can be designed having IMS/VSAM, TABLES/AS tables, and DB2 tables. All can be updated on the same screen. Separate PF keys are used to identify which table to process.

A screen may be defined as having add, change, delete, or inquiry capabilities in any combination. Security may be defined for a table that is being updated. A user may be given full maintenance and inquiry capabilities, or only a portion. See the Security Section for further explanation.

The Screen Processor can also be used in a development project as a prototype to the screen flow of the system. A user can have an idea of how the system looks before programming is done.

Transferring between screens with or without data is possible. Switching to multiple screens is permitted depending on the value of a certain field or the entry of PF keys. Switching may occur to any screens designed with TABLES/MS or to or from other applications using BMS/MFS designed screens.

The following are the steps for using the Screen Processor.

1. Design the screen
2. Add function code field(s) - not required for add only or inquire only
3. Add search operators - not required
4. Map the table
5. Create a test module - not required for testing
6. Define the screen switching requirements - not required
7. Enter the Screen Processor
 - In the testing environment:
 - TABLES/AS Primary Option menu, Option 9
 - In the production environment:
 - Enter the installation's standard transaction code.
 - Enter a unique transaction code established to bypass the Screen Processor start-up screen (sends you directly to a user screen executable through the Screen Processor)
 - By a switch from a programmed transaction to the Screen Processor by any of the methods defined in Screen Switching
 - By an IMS/CICS start-up transaction invoking the Screen Processor and sending you to an executable screen.

1. DESIGN THE SCREEN

Using the Screen Generator, the screen shown in Figure 4-1 is created.

```

ACME MANUFACTURING COMPANY
EMPLOYEE FILE MAINTENANCE AND INQUIRY

SEARCH OPERATORS:      EMPLOYEE NUMBER
(*, <, >, L, G, -)      EMPLOYEE NAME
                        HIRE DATE

FUNCTION  EMPLOYEE  EMPLOYEE  HIRE
CODE     NUMBER   NAME      DATE
  
```

Figure 4-1

The screen is named Employee File Maintenance and Inquiry. For this example, the employee file is a TABLES/MS table. The table has the following fields: Employee Number, Employee Name, and Hire Date. The fields are repeated five times, allowing the display or updating of five employee records at a time.

2. ADD FUNCTION CODE FIELD(S)

The purpose of a function code field is to indicate which activity to perform. The valid function codes are:

```

R, I, B Retrieve for inquiry only
U       Retrieve for multiple updates
A       Add
C       Change
D       Delete
  
```

One function code may be defined for all records on the screen or the function code can be defined as part of a repeating group as was done in our example. Having the function code as part of a repeating group allows more than one update function on the screen to be performed at a time. For example, Line 1 could be changed, Line 2 could be deleted, and Line 3 added at the same time.

On a screen containing multiple rows for a table, the function code entered (R, I, B, U or A) on the first row, controls subsequent processing of all rows within the given table until a new function code (R, I, B, U or A) is entered.

To perform a change or delete function, the function code U must be used to retrieve the rows for a display. When rows are retrieved for multiple updates, the function code C, D, and A may be used at the row level. Function code A after U or R may also be used to retrieve data, perform modifications and update table using insert function.

To define a function code:

Define an alphanumeric field and name it.

- It is recommended that consistent names be used as code fields.
- It is not necessary to define edits for this field.

The use of the function code is further explained in the section, Basic File Maintenance and Inquiry.

3. ADD SEARCH OPERATORS

Search operators are option in the screen processor.

Search operators specify a condition to be met when retrieving records. A search operator can be related to one field on the screen or to many fields. If a search operator is not defined, then a default of = Equal To the value of the search field is applied. The following are the valid search operators:

< Less than
> Greater than
= Equal to
L Less than or equal to
G Greater than or equal to
γ Not equal to

In our example, three search operator fields are defined (employee number, employee name, and hire date). This allows the specification of the following search conditions:

Retrieve all records:
EMPNO > 12345 and HIREDATE = 04/15/80

Retrieve all records:
EMPNAME = SMITH

Retrieve all records:
EMPNO < 77000 and HIREDATE > 01085 and EMPNAME = SMITH

The use of the search operator is further explained in the section Basic File Maintenance and Inquiry.

FILE MAINTENANCE AND INQUIRY

The TABLES/AS Screen Processor can be used in a test environment or production environment. Entering the Screen Processor from TABLES/AS Primary Option menu (Option 9) uses the test environment. Entering the Screen Processor from a transaction code uses the production environment. The primary difference in using these two environments is in the handling of the load module form of a screen vs. dynamic building of screen using database access.

Selecting Option 9 from the TABLES/AS Primary Option menu brings up the screen shown in Figure 4-2.

```

TABLES/AS SCREEN PROCESSOR

SCREEN NAME ==>
USER-ID ==>

-----
Enter the screen name to execute. If you are not
signed on, enter your User-Id, also.
-----

Table/Segment Name:          DBSD Name:

PF 1=HELP      2=      3=EXIT      4=RETURN      5=      6=
PF 7=          8=      9=          10=          11=     12=
  
```

Figure 4-2

SCREEN NAME

Automatically supplied from the screen name entered on the Primary Option menu. If no screen name appears or a different screen name is to be accessed, enter the desired screen name.

USERID

May be required in production mode for non-DB2 table processing when user SIGNON is inactive.

Enter a valid user ID which has been defined for the table the screen accesses. A valid user ID is defined by adding a user ID record on the USERID control table.

If an invalid user ID is given, the table is displayed on the screen. This indicates which table needs to have a user ID defined.

The next screen displayed is the designed screen. Position the cursor at the function code field and enter a function. The screen can now be processed depending on the security defined for both the screen and the user ID.

RETRIEVING RECORDS FOR INQUIRY

If both the screen and user ID have inquiry capability, records may be retrieved from a table for inquiry purposes. By entering an R in the function code field and pressing ENTER, the system sequentially retrieves up to the maximum number of records allowed.

To retrieve records with specific values, enter the R and the specific values interested in. On a multiple row screen, the function code and the search values are always entered in the first row. All records with values equal to those specified are retrieved. If search operators have been defined, records can be retrieved based on the values defined.

The records retrieved are displayed on the screen in as many rows as are defined on the screen. If the record is defined as one row, the system displays one record at a time. If there are ten rows, the system can display up to ten rows at a time.

For TABLES/MS and DB2, if more records are retrieved than can fit on one screen, pressing ENTER or the key defined to process, pages through the remaining records.

For VSAM/IMS, only the number of records which can fit on the screen are retrieved. To see the next set of records, enter the key value of the next record or enter the key value of the last record displayed and use a search operator of >.

After R, the function code is changed to '*' after the retrieval is done. This function code can be changed to R, I, B, U, or A to perform subsequent function.

To clear the screen for next function, the clear key may be used.

ADDING RECORDS

If both the screen and user ID have Add capability, you may add records to TABLES/MS, DB2 Tables, VSAM files, or IMS database segments. To do this, enter an A in the function code field and fill in the necessary data on the screen. Press ENTER or the key that was defined for processing.

If there were record level validations defined for the add function, validation takes place before the record is added. If the validation fails, the record is not added and an error message appears.

Add function may be used after R; i.e., '*' may be changed to 'A' to add. This will switch the screen into add mode. On a multiple row screen, you will be required to enter 'A' on the first row to switch the screen into add mode.

CHANGING OR DELETING RECORDS

A retrieve for update must first be done in order to change or delete a record. Enter a U in the function code field to specify multiple updates. To retrieve a record, enter the necessary field values in the record. To retrieve records sequentially, leave all fields blank.

The retrieval for update is the same as a retrieval for inquiry. The user ID and screen must have either Change or Delete capability. The function code is changed from a U to ' ' (underscore) once the records are retrieved for display. A function code of ' ' can be changed to either D (delete), C (change), A (add), U (retrieve for update), or R, I, or B (retrieve for inquiry).

When switching a function code from U to A or U to R, on a multiple row screen, the new function code must be entered on the first row.

NOTE: During any processing, if function code A is entered on the first row, the processing mode on the screen switches to A for all subsequent processing unless a new function code is entered to change A.

To delete a record, change the ' ' to D.

To change a record, change the ' ' to C and make the necessary changes. Key fields cannot be changed for VSAM files, and IMS databases.

To add a record, change the ' ' to A and make any other changes necessary. If a record is added with a duplicate key, an error message is displayed if duplicate records are not allowed.

NOTE: when ' ' is changed to A in the first row, the processing mode of the screen switches to add for subsequent processing.

If table level validations are defined for the function being performed, validation takes place before the record is processed. If the validation fails, the record is not updated and an error message appears.

REPEATING GROUPS

If a record is part of a repeating group, the first occurrence of that group is examined when performing a retrieval (R, I, B, or U). If search operators exist, they are applied to the fields in the first occurrence. If there are no search operators, the equal condition (=) is applied to the fields in the first occurrence.

If there is one function code field defined for a screen containing repeating groups, that function applies to all records. For example, if three records are displayed on a screen after a retrieval for update (Function U) and a D is entered in the function code field, all three records are deleted.

If the function code is part of the repeating group, multiple updates may be performed and controlled at the row level. For example, if three records are to be deleted, a D is entered in the function code field for each line. If only Line 2 is to be deleted, only a D is entered in the function code field of Line 2, leaving the function code of Lines 1 and 3 an ' '.

NOTE: Repeating function code fields are used to provide a multiple update capability. They do not serve any other useful purpose.

SEARCH OPERATORS

In the example created in Figure 4-3, three search operators were defined each relating to a different field on the screen. Let us suppose that we have entered the data as shown on the screen.

ACME MANUFACTURING COMPANY			
EMPLOYEE FILE MAINTENANCE AND INQUIRY			
SEARCH OPERATORS:		> EMPLOYEE NUMBER	
(M, S, >, L, G, +)		EMPLOYEE NAME	
		HIRE DATE	
FUNCTION CODE	EMPLOYEE NUMBER	EMPLOYEE NAME	HIRE DATE
R	12345		01/01/86

Figure 4-3

All records are retrieved with an employee number greater than 12345 and a hire date equal to 01/01/86. Even though a search operator was not entered for hire date, the system defaults to = (equal to the value of the search field).

If a field has no search operator and data is entered when performing a retrieval, it is included in the match criteria as an equal to condition. For example, if there was a field on the above screen called Pay Rate and 10.00 was entered, then the employee records would also have to have a pay rate equal to 10.00 in order to be retrieved.

MULTIPLE TABLES ON A SCREEN

The TABLES/AS Screen Processor processes multiple tables on the same screen. This should not be confused with REPEATING GROUPS. Each table can be processed individually. The resulting effect is having one screen sectioned into many smaller screens. Up to 14 tables may be defined on any one screen.

For example, a screen may be designed to add records to a DB2 table and to display a list of values from another table on the same screen.

EDITOR MODE PROCESSING

The editor mode allows a user-written program to fully or partially process a given screen. The control table SCREDIT must be updated with a record to specify the screen name and the editor program name. One editor program may be designed to process multiple screens if desired. The SCREDIT table can be updated using the TABLES/MS processing menu.

In the editor mode, it is possible for the user program to switch to different screens and direct transfer and processing within its own controls. The editor mode is invoked under the following condition:

- Any key is pressed.
- Function code field is either blank or not present.
- The conditions for a screen switching are not met.

Refer to the TABLES/MS and TABLES/AS Technical Guides for additional details on Editor Programming.

SCREEN PROCESSOR MESSAGES

The Screen Processor uses standard message text in the absence of user defined messages. If messages are to be overridden, they must be entered in the control table SCPMSG. The following is required for creating a message:

- SCREEN NAME Name of the screen for which the message is applicable.
- MESSAGE NUMBER Number of the message to be overridden.
Example - T058, T065
- MESSAGE TEXT1 Up to 60 characters of user message.
- MESSAGE TEXT2 Additional 19 characters of message as a continuation of Message Text1.

OVERRIDING DB2 ERROR MESSAGES

Normal DB2 errors are translated using DSNTIAR program (a DB2 standard program); however if these messages are to be overridden, this may be done at the screen level or system wide.

For screen level override, enter a four (4) digit numeric code in which the leading zero equates to the negative (-) sign and a corresponding message in the SCPMSG control table. For example, -911 should be equated to 0911. The screen name is the name of the screen to be processed.

For system wide override, enter a four (4) digit numeric code in which the leading zero equates to the negative (-) sign and a corresponding message in the SCPMSG control table. The screen name is a constant name called SQLCODE.

The sequence of searching for a customized message is as follows:

1. If a customized message exists for the given screen, it is used.
2. If a customized message exists for system wide use (stored under SQLCODE screen name), it is used.
3. The standard DB2 message as returned by DSNTIAR module is used.

DEFAULT MESSAGES

T001 FUNCTION CODE REQUIRED
T002 FUNCTION CODE INVALID
T003 SCREEN NAME REQUIRED
T004 SCREEN NAME NOT FOUND
T005 CORRECT USERID IS REQUIRED
T006 RECORD NOT FOUND
T007 FUNCTION COMPLETED
T008 DUPLICATE KEYS ARE NOT ALLOWED
T010 UNABLE TO ACCESS EDITOR MODULE
T011 UNABLE TO ACCESS SCREEN
T012 TABLE NOT DEFINED FOR THE SCREEN
T013 GENERIC RETRIEVAL NOT ALLOWED
T014 ENTER SCREEN NAME & USERID
T015 UNABLE TO ACCESS TABLE DEFN PROGRAM
T016 UNABLE TO ACCESS EDITOR PROGRAM
T017 UNABLE TO FIND THE SCREEN RECORD
T018 UNABLE TO FIND THE SCREEN NAME RECORD
T019 UNABLE TO FIND THE FUNCTION FIELD
T020 UNABLE TO FIND THE 2ND FUNCTION FIELD
T021 FUNCTION CODE ENTERED IS INVALID
T022 UNSUCCESSFUL VALIDATION
T023 FILE IS NOT OPEN
T024 VSAM FILE INFORMATION NOT FOUND
T025 DATA DOES NOT SATISFY TABLE DEFINITION
T027 CHANGE OF KEY FIELD WAS ATTEMPTED
T028 SEARCH VALUES ARE REQUIRED FOR VSAM FILE
T029 RECORDS BEING SEARCHED ARE NOT FOUND
T030 SELECTED FOR INQUIRY
T031 SELECTED FOR UPDATE
T032 FUNCTION COMPLETED, ENTER NEXT SEARCH VALUES
T033 ADDITIONAL RECORDS ARE DISPLAYED FOR INQUIRY
T034 FUNCTION COMPLETED, ADDITIONAL RECORDS ARE DISPLAYED
T035 SEARCH OPERATOR FIELD IS NOT FOUND ON SCREEN
T036 MAXIMUM FILE CALLS PERMITTED EXCEEDING
T037 ALLOWED MAX SEARCHED

T038 RECORD LENGTH ERROR; CHECK DEFINITION
T039 PROCESSING FUNCTION INVALID
T040 ACCESS DENIED, VERIFY USERID & PROCESSING OPTIONS
T041 DATA FORMATS TO BE MAPPED ARE INCOMPATIBLE
T042 RECORD NAME TO BE MAPPED UNKNOWN
T043 DBD NAME IS REQUIRED TO ACCESS THIS SEGMENT
T044 RECORD TO BE CHANGED WAS NOT FOUND ON WORK DATA BASE
T045 MUST RETRIEVE ROW TO BE DELETED BY FUNCTION U
T046 UNABLE TO FIND THE MESSAGE FIELD
T047 RECORD TO BE MAPPED OUT NOT FOUND
T048 NO MAP RECORD, PF KEY, OPTION CODE, OR EXIT FROM TARGET
T049 MAP IS NOT DEFINED FOR THE SCREEN
T050 INITIATION SOURCE UNKNOWN, RETURN NOT POSSIBLE
T051 UNABLE TO FIND THE NEXT HIGHER LEVEL KEY
T052 ABNORMAL CONDITION ENCOUNTERED IN EDITOR
T053 NO ACTION HAS BEEN INDICATED
T054 UNABLE TO FIND THE OPTION CODE FIELD NAME
T055 UNRECOGNIZABLE FIELD TYPE (NOT=C,P,B,OR D)
T056 A FIELD OF ZERO LENGTH WAS DETECTED
T057 A QTY FIELD CONTAINS ERRONEOUS DEFINITION
T058 ERROR IN THE DATE INPUT/OUTPUT DEFINITION
T059 INVALID FILE NAME
T060 SECURITY VIOLATION
T061 TABLES/VSAM SEQ. FIELD SEARCH ON OPERATOR G NOT VALID
T062 VSAM FILE KEY FIELD SEARCH ON <,' , AND L NOT VALID
T064 ENTER SCREEN NAME TO BE PROCESSED
T065 NO DATA ENTERED TO PERFORM ADD FUNCTION
T066 ERROR-IN BUILDING SQL STATEMENT
T067 CURRENT PAGE NO
T069 RECORD TO CHANGE IS NO LONGER AVAILABLE
T070 UNABLE TO FIND SWITCHING SCREEN
T071 ENTER NEXT SELECTION
T072 THIS IS THE LAST PAGE

EFFECTIVITY CONTROL MESSAGES

T200 BI COLUMN NAME DEFINED IS INVALID
T201 KEY COLUMN NAME DEFINED IS INVALID
T202 BO COLUMN NAME DEFINED IS INVALID
T203 BO DATE IS NOT ALLOWED AS USER INPUT
T204 DUPLICATE KEYS ARE NOT ALLOWED
T205 BI DATE IS REQUIRED TO PROCESS
T206 CURRENTLY EFFECTIVE ROW HAS BLANK BO DATE
T207 BI DATE IS NOT ALLOWED AS USER INPUT
T208 PREVIOUS ROW MUST BE BROKEN OUT
T209 BI DATE ADDED NOT < THAN ANOTHER EFFECTIVE ROW
T210 BO DATE ADDED NOT < THAN ANOTHER EFFECTIVE ROW

T211 BO DATE INVALID, EFFECTIVITY GAP EXISTS
T212 BI DATE MUST BE > THAN BI DATE PREV. ROW
T213 BI DATE MUST BE > THAN BO DATE PREV. ROW
T214 DELETION OF ROW IS NOT ALLOWED
T215 CHANGE OF ROW IS NOT ALLOWED
T216 CHANGE OF KEY COLUMN VALUE NOT ALLOWED
T217 CHANGE OF BO DATE VALUE NOT ALLOWED
T218 BO DATE IS EXPIRED, ROW CANNOT CHANGE
T219 BO DATE CANNOT BE < THAN BI IN SAME ROW
T220 CHANGE OF BO DATE TO BLANKS NOT ALLOWED
T221 ROW TO BE CHANGED NOT FOUND IN THE TABLE
T222 BI DATE CHANGED NOT < BI DATE NEXT ROW
T223 A BO DATE IS REQUIRED
T224 BO DATE MUST BE < THAN BI DATE NEXT ROW
T225 EFFECTIVITY GAP MUST BE GREATER THAN ZERO
T226 EFFECTIVITY BI DATE IS INVALID
T227 EFFECTIVITY BO DATE IS INVALID
T228 ROW TO BE DELETED NOT FOUND IN THE TABLE
T229 A NEW BO DATE IS INVALID
T230 BI DATE ADDED MUST BE > THAN LATEST BI DATE
T231 BI DATE ADDED MUST BE > THAN CURRENT DATE
T301 VALIDATION BREAK-IN DATE IS INVALID
T302 VALIDATION BREAK-OUT DATE IS INVALID

TABLES/AS USERS' GUIDE

APPENDICES

APPENDIX A ATTRIBUTE CHARACTERS

STANDARD ATTRIBUTE CHARACTERS

A Input/output field, low intensity
B Input/output field, high intensity
C Input/output field, non-displayable
D Output field, low intensity
E Output field, high intensity
F Output field, non-displayable
G Input/output protected field, low intensity, modified data tag on
H Input/output protected field, high intensity, modified data tag on
I Input/output protected field, non-displayable, modified data tag on (used to hide fields on the screen)

EXTENDED ATTRIBUTE CHARACTERS

B Blink
R Reverse video
U Underline
Blank Device Default

COLOR ATTRIBUTE CHARACTERS

B Blue
R Red
P Pink
G Green
T Turquoise
Y Yellow
N Neutral
Blank Device Default

CURSOR ATTRIBUTE CHARACTERS

E Position cursor on this field
Blank Do not position cursor on this field

**APPENDIX B
DATE FORMAT CODES**

1	MMDDYY	
2	MMDDYYYY	
3	DDMMYY	
4	DDMMYYYY	
5	YYMMDD	
6	YYYYMMDD	
7	MM/DD/YY	
8	MM/DD/YYYY	
9	DD/MM/YY	
A	DD/MM/YYYY	
B	YY/MM/DD	
C	YYYY/MM/DD	
D	YYDDD	
E	YYYYDDD	
F	YY/DDD	
G	YYYY/DDD	
H	DD-MMM-YY	('01-JAN-90',L=9)
I	DD-MMM-YYYY	('01-JAN-1990',L=11)
J	MON DD,YYYY	('JUNE 1, 1990',L=18)
K	MMM DD,YYYY	('OCT 1, 1990',L=12)
L	YYYY-MM-DD	(DB2 FORMAT, ISO, JAPANESE)
M	DD.MM.YYYY	(EUROPEAN STD)
S	TIME STAMP	
T	HHMMSS	
U	HH:MM:SS	
V	HH.MM.SS	
W	HH.MM AM/PM	

APPENDIX C SCREEN PROCESSOR PARAMETERS

SEARCH/COMPARE OPERATORS

<	Less than
>	Greater than
=	Equal to
L	Less than or equal to
G	Greater than or equal to
≠	Not equal to
J	Not like (DB2 interface only)
K	Like (DB2 interface only)

FUNCTION CODES

R, B, I	Retrieve for inquire only
U	Retrieve for update
A	Add
C	Change
D	Delete

APPENDIX D ERROR MESSAGES

The upper portion of the screen will display error messages pertinent to problems encountered while processing the screen. Additionally, the results of the various options selected will also be displayed.

SCREEN DESIGN FUNCTIONS

DISPLAY NOT POSSIBLE, RECORD DELETED

A screen description was defined for that screen name, but PF6/12 was used to back out of the paint screen. The system has just deleted the residual screen description.

ENTER PF KEY FOR HELP

Enter the PF Key corresponding to the option with which help is needed.

OPTION CODE INVALID

Valid codes are listed on the screen.

OPTION CODE REQUIRED

Valid codes are listed on the screen.

SCREEN ALREADY EXISTS

A screen which already exists.

SCREEN NAME NOT FOUND

A defined screen name is required.

SCREEN NAME REQUIRED

A valid screen name is required.

EDITS EXIST, SCREEN CANNOT BE DELETED

First delete all existing edits before deleting a screen. Use Option 5 on the Edit Definitions menu.

FIELD START INDICATORS WERE INSERTED

A literal was defined with no field start indicator, therefore the system inserted them where necessary. Verify that these are acceptable.

NAME RECORD NOT FOUND, SCREEN RECORD COPIED

Field names must be defined on the From screen prior to using this option. The system copied only the screen format.

TABLE DEFINITION NOT FOUND

A table name was specified as a base table for screen design and the table was not found in catalogue.

UNSUPPORTED COLTYPE FOUND

A column type selected for screen design is not supported, one example is a floating point column in a DB2 table.

NO OF COLUMNS EXCEEDS MAX. 120

The total number of columns in the selected table exceeds 120 which is the maximum allowed for a base table.

VALUE MUST BE YES, NO, SEL OR BLANK

To select a default starting screen, value entered must be YES, NO, SEL (to select fields) or blank.

LINE COMMANDS**ERROR - NO. OF COLUMNS TO BE SHIFTED IS INVALID**

This message occurs when SL or SR commands were entered and the number of columns to shift was greater than eighty (80) or the number of columns to shift was not numeric.

ERROR - DATA TO BE MOVED OR COPIED OUTSIDE OF SCREEN

This message occurs when the number of lines to be moved or copied would go off the top or bottom of the screen. For example, A move M of a single line after A the last line of the screen (line 24). Copying five (5) lines before B line three (3) of the screen.

ERROR - CONFLICTING COMMANDS, ONLY ONE KIND CAN BE ENTERED AT A TIME"

This message occurs when more than one move, copy or repeat command is entered. Also, when any combination of move, copy, repeat or shift commands are entered together. Enter number of shift commands at one time, but not in combination with move, copy or repeat.

ERROR - INVALID COMMAND FORMAT

This message occurs when a command was entered incorrectly.

ERROR - INCOMPLETE COMMAND

This message occurs when one or more of the entries required for a command were not entered. For example, a C was entered on one line but there was no A or B entered to indicate where to move the line.

CHANGE OPTIONS**EXTENDED ATTRIBUTES NOT SPECIFIED**

The screen description has been defined indicating that extended attributes are not to be used. Change the screen description if extended attributes are now valid for this screen.

OPTION CODE INVALID

Self-explanatory

SCREEN NAME REQUIRED

Self-explanatory

SCREEN NAME NOT FOUND

Self-explanatory

MESSAGES PERTAINING TO RESULTS OF VARIOUS OPTIONS

CANCELLED

PF12 was invoked to return without changes.

XXXXXXXXX CHANGED

Changes made have been applied.

Where, XXXXXXXXX = screen name.

FUNCTION COMPLETED

Option 7 (FIELD NAMES) or Option 8 (RESEQUENCE) have been successfully completed.

EDITS EXIST, FIELD CANNOT BE DELETED

While in Option 2 (SCREEN FORMAT), an attempt was made to remove one or more input/output fields which have edits defined. None of the changes have been made. Delete edits for the fields being deleted and then delete the fields from the screen.

XXXXXXXXX ERROR IN LINE 1 COL 1

An input/output field has been defined which ends in the last (BOTTOM RIGHT) position of the screen. When this condition occurs, a valid field-start character must be in the first (TOP LEFT) position of the screen.

FLDID CANNOT CHANGE

An attempt was made to change a FIELD ID (FLDID) value. A FIELD ID value is the one alphabetic character or the two numeric characters following the input/output field-start character. None of the changes have been made.

CONFLICTING FIELD DEFINITION=FIELDNAME

An input/output field format was changed which would make it incompatible with a field of the same name on one or more screens.

Either change the field name or correct the definition on this screen so it conforms to the format defined on the other screens.

FIELDID TABLE FULL - PLEASE REDO IN ADD MODE

A screen which has more than thirty-five (35) one character fields can not be changed.

RESEQUENCE FIELDS IN THE COPY CODE

FLDID NOT FOUND

This message occurs when a FLDID number is entered which does not exist for this screen.

COPY A SCREEN***FROM SCREEN IS REQUIRED***

Field: From screen

Enter the name of the screen to be copied from.

FROM SCREEN DOES NOT EXIST

Field: From screen

The screen name entered must be an existing screen - Reenter.

MUST INDICATE THE AMOUNT OF DATA TO BE COPIED

Field: Screen format only

Specify one option, for example, screen format only, screen format + field names, etc. Place an X beside the desired option.

PRIMARY OPTION MENU***APPLICATION ID MUST EXIST IN THE TXNTBL CONTROL TABLE***

Using the TABLES/MS (Option 8) maintenance (Option 2) function, verify that the application name exists in the control table TXNTBL.

APPLICATION NAME REQUIRED

Enter a valid application name. Check spelling or find out the correct application name to use.

APPLICATION NAME MUST BE A VALID NAME

An application has been entered which has not been previously established. Check spelling, find out the correct name to use, or establish the name as a valid application name thru TABLES/MS (Option 8) maintenance (Option 2) function.

OPTION CODE REQUIRED

Enter Option Code 1 through 9.

OPTION CODE INVALID

An option code not defined in list of options for this menu has been entered.

SCREEN NAME REQUIRED

Enter a screen name. For Options 2 or 3, the name entered must be a name previously used for a screen which was designed with the screen design functions. For Option 1, this can be a new screen name, if designing a new screen, or it must be a name previously used. Check spelling or find out the correct screen name to use.

SCREEN RECORD NOT FOUND

A screen name has been entered which has not been previously assigned. When a previously assigned screen name must be entered. Check spelling or find out the correct name to use.

EDIT DEFINITION FUNCTIONS MENU***NO CONTROL FIELDS ARE DEFINED - OPTION 2***

At least one field on the screen has to be defined as a controlling field in relational edits.

NO EDIT DEFINITIONS EXIST FOR THIS SCREEN - OPTION 6, 7

Edits must first be defined for the screen before performing these options.

OPTION CODE INVALID

Valid codes are listed on the screen.

OPTION CODE REQUIRED

Valid codes are listed on the screen.

SCREEN MODULE IS NOT FOUND

Either the screen has not been prepared for test and has not been run for this screen or the program library may have gone into extents. Stop and start the message region to resolved the problem for the second case.

SCREEN NAME INVALID

A valid screen name is required to perform any of the options.

SCREEN NAME REQUIRED

A valid screen name is required to perform any of the options.

FIELD EDITS***A TABLE NAME REQUIRES VALIDATE THRU TABLE OF Y***

N indicates no validation against TABLES, yet a table name has been entered to validate against. Change one or the other.

ABOVE INDICATES THE CURRENT DEFINITIONS

This is not an error message. If defining edits for the first time for this field, these are either the default edits or this field has edits defined for another screen. Pressing the ENTER key will activate these edits for this field on this screen.

ALPHA CHECK & FORMAT CANNOT BOTH BE Y

These two edits are mutually exclusive.

DATE REL. MUST BE BLANK OR = - < L > OR G

See the explanation of each of these characters listed earlier in this section under date field edits.

FIELD MUST BE Y OR N

A response of other than a Y or N value has been given. Correct and press ENTER.

FIELD NAME NOT DEFINED FOR THE SCREEN

The field name entered as a special message field must be a predefined field on this screen.

FIELD TOO SHORT FOR STANDARD MESSAGES - CUSTOMIZE. MAX STD MESSAGE IS 73

A special message field must be defined as having a length of 73 or greater in order to utilize the system's generic error messages. If it's defined as less than 73, the error messages must be customized.

FORMAT MUST NOT BE LONGER OR SHORTER THAN LENGTH

The format specified must be the exact length of the field, including the special characters.

FORMAT REQUIRES A FORMAT YES

If Y was specified to format check, the format desired must be entered.

VALIDATION ERROR_SCRVAL RECORD NOT FOUND

Edit definitions being changed are not found. Delete the field edits and reestablish using the field edit definition panel.

FIELD EDITS - DISCRETE VALUE*FORMAT MUST BE NUMERIC OR VALUE NOT LONG ENOUGH*

The discrete value entered must be numeric and it must be the same length as the field. If more than one discrete value is entered they must be separated by a comma.

INVALID DATE FORMAT OR LENGTH NOT EQUAL TO FORMAT

The date value entered must be the same length as the field and it must be of the same format, i.e., if the date is defined as MMDDYY then 860101 would be invalid.

DISCRETE VALUE ENTRY SCREEN*DECIMAL POINT LOCATION IS INVALID*

Discrete values for quantity fields must contain the same number of decimal positions as defined on the Field Edit screen.

FORMAT LENGTH DOES NOT MATCH FIELD LENGTH

The discrete value entered must be the same length as the field. If more than one discrete value is entered they must be separated by a comma.

RELATIONAL EDIT RULES

COMPARE FIELDS MUST BE SINGLE VALUED OR BELONG TO THE SAME GROUP

The field name of a field in a repeating group other than the repeating group of the control field has been used as the name for compare FLD1 or compare FLD2. Check the spelling of the field name used or remove the name from the condition.

CONTROL FIELD NUMBER ENTERED MUST MATCH THE LIST

Some value for "ENTER CONTROL NUMBER DESIRED" has been entered, but it does not match any of the numbers in the list shown on this screen.

DEFINITION FUNCTION TO BE PERFORMED IS REQUIRED

Y must be entered to indicate the function desired, i.e., Add, Change, etc.

ONLY ONE DEFINITION FUNCTION CAN BE PERFORMED AT A TIME

A Y has been entered next to more than one function. Blank out all except one.

RELATIONAL COMPARE FIELDS MUST MATCH SINGLE VALUE CONTROL FIELD

A field name of a field in a repeating group as compare FLD1 or compare FLD2 has been used and the control field is a non-repeating group field. Either use the repeating group field as the control field or, check the spelling of the field name entered.

RELATIONAL CONTROL FIELD NUMBER IS REQUIRED

No value has been entered for "ENTER CONTROL NUMBER DESIRED".

RELATIONAL FIELDS MUST MATCH SINGLE VALUED CONTROL FIELD

This is a control field which is a non-repeating group field and fields have been selected within a repeating group for use in this relational condition. Either use the repeating group field as the control field or go back and select the correct non-repeating group fields.

THE SPECIFIED CONDITION IS NOT DEFINED, CANNOT PROCESS

A condition number for change has been specified which does not exist. Use view relational edits to see the conditions which are defined.

THE SPECIFIED CONDITION IS NOT DEFINED, CANNOT DELETE

A condition number for delete has been specified which does not exist. Use view relational edits to see the conditions which are defined.

UNACCEPTABLE INPUT CHARACTER

A value other than Y has been entered.

DEFINE FIELD VALUES FOR CONDITIONS***A DATE FIELD CAN ONLY BE COMPARED TO ANOTHER DATE FIELD***

An alphanumeric or numeric or quantity field name for FLD1 or FLD2 has been used and the screen field selected to participate in the relational condition is a date field. Check logic, field names and spelling.

ADDED FIELD NAMES MUST HAVE BEEN PREVIOUSLY SELECTED

A field name has been entered in the left most column which was not in the list of field names selected for this condition. To include another field, PF12 must be entered to select that field using a P, A, or C. Check spelling also.

ALPHA & NUMERIC FIELDS CAN ONLY BE COMPARED TO OTHER ALPHA & NUMERIC FIELDS

A date field name or a quantity field name for FLD1 or FLD2 and the screen field selected to participate in the relational condition is either alphanumeric or numeric. Check logic, field names and spelling.

A QUANTITY FIELD CAN ONLY BE COMPARED TO ANOTHER QUANTITY FIELD

An alphanumeric or numeric or date field name for FLD1 or FLD2 and the screen field selected to participate in the relational condition is a quantity field. Check logic, field names and spelling.

DECIMAL POINT NOT ALLOWED

A decimal point has been entered in one of the values and the field was defined with no decimal points. Remove the decimal point.

FIELD MUST BE NUMERIC OR NOT LONG ENOUGH

Specific values entered must be the same length as the length defined on the screen. A value in FLD1 or FLD2 which is shorter in length than defined on the screen has been entered or an alpha characters in a numeric value.

FIELD MUST BE Y OR N

A value other than Y or N to the question at the top of the screen has been entered.
Enter either a Y or N.

INVALID A/N FORMAT

A value in FLD1 or FLD2 which has a different format than the format you specified in defining field edits for this field has been entered. Check entry or check the format defined.

INVALID DATE FORMAT OR LENGTH NOT EQ TO FORMAT

The date entered for FLD1 or FLD2 does not conform to the date format specified when defining field edits for this field.

MULTIPLE DECIMAL POINTS NOT ALLOWED

A quantity field with more than one decimal point has been entered.

RELATIONAL OPERATOR CAN ONLY BE =, -, <, >, L, G, P, R OR A

A valid relational operator has not been entered. Enter one of the values shown.

RELATIONAL OPERATOR R, REQUIRES A (-) AT THE END OF THE FIRST FIELD VALUE

Operator R signifies entry of a range of values or field names. There must be a (-) separating the two values/names entered. Only the first value was entered. Either use a different operator or enter two values/names separated by the hyphen (-).

2ND VALUE OF RANGE MUST BE GREATER THAN 1ST VALUE

A specified a range of values has been specified where the 2nd (to) value is not greater than the 1st (from) value. Check the values entered.

UNACCEPTABLE INPUT CHARACTER AT THE END OF THE FIRST COMPARE VALUE

The value entered in FLD1 does not have a single quote following the last character. The number of characters between the single quotes must be the same number of characters as the field length defined on the screen.

VALUE MUST BE A FIELD NAME OR ENCLOSED IN SINGLE QUOTES

A specific value was entered for FLD1 or FLD2 and was not the value enclosed in quotes. A field name in FLD1 or FLD2 has been specified which is not a field named on the screen. Check spelling.

INVALID COLOR ATTR. ONLY P, B, G, Y, T, R, N ALLOWED**INVALID EXTENDED ATTRIBUTE. ONLY B, R, U ALLOWED****INVALID STANDARD ATTRIBUTE. ONLY A THRU I ALLOWED****SPECIAL MESSAGE FIELD CANNOT BE COMMON MSG FIELD**

The field name being used as a special message field has already been defined as a common message field. Change one or the other.

USE CUSTOMIZE OPTION & CLEAR ALL MESSAGES

When changing the customize message option from Y to N, first delete the customized messages using the CUSTOMIZE MSGS SCREEN.

VALIDATE THRU TABLES REQUIRES NO RANGE CHECK

Validating thru TABLES and having discrete values is mutually exclusive.

RECORD MAPPING OPTION MENU**OPTION CODE REQUIRED**

Specify any option code.

OPTION CODE INVALID

The option code entered is not one of the available options for this screen.

RECORD-NO. IS NOT REQUIRED FOR THE DEFINE FUNCTION

Option 1 has been selected and a record number has been entered. Blank the record number field to proceed. Record numbers are generated automatically by the product in the define function.

RECORD MAPPING DEFINITION

DATE CODE MUST BE ABSENT FOR FIELD TYPE NUMERIC

A numeric screen field has been related to a record field and have supplied a date code for the record field. If the screen is not defined as a date field, a date code cannot be used for the record field.
Remove the date code or fix the screen or use the proper FIELD SEQ NO. value.

FIELD VALUE CANNOT BE NON-NUMERIC

A value has been entered with other than digits in the MAP SEQ NO. field.
Correct the value entered.

MAP SEQUENCE NO. DOES NOT MATCH SCREEN FIELD SEQUENCE

A value has been entered in MAP SEQ NO. which does not exist in the list under FIELD SEQ NO. Correct the number entered.

OPERATOR FIELD NAME MUST BE ON THE SELECTED SCREEN

An operator field name has been entered which does not exist on the screen.
Check the spelling of the name.

DEFINE MAPPING SOURCE

INPUT IS REQUIRED FOR THE OPTION SELECTED

A table name and/or a copy code name and/or a VSAM filename has been specified but an X was not entered to indicate the source for mapping.

OPTION CODE INVALID

A value other than X was entered next to TABLES/AS definitions or next to copy code source input.

ONLY ONE TYPE OF RECORD CAN BE DEFINED AT A TIME

More than one X was entered to indicate the source for mapping.

TABLES/MS TABLE NAME IS REQUIRED

X was entered next to TABLES/AS definitions but no table name was entered.

** XXXXXXXX TABLE DEFINITION DOES NOT EXIST IN TABLES/DB2 CATALOG*

An invalid table name was entered.

** XXXXXXXX COPY CODE MEMBER MUST BE EXTRACTED USING UTILITY PROGRAM*

Either the copy code member name was misspelled or JCL401MC was not run.

* Note: XXXXXXXX = TABLE NAME OR COPY CODE MEMBER NAME.

CONVERSION TO NUMERIC FORMAT IS NOT POSSIBLE

A date code containing slashes (/) for the MAPPED DATE FORMAT and the record format is numeric. There is inconsistency. Check the date code used or the wrong FIELD SEQ NO may have been entered.

VALIDATION ERROR_SCRYAL RECORD NOT FOUND

One or more fields being mapped have lost their edit definition even though fields appear to be marked as being edited.

This problem can be cleared by switching to the edit definition panel and deleting the field edits for all fields that are being mapped.

APPENDIX E TIPS

DURING SCREEN DEVELOPMENT

1. Include Function Code Field:
 - One per screen
 - or • One per table
 - or • One per row
2. Include Message Field.
3. Select Data Presence Indicator of 'N' for Repeating Fields.
4. Use Standard Attributes of A, B, C or G, H, I Only.
5. Use Following for Date & Time Initial Values:
 - Date = MM / DD / YY
 - Time = HR : MN : SC

WHEN TO RECOMPILE SCREEN?

1. Any Change Made Using Screen Design Menu
2. Any Change Made Using Edit Definition
3. Any Change Made Using Map Menu

APPENDIX F TABLES SYSTEM MENU

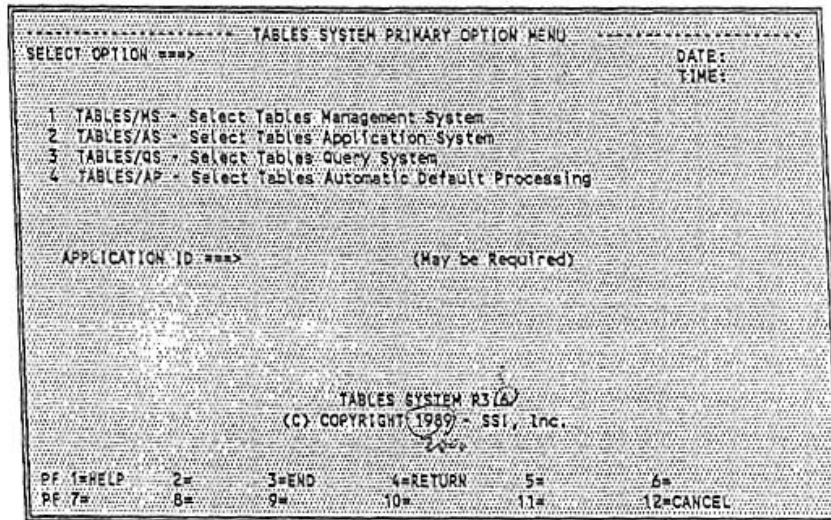


Figure F-1

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