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ภาคผนวก ก.

ขั้นตอนการแก้ไขตารางรหัส EBCDIC - 3277

ขั้นตอนการแก้ไขตารางแปลงรหัส EBCDIC - 3277

รหัสของอักขระในคอมพิวเตอร์จะมีหลายประเภท งานที่จะกล่าวถึงรหัส 2 ประเภทที่
ใช้ในวิทยานิพนธ์ฉบับนี้คือ

1. รหัส EBCDIC เป็นรหัสมาตรฐานของไอบีเอ็มซึ่งจะ เป็นรหัสที่ เก็บอยู่ใน
หน่วยความจำสำรอง
2. รหัส 3277 เป็นรหัสของตัวอักขระที่เกิดขึ้นขณะทีกดแป้นพิมพ์

ซึ่งรหัสของอักขระตัวอักขระตัวหนึ่ง ๆ อาจมีรหัส EBCDIC เหมือนกับรหัส 3277 หรือ
มีรหัส EBCDIC ไม่เหมือนกับรหัส 3277 ก็ได้

การรับข้อมูล เพื่อ เก็บลงในหน่วยความจำสำรอง

1. ซีเอ็มเอสจะรับข้อมูลจากแป้นพิมพ์ เข้าไป เก็บในบัฟเฟอร์ของ เทอร์มินัล
(Terminal Buffer) ซึ่งเป็นรหัสของ 3277 โดยจะนำไปเก็บเมื่อกด 'Enter'
2. ซีเอ็มเอสจะนำข้อมูลที่ได้จากข้อ 1 ไปแปลงรหัสจากอักขระตัวเล็กไปเป็น
อักขระตัวใหญ่ โดย
 - ถ้าผู้ใช้ป้อนคำสั่ง 'Case M' ซีเอ็มเอสจะไม่นำข้อมูลไปแปลงรหัสจากอักขระ
ตัวเล็กให้เป็นอักขระตัวใหญ่
 - ถ้าผู้ใช้ไม่ป้อนคำสั่ง 'Case M' ซีเอ็มเอสจะนำข้อมูลไปแปลงรหัสจากอักขระ
ตัวเล็กให้เป็นอักขระตัวใหญ่

จากนั้นจึงจะนำข้อมูลไปเก็บลงในหน่วยความจำสำรอง เมื่อผู้ใช้ป้อนคำสั่ง 'File'

* Uppercase Table

*

		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
DMSXSDUP	DC	X'	000102030405060708090A0B0C0D0E0F'	0													
	DC	X'	101112131415161718191A1B1C1D1E1F'	1													
	DC	X'	202122232425262728292A2B2C2D2E2F'	2													
	DC	X'	303132333435363738393A3B3C3D3E3F'	3													
	DC	X'	404142434445464748494A4B4C4D4E4F'	4													
	DC	X'	505152535455565758595A5B5C5D5E5F'	5													
	DC	X'	606162636465666768696A6B6C6D6E6F'	6													
	DC	X'	707172737475767778797A7B7C7D7E7F'	7													
	DC	X'	80C1C2C3C4C5C6C7C8C98A8B8C8D8E8F'	8													
	DC	X'	90D1D2D3D4D5D6D7D8D99A9B9C9D9E9F'	9													
	DC	X'	AOA1E2E3E4E5E6E7E8E9AAABACADAFAF'	A													
	DC	X'	BOB1B2B3B4B5B6B7B8B9BABBBCBDBEBF'	B													
	DC	X'	COC1C2C3C4C5C6C7C8C9CACBCCDCECF'	C													
	DC	X'	DOD1D2D3D4D5D6D7D8D9DADBDCDDDEDF'	D													
	DC	X'	EOE1E2E3E4E5E6E7E8E9EAEBECEDEEEF'	E													
	DC	X'	FOF1F2F3F4F5F6F7F8F9FAFBFCFDFEFF'	F													

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รูปที่ ก.1 แสดงตารางแปลงรหัสจากอักขระตัวเล็กให้เป็นอักขระตัวใหญ่

ดังนั้นจะพบว่ารหัสที่นำไปเก็บจะเป็นรหัส 3277 ไม่ใช่รหัส EBCDIC จึงจำเป็นต้องใช้
ต้องมีกลุ่มของคำสั่งที่ใช้ในการแปลงจากรหัส 3277 ให้เป็นรหัส EBCDIC ก่อน ซึ่งต้องใช้
ร่วมกับคำสั่ง 'Case M' คือ

SET INPUT 82 80
SET INPUT 84 8B
SET INPUT 5B A0
SET INPUT 7A A1
SET INPUT A5 AB
SET INPUT 41 B0
SET INPUT 42 B1
SET INPUT 43 B2
SET INPUT 44 B3
SET INPUT 45 B4
SET INPUT 46 B5
SET INPUT 47 B6
SET INPUT 48 B7
SET INPUT 49 B8
SET INPUT 51 B9
SET INPUT 52 CA
SET INPUT 53 CB
SET INPUT 54 CC
SET INPUT BD CD
SET INPUT 56 CE
SET INPUT 58 CF

เพื่อทำการแปลงรหัส 3277 เป็นรหัส EBCDIC

การส่งข้อมูลไปไว้ที่บัฟเฟอร์ของเทอร์มินัล เพื่อแสดงบนเทอร์มินัล

ซีเคมเลขจะนำข้อมูลไปแปลงรหัสจากรหัส EBCDIC เป็นรหัส 3277 ก่อนที่จะแสดงบนเทอร์มินัล ดังนั้นจึงแก้ไขที่ตารางแปลงรหัส EBCDIC - 3277 ให้มีรหัสที่ถูกต้องกับรหัสบน

เทอร์มินัล จึงทำให้รหัสทุกตัวสามารถแสดงบนเทอร์มินัล 3277 ได้

* EBCDIC -- 3277/CHARACTER SET

		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F								
DMSXSDTB	DC	X'	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	0							
	DC	X'	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	1							
	DC	X'	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	2							
	DC	X'	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	3							
	DC	X'	40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F	4						
	DC	X'	50	51	52	53	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F	5						
	DC	X'	60	61	62	63	64	65	66	67	68	69	6A	6B	6C	6D	6E	6F	6						
	DC	X'	70	71	72	73	74	75	76	77	78	79	7A	7B	7C	7D	7E	7F	7						
	DC	X'	82	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	8						
	DC	X'	90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	9						
	DC	X'	5B	7A	A2	A3	A4	A5	A6	A7	A8	A9	AAA	5A	CAD	A	EAF	A							
	DC	X'	41	42	45	44	45	46	47	48	49	51	B	A	B	B	C	B	D	B	E	B	F	B	
	DC	X'	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	52	53	54	B	D	5	6	5	8	C			
	DC	X'	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D	A	B	D	C	D	D	D	E	D	F	D	
	DC	X'	E0	E1	E2	E3	E4	E5	E6	E7	E8	E9	E	A	E	B	E	C	E	D	E	E	E	F	E
	DC	X'	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	F	A	F	B	F	C	F	D	F	E	F	F	F

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รูปที่ ก.2 แสดงตารางแปลงรหัส EBCDIC - 3277

หมายเหตุ ตารางแปลงรหัส EBCDIC - 3277 นี้จะอยู่ในโปรแกรม 'DMSXSD ASSEMBLE'

เมื่อแก้ไขแล้วจะต้องมีการสร้างนิวเคลียสของซีเคม เกสจึงจะใช้งานได้

* EBCDIC -- 3278/CHARACTER SET

* 0 1 2 3 4 5 6 7 8 9 A B C D E F

DC	X'7F7F7F7F7F7F7F7F7F7F7F7F7F7F7F7F7F'	0
DC	X'7F7F7F7F7F7F7F7F7F7F7F7F7F7F7F7F7F'	1
DC	X'7F7F7F7F7F7F7F7F7F7F7F7F7F7F7F7F7F'	2
DC	X'7F7F7F7F7F7F7F7F7F7F7F7F7F7F7F7F7F'	3
DC	X'404142434445464748494A4B4C4D4E4F'	4
DC	X'505152535455565758595A5B5C5D5E5F'	5
DC	X'606162636465666768696A6B6C6D6E6F'	6
DC	X'707172737475767778797A7B7C7D7E7F'	7
DC	X'828182838485868788898A8B8C8D8E8F'	8
DC	X'909192939495969798999A9B9C9D9E9F'	9
DC	X'A0A1A2A3A4A5A6A7A8A9AAABACADAEAF'	A
DC	X'B0B1B2B3B4B5B6B7B8B9BABBBCBDBEBF'	B
DC	X'C0C1C2C3C4C5C6C7C8C9CACBCCCD7F7F'	C
DC	X'D0D1D2D3D4D5D6D7D8D9DADBC77F7F7F'	D
DC	X'E0E1E2E3E4E5E6E7E8E9EAEBEC77F7FEF'	E
DC	X'F0F1F2F3F4F5F6F7F8F9FAFBFCFD7F7F'	F

*

*

รูปที่ ก.3 แสดงตารางแปลงรหัส EBCDIC - 3278

ภาคผนวก ก.

โปรแกรมการทำงานของคำสั่ง **Thaiedit Exec**


```

&TRACE OFF
*****
*           MAIN PROGRAM OF THAIEDIT COMMAD           *
*           FOR PROCESS SAME AS XEDIT COMMAND        *
*           BUT THAIEDIT COMMAND IS USED FOR        *
*           EDIT THAI DATA.                          *
*****
&STACK LIFO &ARGSTRING
&READ ARGS
&USER = &1
&USERTYPE = &2
* LET'S GO TO THE MENU?
  &CALL -CKMODE
* &IF &RC U= 0  &GOTO -ERROR653E
  XEDIT &USER &USERTYPE &GM ( PROFILE THAIEDIT )
  &EXIT &RC
* IF THE NAMES FILE EXISTS, THEN XEDIT WILL FIND IT WHEREVER IT MAY BE..
-CKMODE  &GM = *
ESTATE &USER &USERTYPE *
&IF &RC = 0  &RETURN
* IF WE ARE CREATING A NEW NAMES FILE, WE WANT A READ/WRITE FILEMODE...
MAKEBUF
SENTRIES
&SRC = &RC
QUERY DISK R/W ( STACK FIFO
&READ STRING &QDISK
SENTRIES
&SRC = &RC - &SRC
&IF &SRC = 0  &GOTO -ERROR006E
&READ STRING &QDISK
&QDISK = &SUBSTR OF &QDISK 7 *
&STACK LIFO &QDISK
&READ VARS &Y &M
&GM = &CONCAT OF &M 0
DROPBUF
&RETURN
* COME HERE IF WE HAVE ANY ERRORS.
-ERROR006E  &R = 36
  &T = &STRING OF 006E NO READ/WRITE DISK ACCESSED.
  DROPBUF
  &GOTO -ERROR
-ERROR649E  &R = 24
  &T = &RANGE OF & 2 &N
  &C = &CONCAT OF ' &T ' .
  &T = &STRING OF 649E EXTRANEIOUS PARAMETER &C
  &GOTO -ERROR
-ERROR653E  &R = 40
  &RZ = &CONCAT OF &RC .
  &T = &STRING OF 653E ERROR EXECUTING 'GLOBALV', RC = &RZ
* ISSUE AN ERROR MESSAGE AND EXIT.
-ERROR &T = &CONCAT OF DMSWNM &T
  EXECIO 1 EMSG (CASE M STRING &T
  &EXIT &R

```

ภาคผนวก ค.

โปรแกรมการทำงานของคำสั่ง **Thaiedit Xedit**

&TRACE OFF

```
*****
*
*           THAIEDIT XEDIT A  IS MODULE OF DO XEDIT      *
*  COMMAND BY RECEIVE ALL CHANGE FROM BUFFER TERMINAL  *
*  THIS PROGRAM MOVE DATA FROM BUFFER TERMINAL AND    *
*  PROCESS TO CHANGE DATA INTO DATA FILE OR DO THAT  *
*  COMMAND IN COMMAND LINE AND PREFIX AREA.           *
*
*
*****
```

COMMAND EXTRACT /FNAME/TERMINAL/LSCREEN/

&IF &RC = 0 &EXIT &RC

&EQUAL = =====

COMMAND SET LRECL 80

COMMAND SET TRUNC *

COMMAND SET RECFM F

COMMAND SET CASE MIXED IGNORE

COMMAND SET VARBLANK ON

* IF THIS IS NOT A DISPLAY TERMINAL, DON'T DISPLAY PANEL.

* SET UP THE TERMINAL CHARACTERISTICS.

COMMAND SET PF4 COMMAND MSG WNM657E UNDEFINED PFKEY.

COMMAND SET PF6 COMMAND MSG WNM657E UNDEFINED PFKEY.

COMMAND SET PF16 COMMAND MSG WNM657E UNDEFINED PFKEY.

COMMAND SET PF18 COMMAND MSG WNM657E UNDEFINED PFKEY.

COMMAND SET WRAP ON

COMMAND SET STAY OFF

COMMAND SET LINEND OFF

COMMAND SET SCALE OFF

COMMAND SET PREFIX OFF

COMMAND SET MSGLINE ON -3 5

COMMAND SET COLOR MSGLINE RED HIGH

COMMAND SET COLOR CMDLINE BLUE NOHIGH

COMMAND SET COLOR STATAREA BLUE NOHIGH

COMMAND SET COLOR ARROW BLUE NOHIGH

COMMAND SET CTLCHAR ! ESCAPE

COMMAND SET CTLCHAR % PROTECT BLUE HIGH

COMMAND SET CTLCHAR " PROTECT BLUE NOHIGH

COMMAND SET CTLCHAR C NOPROTECT WHITE HIGH

COMMAND SET CTLCHAR @ NOPROTECT WHITE NOHIGH

&STACK LIFO !% !" !C !@

&READ VARS &PH &PN &NH &NN

* SET CONTENT TO VARAIBLE

&STACK LIFO l y

&READ VARS &SALAU &SALAUU &SALAAI &SALAEI &SALAU1 &SALAU2 &TAIKU &MAIEAK

```

&STACK LIFO " ` ' 5
&READ VARS &MAITO &MAITREE &JUTTAWA &KARUN &ARKART

&STACK LIFO A D F P C "M MM " DD CC & RR R /
&READ VARS &A &D &F &P &C &R &M &MM &RR &DD &CC &AMPERSAND &RR1 &R1 &SL
&STACK LIFO I
&READ VARS &SINP

&L5 = &LEFT OF &BLANK 1
&EQ11 = &LEFT OF &BLANK 6
&INPTAR = &STRING OF ]...+....1....+....2....+....3....+....4....+
&INPTAR = &STRING OF &INPTAR ....5....+....6....+....7....+....
&INPTAR = &CONCAT OF &PN &INPTAR
&EDITAR = &STRING OF ]...+....1....+....2....+....3....+....4....+....5....+.
&EDITAR = &STRING OF &EDITAR ..6....+....7...
&EDITAR = &CONCAT OF &PN &L5 &L5 &L5 &L5 &L5 &EDITAR
* GET THE SCREEN SIZE AND SET UP SOME USEFUL VARIABLES.
&SCREENM2 = &LSCREEN.1 - 2
&PAGESIZE = &SCREENM2 - 5
&PAGESIZE = &DIV OF &PAGESIZE 4
&PAGESIZE1 = &PAGESIZE - 1
&BUFFER *
&INPUTFLAG = 0
&OLDCUR1 = 1
&NEWSTART = 1
&CALL -REFRESH
&CALL -READDATA
&NOALT = 0
-RRRR

*****
*   MAINLOOP OF PROCESSING UNTIL PRESS PF3   *
*   OR KEY QUIT OR FILE                       *
*****

&LOOP -MAINLOOP *
  &COMMAND DESBUF
  &CALL -DISPLAY
  &IF .&PFKEY = . COMMAND CURSOR CMDLINE
    &PFKEY =
    COMMAND EXTRACT /LINE/SIZE/
    &OLDCUR = &LINE.1
    &OLDCUR1 = &LINE.1
    &NEWSTART = &LINE.1
    &OLDSIZE = &SIZE.1
    COMMAND READ ALL TAG
    &COMMAND SENTRIES

    &NUMLINE = &RC
    &ONE = &NUMLINE
    &NUMLOOP = 1

```

```

*****
*      -SUBLOOP IS SUBROUTINE OF          *
*      DOING ALL COMMAND                  *
*****

&LOOP -SUBLOOP UNTIL &NUMLOOP > &NUMLINE
&READ STRING &SLINE
&ERROR = 0

&STACK LIFO &SLINE
&READ ARGS
&UPPER ARGS
COMMAND EXTRACT /LINE/SIZE/
&OLDCUR = &LINE.1
&OLDCUR1 = &LINE.1
&OLDSTART = &LINE.1
&OLDSIZE = &SIZE.1

&GOTO -&1

* PROCESS THE MODIFIED FIELDS.
* REMEMBER WHICH PF KEY WAS PRESSED.

*****
* -PFK IS SUBROUTINE WHEN PRESS PF KEY    *
*                                          *
*****

-PFK &PFKEY = &2
&IF &PFKEY > 12 &PFKEY = &PFKEY - 12
&GOTO -SUBLOOP

* READ IN ANY CHANGED FIELDS AND SET THE ASSOCIATED VARIABLES.
* PASS ALL COMMANDS ON COMMAND LINE TO CMS.

*****
* -CMD IS SUBROUTINE WHEN ENTER COMMAND  *
*      IN COMMAND AREA                   *
*****
-CMD

&IF &INDEX > 1 &SKIP 11

*****
* FOR CLEAR &LASTCMD1 IF ENTER BLANK     *
*****

&CMDLINE = &RANGE OF & 2 &N
&IF /&CMDLINE = /&BLANK &LASTCMD1 =
&GOTO -SUBLOOP

```

```

*****
*   CHECK FOR INPUT MODE OR EDIT MODE           *
*   IF EDIT MODE (&INPUTFLAG = 0) THEN PROCESS *
*   FOR EDIT MODE ELSE PROCESS FOR             *
*   INPUT MODE                                  *
*****

```

```

&CMDLINE = &RANGE OF & 2 &N
&IF &INPUTFLAG = 0 &SKIP 10

```

```

&GOTO -SUBLOOP
  COMMAND LOCATE :&OLDCUR1
  COMMAND INPUT &CMDLINE
  &OLDCUR1 = &OLDCUR1 + 1
  &NEWSTART = &OLDCUR1
  COMMAND LOCATE :&OLDCUR1
  &CALL -GETDATA
  &GOTO -SUBLOOP

```

```

*****
*
*   PROCESS FOR EDIT MODE                       *
*
*****

```

```

&CMDLINE = &RANGE OF & 2 &N
&STACK LIFO &CMDLINE
&READ ARGS
&UPPER ARGS
&IF .&1 = .INPUT &SKIP 3
&IF .&1 = .I &SKIP 2
&SKIP 10

```

```

&IF &INDEX = 1 &SKIP 8
  COMMAND LOCATE :&OLDCUR1
  &CMDLINE = &RANGE OF & 2 &N
  COMMAND INPUT &CMDLINE
  &CALL -READDATA
  &GOTO -SUBLOOP

```

```

&IF /&CMDLINE = / &GOTO -SUBLOOP
&LASTCMD1 = &CMDLJ%E
&ARGSTRING = &CMDLINE
&LOCATED = &LEFT OF &CMDLINE J
&IF &LOCATED = &AMPERSAND &LASTCMD1 =
&IF &LOCATED = &AMPERSAND &CMDLINE = &SUBSTR OF &CMDLINE 2 *
&STACK LIFO &CMDLINE
&READ ARGS

```

```

&UPPER ARGS
&IF .&1 = .INPUT      &GOTO -CMDINPUT
&IF .&1 = .I          &GOTO -CMDINPUT
&IF .&1 = .U          &GOTO -CMDUP
&IF .&1 = .UP         &GOTO -CMDUP
&IF .&1 = .FO         &GOTO -CMDFO
&IF .&1 = .FORWARD    &GOTO -CMDFO
&IF .&1 = .DO         &GOTO -CMDDOWN
&IF .&1 = .DOWN       &GOTO -CMDDOWN
&IF .&1 = .BA         &GOTO -CMDDBA
&IF .&1 = .BACKWARD   &GOTO -CMDDBA
&IF .&1 = .TOP        &GOTO -CMDTOP
&IF .&1 = .B          &GOTO -CMDBOT
&IF .&1 = .BOTTOM     &GOTO -CMDBOT
&IF .&1 = .RESET      &GOTO -CMDRESET
&IF .&1 = .FILE       &GOTO -CMDFILE
&IF .&1 = .QQ         &GOTO -CMDQUIT
&IF .&1 = .QUIT       &GOTO -CMDQUIT
&IF .&1 = .N          &GOTO -CMDNEXT
&IF .&1 = .NEXT       &GOTO -CMDNEXT
&IF .&1 = .SET        &GOTO -CMD
&IF .&1 = .QUERY      &GOTO -CMDQUERY
&IF .&1 = .AUTOSAVE   &GOTO -CMDAUTO
&IF .&1 = .AUTO       &GOTO -CMDAUTO
&IF .&1 = .CASE       &GOTO -CMDCASE
&IF .&1 = .CHANGE     &GOTO -CMDCHANGE
&IF .&1 = .FMODE      &GOTO -CMDFMODE
&IF .&1 = .FM         &GOTO -CMDFMODE
&IF .&1 = .FNAME      &GOTO -CMDFNAME
&IF .&1 = .FN         &GOTO -CMDFNAME
&IF .&1 = .FTYPE      &GOTO -CMDFTYPE
&IF .&1 = .FT         &GOTO -CMDFTYPE
&IF .&1 = .GETFILE    &GOTO -CMDGETFILE
&IF .&1 = .GET        &GOTO -CMDGETFILE
&IF .&1 = .FIND       &GOTO -CMDFIND
&IF .&1 = .LRECL      &GOTO -CMDLRECL
&IF .&1 = .LOCATE     &GOTO -CMDLOCATE
&IF .&1 = .ZONE       &GOTO -CMDZONE
&IF .&1 = .RECFM      &GOTO -CMDRECFM
&IF .&1 = .SAVE       &GOTO -CMDSAVE
&IF .&1 = .LOCATE     &GOTO -CMDLOCATE
&IF .&1 = .ZONE       &GOTO -CMDZONE
&IF .&1 = .REPLACE    &GOTO -CMDREPLACE
&IF .&1 = .TABS       &GOTO -CMDTABS
&IF .&1 = .TRUNC      &GOTO -CMDTRUNC
&IF .&1 = .VERIFY     &GOTO -CMDVERIFY
      &I = &POSITION OF &CMD REPEAT REPLACE SERIAL STACK
      &IF &I = 0 &GOTO -CMDOK

```

```

*****
*   OTHER COMMAND TRANSFER TO CMS PROCESS   *
*                                           *
*****

```

```

COMMAND &CMDLINE
* &IF &RC = 0 COMMAND EMSG
  &GOTO -SUBLOOP

*****
* -ETK IS SUBROUTINE WHEN HIT RETURN KEY *
*
*****

-ETK COMMAND CURSOR CMDLINE

*****
* CHECK IF PRESS ENTER KEY WITHOUT ENTER *
* ANY DATA WHEN &ONE = 1 *
*****

&IF &ONE > 1 &GOTO -SUBLOOP
&IF &INPUTFLAG = 0 &SKIP 7
  &OLDCUR1 = &NEWSART
  COMMAND LOCATE :&OLDCUR1
  &INPUTFLAG = 0
  &CALL -REFRESH
  &CALL -READDATA
  &GOTO -SUBLOOP

*****
* IN EDIT MODE YOU WILL PROCESS COMMAND *
* LINE WIHT & IN VARIABLE &LASTCMD1 *
*****

&IF .&LASTCMD1 = . &GOTO -SUBLOOP
&ARGS CMD &LASTCMD1
&GOTO -CMD

*****
* -PAK IS SUBROUTINE WHEN HIT PA KEY *
*
*****

-PAK &GOTO -SUBLOOP

*****
* -RES IS SUBROUTINE FOR UNPROTECTED *
* FIELD *
*****

-RES

```




```

&ROW = &2
&COLUMN = &3
&CMDLINE = &SLINE
&IF &ROW < 10 &SKIP 3
    &SLINE = &SUBSTR OF &SLINE 10 *
    &SKIP 3
* ROW <= 10
    &SLINE = &SUBSTR OF &SLINE 9 *

&ARGSTRING = &CMDLINE
&IF &INPUTFLAG = 0 &GOTO -RESEND

*****
* SAVE DATA ONE LEVEL TO VARIABLE '&DATA&ROW' *
*
*****

*      &T      =      &LOCATION OF &COLUMN &CMDLINE
*      &CMDLINE =      &SUBSTR OF &CMDLINE &T *
*      &T      =      &LOCATION OF &L5 &CMDLINE
*      &T      =      &T + 1
*      &T      =      &T + 2
*      &SLINE  =      &SUBSTR OF &CMDLINE &T *

*      &SLINE  =      &RANGE OF & 4 &N
*      &SLINE  =      &CONCAT OF &SLINE &BLANK
*      &SLINE  =      &LEFT OF &SLINE 80
*      &DATA&ROW =      &SLINE
*      &GOTO -SUBLOOP

*****
* -RESEND IS SUBROUTINE FOR EDIT MODE      *
*      REPLACE DATA&ROW                    *
*****

-RESEND

*****
* FIND DATA IN PREFIX AREA IF IT IS A PREFIX*
* COMMAND THEN DO -SAVE1                    *
*****

&IF &COLUMN < 7 &GOTO -SAVE1

*****
* &SLINE IS DATA IN DATA AREA (FOUR LEVEL) *
* THEN SAVE DATA INTO VARIABLE &DATA&ROW *
*****

*      &T      =      &LOCATION OF &COLUMN &CMDLINE
*      &SLINE1 =      &SUBSTR OF &CMDLINE &T *
*      &T      =      &LOCATION OF &L5 &SLINE1

```

```

*      &T      =    &T + 1
*      &SLINE  =    &SUBSTR OF &SLINE1 &T *
*      &SLINE  =    &CONCAT OF &SLINE &BLANK
*      &SLINE  =    &LEFT OF &SLINE 80
*      &DATA&ROW = &SLINE
*      &NOALT  =    &NOALT + 1
*      &GOTO -SUBLOOP

```

-SAVE1

```

*****
* &SLINE IS DATA IN PREFIX COMMAND THEN FIND*
* PREFIX COMMAND FROM &SLINE AND SAVE INTO *
* VARIABLE '&PREFIX&START' *
*****

```

```

&IF .&4 = . &SKIP 6
&IF /&4 = /&L5 &SKIP 5
&IF /&4 = /&BLANK &SKIP 4
&SLINE = &EQUAL
&CMDLINE = &BLANK

```

```

&SLINE = &4
&CALL -FINDEDIT
&CALL -FINDCMD
&PRFLINE&START = &SLINE
&GOTO -SUBLOOP

```

-SUBLOOP &NUMLOOP = &NUMLOOP + 1

```

*****
*      END OF SUBLOOP *
* THEN UPDATE DATA FROM FOUR LEVEL TO ONE LEVEL*
* AND SAVE INTO FILE IF IT IS IN EDIT MODE *
*****

```

&IF &INPUTFLAG = 1 &GOTO -SAVEINPUT

```

*****
* -SAVEEDIT IS SUBROUTINE FOR UPDATE DATA *
* IN EDIT MODE *
*****

```

-SAVEEDIT

```

COMMAND EXTRACT /LINE/
&START      =    &LINE.1
&NEWSTART   =    &LINE.1
&STARTUPD   =    &OLDCUR1 - 2
&ROW        =    3
&H          =    1
&LOOP -UPDATE1 UNTIL &H > &PAGESIZE
&STARTUPD = &STARTUPD + 1
&HH       =    1

```

```

&IF &ROW = 11 &ROW = 12
&LOOP -UPDATE2 UNTIL &HH > 4
    &CALL -UPDATA
    &ROW = &ROW + 1
    -UPDATE2 &HH = &HH + 1
    &T = &LENGTH OF &L3
    &IF &T = 0 &GOTO -UPDATE1
    &IF .&L3 = . &GOTO -UPDATE1
    &IF /&L3 = /&BLANK &GOTO -UPDATE1
    &CALL -TRANONE
    COMMAND LOCATE :&STARTUPD
    COMMAND INPUT &SLINE
    COMMAND LOCATE :&STARTUPD
    COMMAND DELETE 1
-UPDATE1 &H = &H + 1
&OLDCUR1 = &START
COMMAND LOCATE :&OLDCUR1

```

```

*****
*           END OF SUBLOOP           *
* NOW PERFORM PREFIX COMMAND IN BOTTOM FILE *
* AND SET UP VALUE OF VARIABLE FOR PROCESSING *
*****

```

```

&OLDSTART = &LINE.1
&FOLLOW = 0
&PREVIOUS = 0
&COPY1 = &STRING OF OFF
&COPY2 = &STRING OF OFF
&COPY3 = 0
&DELETE1 = &STRING OF OFF
&DELETE2 = &STRING OF OFF
&MOVE1 = &STRING OF OFF
&MOVE2 = &STRING OF OFF
&MOVE3 = 0
&REP1 = &STRING OF OFF
&REP2 = &STRING OF OFF
&REP3 = 0
&FLAG = 1
&H = 0
COMMAND EXTRACT /SIZE/
&ENDSIZE = &SIZE.1

```

```
-PLOOP &H = 0
```

```

&NADD = 0
&NDELETE = 0
&NMOVE = 0
&NREP = 0
&NCOPY = 0

```

```

&FLAG = 0

COMMAND EXTRACT /SIZE/

&ENDSIZE = &SIZE.1

*****
*   END OF INITIAL VALUE                               *
*                                                       *
*****

-LOOP &H = &H + 1
COMMAND EXTRACT /SIZE/
&OLDSIZE = &SIZE.1
&ENDSIZE = &SIZE.1

&IF &H > &ENDSIZE &GOTO -PLOOP1

*****
*   LOOP FOR DOING PREFIX COMMAND UNTIL               *
*           &CNTSTACK = 0                             *
*****

&START = &H
&PROCESSFLAG = 0
&CMDLINE = &PRFLINE&H

&IF /&CMDLINE = /&EQUAL &GOTO -LOOP

*   GOTO FIND PREFIX COMMAND AND PREFIX NUMBER

&CALL -DIVIDEPRF
&FLAG = 1
&IF &ERROR = 0 &SKIP 3
    &PRFLINE&H = &EQUAL
    &GOTO -INVCMD1

&GOTO -&CMDLINE

*****
*   -CHECKDO IS SUBROUTINE FOR CLEAR FLAG AND        *
*           MOVE NEW PRFLINE                          *
*****

-CHECKDO

&IF &PROCESSFLAG = 0 &GOTO -LOOP
&POSIT = &POSITION OF &CMDLINE2 &A &D &M &C

```

```

&IF &POSIT = 0 &CALL -CHECK&CMDLINE2
&IF .&CMDLINE2 = .R &CALL -CHECKR
&POSIT = &POSITION OF &CMDLINE2 &DD &MM &CC &RR1
&IF &POSIT = 0 &CALL -CHECK&CMDLINE2

```

```

&NADD      = 0
&NDELETE  = 0
&NMOVE    = 0
&NREP     = 0
&NCOPY    = 0
&GOTO -LOOP

```

```

*****
* -LOOP IS END OF LOOP DO PREFIX COMMAND IN *
*                PRFLINE&H                *
*****

```

```

* -LOOP &H = &H + 1

```

```

*****
* PROCESS AFTER MOVE PREFIX AREA ALREADY *
*                *                          *
*****

```

```

-LOOP1

```

```

*****
* GO PROCESS THE PF KEY IF ONE WAS POUNDED UPON. *
*****

```

```

COMMAND LOCATE :&OLDCUR1

```

```

&IF .&PFKEY = . &CALL -PF&PFKEY

```

```

*****
* -ETKEDIT IS SUBROUTINE OF GETTING NEW DATA*
* FROM FILE FOR DISPLAY (IN EDIT MODE) *
*****

```

```

-ETKEDIT &J = 1

```

```

COMMAND EXTRACT /LINE/SIZE/
&IF &SIZE.1 = 0 &CALL -NODATA
&OLDCUR1 = &LINE.1
&OLDCUR  = &LINE.1

```

```

&VT = 3

```

```

&START1 = &OLDCUR1 - 2

```

```

* &IF &START1 < 1 &START1 = 0

```

```

&START1 = &START1 + 1

&LOOP -EDIT UNTIL &VT > &SCREENM2
  &IF &START1 > 0 &SKIP 15
    &FLAG3 = &PN
    &DATA3 =
    &EQ3 = &LEFT OF &BLANK 4
    &FLAG4 = &PN
    &DATA4 =
    &EQ4 = &LEFT OF &BLANK 4
    &FLAG5 = &PN
    &DATA5 =
    &EQ5 = &LEFT OF &BLANK 4
    &FLAG6 = &PN
    &DATA6 = &STRING OF % % % TOP OF FILE % % %
    &EQ6 = &EQUAL
    &VT = 7
    &START1 = &START1 + 1

    &IF &START1 > &SIZE.1 &SKIP 8
  * DISPLAY LINE
    COMMAND LOCATE :&START1
    &CALL -THAI
    &IF &VT = 11 &VT = 12

    &CALL -RETURNDATA
    &START1 = &START1 + 1
    &GOTO -EDIT
  * DISPLAY BOTTOM LINE
    &IF &VT = 11 &VT = 12
    &EQ&VT = &EQUAL
    &FLAG&VT = &PN
    &DATA&VT = &STRING OF % % % END OF FILE % % %

    &VT = &VT + 1
    &LOOP -BOTLOOP UNTIL &VT > &SCREENM2
      &IF &VT = 11 &VT = 12
      &DATA&VT =
      &EQ&VT =
      &FLAG&VT = &PN

      -BOTLOOP &VT = &VT + 1
      &VT = &SCREENM2
    -EDIT &VT = &VT + 1
    COMMAND LOCATE :&OLDCUR1
    &GOTO -SUBLOOP1

```

```

*****
* -SAVEINPUT IS SUBROUTINE FOR UPDATE DATA *
* IN INPUT MODE *
*****

```

-SAVEINPUT

```

&NOSAVEINP = 0
&ROW = 10
&START = &NEWSTART
* &CALL -FINDINPUT
&OLDSTART = &START
*****
* UPDATE OLD DATA (ABOVE CURRENT LINE) WHICH *
* DATA FROM SCREEN *
*****

&LOOP -RESEND1 UNTIL &ROW < 3
&IF &START > 0 &SKIP 3
&ROW = 2
&GOTO -RESEND1

COMMAND LOCATE :&START
COMMAND INPUT &DATA&ROW
COMMAND LOCATE :&START
COMMAND DELETE 1
&START = &START - 1
-RESEND1 &ROW = &ROW - 1
COMMAND LOCATE :&OLDSTART
&ROW = &SCREENM2
&NOINSERT = 0
&FLAGIN = 0
&LOOP -RESEND2 UNTIL &ROW < 12

*****
* &FLAGIN = 1 MEANS THAT MUST APPEND BLANK *
* LINE INTO FILE. *
*****

&IF &FLAGIN = 1 &GOTO -RESEND3

*****
* IF &DATA&ROW IS NULL STRINGS THEN BY PASS *
* TO -RESEND2 *
*****

&IF /&DATA&ROW = / &GOTO -RESEND2

*****
* APPEND NEW DATA INTO FILE AND SET &FLAGIN *
* = 1 *
*****

COMMAND LOCATE :&OLDSTART
COMMAND INPUT &DATA&ROW
&NOINSERT = &NOINSERT + 1
&NOSAVEINP = &NOSAVEINP + 1

```

```

&FLAGIN = 1
&GOTO -RESEND2
-RESEND3

```

```

*****
* NOW &FLAGIN = 1 SO *
* IF &DATA&ROW IS DATA THEN APPEND NEW DATA *
* INTO FILE. *
* IF &DATA&ROW IS NULL STRING THEN APPEND *
* BLANK LINE INTO FILE. *
*****

```

```

&IF /&DATA&ROW = / &DATA&ROW = &LEFT OF &BLANK 80
COMMAND LOCATE :&OLDSTART
COMMAND INPUT &DATA&ROW
&NOINSERT = &NOINSERT + 1
&NOSAVEINP = &NOSAVEINP + 1
-RESEND2 &ROW = &ROW - 1
&NEWSTART = &OLDSTART + &NOSAVEINP
COMMAND LOCATE :&NEWSTART
&NOALT = &NOALT + &NOINSERT
&GOTO -ETKINPUT

```

```

*****
* -ETKINPUT IS SUBROUTINE OF GETTING NEW DATA *
* FROM FILE FOR DISPLAY (IN INPUT MODE) *
*****

```

```

-ETKINPUT &J = 1
&VT = 10
&START = &NEWSTART
&OLDSTART = &NEWSTART
&OLDCUR = &NEWSTART

```

```

*****
* DISPLAY DATA IN ONE LEVEL ABOVE CURRENT *
* LINE *
*****

```

```

-INPUT1
&IF &VT < 3 &GOTO -INPUT3
&IF &START > 0 &GOTO -INPUT4
&FLAG&VT = &PN
&DATA&VT = &STRING OF % % % TOP OF FILE % % %
&EQ&VT = &EQUAL
&VT = &VT - 1

```

```

*****
* DISPLAY NULL LINE AFTER CURRENT LINE *
*****

```



```

-INPUT2
&IF &VT < 3 &GOTO -INPUT3
  &FLAG&VT = &PN
  &DATA&VT =
  &EQ&VT = &LEFT OF &BLANK 4
  &VT = &VT - 1
&GOTO -INPUT2
* DISPLAY DATA
  -INPUT4
  COMMAND LOCATE :&START
* READ DATA
  &CALL -GETDATA
  &FLAG&VT = &NN
  &DATA&VT = &SLINE
  &START = &START - 1
  &VT = &VT - 1
  &GOTO -INPUT1

*****
* DISPLAY SPACE LINE FOR ACCEPT DATA *
* *
*****

-INPUT3
&VT = 12
&LOOP -INPBOT UNTIL &VT > &SCREENM2
  &FLAG&VT = &NN
  &DATA&VT =
  -INPBOT &VT = &VT + 1

*****
* -SUBLOOP1 IS SUBROUTINE OF END OF ETK *
* *
*****

COMMAND LOCATE :&NEWSTART
-SUBLOOP1

*****
* -MAINLOOP IS SUBROUTINE OF END OF *
* MAINLOOP *
*****

-MAINLOOP &GOTO -RRRR

*****
* -CHECKD IS SUBROUTINE FOR SET PRFLINE *
* FOR DELETE *
*****

```

-CHECKD

```

&NEWSIZE = &OLDSIZE - &OLDDELETE
&HH      = &STARTRH
&NEWHH   = &STARTRH + 1
&PRFLINE&HH = &EQUAL
&LOOP -LOOPD1 UNTIL &HH > &NEWSIZE
      &PRFLINE&HH = &PRFLINE&NEWHH
      &NEWHH      = &NEWHH + 1
-LOOPD1 &HH = &HH + 1
&HH = &NEWSIZE
&LOOP -LOOPD2 UNTIL &HH > &OLDSIZE
      &PRFLINE&HH = &EQUAL
-LOOPD2 &HH = &HH + 1
&PROCESSFLAG = 0
&RETURN

```

```

*****
* -CHECKA IS SUBROUTINE FOR SET PRFLINE *
*                FOR ADD                *
*****

```

-CHECKA

```

&HH = &STARTRH
&PRFLINE&HH = &EQUAL
&LOOP -LOOPA1 UNTIL &OLDSIZE < &HH

      &NEWSIZE = &OLDSIZE + &OLDADD
      &PRFLINE&NEWSIZE = &PRFLINE&OLDSIZE
-LOOPA1 &OLDSIZE = &OLDSIZE - 1
&PROCESSFLAG = 0

&RETURN

```

```

*****
* -CHECKR IS SUBROUTINE FOR SET PRFLINE *
*                FOR REPLICATE          *
*****

```

-CHECKR

```

&STARTRH = &HS
&PRFLINE&HP = &EQUAL
&PRFLINE&H1 = &EQUAL
&OLDADD = &OLDREP
&CALL -CHECKA
&PROCESSFLAG = 0
&REP3 = 0

```

```
&FOLLOW      = 0
&PREVIOUS    = 0
```

```
&RETURN
```

```
*****
* -CHECKC  IS SUBROUTINE FOR SET PRFLINE  *
*                FOR COPY                *
*****
```

```
-CHECKC
```

```
&STARTR      = &HS
&PRFLINE&HP  = &EQUAL
&PRFLINE&H1  = &EQUAL
&OLDADD      = &OLDCOPY
&CALL -CHECKA
&PROCESSFLAG = 0
&COPY3       = 0
&FOLLOW      = 0
&PREVIOUS    = 0
```

```
&RETURN
```

```
*****
* -CHECKM  IS SUBROUTINE FOR SET PRFLINE  *
*                FOR MOVE                *
*****
```

```
-CHECKM
```

```
&STARTR      = &HS
&PRFLINE&HP  = &EQUAL
&PRFLINE&H1  = &EQUAL
&OLDADD      = &OLDMOVE
&CALL -CHECKA
COMMAND EXTRACT /SIZE/
&OLDSIZE     = &SIZE.1
&STARTR      = &H1
&OLDDELETE   = &OLDMOVE
&CALL -CHECKD
&PROCESSFLAG = 0
&MOVE3       = 0
&FOLLOW      = 0
&PREVIOUS    = 0
&RETURN
```

```
*****
* -CHECKCC IS SUBROUTINE FOR SET PRFLINE  *
*                FOR COPY BLOCK          *
*****
```

-CHECKCC

```

&STARTH      =   &HS
&PRFLINE&HP =   &EQUAL
&PRFLINE&H1 =   &EQUAL
&PRFLINE&H2 =   &EQUAL

&OLDADD      =   &OLDCOPY
&CALL -CHECKA
&PROCESSFLAG = 0
&COPY1       = OFF
&COPY2       = OFF
&FOLLOW      = 0
&PREVIOUS    = 0
&RETURN

```

```

*****
* -CHECKMM IS SUBROUTINE FOR SET PRFLINE      *
*                FOR MOVE BLOCK                *
*****

```

-CHECKMM

```

&STARTH      =   &HS
&PRFLINE&HP =   &EQUAL
&PRFLINE&H1 =   &EQUAL
&PRFLINE&H2 =   &EQUAL
&OLDADD      =   &OLDMOVE
&CALL -CHECKA
COMMAND EXTRACT /SIZE/
&OLDSIZE     =   &SIZE.1
&STARTH      =   &H1
&OLDDELETE   =   &OLDMOVE
&CALL -CHECKD
&PROCESSFLAG = 0
&MOVE1       = OFF
&MOVE2       = OFF
&FOLLOW      = 0
&PREVIOUS    = 0
&RETURN

```

```

*****
* -CHECKRR IS SUBROUTINE FOR SET PRFLINE      *
*                FOR REPLICATE BLOCK          *
*****

```

-CHECKRR

```

&STARTH      =   &HS
&PRFLINE&HP =   &EQUAL
&PRFLINE&H1 =   &EQUAL
&PRFLINE&H2 =   &EQUAL

```

```

&OLDADD      =   &OLDREP
&CALL -CHECKA
&PROCESSFLAG = 0
&REP1        = OFF
&REP2        = OFF
&FOLLOW      = 0
&PREVIOUS   = 0
&RETURN

```

```

*****
* -CHECKDD IS SUBROUTINE FOR SET PRFLINE      *
*                FOR DELETE BLOCK            *
*****

```

-CHECKDD

```

&STARTRH    =   &H1
&PRFLINE&H1 =   &EQUAL
&PRFLINE&H2 =   &EQUAL
&CALL -CHECKD
&PROCESSFLAG = 0
&DELETE1    = OFF
&DELETE2    = OFF
&RETURN

```

```

*****
* -A                *
* IS SUBROUTINE FOR ADD N LINES      *
*      NA , AN OR A                *
*****

```

-A

```
&CMDLINE2 = &CMDLINE
```

```

COMMAND EXTRACT /SIZE/
&OLDSIZE = &SIZE.1
&STARTRH = &H
&OLDADD  = &NADD

```

```

&LOOP -ADDLOOP UNTIL &NADD = 0
      COMMAND LOCATE :&H
      COMMAND INPUT &BLANK
-ADDLOOP &NADD = &NADD - 1
&PROCESSFLAG = 1
&GOTO -CHECKDO

```

```

*****
* -D                *
* IS SUBROUTINE FOR DELETE N LINES    *
*      ND , DN OR D                *
*****

```

-D

```
&CMDLINE2 = &CMDLINE
COMMAND EXTRACT /SIZE/
&OLDSIZE   = &SIZE.1
&STARTRH   = &H
```

```
&OLDDELETE = &NDELETE
```

```
COMMAND LOCATE :&H
COMMAND DELETE &NDELETE
&PROCESSFLAG = 1
&GOTO -CHECKDO
```

```
*****
* -C                                     *
*   IS SUBROUTINE FOR COPY N LINES      *
*   NC , CN OR C                       *
*****
```

-C

```
&CMDLINE2 = &CMDLINE
&COPY3 = 1
&H1      = &H
```

```
&IF &FOLLOW   = 1 &GOTO -COPYNLINE
&IF &PREVIOUS = 1 &GOTO -COPYNLINE
&GOTO -LOOP
```

```
*****
* -M                                     *
*   IS SUBROUTINE FOR MOVE N LINES      *
*   NM , MN OR M                       *
*****
```

-M

```
&CMDLINE2 = &CMDLINE
&MOVE3 = 1
&H1      = &H
&IF &FOLLOW   = 1 &GOTO -MOVENLINE
&IF &PREVIOUS = 1 &GOTO -MOVENLINE
&GOTO -LOOP
```

```
*****
* -R                                     *
*   IS SUBROUTINE FOR REP N LINES      *
*   N" , "N OR "                       *
*****
```

-R

```
&CMDLINE2 = &CMDLINE
```

```
&REP3 = 1
&H1   = &H
```

```
&IF &FOLLOW = 1 &GOTO -REFNLINE
&IF &PREVIOUS = 1 &GOTO -REFNLINE
&GOTO -LOOP
```

```
*****
* -CC IS SUBROUTINE FOR SET COPY OR REP      *
*      FLAG ON AND DO COPY OR DO REP      *
*****
```

```
-CC
```

```
&CMDLINE2 = &CMDLINE
&IF .&COPY1 = .OFF &GOTO -DOCOPY1
-DOCOPY2
  &H2       = &H
  &LINECOPY2 = &H
  &COPY2    = &STRING OF ON
```

```
&GOTO -PRECOPY
```

```
-DOCOPY1
```

```
&H1       = &H
&LINECOPY1 = &H
&COPY1    = &STRING OF ON
&GOTO -LOOP
```

```
*****
* -RR IS SUBROUTINE FOR SET REPLICATE      *
*      FLAG ON AND DO COPY OR DO REP      *
*****
```

```
-RR
```

```
&CMDLINE2 = &CMDLINE
&IF .&REP1 = .OFF &GOTO -DOREP1
-DOREP2
  &H2       = &H
  &LINEREP2 = &H
  &REP2    = &STRING OF ON
  &GOTO -PREREP
```

```
-DOREP1
```

```
&H1       = &H
&LINEREP1 = &H
&REP1    = &STRING OF ON
&GOTO -LOOP
```

```
*****
* -MM IS SUBROUTINE FOR SET MOVE *
* FLAG ON AND DO MOVE *
*****
```

```
-MM
&CMDLINE2 = &CMDLINE
&IF .&MOVE1 = .OFF &GOTO -DOMOVE1
-DOMOVE2
  &H2      = &H
  &LINEMOVE2 = &H
  &MOVE2    = &STRING OF ON
  &GOTO -PREMOVE
```

```
-DOMOVE1
  &H1      = &H
  &LINEMOVE1 = &H
  &MOVE1    = &STRING OF ON
  &GOTO -LOOP
```

```
*****
* -DD IS SUBROUTINE FOR SET DELETE *
* FLAG ON AND DO DELETE *
*****
```

```
-DD
&CMDLINE2 = &CMDLINE
&IF .&DELETE1 = .OFF &GOTO -DODEL1
-DODEL2
  &H2      = &H
  &LINEDEL2 = &H
  &DELETE2  = &STRING OF ON
  &GOTO -DODEL
```

```
-DODEL1
  &H1      = &H
  &LINEDEL1 = &H
  &DELETE1  = &STRING OF ON
  &GOTO -LOOP
```

```
*****
* -F IS SUBROUTINE FOR SET FOLLOW FLAG *
* = 1 FOR COPY MOVE REPLICATE *
*****
```

```
-F &ADJUST = 0
  &FOLLOW = 1
```


&SKIP 8

```
*****
* -P IS SUBROUTINE FOR SET FOLLOW FLAG *
* = 1 FOR COPY MOVE REPLICATE *
*****
```

```
-P &ADJUST = -1
   &PREVIOUS = 1
```

```
*****
* COMMON LOOP FOR FOLLOW AND PREVIOUS *
* * *
*****
```

```
&LINESTART = &H
&HP = &H
&LINESTART = &LINESTART + &ADJUST
&IF &LINESTART < 1 &LINESTART = 0
```

```
*****
* -DOPREFIX IS SUBROUTINE FOR CHECK FLAG ON *
* * *
*****
```

-DOPREFIX

```
&IF &COPY3 = 1 &GOTO -COPYNLINE
&IF &MOVE3 = 1 &GOTO -MOVENLINE
&IF &REP3 = 1 &GOTO -REPNLINE
&IF .&COPY1 = .ON &IF .&COPY2 = .ON &GOTO -DOCOPY
&IF .&MOVE1 = .ON &IF .&MOVE2 = .ON &GOTO -DOMOVE
&IF .&REP1 = .ON &IF .&REP2 = .ON &GOTO -DOREF
* &IF .&DELETE1 = .ON &IF .&DELETE2 = .ON &GOTO -PREDELETE
&GOTO -LOOP
```

```
*****
* END OF CHECK FLAG *
* * *
*****
```

```
*****
* -COPYNLINE IS SUBROUTINE OF COPYING DATA *
* N LINE (CN,NC,C) *
*****
```

-COPYNLINE

```
&CMDLINE2 = &C
&START = &H1
&OLDSTART = &START
```

```

&OLDCOPY = &NCOPY

&HS      = &LINESTART
&LOOP -COPYLOOP3 UNTIL &NCOPY = 0
  COMMAND LOCATE :&START
  &CALL -GETDATA
  COMMAND LOCATE :&LINESTART
  COMMAND INPUT &SLINE
  &START = &START + 1
  &LINESTART = &LINESTART + 1
-COPYLOOP3 &NCOPY = &NCOPY - 1
COMMAND LOCATE :&OLDCUR1
&PROCESSFLAG = 1

&GOTO -CHECKDO

```

```

*****
* -MOVENLINE IS SUBROUTINE OF MOVING DATA *
*           N LINE (MN,NM,M)             *
*****

```

```
-MOVENLINE
```

```

&OLDSTART = &H1
&CMDLINE2 = &M

&START    = &H1
&OLDMOVE  = &NMOVE
&HS       = &LINESTART

&LOOP -MOVELOOP3 &NMOVE
  COMMAND LOCATE :&START
  &CALL -GETDATA
  COMMAND LOCATE :&LINESTART
  COMMAND INPUT &SLINE
  &START = &START + 1
  &LINESTART = &LINESTART + 1
-MOVELOOP3
&IF &H1 > &HS &OLDSTART = &H1 + &NMOVE

COMMAND LOCATE :&OLDSTART
COMMAND DELETE &OLDMOVE
COMMAND LOCATE :&OLDCUR1
&PROCESSFLAG = 1
&GOTO -CHECKDO

```

```

*****
* -REPNLINE IS SUBROUTINE OF COPYING DATA *
*           FROM ONE LINE TO N LINE ("N,N",) *
*****

```

-REPINLINE

```
&CMDLINE2 = R
&START    = &H1
&OLDREP   = &NREP
&OLDSTART = &START
&HS       = &LINESTART
```

```
COMMAND LOCATE :&START
&CALL -GETDATA
&LOOP -RELOOP3 UNTIL &NREP = 0
      COMMAND LOCATE :&LINESTART
      COMMAND INPUT &SLINE
      -RELOOP3 &NREP = &NREP - 1
&PROCESSFLAG = 1
COMMAND LOCATE :&OLDCUR1
&GOTO -CHECKDO
```



```
*****
* -PRECOPY IS SUBROUTINE OF FLAG COPY      *
*      COMPLETE (Y/N)                      *
*****
```

-PRECOPY

```
&IF &FOLLOW = 1 &GOTO -DOCOPY
&IF &PREVIOUS = 1 &GOTO -DOCOPY
&GOTO -CHECKDO
```

```
*****
* -PREMOVE IS SUBROUTINE FOR MOVE FLAG    *
*      COMPLETE (Y/N)                      *
*****
```

-PREMOVE

```
&IF &FOLLOW = 1 &GOTO -DOMOVE
&IF &PREVIOUS = 1 &GOTO -DOMOVE
&GOTO -CHECKDO
```

```
*****
* -PREREP IS SUBROUTINE FOR REPLICATE FLAG*
*      COMPLETE (Y/N)                      *
*****
```

-PREREP

```
&IF &FOLLOW = 1 &GOTO -DOREP
&IF &PREVIOUS = 1 &GOTO -DOREP
&GOTO -CHECKDO
```

```

*****
* -PREDELETE IS SUBROUTINE FOR DELETE FLAG *
*   COMPLETE (Y/N) *
*****

```

```
-PREDELETE
```

```
&GOTO -DODEL
```

```

*****
* -DOCOPY *
*   IS SUBROUTINE OF COPY BLOCK DATA *
* *
*****

```

```
-DOCOPY
```

```
-COPYLOOP1
```

```

&CMDLINE2 = &CC
&PRENO    = &LINECOPY2 - &LINECOPY1 + 1
&HS      = &LINESTART
&OLDCOPY = &PRENO

```

```

&LOOP -COPYLOOP2 UNTIL &PRENO = 0
  COMMAND LOCATE :&LINECOPY1
  &CALL -GETDATA
  COMMAND LOCATE :&LINESTART
  COMMAND INPUT &SLINE
  &IF &LINECOPY1 < &LINESTART &SKIP 2
    &LINECOPY1 = &LINECOPY1 + 2
    &SKIP 1
  &LINECOPY1 = &LINECOPY1 + 1
  &LINESTART = &LINESTART + 1
-COPYLOOP2 &PRENO = &PRENO - 1

```

```

*****
*   END OF LOOP   DOCOPY *
* *
*****

```

```

&PROCESSFLAG = 1
&GOTO -CHECKDO

```

```

*****
* -DOREP *
*   IS SUBROUTINE OF COPY BLOCK DAT *
* *
*****

```

```
-DOREP
```

```

-REPLOOP1
  &CMDLINE2 = &RR1
  &HS = &LINESTART
  &PRENO = &LINEREP2 - &LINEREP1 + 1
  &OLDREP = &PRENO
  &LOOP -REPLOOP2 UNTIL &PRENO = 0
    COMMAND LOCATE :&LINEREP1
    &CALL -GETDATA
    COMMAND LOCATE :&LINESTART
    COMMAND INPUT &SLINE
    &IF &LINEREP1 < &LINESTART &SKIP 2
      &LINEREP1 = &LINEREP1 + 2
      &SKIP 1
    &LINEREP1 = &LINEREP1 + 1
    &LINESTART = &LINESTART + 1
  -REPLOOP2  &PRENO = &PRENO - 1

```

```

*****
* END OF LOOP   DOREP                               *
*                                                       *
*****

```

```

&PROCESSFLAG = 1
&GOTO -CHECKDO

```

```

*****
* -DOMOVE                                           *
* IS SUBROUTINE OF MOVE BLOCK DATA                *
*                                                       *
*****

```

```
-DOMOVE
```

```
-MOVELOOP1
```

```

&CMDLINE2 = &MM
&PRENO = &LINEMOVE2 - &LINEMOVE1 + 1
&HS = &LINESTART
&OLDMOVE = &PRENO
&OLDSTART = &LINEMOVE1

```

```

&LOOP -MOVELOOP2 UNTIL &PRENO = 0
  COMMAND LOCATE :&LINEMOVE1
  &CALL -GETDATA
  COMMAND LOCATE :&LINESTART
  COMMAND INPUT &SLINE
  &IF &LINEMOVE1 < &LINESTART &SKIP 2
    &LINEMOVE1 = &LINEMOVE1 + 2
    &SKIP 1
  &LINEMOVE1 = &LINEMOVE1 + 1

```

```

&LINESTART = &LINESTART + 1
-MOVELOOP2  &PRENO = &PRENO - 1

```

```

*****
*   END OF LOOP DO MOVE                               *
*   BY DLLETE BEGINNING BLOCK                         *
*****

```

```

&IF &H1 > &HS  &OLDSTART = &H1 + &OLDMOVE

```

```

COMMAND LOCATE :&OLDSTART
COMMAND DELETE &OLDMOVE
&PROCESSFLAG = 1
&GOTO -CHECKDO

```

```

*****
*   -DODEL                                           *
*   IS SUBROUTINE OF DELETE BLOCK DATA             *
*                                                    *
*****

```

```

-DODEL.

```

```

-DELLOOP1
  &CMDLINE2 = &DD
  &PRENO = &LINEDEL2 - &LINEDEL1 + 1
  &OLDDELETE = &PRENO
  &HS = &LINEDEL1
  COMMAND LOCATE :&LINEDEL1
  COMMAND DELETE &PRENO

```

```

*****
*   END OF LOOP DOCOPY AND DOMOVE                   *
*   BY DLLETE BEGINNING BLOCK                       *
*****
  &PROCESSFLAG = 1
  &GOTO -CHECKDO

```

```

*****
*   -PF1 IS SUBROUTINE OF PF KEY 1                 *
*   MOVE CURSOR TO HOME                           *
*****

```

```

-PF1 COMMAND CURSOR CMDLINE
  &RETURN

```

```

*****
*   -PF9 IS SUBROUTINE OF PF KEY 9                 *
*   -PF11 IS SUBROUTINE OF PF KEY 11              *
*   UNDEFINED PF KEY                               *
*****

```

```

-PF9
-PF2
-PF4
-PF5
-PF6
-PF10
-PF11 &E = &STRING OF WNM657E UNDEFINED PFKEY.
      &GOTO -ERROR
      &RETURN

```

```

*****
*   -PF12 IS SUBROUTINE OF PF KEY 12           *
*           MOVE CURSOR TO HOME                 *
*****

```

```

-PF12 &PFKEY =
      COMMAND CURSOR CMDLINE
      &RETURN

```

```

*****
*   -PF3 IS SUBROUTINE OF PF KEY 3           *
*           SAVE DATA TO FNAME AND RETURN TO CMS *
*****

```

```

-PF3 &COMMAND DROPBUF
      COMMAND EXTRACT /ALT/FNAME/FTYPE/FMODE/
      &IF &ALT.1 = 0 &SKIP 2
          COMMAND SAVE &FNAME.1 &FTYPE.1 &FMODE.1
          &IF &RC = 0 &GOTO -ERROR
      &COMMAND CONWAIT
      COMMAND QUIT
      &EXIT

```

```

*****
*   -PF7 IS SUBROUTINE OF PF KEY 7           *
*           UP BY ONE PAGE                     *
*****

```

```

-PF7
      COMMAND EXTRACT /LINE/
      &START = &LINE.1 - &PAGESIZE1
      &IF &START < 1 &START = 1
      COMMAND LOCATE :&START
      &OLDCUR1 = &START
      &RETURN

```

```

*****
*   -PF8 IS SUBROUTINE OF PF KEY 7           *
*           DOWN BY ONE PAGE                   *
*****

```

-PF8

```

COMMAND EXTRACT /LINE/SIZE/
&START      =   &LINE.1 + &PAGESIZE1
&IF &START > &SIZE.1 &START = &SIZE.1
COMMAND LOCATE :&START
&OLDCUR1    =   &START
&RETURN

```

```

*****
*   -THAI IS SUBROUTINE OF THAI ROUTINE                               *
*   BY READING FROM DATA FILE AND TRANSLATE INTO 4 LEVEL          *
*   &SLINE IS INPUT FIELD FOR ONE LEVEL                             *
*   RETURN VALUE E-                                                *
*   &L1   IS OUTPUT FIELD FOR FIRST LEVEL                          *
*   &L2   IS OUTPUT FIELD FOR SECOND LEVEL                         *
*   &L3   IS OUTPUT FIELD FOR THIRD LEVEL                          *
*   &L4   IS OUTPUT FIELD FOR FOURTH LEVEL                         *
*****

```

```

-THAI
COMMAND DESBUF
COMMAND STACK
&STACK
&READ STRING &SLINE1
&LSL = &LENGTH OF &SLINE1

```

```

&L1 =
&L2 =
&L3 =
&L4 =
&I = 1

```

```

&LOOP -ENDO UNTIL &I > &LSL
  &II = &SUBSTR OF &SLINE1 &I 1
  &III = &POSITION OF &II &SALAU &SALAUU
  &IF &III = 0 &GOTO -L4
  &III = &POSITION OF &II &SALAAI &SALAAE &SALAU1 &SALAU2 &TAIKU &ARKART
  &IF &III = 0 &GOTO -L2
  &III = &POSITION OF &II &MAIEAK &MAITO &MAITREE &JUTTAWA &KARUN
  &IF &III = 0 &GOTO -L3
-L1 &L1 = &CONCAT OF &L1 &II
  &GOTO -ENDO
-L2 &L2 = &CONCAT OF &L2 &II
  &GOTO -ENDO
-L4 &L4 = &CONCAT OF &L4 &II
  &GOTO -ENDO
-L3 &LL3 = &LENGTH OF &L3
  &LL1 = &LENGTH OF &L1
  &LL2 = &LENGTH OF &L2
  &LL4 = &LENGTH OF &L4

```



```

&IF &LL3 > &LL1 &L1 = &CONCAT OF &L1 &L5
&IF &LL3 > &LL2 &L2 = &CONCAT OF &L2 &L5
&IF &LL3 > &LL4 &L4 = &CONCAT OF &L4 &L5
&IF &LL2 = 0 &GOTO -OK
&TEST = &RIGHT OF &L2 1
&IF &TEST = &L5 &GOTO -OK
&TEST = &RIGHT OF &L1 1
&IF &TEST = &L5 &GOTO -OK
&L2 = &LEFT OF &L2 &LL2
&L2 = &CONCAT OF &L2 &TEST
&L1 = &LEFT OF &L1 &LL2
&L1 = &CONCAT OF &L1 &L5
-OK &L3 = &CONCAT OF &L3 &I
* &L1 = &CONCAT OF &L1 &L5
* &L2 = &CONCAT OF &L2 &L5
* &L4 = &CONCAT OF &L4 &L5
-ENDO &I = &I + 1

```

```

*****
*   RETURN TO CALLING COMMAND FROM THAI   *
*   ROUTINE                               *
*****

```

&RETURN

```

*****
* -RETURN DATA IS SUBROUTINE OF RETURN OUTPUT *
* FROM THAI ROUTINE TO VARIABLE FOR DISPLAY *
*****

```

-RETURN DATA

```

&DATA&VT = &L1
&FLAG&VT = &PN
&EQ&VT = &EQUAL
&VT = &VT + 1
&IF &VT = 11 &VT = 12
&DATA&VT = &L2
&EQ&VT = &EQUAL
&FLAG&VT = &PN
&VT = &VT + 1
&IF &VT = 11 &VT = 12
&DATA&VT = &L3
&TEMPPRF = &PRFLINE&START1
&T = &LENGTH OF &TEMPPRF
&IF &T = 4 &SKIP 3

&TEMPPRF = &CONCAT OF &TEMPPRF &BLANK

&EQ&VT = &LEFT OF &TEMPPRF 4
&FLAG&VT = &NN
&VT = &VT + 1

```

```

&IF &VT = 11 &VT = 12
&DATA&VT = &L4
&EQ&VT = &EQUAL
&FLAG&VT = &PN

```

```

&ERR = 0

```

```

*****
*   RETURN TO CALLING COMMAND FROM RETURNDATA   *
*   ROUTINE                                     *
*****

```

```

&RETURN

```

```

*****
*   SUBROUTINE OF DISPLAY SCREEN                 *
*   (INPUT MODE AND EDIT MODE)                 *
*   *                                           *
*****

```

```

-DISPLAY

```

```

COMMAND EXTRACT /ALT/LINE/SIZE/COL/FNAME/FMODE/
&OLDCUR   = &LINE.1
&OLDSIZE  = &SIZE.1

```

```

&DATA1 =
&DATA1 = &CONCAT OF &PN &FNAME.1 &BLANK
&DATA1 = &LEFT OF &DATA1 10
&DATA1 = &CONCAT OF &DATA1 &FMODE.1 &BLANK
&DATA1 = &LEFT OF &DATA1 19
&DATA1 = &CONCAT OF &DATA1 &FMODE.1 &BLANK
&DATA1 = &LEFT OF &DATA1 23
&DATA1 = &STRING OF &DATA1 F 80 TRUNC = 80 &L5 SIZE =
&DATA1 = &CONCAT OF &DATA1 &SIZE.1 &L5
&DATA1 = &STRING OF &DATA1 LINE=
&DATA1 = &CONCAT OF &DATA1 &LINE.1 &L5
&DATA1 = &STRING OF &DATA1 COL=
&DATA1 = &CONCAT OF &DATA1 &COLUMN.1 &L5
&DATA1 = &STRING OF &DATA1 ALT=
&DATA1 = &CONCAT OF &DATA1 &NOALT
COMMAND SET RESERVED 1 BLUE NOHIGH &DATA1
&IF &INPUTFLAG = 1 &SKIP 2
COMMAND SET RESERVED 2 BLUE NOHIGH &PN &L5
&SKIP 6
*   INPUT MODE

&DATA2 = &STRING OF % % % INPUT MODE % % %
&DATA2 = &CONCAT OF &PN &DATA2

```

```

COMMAND SET RESERVED 2 BLUE NOHIGH &DATA2
&VT = 3
&LOOP -DISTOP UNTIL &VT = 11
  &IF &INPUTFLAG = 1 &SKIP 3
  &DISPLINE = &CONCAT OF &FLAG&VT &EQ&VT &NN &DATA&VT
  COMMAND SET RESERVED &VT BLUE NOHIGH &DISPLINE
  &GOTO -DISTOP
  &DISPLINE = &CONCAT OF &FLAG&VT &DATA&VT
  COMMAND SET RESERVED &VT BLUE NOHIGH &DISPLINE
-DISTOP &VT = &VT + 1
&IF &INPUTFLAG = 1 COMMAND SET RESERVED 11 BLUE NOHIGH &INPTAR
&IF &INPUTFLAG = 0 COMMAND SET RESERVED 11 BLUE NOHIGH &EDITAR
&VT = 12
&LOOP -DISBOT UNTIL &VT > &SCREENM2
  &IF &INPUTFLAG = 1 &SKIP 3
  &DISPLINE = &CONCAT OF &FLAG&VT &EQ&VT &NN &DATA&VT
  COMMAND SET RESERVED &VT BLUE NOHIGH &DISPLINE
  &GOTO -DISBOT
  &DISPLINE = &CONCAT OF &FLAG&VT &DATA&VT
  COMMAND SET RESERVED &VT BLUE NOHIGH &DISPLINE
-DISBOT &VT = &VT + 1

```

```

COMMAND MSG &LASTCMD1
*OMMAND MSG

```

```

*****
*   RETURN TO CALLING COMMAND FROM DISPLAY *
*           SUBROUTINE                       *
*****

```

```
&RETURN
```

```

*****
*
*SUBROUTINE OF FINDEDIT(FIND RECORD NUMBER IN EDIT MODE) *
*
*   INPUT FIELD IS &ROW
*   OUTPUT FIELD IS &START
*
*****

```

```

-FINDEDIT
&OLDCUR = &OLDCUR1
&IF &ROW > 13 &SKIP 13

```

```

*****
*
*   &ROW < 10
*
*****

```

```
&LAG = 9 - &ROW
```



```

&IF &LAG = 0 &SKIP 1
&LAG = &DIV OF &LAG 4
&START = &OLDCUR - &LAG
&GOTO -ENDFINDE

```

```

*****
*                                     *
*   &ROW >= 10                       *
*                                     *
*****

```

```

&LAG = &ROW - 9
&LAG = &DIV OF &LAG 4
&START = &OLDCUR + &LAG
-ENDFINDE &RETURN

```

```

*****
*                                     *
*SUBROUTINE OF FINDINPUT (FIND RECORD NUMBER IN EDIT MODE)*
*                                     *
*   INPUT FIELD IS &ROW               *
*   OUTPUT FIELD IS &START            *
*                                     *
*****

```

```

-FINDINPUT &IF &ROW > 11 &SKIP 15

```

```

*****
*                                     *
*   &ROW < 10                         *
*                                     *
*****

```

```

&LAG = 10 - &ROW
&START = &OLDCUR1 - &LAG
&GOTO -ENDFINDI

```

```

*****
*                                     *
*   &ROW >= 10                       *
*                                     *
*****

```

```

&LAG = &ROW - 11
&START = &OLDCUR1 + &LAG
-ENDFINDI
&RETURN

```

```

*****
**  SUBROUTINE OF READ DATA  **
*****

```

-READDATA

COMMAND EXTRACT /LINE/SIZE/

&IF &SIZE.1 = 0 &GOTO -NODATA

&IF &RC = 6 &LINE.1 = 1

&OLDCUR = &LINE.1

&OLDCUR1 = &LINE.1

&J = 1

&VT = 3

&START1 = &OLDCUR - 1

&IF &START1 < 1 &START1 = 0

&LOOP -EDITRE UNTIL &VT > &SCREENM2

&IF &START1 > 0 &SKIP 15

&FLAG3 = &PN

&DATA3 =

&EQ3 =

&FLAG4 = &PN

&DATA4 =

&EQ4 =

&FLAG5 = &PN

&DATA5 =

&EQ5 =

&FLAG6 = &PN

&DATA6 = &STRING OF % % % TOP OF FILE % % %

&EQ6 = &EQUAL

&VT = 7

&START1 = &START1 + 1

&IF &START1 > &SIZE.1 &SKIP 8

* DISPLAY LINE

COMMAND LOCATE :&START1

&CALL -THAI

&IF &VT = 11 &VT = 12

&CALL -RETURNDDATA

&START1 = &START1 + 1

&GOTO -EDITRE

* DISPLAY BOTTOM LINE

&VT = &VT + 1

&IF &VT = 11 &VT = 12

&FLAG&VT = &PN

&EQ&VT = &EQUAL

&DATA&VT = &STRING OF % % % END OF FILE % % %

&VT = &VT + 1

&LOOP -BOTLOOP1 UNTIL &VT > &SCREENM2

&IF &VT = 11 &VT = 12

&DATA&VT =

&FLAG&VT = &PN

&EQ&VT =

-BOTLOOP1 &VT = &VT + 1

```

        &VT = &SCREENM2
        -EDITRE &VT = &VT + 1
        &OLDCUR = &OLDCUR + 1
        COMMAND LOCATE :&OLDCUR1
&RETURN

*****
* -NODATA IS SUBROUTINE FOR DISPLAY      *
*   TOP OF FILE LINE AND END OF FILE LINE *
*****

-NODATA

&EQ10 = &EQUAL
&EQ12 = &EQUAL
&FLAG10 = &PN
&FLAG12 = &PN
&DATA10 = &STRING OF % % % TOP OF FILE % % %
&DATA12 = &STRING OF % % % END OF FILE % % %

&VT = 9
&LOOP -NODATA1 UNTIL &VT < 3
    &EQ&VT =
    &FLAG&VT = &PN
    &DATA&VT =
    -NODATA1 &VT = &VT - 1

&VT = &SCREENM2
&LOOP -NODATA2 UNTIL &VT < 13
    &EQ&VT =
    &FLAG&VT = &PN
    &DATA&VT =
    -NODATA2 &VT = &VT - 1
COMMAND LOCATE :&OLDCUR1
&RETURN

*****
* -GETDATA IS SUBROUTINE FOR GET DATA  *
*   OUTPUT FIELD &SLINE                 *
*****

-GETDATA

COMMAND DESBUF
COMMAND STACK
&STACK
&READ STRING &SLINE
&RETURN

```

```

*****
* -DIVIDEPRF IS SUBROUTINE OF FIND &PRFNO *
* AND &PRECMD FROM &CMDLINE *
* INPUT FIELD = &CMDLINE *
* OUTPUT FIELD= &NADD OR &NDELETE *
* &NREP &NCPY &CMDLINE *
*****

```

-DIVIDEPRF

```

&ERROR = 0
&LENCMD = &LENGTH OF &CMDLINE
&IF &LENCMD > 1 &GOTO -CHKBLOCK

```

```

*****
* CHECK D M C R A AND SET VALUE OF N = 1 *
*****

```

```

&POSIT = &POSITION OF &CMDLINE &D &A &C &R &M &F &P &R1 &SINP
&POSIT = &POSITION OF &CMDLINE &D &A &C &R &M &F &P &R1 &SINP &SL
&IF &POSIT > 0 &SKIP 4
&PRFLINE&H = &EQUAL

```

```

&ERROR = 1
&GOTO -ENDDIVIDE
&IF &POSIT = 4 &CMDLINE = &STRING OF R
&IF &POSIT = 9 &CMDLINE = &STRING OF A
* &IF &POSIT = 10 &CMDLINE = &STRING OF SL

```

```

*****
* GOTO TO SET NDELETE NADD NCPY NREP *
* = 1 (CHKD,CHKR,CHKA,CHKM,CHKC) *
*****

```

&GOTO -CHK&CMDLINE

```

*****
* -CHKBLOCK IS SUBROUTINE FOR PREFIX *
* BLOCK COMMAND OR PREFIX WITH N COMMAND *
*****

```

-CHKBLOCK

&IF &LENCMD > 2 &GOTO -CHKBLOCK1

```

&POSIT = &POSITION OF &CMDLINE &M &R &C &D &R1
&IF &POSIT = 0 &GOTO -CHKBLOCK1
&IF &POSIT = 2 &CMDLINE = &R1
&GOTO -ENDDIVIDE

```

```

*****
*   -CHKBLOCK1 IS SUBROUTINE FOR PREFIX          *
*   COMMAND WITH NUMBER LINE                    *
*****

```

```
-CHKBLOCK1
```

```

&LOCATED = &LOCATION OF &A &CMDLINE
&IF &LOCATED = 0 &GOTO -CHKNA

```

```

&LOCATED = &LOCATION OF &R &CMDLINE
&IF &LOCATED = 0 &GOTO -CHKNR

```

```

&LOCATED = &LOCATION OF &C &CMDLINE
&IF &LOCATED = 0 &GOTO -CHKNC

```

```

&LOCATED = &LOCATION OF &D &CMDLINE
&IF &LOCATED = 0 &GOTO -CHKND

```

```

&LOCATED = &LOCATION OF &M &CMDLINE
&IF &LOCATED = 0 &GOTO -CHKNM

```

```

&ERROR = 1
&GOTO -ENDDIVIDE

```

```

*****
*   -CHKD IS SUBROUTINE FOR SET NDELETE = 1    *
*                                               *
*****

```

```
-CHKD
```

```

&NDELETE = 1
&GOTO -ENDDIVIDE

```

```

*****
*   -CHKM IS SUBROUTINE FOR SET NMOVE = 1      *
*                                               *
*****

```

```
-CHKM
```

```

&NMOVE = 1
&GOTO -ENDDIVIDE

```

```

*****
*   -CHKC IS SUBROUTINE FOR SET NCOPY = 1     *
*                                               *
*****

```

```
-CHKC
```



```

&NCOPY = 1
&GOTO -ENDDIVIDE

```

```

*****
* -CHKR IS SUBROUTINE FOR SET NREP = 1 *
*

```

```

*****

```

```

-CHKR
  &NREP = 1
  &GOTO -ENDDIVIDE

```

```

*****
* -CHKA IS SUBROUTINE FOR SET NADD = 1 *
*
*****

```

```

-CHKA

```

```

  &NADD = 1
  &GOTO -ENDDIVIDE

```

```

*****
* -CHKF *
* -CHKP IS SUBROUTINE TO RETURN TO CALLING *
*      COMMAND *
*****

```

```

-CHKF
-CHKP

```

```

  &GOTO -ENDDIVIDE

```

```

*****
* -CHKNA IS SUBROUTINE FOR NA OR AN *
*
*****

```

```

-CHKNA

```

```

  &IF &LENCMD = &LOCATED &GOTO -NA
  &IF &LOCATED = 1 &GOTO -AN
  &ERROR = 1
  &GOTO -ENDDIVIDE

```

```

*****
* -AN IS SUBROUTINE FOR AN COMMAND *
*
*****

```

```

-AN

```

```

&NADD = &SUBSTR OF &CMDLINE 2 &LENCMD
&TYPEDATA = &DATATYPE OF &NADD
&IF &TYPEDATA = NUM &SKIP 3
    &ERROR = 1
    &GOTO -ENDDIVIDE

```

```

&CMDLINE = &A
&GOTO -ENDDIVIDE

```

```

*****
* -NA IS SUBROUTINE FOR NA COMMAND *
*                                     *
*****

```

-NA

```

&LENCMD = &LENCMD - 1
&NADD = &LEFT OF &CMDLINE &LENCMD
&TYPEDATA = &DATATYPE OF &NADD
&IF &TYPEDATA = NUM &SKIP 3
    &ERROR = 1
    &GOTO -ENDDIVIDE

```

```

&CMDLINE = &A
&GOTO -ENDDIVIDE

```

```

*****
* -CHKNR IS SUBROUTINE FOR N" OR "N *
*                                     *
*****

```

-CHKNR

```

&IF &LENCMD = &LOCATED &GOTO -NR
&IF &LOCATED = 1 &GOTO -RN
&ERROR = 1
&GOTO -ENDDIVIDE

```

```

*****
* -RN IS SUBROUTINE FOR "N COMMAND *
*                                     *
*****

```

-RN

```

&NREP = &SUBSTR OF &CMDLINE 2 &LENCMD
&TYPEDATA = &DATATYPE OF &NREP
&IF &TYPEDATA = NUM &SKIP 3
    &ERROR = 1
    &GOTO -ENDDIVIDE

```

```
&CMDLINE = &STRING OF R
&GOTO -ENDDIVIDE
```

```
*****
* -NR IS SUBROUTINE FOR N" COMMAND *
* * * * *
*****
```

```
-NR
```

```
&LENCMD = &LENCMD - 1
&NREP = &LEFT OF &CMDLINE &LENCMD
&TYPEDATA = &DATATYPE OF &NREP
&IF &TYPEDATA = NUM &SKIP 3
&ERROR = 1
&GOTO -ENDDIVIDE
```

```
&CMDLINE = &STRING OF R
&GOTO -ENDDIVIDE
```

```
*****
* -CHKNC IS SUBROUTINE FOR NC OR CN *
* * * * *
*****
```

```
-CHKNC
```

```
&IF &LENCMD = &LOCATED &GOTO -NC
&IF &LOCATED = 1 &GOTO -CN
&ERROR = 1
&GOTO -ENDDIVIDE
```

```
*****
* -CN IS SUBROUTINE FOR CN COMMAND *
* * * * *
*****
```

```
-CN
```

```
&NCOPY = &SUBSTR OF &CMDLINE 2 &LENCMD
&TYPEDATA = &DATATYPE OF &NCOPY
&IF &TYPEDATA = NUM &SKIP 3
&ERROR = 1
&GOTO -ENDDIVIDE
```

```
&CMDLINE = &C
&GOTO -ENDDIVIDE
```

```
*****
* -NC IS SUBROUTINE FOR NC COMMAND *
* * * * *
*****
```

-NC

```

&LENCMD = &LENCMD - 1
&NCOPY = &LEFT OF &CMDLINE &LENCMD
&TYPEDATA = &DATATYPE OF &NCOPY
&IF &TYPEDATA = NUM &SKIP 3
    &ERROR = 1
    &GOTO -ENDDIVIDE

&CMDLINE = &C
&GOTO -ENDDIVIDE

```

```

*****
* -CHKND IS SUBROUTINE FOR ND OR DN *
* * *
*****

```

-CHKND

```

&IF &LENCMD = &LOCATED &GOTO -ND
&IF &LOCATED = 1 &GOTO -DN
&ERROR = 1
&GOTO -ENDDIVIDE

```

```

*****
* -DN IS SUBROUTINE FOR DN COMMAND *
* * *
*****

```

-DN

```

&NDELETE = &SUBSTR OF &CMDLINE 2 &LENCMD
&TYPEDATA = &DATATYPE OF &NDELETE
&IF &TYPEDATA = NUM &SKIP 3
    &ERROR = 1
    &GOTO -ENDDIVIDE

&CMDLINE = &D
&GOTO -ENDDIVIDE

```

```

*****
* -ND IS SUBROUTINE FOR ND COMMAND *
* * *
*****

```

-ND

```

&LENCMD = &LENCMD - 1
&NDELETE = &LEFT OF &CMDLINE &LENCMD
&TYPEDATA = &DATATYPE OF &NDELETE
&IF &TYPEDATA = NUM &SKIP 3

```

```

&ERROR = 1
&GOTO -ENDDIVIDE

```

```

&CMDLINE = &D
&GOTO -ENDDIVIDE

```

```

*****
* -CHKNM IS SUBROUTINE FOR NM OR MN      *
*                                         *
*****

```

```
-CHKNM
```

```

&IF &LENCMD = &LOCATED &GOTO -NM
&IF &LOCATED = 1 &GOTO -MN
&ERROR = 1
&GOTO -ENDDIVIDE

```

```

*****
* -MN IS SUBROUTINE FOR MN COMMAND      *
*                                         *
*****

```

```
-MN
```

```

&NMOVE = &SUBSTR OF &CMDLINE 2 &LENCMD
&TYPEDATA = &DATATYPE OF &NMOVE
&IF &TYPEDATA = NUM &SKIP 3
&ERROR = 1
&GOTO -ENDDIVIDE

```

```

&CMDLINE = &M
&GOTO -ENDDIVIDE

```

```

*****
* -NM IS SUBROUTINE FOR NM COMMAND      *
*                                         *
*****

```

```
-NM
```

```

&LENCMD = &LENCMD - 1
&NMOVE = &LEFT OF &CMDLINE &LENCMD
&TYPEDATA = &DATATYPE OF &NMOVE
&IF &TYPEDATA = NUM &SKIP 3
&ERROR = 1
&GOTO -ENDDIVIDE

```

```

&CMDLINE = &M
&GOTO -ENDDIVIDE

```

```

*****
* -ENDDIVIDE IS SUBROUTINE FOR RETURN TO      *
*                CALLING SUBROUTINE          *
*****

```

-ENDDIVIDE &RETURN

```

%*****%
* ALL OF COMMAND LINE SUBROUTINE              %
*                IN COMMAND AREA              %
%*****%

```

```

*****
* -CMDINPUT IS SUBROUTINE OF INPUT            *
*                COMMAND SET INPUTFLAG       *
*                ON                           *
*****

```

-CMDINPUT

```

COMMAND EXTRACT /LINE/SIZE/
&NEWSTART = &LINE.1
&IF &INDEX = 1 &SKIP 2
&SLINE = &RANGE OF & 2 &N
&IF /&SLINE = / &SKIP 4
    &INPUTFLAG = 1
    &CALL -READINPUT
    &GOTO -SUBLOOP

```

```

COMMAND INPUT &SLINE
&GOTO -SUBLOOP

```

```

*****
* -CMDUP IS SUBROUTINE OF UP COMMAND*
*                MOVE TO TOP OF FILE      *
*****

```

-CMDUP

```

&OLDCUR1 = &LINE.1
&IF .&2 = . &2 = 1
&T = &DATATYPE OF &2
&IF &T = NUM &SKIP 3
&IF &T = * &GOTO -BADOP1
&START = 1
&SKIP 3
COMMAND EXTRACT /LINE/
&START = &LINE.1 - &2
&IF &START < 1 &START = 1

```

```
COMMAND LOCATE :&START
&GOTO -SUBLOOP
```

```
*****
* -CMDDOWN IS SUBROUTINE OF DOWN COMMAND *
* MOVE TO END OF FILE *
*****
```

```
-CMDDOWN
```

```
COMMAND EXTRACT /LINE/SIZE/
&OLDCUR1 = &LINE.1
&IF .&2 = . &2 = 1
&T = &DATATYPE OF &2
&IF &T = NUM &SKIP 3
&IF &T = * &GOTO -BADOP1
&START = &SIZE.1
&SKIP 2
&START = &LINE.1 + &2
&IF &START > &SIZE.1 &START = &SIZE.1
```

```
COMMAND LOCATE :&START
&GOTO -SUBLOOP
```

```
*****
* -CMDFO IS SUBROUTINE OF FORWARD COMM.*
* SAME AS -CMDDO BUT MOVE BY *
* PAGE *
*****
```

```
-CMDFO
```

```
&IF &INDEX = 1 &ARGS &1 1

&T = &DATATYPE OF &2
&IF .&T = .NUM &2 = &MULT OF &2 &PAGESIZE1
&GOTO -CMDDOWN
```

```
*****
* -CMDDBA IS SUBROUTINE OF BACKWARD COM.*
* SAME AS -CMDUP BUT MOVE BY *
* PAGE *
*****
```

```
-CMDDBA
```

```
&IF &INDEX = 1 &ARGS &1 1
&T = &DATATYPE OF &2
&IF &T = NUM &2 = &MULT OF &2 &PAGESIZE1
&GOTO -CMDUP
```



```

*****
*   -CMDTOP IS SUBROUTINE OF TOP COMMAND *
*           GO TO THE FIRST RECORD OF *
*           FILE *
*****

```

-CMDTOP

```

COMMAND LOCATE E1
&GOTO -SUBLOOP

```

```

*****
*   -CMDBOT IS SUBROUTINE OF BOTTOM COMM. *
*           GO TO THE LAST RECORD OF *
*           FILE *
*****

```

-CMDBOT

```

COMMAND EXTRACT /SIZE/
COMMAND LOCATE :&SIZE.1
&GOTO -SUBLOOP

```

```

*****
*   -CMDRESET IS SUBROUTINE OF RESET COMM. *
* *
*****

```

-CMDRESET

```

&CALL -REFRESH
&GOTO -SUBLOOP

```

```

*****
*   -CMDFILE IS SUBROUTINE OF SAVE DATA *
*           AND RETURN TO CMS *
*****

```

-CMDFILE

```

COMMAND EXTRACT /FNAME/FTYPE/FMODE/
COMMAND SAVE &FNAME.1 &FTYPE.1 &FMODE.1
&COMMAND CONWAIT
COMMAND QUIT
&EXIT

```

```

*****
*   -CMDQUIT IS SUBROUTINE OF QUIT COMM. *
*           AND RETURN TO CMS *
*****

```


-CMDQUIT

```
COMMAND DROPBUF
COMMAND QUIT
&EXIT
```

```
*****
*   -CMDNEXT IS SUBROUTINE OF NEXT COMMAND *
*           MOVE TO END OF FILE N LINES   *
*****
```

-CMDNEXT

```
COMMAND EXTRACT /LINE/SIZE/
&IF &INDEX = 1 &ARGS &1 1
&T = &DATATYPE OF &2
&IF &T = NUM   &SKIP 3
&IF &T = * &GOTO -BADOP1
  COMMAND LOCATE :&SIZE.1
  &GOTO -SUBLOOP
&START = &LINE.1 + &2 + 1
&IF &START > &SIZE.1 &START = &SIZE.1
COMMAND LOCATE :&START
&OLDCUR1 = &START
&GOTO -SUBLOOP
```

```
*****
*   -CMDQUERY IS SUBROUTINE OF QUERY DATA *
*                                           *
*****
```

-CMDQUERY

```
&IF &INDEX = 2 &GOTO -CMD
&GOTO -BADOP1
```

```
*****
*   -UPDATA IS SUBROUTINE OF UPDATE DATA *
*           FROM ONE LEVEL AND DISPLAY   *
*           IN FOUR LEVEL                *
*****
```

-UPDATA

```
&IF &ROW < 7 &LAG = 0
&IF &ROW > 6 &IF &ROW < 11 &LAG = 1
&IF &ROW > 11 &IF &ROW < 16 &LAG = 2
&IF &ROW > 15 &IF &ROW < 20 &LAG = 3
&IF &ROW > 19 &IF &ROW < 24 &LAG = 4
&IF &ROW > 23 &IF &ROW < 28 &LAG = 5
&IF &ROW > 27 &IF &ROW < 32 &LAG = 6
&IF &ROW > 31 &IF &ROW < 36 &LAG = 7
&IF &ROW > 35 &IF &ROW < 40 &LAG = 8
```

```

&IF &ROW > 39   &LAG = 9
&LAG = &MULT OF &LAG 4
&LAG = &LAG + 2
&IF &LAG > 7 &LAG = &LAG + 1
&STARTLAG = &ROW - &LAG
&L&STARTLAG = &DATA&ROW
&RETURN

```

```

*****
* -TRANONE IS SUBROUTINE FOR TRANSLATE FROM *
*           4 LEVEL INTO 1 LEVEL (3 2 1 4) *
*****

```

```
-TRANONE
```

```

&NEWLINE =
&LL1 = &LENGTH OF &L1
&LL2 = &LENGTH OF &L2
&LL3 = &LENGTH OF &L3
&LL4 = &LENGTH OF &L4
&JJ = 1
&MAXLENGTH = &LL1
&IF &MAXLENGTH > &LL2 &MAXLENGTH = &LL2
&IF &MAXLENGTH > &LL3 &MAXLENGTH = &LL3
&IF &MAXLENGTH > &LL4 &MAXLENGTH = &LL4
&LOOP -TRANLOOP UNTIL &JJ > &MAXLENGTH
  &TESTL1 = &LEFT OF &L1 1
  &TESTL2 = &LEFT OF &L2 1
  &TESTL3 = &LEFT OF &L3 1
  &TESTL4 = &LEFT OF &L4 1
  &L1 = &SUBSTR OF &L1 2 *
  &L2 = &SUBSTR OF &L2 2 *
  &L3 = &SUBSTR OF &L3 2 *
  &L4 = &SUBSTR OF &L4 2 *
  &T = &LENGTH OF &NEWLINE
  &IF &T < 80 &SKIP 2
    &JJ = &MAXLENGTH
    &GOTO -TRANLOOP
  &NEWLINE = &CONCAT OF &NEWLINE &TESTL3
  &IF .&TESTL2 = .&L5 &SKIP 1
  &NEWLINE = &CONCAT OF &NEWLINE &TESTL2
  &IF .&TESTL1 = .&L5 &SKIP 1
  &NEWLINE = &CONCAT OF &NEWLINE &TESTL1
  &IF .&TESTL4 = .&L5 &SKIP 1
  &NEWLINE = &CONCAT OF &NEWLINE &TESTL4

-TRANLOOP &JJ = &JJ + 1
&SLINE = &NEWLINE
&GOTO -ENDUPDATA
-ENDUPDATA

```

&RETURN

```
*****
* -REFRESH IS SUBROUTINE OF CLEAR PREFIX *
*                                     *
*                                     *
*                                     *
*                                     *
*****
```

-REFRESH

```
COMMAND EXTRACT /SIZE/LINE/
&CURSIZE = &SIZE.1
&H = 1
&LOOP -REFRESHLOOP UNTIL &H > &CURSIZE
    &PRFLINE&H = &EQUAL
    -REFRESHLOOP &H = &H + 1
&IF &LINE.1 = 0 &OLDCUR1 = 1
COMMAND LOCATE :&OLDCUR1
&RETURN
```

```
*****
* -FINDCMD IS SUBROUTINE OF FIND PREFIX *
*     COMMAND SUPPRESS EQUAL SIGN      *
*                                     *
*                                     *
*                                     *
*****
```

-FINDCMD

```
&SLINE      = &LEFT OF &SLINE 4
&IF &SLINE = &EQUAL &RETURN
```

```
*****
*   FIND FROM LEFT BY ONE BY ONE UNTIL NOT *
*   EQUAL SIGN THEN GOTO -FINDRIGHT      *
*                                     *
*                                     *
*                                     *
*****
```

-FINDLEFT

```
&TESTLEFT = &LEFT OF &SLINE 1
&IF .&TESTLEFT = .= &GOTO -FINDRIGHT
&SLINE = &SUBSTR OF &SLINE 2 *
&GOTO -FINDLEFT
```

```
*****
*   FIND FROM RIGHT BY ONE BY ONE UNTIL NOT *
*   EQUAL SIGN THEN RETURN                *
*                                     *
*                                     *
*                                     *
*****
```

-FINDRIGHT

```
&TESTRIGHT = &RIGHT OF &SLINE 1
&IF .&TESTRIGHT = .= &RETURN
&TESTRIGHT = &LENGTH OF &SLINE
```

```

&TESTRIGHT = &TESTRIGHT - 1
&SLINE      = &LEFT OF &SLINE &TESTRIGHT
&GOTO -FINDRIGHT

```

```

*****
* -INVCMD1 = SUBROUTINE OF DISPLAY ERROR      *
*                MESSAGE                      *
*****

```

```

-INVCMD1
  &IF /&CMDLINE = / &SKIP 1
  COMMAND EMSG ?EDIT &CMDLINE
  COMMAND CMSG &CMDLINE
  &R = 1
  &GOTO -LOOP

```

```

*****
* -BADOP1 IS SUBROUTINE OF DISPLAY ERROR      *
*                MESSAGE INVALID OPERAND     *
*****

```

```

-BADOP1

  COMMAND EMSG INVALID OPERAND
  COMMAND CMSG &ARGSTRING
  &R = 5
  &GOTO -SUBLOOP

```

```

*****
* -READINPUT IS SUBROUTINE OF GETTING NEW DATA *
*    FROM FILE FOR DISPLAY (IN INPUT MODE)      *
*****

```

```

-READINPUT &J = 1

  &IF &SIZE.1 = 0 &NEWSTART = 0
  &VT = 11
  &START = &NEWSTART
  &OLDSTART = &NEWSTART

```

```

*****
* DISPLAY DATA IN ONE LEVEL ABOVE CURRENT      *
*    LINE                                        *
*****

```

```

-RINPUT1
  &VT = &VT - 1
  &IF &VT < 3 &GOTO -RINPUT4
  &IF &START > 0 &GOTO -READDATA1
  &FLAG&VT = &PN
  &DATA&VT = &STRING OF % % % TOP OF FILE % % %
  &EQ&VT = &EQUAL

```

```
&VT = &VT - 1
```

```
*****
* DISPLAY NULL LINE AFTER CURRENT LINE *
*****
```

```
-RINPUT2
&IF &VT < 3 &GOTO -RINPUT4
  &FLAG&VT = &PN
  &DATA&VT =
  &EQ&VT = &LEFT OF &BLANK 4
  &VT = &VT - 1
  &GOTO -RINPUT2
```

```
*****
* DISPLAY DATA BY READING DATA FROM FILE AND *
* RETURN TO VARIABLE IN ONE LEVEL *
*****
```

```
-READDATA1
  COMMAND LOCATE :&START

  &CALL -GETDATA
  &FLAG&VT = &NN
  &DATA&VT = &SLINE
  &START = &START - 1
  &GOTO -RINPUT1
```

```
*****
* DISPLAY SPACE LINE FOR ACCEPT DATA *
* *
*****
```

```
-RINPUT4
  &VT = 12
  &LOOP -RINPBOT UNTIL &VT > &SCREENM2
  &FLAG&VT = &NN
  &DATA&VT =
  -RINPBOT &VT = &VT + 1
  COMMAND LOCATE :&NEWSTART
  &OLDCUR1 = &NEWSTART
  &RETURN
```

```
*****
* -ERROR IS SUBROUTINE FOR DISPLAY ERROR *
* MESSAGE *
*****
```

```
-ERROR

  COMMAND EMSG &E
```

```

&GOTO -MAINLOOP
*****
*      COME TO DO OTHER CMD COMMAND      *
*****

-CMDOK

&ARGS &2 &3 &4 &5 &6 &7 &8 &9 &10 &11 &12 &13 &14 &15 &16 &17 &18 &19 &20
&GOTO  -&CMD

*****
*  -CMDCHANGE  IS SUBROUTINE FOR CHANGE DATA  *
*****

-CMDCHANGE &IF &INDEX = 0 &GOTO  -CNOPARM

COMMAND TRANSFER ZONE
&READ VARS &ZONE1 &ZONE2
COMMAND SET TRUNC &ZONE2
* MUST ANALYZE ARGSTRING TO SUPPORT G INSTEAD OF
* FOR NUMBER OF OCCURRENCES PER LINE
&I = 2 + &LENGTH OF &CMD
&X = &SUBSTR OF &ARGSTRING &I
&IO = &LOCATION OF &I &X
&DLM = &SUBSTR OF &X &IO 1
&IO = &IO + 1
&X = &SUBSTR OF &X &IO
&IF /&X = / &GOTO  -CHANGECC
&I1 = &LOCATION OF &DLM &X
&IF &I1 = 0 &GOTO  -CHANGECC
&I1 = &I1 + 1
&X = &SUBSTR OF &X &I1
&IF /&X = / &GOTO  -CHANGECC
&I2 = &LOCATION OF &DLM &X
&IF &I2 = 0 &GOTO  -CHANGECC
&I2 = &I2 + 1
&X = &SUBSTR OF &X &I2
&IF /&X = / &GOTO  -CHANGECC
&STACK LIFO &X
&READ VARS &V1 &V2 &V3

&IF /&V3 = / &GOTO  -CHANGECC
&IF /&V2 = / &GOTO  -CHANGEM
&LEN = &LENGTH OF &V1

&CHKG = &SUBSTR OF &V1 &LEN 1

&IF &CHKG = G &IF &CHKG = G &GOTO  -CHANGECC
&LENM1 = &LEN - 1

&NL = &SUBSTR OF &V1 1 &LENM1

```

&T = &DATATYPE OF &NL

&IF &T = NUM &IF &NL = * &GOTO -CHANGE
 &CEXTENT = &CONCAT OF &NL &BLANK *

&GOTO -CHANGEN
 -CHANGEM &T = &DATATYPE OF &V1

&IF &T = NUM &IF &V1 = * &GOTO -CHANGE
 &IF &V2 = G &IF &V2 = G &GOTO -CHANGE
 &V2 = *

&CEXTENT = &RANGE OF &V 1 3

-CHANGEN &GOODLEN = &I + &IO + &I1 + &I2 - 4

&X = &SUBSTR OF &ARGSTRING 1 &GOODLEN

&ARGSTRING = &STRING OF &X &CEXTENT

-CHANGE COMMAND &ARGSTRING

&GOTO -EXITRC

-CNOPARM COMMAND TRANSFER TERMINAL TOF EOF CASE TRUNC VERIFY

&READ VARS &TRM &TF &EF &XCASE * &TRUNC * &FVCOL

&IF &TRM = DISPLAY &GOTO -CHANGE

&CASE &XCASE

&IF &TF = ON &IF &EF = ON &SKIP 2

COMMAND EMSG CMS586E NOT FOUND.

&GOTO -EXITRC

&LASTCOL = &TRUNC

* THE FOLLOWING 27 LINES HAVE BEEN MODIFIED FOR APAR VM17211

COMMAND TRANSFER ZONE FT

&READ VARS &DZ1 &DZ2 &CFT

&SPECFT = NO

&IF /&CFT = /BASIC &SPECFT = YES

&IF /&CFT = /BASDATA &SPECFT = YES

&IF /&CFT = /VSBASIC &SPECFT = YES

&IF &LASTCOL > 141 &LASTCOL = 141

COMMAND STACK 1 &DZ1 &LASTCOL

&READ STRING &LINE

COMMAND MSG &LINE

* THE FOLLOWING 4 LINES WERE ADDED FOR VM20106.

COMMAND EXTRACT /ENTER/

COMMAND SET ENTER

```

COMMAND READ
&IF &ENTER.0 > 0 COMMAND SET ENTER &ENTER.1 &ENTER.2
&READ STRING &LINE2
&IF /&LINE2 = / &GOTO -EXITRC
  &DZ3 = &DZ2 - &DZ1 + 1
  &LINE2 = &LEFT OF &LINE2 &DZ3
  &IF &SPECFT = NO &GOTO -NOSPECFT
  &LINE2 = &CONCAT OF &BLANK &LINE2
  &HOLDZ1 = &DZ1 - 1
  COMMAND SET ZONE &HOLDZ1 &DZ2
  COMMAND CFIRST
  COMMAND CREPLACE &LINE2
  COMMAND SET ZONE &DZ1 &DZ2
  &GOTO -EXITRC
*****
-NOSPECFT

  COMMAND CREPLACE &LINE2

&GOTO -EXITRC

*****
*   FORM OF CMD COMMAND   *
* (EDIT SUBSETE) FORCE QUERY IF NO PARMS. *
*   CMDAUTOSAVE           *
*   CMDCASE               *
*   CMDFNAME              *
*   CMDFTYPE              *
*   CMDFMODE              *
*   CMDLRECL              *
*   CMDRANGE              *
*   CMDRECFM              *
*   CMDTABS               *
*   CMDTRUNC              *
*****

-CMDAUTOSAVE
-CMDCASE
-CMDFNAME
-CMDFTYPE
-CDFMODE
-CMDLRECL
-CMDRANGE
-CMDRECFM
-CMDTABS
-CMDTRUNC

-FORCEQUERY &IF &INDEX = 0 &SKIP 2
  COMMAND QUERY &CMD
  &GOTO -EXITRC
*&LASTCMD = &STRING OF COMMAND SET &ARGSTRING

```



```
&LASTCMD = &RANGE OF & 1 &N
&LASTCMD = &CONCAT OF &CMD &L5 &LASTCMD
&LASTCMD = &STRING OF SET &LASTCMD
```

```
COMMAND &LASTCMD
COMMAND EXTRACT /FNAME/FMODE/FMODE/
&GOTO -EXITRC
```

```
*****
* FIND IS COMPLICATED BECAUSE IN EDIT BLANKS MATCH ANYTHING AS IN XEDIT*
* BUT UNDERScore ( _ ) DOES NOT IMPLY A FORCED BLANK *
* ALSO, FIND WITH NO ARGUMENTS IS EQUIVALENT TO NEXT *
*****
```

```
-CMDFIND
&FCOL = 2 + &LENGTH OF &CMD
&W1 = &SUBSTR OF &ARGSTRING &FCOL 1
&IF /&W1 = /&BLANK &FCOL = &FCOL + 1
&FSTRING = &SUBSTR OF &ARGSTRING &FCOL
&IF /&FSTRING = / &SKIP 2
  COMMAND NEXT
  &GOTO -EXITRC
COMMAND TRANSFER IMAGE TABS
&READ VARS &IMAGE &TAB1
&IF &IMAGE = OFF COMMAND SET IMAGE ON
COMMAND SET TRUNC *
```

```
* MAKE SEARCH STRING LEAST RESTRICTIVE (DON'T CARE BLANKS FOR _ )
* AND FINISH MATCH BY MACRO CODE
```

```
&SSTRING = &TRANS OF &FSTRING _ &BLANK
&IUND = &LOCATION OF _ &FSTRING
&LEN = &LENGTH OF &FSTRING
&R = 2
&LOOP -FINDLUP WHILE &R = 0
  COMMAND &CMD &SSTRING
  &IF &RETCODE = 0 &GOTO -FINDOK
  &IF &IUND = 0 &GOTO -FINDYES
  COMMAND STACK 1 &TAB1 &LEN
  &READ STRING &LINE
```

```
&FLINE = &FSTRING
```

```
&I = &IUND
```

```
&LOOP -FINDFIX WHILE &I = 0
  &X = &SUBSTR OF &LINE &I 1

  &IF &X = _ &GOTO -FINDLUP
  &I = &I + 1
```

&LINE = &SUBSTR OF &LINE &I

&FLINE = &SUBSTR OF &FLINE &I

&I = &LOCATION OF _ &FLINE

-FINDFIX

-FINDYES &R = 0

-FINDLUP

-FINDOK &GOTO -EXITR

* -SAVE IS SUBROUTINE FOR SAVING DATA *

* AND CAN PROCESS CONTINUE *

-CMDSAVE

COMMAND TRANSFER MSGMODE

&READ VARS &MA &MB

COMMAND &CMD &1 &2 &3 &4 &5 &6

&R = &RETCODE

*IF &MB = LONG &IF &R = 0 COMMAND EMSG CMS587I XEDITE

&GOTO -EXITR

* -CMDGETFILE IS SUBROUTINE FOR GET ANOTHER *

* INTO EDITED FILE *

-CMDGETFILE

*OMMAND TRANSFER MSGMODE VERIFY

*READ VARS &MSGMODE * &VERIFY

*IF &VERIFY = OFF COMMAND SET MSGMODE OFF

COMMAND GET &2 &3 &4 &5 &6 &7 &8 &9 &10

*OMMAND &CMDLINE

* THE FOLLOWING LINE HAS BEEN ADDED BY APAR VM12416.

&RCGET = &RC

&ERROR = 0

&CALL -READDATA

* VM12416

*OMMAND SET MSGMODE &MSGMODE

* THE FOLLOWING 6 LINES HAVE BEEN ADDED BY APAR VM12416.

&IF &RCGET = 0 &SKIP 6

&IF &VERIFY = ON &GOTO -EXITRC

COMMAND TRANSFER LASTMSG

&READ STRING &MSG

* COMMAND EMSG &MSG

&GOTO -EXITRC

* VM12416
 *IF &VERIFY = ON COMMAND TYPE
 *OMMAND SAVE NEWGET DATA
 &GOTO -EXITRC

***** LOCATE *****
 * ONLY DIFFERENCE HERE IS THAT LOCATE WITH NO ARGS IS LIKE NEXT

-LOCATE &IF &INDEX = 0 &GOTO -NOLSTRING
 &LCOL = 2 + &LENGTH OF &CMD
 &LSTRING = &SUBSTR OF &ARGSTRING &LCOL

&I = &LOCATION OF &1 &LSTRING

&L = &LENGTH OF &LSTRING

&IF /&L = /&I &SKIP 2
 -NOLSTRING COMMAND NEXT
 &GOTO -EXITRC
 COMMAND LOCATE &LSTRING
 &GOTO -EXITRC



***** REPLACE *****

-CMDREPLACE COMMAND TRANSFER CASE MSGMODE VERIFY
 &READ VARS &XCASE * &MSGMODE * &VERIFY

&RCOL = 2 + &LENGTH OF &CMD
 &RSTRING = &SUBSTR OF &ARGSTRING &RCOL
 &L = &LENGTH OF &RSTRING
 &INPACT = &CONCAT OF INPUT &RSTRING
 &IF &L = 0 &GOTO -REPINP
 * MAKE SURE ENTIRE LINE IS DELETED, EVEN PAST TRUNC COLUMN
 COMMAND SET MSGMODE OFF
 COMMAND DELETE
 COMMAND UP
 COMMAND SET MSGMODE &MSGMODE
 COMMAND &INPACT
 &GOTO -EXITRC
 -REPINP
 *READ STRING &LINE
 *IF /&LINE = / &GOTO -EXIT
 COMMAND SET MSGMODE OFF
 COMMAND DELETE
 COMMAND UP
 *IF &XCASE = U &UPPER VARS &LINE
 COMMAND SET MSGMODE &MSGMODE
 *OMMAND INPUT &LINE
 COMMAND INPUT
 *OMMAND EMSG CMS587I XEDITE
 &GOTO -EXIT

```

*****
* -CMDZONE NO ARGS IMPLIES QUERY, ALSO *
* FOR 1ST ARG MEANS CURRENT FIRST ZONE VALUE *
*****

```

```
-CMDZONE &IF &INDEX = 0 &SKIP 3
```

```
COMMAND QUERY &CMD
```

```
&GOTO -EXITRC
&IF &1 = * &ARGS 1 &2 &3
```

```
&IF &INDEX > 1 &SKIP 6
COMMAND TRANSFER ZONE
&READ VARS &Z1 &Z2
```

```
&ARGS &1 &Z2
```

```
&LASTCMD = &STRING OF COMMAND SET &CMD &1 &2 &3
```

```
&GOTO -EXIT
```

```
***** ERROR MESSAGES *****
```

```
-NOTGOOD COMMAND MSG YOU CANNOT DUPLICATE THIS LINE
```

```
&GOTO -LMREQ
```

```
-INVCMD COMMAND MSG ?EDITE &CMDLINE
```

```
*OMMAND MSG &CMDLINE
```

```
&R = -1
```

```
&GOTO -EXITR
```

```
-BADOP COMMAND MSG INVALID OPERAND
```

```
COMMAND MSG &CMDLINE
```

```
&R = 5
```

```
&GOTO -EXITR
```

```
***** EXITS *****
```

```
-EXITRC &R = &RETCODE
```

```
&SKIP 1
```

```
-EXIT &R = 0
```

```
-EXITR
```

```
*EXITR COMMAND &CMDLINE
```

```
-EXITNR &IF /&LASTCMD = / &SKIP 3
```

```
* &SUBCOMMAND XEDIT &CMDLINE
```

```
&R = &RETCODE
```

```
&GOTO -SUBLOOP
```

ประวัติผู้เขียน

นางสาว ระพีพรรณ สักดิ์มณีวงศ์ เกิดวันที่ 2 มิถุนายน 2504 ที่จังหวัดกรุงเทพฯ
สำเร็จการศึกษา วิทยาศาสตรบัณฑิต(สถิติ) เกียรตินิยมอันดับ 2 จากคณะวิทยาศาสตร์
มหาวิทยาลัยเกษตรศาสตร์ วิทยาเขตบางเขน ในปี พ.ศ. 2525

