

# basic systems MARKETING SUPPORT SERVICES

## Bulletin

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SYSTEM 80  
MIRAM MULTIKEY FILE PROCESSING  
RPG II

### Abstract

This bulletin provides examples of RPG II programs and associated job control for processing multi-keyed MIRAM data files.

COMPANY CONFIDENTIAL "C"

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SYSTEM 80 - RPG II MULTIKEY FILE PROCESSING - RELEASE 8.0

I. MULTIKEY FILE ENHANCEMENT:

UNDER OS/3 RELEASE 8.0, RPG II HAS BEEN ENHANCED TO ALLOW PROCESSING OF INDEXED FILES WITH MORE THAN 1 KEY OF REFERENCE. MIRAM FILES WITH FROM 1 TO 5 KEYS OF REFERENCE CAN NOW BE PROCESSED. EACH KEY CAN BE FROM 1 TO 80 CHARACTERS IN LENGTH WITH THE OPTION OF ALLOWING DUPLICATE KEY VALUES AND/OR CHANGES TO KEY VALUES.

II. RPG II CODING REQUIREMENTS:

A. FILES DESCRIPTION SPECIFICATION FORM:

COLUMNS	CODING REQUIREMENTS
1 - 28	STANDARD CODING FOR INDEXED FILES (SINGLE KEY)
29 - 30	MUST BE LEFT BLANK
31 - 34	STANDARD CODING FOR INDEXED FILES (SINGLE KEY)
35 - 38	MUST BE LEFT BLANK
39 - 80	STANDARD RPG II CODING

B. CONTINUATION LINES (FILE DESCRIPTION)

COLUMNS	CODING REQUIREMENTS
53	K
54 - 59	KEYN (N=1 TO 5 - DENOTES KEY NUMBER)
60 - 65	START POSITION FOR KEYN VALUE IN RECORD
66 - 67	LENGTH OF KEY (FROM 1 TO 80 CHARACTERS)
68	D OR BLANK      D - DUPLICATION OF KEYN VALUE ALLOWED BLANK - NO DUPLICATION OF KEYN VALUE
69	C OR BLANK      C - CHANGES TO KEYN VALUE ALLOWED BLANK - NO CHANGES ALLOWED

C. CALCULATION SPECIFICATIONS - SETK OPERATION:

COLUMNS	CODING REQUIREMENTS
9 - 17	CONDITIONS - OPTIONAL
18 - 27	FACTOR 1 - POSITION 18 - MUST CONTAIN A VALID LITERAL OR A 1 CHARACTER VARIABLE WITH A VALUE OF FROM 1 TO 5 TO SPECIFY THE KEY STRUCTURE TO REFERENCE THE FILE OPERATION - SETK
28 - 32	
33 - 42	FACTOR 2 - MUST CONTAIN THE FILE NAME USED IN COLUMNS 7 - 14 OF THE FILE DESCRIPTION SPECIFICATION FORM FOR THE MULTIKEYED FILE
43 - 59	RESULT FIELD - RESULTING INDICATORS - MUST BE BLANK

NOTE: KEY "1" IS THE PRIMARY KEY OF REFERENCE UNLESS AN ALTERNATE KEY IS SPECIFIED BY USING THE "SETK" OPERATION IN THE CALCULATION SPECIFICATIONS. THE "SETK" OPERATION WILL NOT BE FUNCTIONAL AND NORMAL PROCESSING FOR A SINGLE KEY INDEXED FILE WILL BE ASSUMED IF A "COMPLETE" KEY STRUCTURE IS NOT SPECIFIED ON THE FILE DESCRIPTION SPECIFICATION FORMS. CONTINUATION LINES (K IN COLUMN 53 OF FILE DESCRIPTION SPECIFICATIONS) MUST BE USED TO DESCRIBE KEY CHARACTERISTICS IF THE FILE HAS MORE THAN 1 KEY OF REFERENCE.

### III. SAMPLE RPG II SPECIFICATION FORMS:

#### A. FILE DESCRIPTION SPECIFICATION FORM:

```
00003FMKFILE  O  F  96  96  AI      DISK      S
```

#### B. CONTINUATION LINES (COMPLETE KEY STRUCTURE - FILE DESCRIPTION):

00004F		KKEY1	110
00005F		KKEY2	31 9
00006F		KKEY3	43 8
00007F		KKEY4	51 7DC
00008F		KKEY5	64 7

#### C. CALCULATIONS SPECIFICATION FORM:

00056C	50	1	SETK MKFILE
00060C	51	2	SETK MKFILE
00064C	52	3	SETK MKFILE
00068C	53	4	SETK MKFILE
00072C	54	5	SETK MKFILE

### IV. SAMPLE PROGRAMS - MULTIKEY FILE PROCESSING:

EACH OF THE SAMPLE PROGRAMS PRESENTED USE A "5" KEYED MIRAM DATA FILE NAMED "MKFILE". THE PRIMARY PURPOSE OF THESE PROGRAMS IS TO DEMONSTRATE THE "EASE" OF PROCESSING A MULTIKEYED FILE IN RPG II IN A VARIETY OF PROCESSING SITUATIONS. FOR EXAMPLE, THE PROGRAMS WHICH CREATE, EXTEND AND UPDATE THE KEYED FILE UTILIZE INTERACTIVE DATA ENTRY TECHNIQUES IN RPG II. SCREEN PROMPTS ARE AUTOMATICALLY GENERATED FOR THE USER WITHOUT THE NEED TO CREATE AND FORMAT SCREENS BY USING THE SCREEN FORMAT GENERATOR IN A SEPARATE STEP. CUSTOMIZED WORKSTATION SCREENS CREATED BY USING THE SCREEN FORMAT GENERATOR ARE USED IN THE FILE INQUIRY PROGRAM. FOR EASE OF CODING, COPY MODULES AND AUTO REPORT ARE USED IN THE FIVE PROGRAMS WHICH SEQUENTIALLY PROCESS THE DATA FILE BY SELECTED KEY. THESE SAMPLE PROGRAMS ARE SIMPLY EXAMPLES OF SOME OF THE TECHNIQUES TO PROCESS MULTIKEYED FILES AND ARE NOT NECESSARILY THE MOST EFFICIENT METHODS.

A. CREMLT - CREATING A 5 KEYED MIRAM FILE

THIS PROGRAM UTILIZES INTERACTIVE DATA ENTRY TO CREATE A 5 KEY MIRAM FILE. THE KEY CHARACTERISTICS ARE AS FOLLOWS:

POSITION	TYPE	FIELD NAME	DUPLICATES	CHANGES
1 - 10	NUMERIC	IDNUM	NO	NO
31 - 39	NUMERIC	SSN	NO	NO
43 - 50	NUMERIC	INSNUM	NO	NO
51 - 57	NUMERIC	PHONE	YES	YES
64 - 70	NUMERIC	RETNUM	NO	NO

PROMPT SCREENS ARE AUTOMATICALLY CREATED BASED ON THE RECORD DESCRIPTIONS OF THE CONSOLE FILE "INDATA".

```

00001H
00002FINDATA IP F 97 CONSOLE
00003FMKFILE O F 96 96 AI DISK S
00004F KKEY1 110
00005F KKEY2 31 9
00006F KKEY3 43 8
00007F KKEY4 51 7DC
00008F KKEY5 64 7
00009FPRNTR O F 132 132 OF PRINTER
00010IINDATA AA 01 1 C1
00011I 1 10IDKEY
00012I 2 110IDNUM
00013I 12 31 NAME
00014I 32 400SSN
00015I 41 41 MSTAT
00016I 42 430EXEMPT
00017I 44 510INSNUM
00018I 52 580PHONE
00019I 59 620DEPT
00020I 63 64 SALCL
00021I 65 710RETNUM
00022I 72 770STDATE
00023I 78 97 TITLE
00024OMKFILE D 01
00025I IDNUM 10
00026I NAME 30
00027I SSN 39
00028I MSTAT 40
00029I EXEMPT 42
00030I INSNUM 50
00031I PHONE 57
00032I DEPT 61
00033I SALCL 63
00034I RETNUM 70
00035I STDATE 76
00036I TITLE 96
00037OPRNTR H 307 OF
00038I OR 1P
00039I 70 '*** M U L T I K E Y '
    
```

000400				80	'FILE **'	
000410	H	1	OF			
000420	OR		1P			
000430				6	'ID'	
000440				24	'EMPLOYEE'	
000450				54	'SOCIAL	MARITAL'
000460				69	'EXEMP	INS.'
000470				91	'PHONE	DEPT SC'
000480				108	'RET.	START'
000490				123	'TITLE'	
000500	D	2	OF			
000510	OR		1P			
000520				7	'NUMBER'	
000530				22	'NAME'	
000540				54	'SECURITY	STATUS'
000550				80	'NUMBER	NUMBER'
000560				107	'NUMBER	DATE'
000570	D	1	01			
000580				IDNUM	10	
000590				NAME	32	
000600				SSN	45	' - - '
000610				MSTAT	51	
000620				EXEMPT	59	
000630				INSNUM	71	
000640				PHONE	81	' - '
000650				DEPT	87	
000660				SALCL	91	
000670				RETNUM	100	
000680				STDATEY	110	
000690				TITLE	132	

JOB CONTROL TO COMPILE AND LINK CREMLT:

```

// JOB RPGEI&&, ,B000   RPG II COMPILE & LINK
// IF ('&PGM' NE '')S1
// QGBL PGM
//S1 NOP
//&PGM   RPG   IN=(OS3DTA,JAM.SRC),ERRFIL=(OS3DTA,JAM.ERF,JAM.EF1),      X
/1       CONSOLE=INDATA
//&PGM   LINK  OUT=(OS3DTA,JAM.LOD)
/&

```

JOB STREAM TO EXECUTE CREMLT:

```

// JOB CREMLT, ,D000
// QGBL PGM
// DVC 20 // LFD PRNTR
// DVC 200
// USE SFS
// UID $YSMAS
// LFD INDATA
// DVC 60 // VOL OS3DTA // LBL MKFILE // LFD MKFILE, ,INIT
// DVC 60 // VOL OS3DTA // LBL JAM.LOD
// LFD LOD
// EXEC &PGM,LOD
/&

```



```

00032I
00033I
00034I
00035I
00036C
00037C
00038C***
00039C
00040C*
00041C**
00042C*
00043C
00044C
00045C*
00046C**
00047C*
00048C
00049C
00050C*
00051C**
00052C*
00053C
00054C
00055C*
00056C**
00057C*
00058C
00059C
00060C*
00061C**
00062C*
00063C
00064OMKFILE
00065O
00066O
00067O
00068O
00069O
00070O
00071O
00072O
00073O
00074O
00075O
00076O
00077OPRNTR
00078O
00079O
00080O
00081O
00082O
00083O
00084O
00085O
00086O

62 63 SALCL
64 700RETNUM
71 760STDATE
77 96 TITLE
102021
2223
WRITE RECORD ENTERED TO PRINTER FILE ***
01
EXCPT
CHECK FOR DUPLICATE IDENTIFICATION NUMBER **
01 1 SETK MKFILE
01 IDNUM CHAINMKFILE 20
SET KEY = IDNUM
CHECK FOR DUPLICATE SOCIAL SECURITY NUMBER **
01 20 2 SETK MKFILE
01 20 SSN CHAINMKFILE 21
SET KEY = SSN
CHECK FOR DUPLICATE INSURANCE NUMBER **
01 21 3 SETK MKFILE
01 21 INSNUM CHAINMKFILE 22
SET KEY = INSNUM
CHECK FOR DUPLICATE RETIREMENT NUMBER **
01 22 5 SETK MKFILE
01 22 RETNUM CHAINMKFILE 23
SET KEY = RETNUM
23 ON - NO DUP KEYS - WRITE RECORD TO MKFILE **
01 23 SETON 10
DADD 10
IDNUM 10
NAME 30
SSN 39
MSTAT 40
EXEMPT 42
INSNUM 50
PHONE 57
DEPT 61
SALCL 63
RETNUM 70
STDATE 76
TITLE 96
H 307 OF
OR 1P
70 '*** MULT I KEY '
80 'F I L E ***'
H 1 OF
OR 1P
6 'ID'
24 'EMPLOYEE'
54 'SOCIAL MARITAL'
69 'EXEMP INS.'

```



000870				91	'PHONE	DEPT	SC'
000880				108	'RET.	START'	
000890				123	'TITLE'		
000900	D	2	OF				
000910	OR		1P				
000920				7	'NUMBER'		
000930				22	'NAME'		
000940				54	'SECURITY	STATUS'	
000950				80	'NUMBER	NUMBER'	
000960				107	'NUMBER	DATE'	
000970	E	1	01				
000980			IDNUM	10			
000990			NAME	32			
001000			SSN	45	'	-	-
001010			MSTAT	51			
001020			EXEMPT	59			
001030			INSNUM	71			
001040			PHONE	81	'	-	'
001050			DEPT	87			
001060			SALCL	91			
001070			RETNUM	100			
001080			STDATEY	110			
001090			TITLE	132			
001100	D	1	N10 01				
001110				40	'INVALID RECORD - '		
001120				60	'DUPLICATE KEY VALUES'		

JOB STREAM TO COMPILE AND LINK MKFADD:

```

// JOB RPGEI&&, ,B000   RPG II COMPILE & LINK
// IF ('&PGM' NE '')S1
// QGBL PGM
//S1 NOP
//&PGM   RPG   IN=(OS3DTA,JAM.SRC),ERRFIL=(OS3DTA,JAM.ERF,JAM.EF1),   X
//1      CONSOLE=INDATA
//&PGM   LINK  OUT=(OS3DTA,JAM.LOD)
/&

```

JOB STREAM TO EXECUTE MKFADD:

```

// JOB MKFADD, ,D000
// QGBL PGM
// DVC 20 // LFD PRNTR
// DVC 200
// USE SFS
// UID $YSMAS
// LFD INDATA
// DVC 60 // VOL OS3DTA // LBL MKFILE // LFD MKFILE
// DVC 60 // VOL OS3DTA // LBL JAM.LOD
// LFD LOD
// EXEC &PGM,LOD
/&

```

C. MLIHQ2 - INQUIRY TO RECORDS OF MKFILE

SCREEN FORMAT SERVICES IS USED TO CREATE PROMPT SCREENS FOR THIS WORKSTATION/MULTIKEYED FILE PROCESSING PROGRAM. THE PURPOSE OF THE PROGRAM IS TO DISPLAY SELECTED RECORDS ON THE WORKSTATION SCREEN. SEPARATE PROMPT SCREENS ARE USED FOR EACH OF THE FIVE KEYS OF REFERENCE.

PROMPT SCREENS PRESENTED:

1. SCREEN01 - MAIN MENU

```
=====
!
! SCREEN01
!
!           *** MULTIKEY FILE INQUIRY ***
!           *** KEY MENU ***
!
!           *****
!
!           KEY NUMBER           KEY FIELD
!           =====           =====
!
!             1           EMPLOYEE IDENTIFICATION NUMBER
!             2           SOCIAL SECURITY NUMBER
!             3           INSURANCE ACCOUNT NUMBER
!             4           BUSINESS PHONE NUMBER
!             5           RETIREMENT ACCOUNT NUMBER
!
!           ENTER KEY REFERENCE NUMBER  _
!           TERMINATE SESSION           _
!
! F15 - TERMINATES SESSION
!
=====
```

2. SCREEN02 - EMPLOYEE IDENTIFICATION NUMBER (KEY 1 OF MKFILE)

```
=====
!
! SCREEN02
!
!           *** MULTIKEY FILE INQUIRY ***
!
!           ENTER:
!
!           EMPLOYEE IDENTIFICATION NUMBER _____
!
! F11 - RETURN TO KEY MENU
! F15 - TERMINATE UPDATE SESSION
!
=====
```

3. SCREEN03 - EMPLOYEE SOCIAL SECURITY NUMBER (KEY 2 OF MKFILE)

! SCREEN03

! \*\*\* MULTIKEY FILE INQUIRY \*\*\*

! ENTER:

! SOCIAL SECURITY NUMBER \_\_\_\_-\_\_\_\_-\_\_\_\_

! F11 - RETURN TO KEY MENU

! F15 - TERMINATE UPDATE SESSION

4. SCREEN04 - EMPLOYEE INSURANCE NUMBER (KEY 3 OF MKFILE)

! SCREEN04

! \*\*\* MULTIKEY FILE INQUIRY \*\*\*

! ENTER:

! INSURANCE ACCOUNT NUMBER \_\_\_\_\_

! F11 - RETURN TO KEY MENU

! F15 - TERMINATE UPDATE SESSION

5. SCREEN05 - EMPLOYEE PHONE NUMBER (KEY 4 OF MKFILE)

! SCREEN05

! \*\*\* MULTIKEY FILE INQUIRY \*\*\*

! ENTER:

! BUSINESS PHONE NUMBER \_\_\_\_-\_\_\_\_

! F11 - RETURN TO KEY MENU

! F15 - TERMINATE UPDATE SESSION

6. SCREEN06 - EMPLOYEE RETIREMENT NUMBER (KEY 5 OF MKFILE)

! SCREEN06

! \*\*\* MULTIKEY FILE INQUIRY \*\*\*

! ENTER:

! RETIREMENT ACCOUNT NUMBER \_\_\_\_\_

! F11 - RETURN TO KEY MENU

! F15 - TERMINATE UPDATE SESSION

7. SCREEN07 - DATA RECORD DISPLAY

! SCREEN07

! \*\*\* MKFILE RECORD DISPLAY \*\*\*

FIELD NUMBER	FIELD NAME	FIELD DATA
1	IDENTIFICATION NUMBER	_____
2	NAME	_____
3	SOCIAL SECURITY NUMBER	____-____-____
4	MARITAL STATUS CODE	____
5	NUMBER OF EXEMPTIONS	____
6	INSURANCE ACCOUNT NUMBERS	_____
7	BUSINESS PHONE NUMBER	____-____
8	DEPARTMENT NUMBER	_____
9	SALARY CLASSIFICATION	____
10	RETIREMENT ACCOUNT NUMBER	_____
11	START OF EMPLOYMENT DATE	___/___/___
12	JOB TITLE	_____

! XMIT TO CONTINUE

8. SCREEN08 - ERROR MESSAGE SCREEN - NO HIT ON CHAIN OPERATION

! SCREEN08

! \*\*\* MULTIKEY FILE INQUIRY \*\*\*  
! \*\*\* ERROR MESSAGE \*\*\*

! INVALID RECORD KEY ENTERED  
! NO MATCHING KEY IN MKFILE  
! XMIT AND RE-ENTER

! F15 - TERMINATE INQUIRY SESSION

! XMIT TO CONTINUE

MLINQ2 - SOURCE LISTING

MLINQ2

00001H								
00002F	WRKSTN	CP	F	96		WORKSTN		
00003F	MKFILE	IC	F	96	96R	AI	DISK	S
00004F								KKEY1
00005F								110
00006F								KKEY2
00007F								31 9
00008F								KKEY3
00009I	WRKSTN	AA	01	1	C			KKEY4
00010I		OR		1	C1			51 7DC
00011I							2	KKEY5
00012I							3	64 7
00013I		BB	02	1	C2			
00014I							2	
00015I		BD	04	1	CY			
00016I	MKFILE	CC	03					
00017I							1	
00018I							11	100IDNUM
00019I							31	30 NAME
00020I							40	390SSN
00021I							41	40 MSTAT
00022I							42	420EXEMPT
00023I							43	500INSNUM
00024I							51	570PHONE
00025I							58	610DEPT
00026I							62	63 SALCL
00027I							64	700RETNUM
00028I							71	760STDATE
00029C							77	96 TITLE
00030C		SETOF						103090
00031C		SETOF						800714
		SETOF						7035

00032C		SETOF					
00033C		SETOF				505152	
00034C		SETOF				535431	
00035C	KK	Z-ADD2	SCN	10		323334	
00036C	KK	SETON					
00037C	KK	MOVE 0	KEY	10			10
00038C	KK	GOTO END					
00039C	04	EXSR INPUT1					
00040C	04	GOTO END					
00041C	01	COMP 'Y'					LR
00042C	01	COMP 0					07
00043C	07	MOVE 2	SCN	10			
00044C	07	SETON					10
00045C	07	GOTO END					
00046C		COMP 2					14
00047C	14	EXSR INPUT1					
00048C	14	GOTO END					
00049C		COMP 5					70
00050C	70 02	EXSR INPUT2					
00051C	70	GOTO END					
00052C		COMP 1					10
00053C	10	MOVE 2	SCN	10			
00054C		TAG					
00055CSR		BEGSR					
00056CSR		COMP 1					50
00057CSR	50	SETK MKFILE					
00058CSR	50	MOVELKEYVAL	CH1	100			
00059CSR	50	GOTO CHFIL					
00060CSR		COMP 2					51
00061CSR	51	SETK MKFILE					
00062CSR	51	MOVELKEYVAL	CH2	90			
00063CSR	51	GOTO CHFIL					
00064CSR		COMP 3					52
00065CSR	52	SETK MKFILE					
00066CSR	52	MOVELKEYVAL	CH3	80			
00067CSR	52	GOTO CHFIL					
00068CSR		COMP 4					53
00069CSR	53	SETK MKFILE					
00070CSR	53	MOVELKEYVAL	CH4	70			
00071CSR	53	GOTO CHFIL					
00072CSR		COMP 5					54
00073CSR	54	SETK MKFILE					
00074CSR	54	MOVELKEYVAL	CH5	70			
00075CSR	54	GOTO CHFIL					
00076CSR		TAG					
00077CSR	50	CHAINMKFILE					80
00078CSR	51	CHAINMKFILE					80
00079CSR	52	CHAINMKFILE					80
00080CSR	53	CHAINMKFILE					80
00081CSR	54	CHAINMKFILE					80
00082CSR	80	CHAINMKFILE					80
00083CSR	90	SETON					90
00084CSR		Z-ADD1	SCN	10			
00085CSR		ENDSR					
00086CSR		BEGSR					
		Z-ADD5	SCN	10			

00087CSR			SETON	30	
00088CSR	KEY		COMP 1		31
00089CSR	KEY		COMP 2		32
00090CSR	KEY		COMP 3		33
00091CSR	KEY		COMP 4		34
00092CSR	KEY		COMP 5		35
00093CSR			ENDSR		
00094OWRKSTN	D	10			
000950				K4	'SCR1'
000960	D	30 31			
000970				K4	'SCR2'
000980	D	30 32			
000990				K4	'SCR3'
001000	D	30 33			
001010				K4	'SCR4'
001020	D	30 34			
001030				K4	'SCR5'
001040	D	30 35			
001050				K4	'SCR6'
001060	D	90 03			
001070				K4	'SCR7'
001080			IDNUM	10	
001090			NAME	30	
001100			SSN	39	
001110			MSTAT	40	
001120			EXEMPT	42	
001130			INSNUM	50	
001140			PHONE	57	
001150			DEPT	61	
001160			SALCL	63	
001170			RETNUM	70	
001180			STDATE	76	
001190			TITLE	96	
001200	D	80			
001210				K4	'SCR8'

JOB STREAM TO COMPILE AND LINK MLINQ2

```

// JOB RPGII&&,B000   RPG II COMPILE & LINK
// IF ('&PGM' NE '')S1
// QGBL PGM
//S1 NOP
//&PGM   RPG   IN=(OS3DTA,JAM.SRC)
//&PGM   LINK  OUT=(OS3DTA,JAM.LOD)
/&

```







00078CSR		UPDTE	BEGSR			
00079CSR		FLDNUM	COMP 2			21
00080CSR	21		MOVEFLDATA	NAME	20	
00081CSR	21		GOTO END2			
00082CSR		FLDNUM	COMP 4			22
00083CSR	22		MOVEFLDATA	MSTAT	1	
00084CSR	22		GOTO END2			
00085CSR		FLDNUM	COMP 5			23
00086CSR	23		MOVEFLDATA	EXEMPT	20	
00087CSR	23		GOTO END2			
00088CSR		FLDNUM	COMP 7			24
00089CSR	24		MOVEFLDATA	PHONE	70	
00090CSR	24		GOTO END2			
00091CSR		FLDNUM	COMP 8			25
00092CSR	25		MOVEFLDATA	DEPT	40	
00093CSR	25		GOTO END2			
00094CSR		FLDNUM	COMP 9			26
00095CSR	26		MOVEFLDATA	SALCL	2	
00096CSR	26		GOTO END2			
00097CSR		FLDNUM	COMP 11			27
00098CSR	27		MOVEFLDATA	STDATE0060		
00099CSR	27		GOTO END2			
00100CSR		FLDNUM	COMP 12			28
00101CSR	28		MOVEFLDATA	TITLE	20	
00102CSR		END2	TAG			
00103CSR			ENDSR			
00104OMKFILE	D		N50N99 07			
001050			IDNUM		10	
001060			NAME		30	
001070			SSN		39	
001080			MSTAT		40	
001090			EXEMPT		42	
001100			INSNUM		50	
001110			PHONE		57	
001120			DEPT		61	
001130			SALCL		63	
001140			RETNUM		70	
001150			STDATE		76	
001160			TITLE		96	

JOB CONTROL TO COMPILE AND LINK MKUPD:

```
// JOB RPGEI&&,B000   RPG II COMPILE & LINK
// IF ('&PGM' NE '')S1
// QGBL PGM
//S1 NOP
//&PGM   RPG   IN=(OS3DTA,JAM.SRC),ERRFIL=(OS3DTA,JAM.ERF,JAM.EF1),   X
/1       CONSOLE=INDATA
//&PGM   LINK  OUT=(OS3DTA,JAM.LOD)
/ &
```

JOB CONTROL TO EXECUTE MKUPD:

```
// JOB MLTUP2&&,D000
// IF ('&PGM' NE '')S1
// QGBL PGM
//S1 NOP
// DVC 20 // LFD PRNTR
// DVC 200
// USE SFS
// UID $Y$MAS
// LFD INDATA
// DVC 60 // VOL OS3DTA // LBL MKFILE // LFD MKFILE
// DVC 60 // VOL OS3DTA // LBL JAM.LOD
// LFD LOD
// EXEC &PGM,LOD
/ &
```

E. MSKEY1 TO MSKEY5 - SEQUENTIAL PROCESSING OF MKFILE

THESE 5 PROGRAMS SEQUENTIALLY PROCESS MKFILE BY USING THE SETK OPERATION TO SELECT KEY STRUCTURE. /COPY STATEMENTS WERE USED TO SAVE REPEATEDLY CODING THE SAME FILE DESCRIPTION, INPUT AND OUTPUT SPECIFICATION FORMS. THE COMMON SOURCE CODING LINES WERE STORED IN A SEPARATE LIBRARY FILE (JAM.COPY) AS MODULES "MKF", "MKIN" AND "MKPRNTR" AND CONTAIN:

MKF: COMMON FILE DESCRIPTION SPECIFICATIONS FOR "MKFILE"

00003FMKFILE	IPE F	96	96	AI	DISK	S	
00004F						KKEY1	110
00005F						KKEY2	31 9
00006F						KKEY3	43 8
00007F						KKEY4	51 7DC
00008F						KKEY5	64 7
00009FPRNTR	O F	132	132	OF	PRINTER		

MKIN: COMMON INPUT SPECIFICATIONS FOR "MKFILE"

00023IMKFILE	AA	01	
00024I			1 100IDNUM
00025I			11 30 NAME
00026I			31 390SSN
00027I			40 40 MSTAT
00028I			41 420EXEMPT
00029I			43 500INSNUM
00030I			51 570PHONE
00031I			58 610DEPT
00032I			62 63 SALCL
00033I			64 700RETNUM
00034I			71 760STDATE
00035I			77 96 TITLE

MKPRNTR: COMMON OUTPUT SPECIFICATIONS FOR "MKFILE"

000890	PRNTR	H	307	OF	
000900		OR		1P	
000910					70 '**MULTIKEY'
000920					80 'FILE**'
000930		H	1	OF	
000940		OR		1P	
000950					6 'ID'
000960					24 'EMPLOYEE'
000970					54 'SOCIAL MARITAL'
000980					69 'EXEMP INS.'
000990					91 'PHONE DEPT SC'
001000					108 'RET. START'
001010					123 'TITLE'
001020		H	2	OF	
001030		OR		1P	
001040					7 'NUMBER'
001050					22 'NAME'
001060					54 'SECURITY STATUS'
001070					80 'NUMBER NUMBER'
001080					107 'NUMBER DATE'
001090		D	1	01	
001100					IDNUM 10
001110					NAME 32
001120					SSN 45
001130					MSTAT 51
001140					EXEMPT 59
001150					INSNUM 71
001160					PHONE 81
001170					DEPT 87
001180					SALCL 91
001190					RETNUM 100
001200					STDATEY 110
001210					TITLE 132

MSKEY1 TO MSKEY5: SEQUENTIAL PROCESSING OF "MKFILE" BY SELECTED KEY

THESE 5 PROGRAMS PROCESS "MKFILE" SEQUENTIALLY BY SELECTED KEY USING THE "SETK" OPERATION. THESE ARE BATCH JOBS AND EACH PRODUCES A PRINTED LISTING OF THE "MKFILE" IN THE DESIGNATED ORDER.

1. "MSKEY1": PROCESSING SEQUENTIALLY BY KEY 1 (IDNUM - EMPLOYEE IDENTIFICATION NUMBER)

UCJSA,JAM.AUTO

H  
 F/COPY JC,MKF  
 I/COPY JC,MKIN  
 C 01 FIRST  
 C 01 FIRST  
 C 98 1  
 O/COPY JC,MKPRNTR

ADD 1 FIRST 150  
 COMP 1  
 SETK MKFILE

98

MSKEY1

2. "MSKEY2": PROCESSING SEQUENTIALLY BY KEY 2 (SSN - EMPLOYEE SOCIAL SECURITY NUMBER)

UCJSA,JAM.AUTO

H

F/COPY JC,MKF

I/COPY JC,MKIN

C 01 FIRST ADD 1 FIRST 150

C 01 FIRST COMP 1 98

C 98 2 SETK MKFILE

O/COPY JC,MKPRNTR

MSKEY2

3. "MSKEY3": PROCESSING SEQUENTIALLY BY KEY 3 (INSNUM - EMPLOYEE INSURANCE NUMBER)

UCJSA,JAM.AUTO

H

F/COPY JC,MKF

I/COPY JC,MKIN

C 01 FIRST ADD 1 FIRST 150

C 01 FIRST COMP 1 98

C 98 3 SETK MKFILE

O/COPY JC,MKPRNTR

MSKEY3

4. "MSKEY4": PROCESSING SEQUENTIALLY BY KEY 4 (PHONE - EMPLOYEE BUSINESS PHONE NUMBER)

UCJSA,JAM.AUTO

H

F/COPY JC,MKF

I/COPY JC,MKIN

C 01 FIRST ADD 1 FIRST 150

C 01 FIRST COMP 1 98

C 98 4 SETK MKFILE

O/COPY JC,MKPRNTR

MSKEY4

5. "MSKEY5": PROCESSING SEQUENTIALLY BY KEY 5 (RETNUM - EMPLOYEE RETIREMENT ACCOUNT NUMBER)

UCJSA,JAM.AUTO

H

F/COPY JC,MKF

I/COPY JC,MKIN

C 01 FIRST ADD 1 FIRST 150

C 01 FIRST COMP 1 98

C 98 5 SETK MKFILE

O/COPY JC,MKPRNTR

MSKEY5

NOTE: Each time a "SETK" command is issued, the file record pointer is reset to point to the first record of the data file.

JOB CONTROL TO COMPILE AND LINK MSKEY1 TO MSKEY5:

```
// JOB AUTRPG2&      COMPILER...ERRFIL OPTION ADDED
// OPTION JOB DUMP
// IF ('&PGM' NE '')S1
// QGBL PGM
//S1 NOP
// DVC 50
// VOL OS3DTA
// LBL JAM.COPY
// LFD JC
// DVC 50
// VOL OS3DTA
// LBL JAM.AUTO
// LFD JSA
//&PGM AUTRPG IN=(OS3DTA,JAM.SRC),ERRFIL=(OS3DTA,JAM.ERF,JAM.EF1)
//&PGM LINK OUT=(OS3DTA,JAM.LOD)
/ &
```

JOB CONTROL TO EXECUTE MSKEY1 TO MSKEY5:

```
// JOB MSKEY&&,,D000
// IF ('&PGM' NE '')S1
// QGBL PGM
//S1 NOP
// DVC 20 // LFD PRNTR
// DVC 60 // VOL OS3DTA // LBL MKFILE // LFD MKFILE
// DVC 60 // VOL OS3DTA // LBL JAM.LOD
// LFD LOD
// EXEC &PGM,LOD
/ &
```