เอกสารอ้างอิง

1. เสาวลักษณ์ เปี่ยมปิติ. คู่มือการออกแบบสอบถาม และเตรียมข้อมูลสำหรับใช้โปรแกรมสำเร็จรูปในการทำตารางสถิติ. กรุงเทพมหานคร : กรุงเทพการพิมพ์, 2522.

2. วรนุช ตรีทิพยบุตร และสหัส ตรีทิพยบุตร. คู่มือการใช้โปรแกรมสำเร็จรูป VSEDIT. กรุงเทพมหานคร : สำนักงานสถิติแห่งชาติ, 2520.

3. เสาวลักษณ์ เปี่ยมปิติ. คู่มือการใช้โปรแกรม MINI-TAB. กรุงเทพมหานคร : สถาบันประชากรศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย, 2521.

4. NTS Research Corporation. CONCOR User's Guide Version 2.2. Durham, North Calorina : (n.p.), 1980.

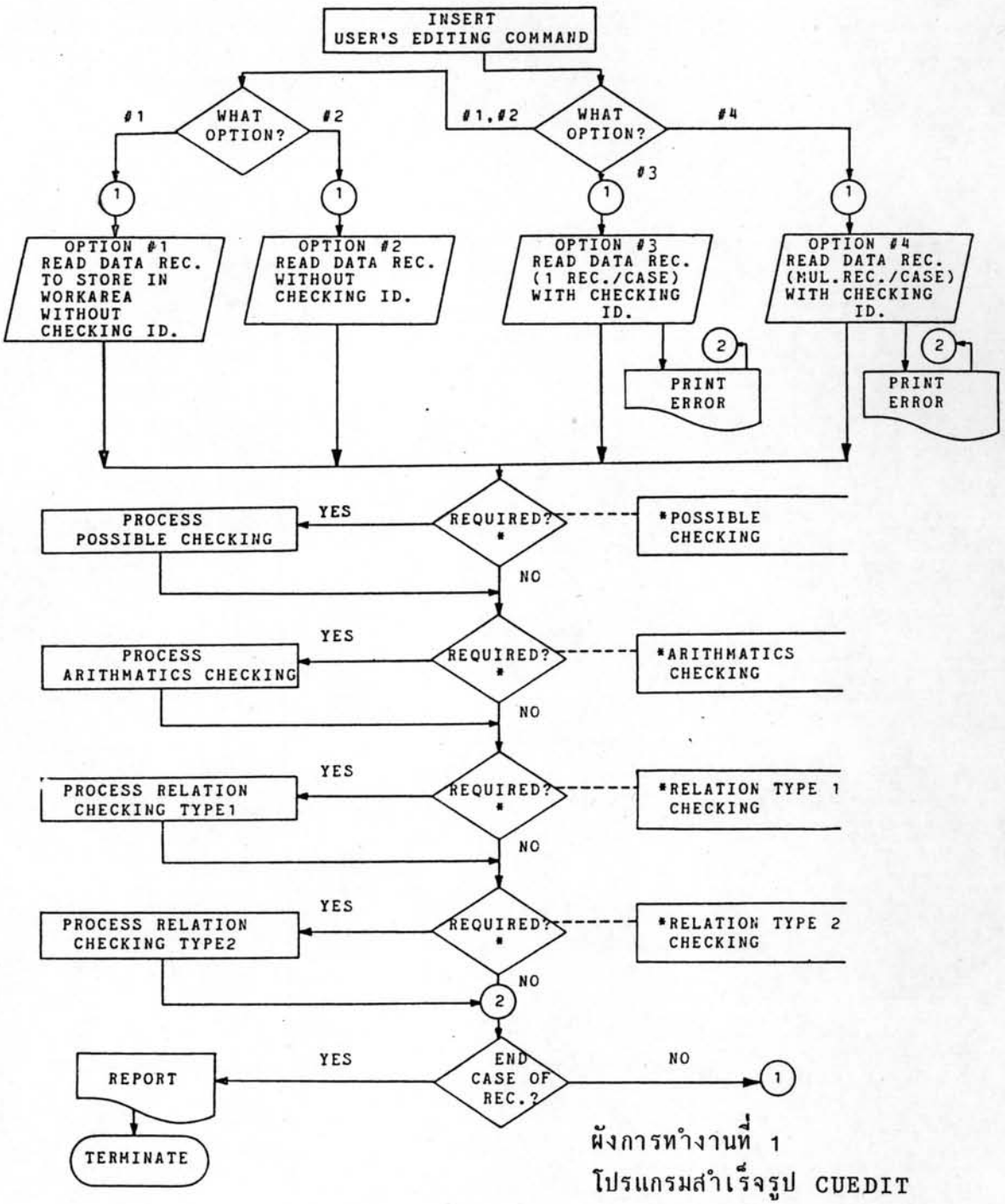
5. IBM, OS/VS-DOS/VS-VM/370 Assembler Language. New York : International Business Machines Coporation, 1975.

6. The Population Council International Program, Data Clean. New York : (n.p.), 1970.

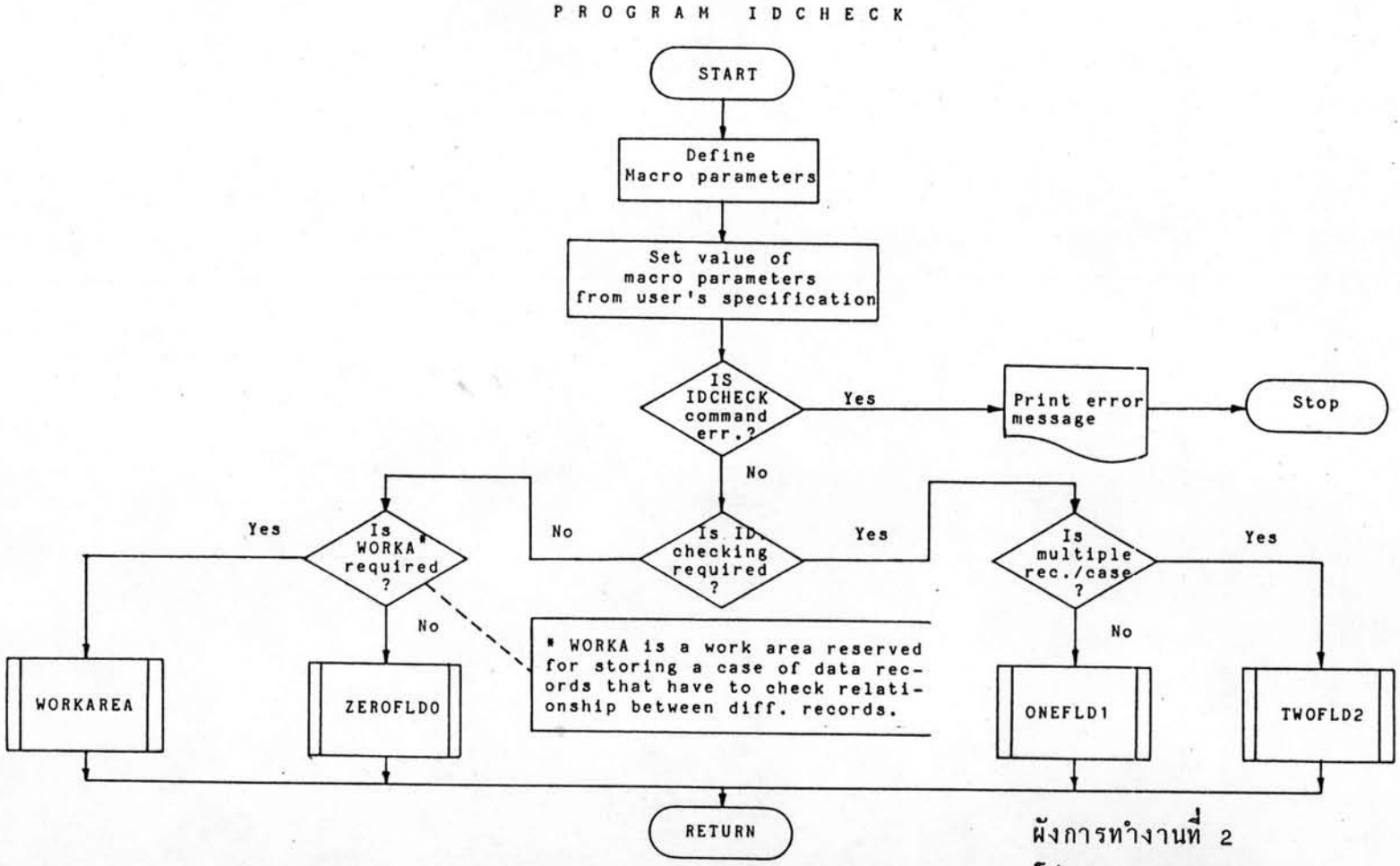
ภาคผนวก ก.

แสดงผังการทำงานของโปรแกรมล้าเร็จรูปซียู-อีดิท และผังการทำงานของโปรแกรมย่อยแต่ละโปรแกรมภายในระบบการทำงานของโปรแกรมล้าเร็จรูปซียู-อีดิท

C U E D I T P A C K A G E S Y S T E M F L O W

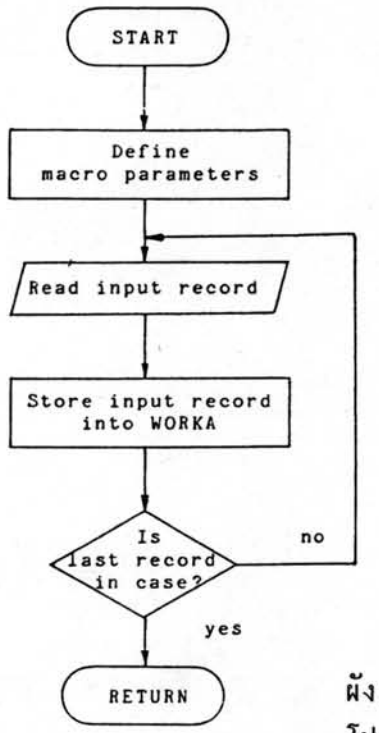


ผังการทำงานที่ 1
โปรแกรมสำเร็จรูป CUEDIT



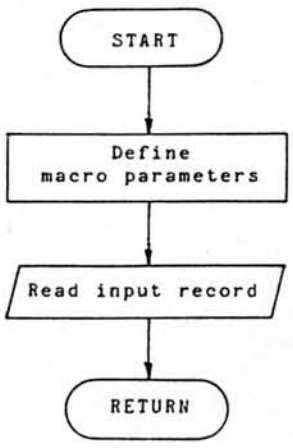
ผังการทำงานที่ 2
โปรแกรม IDCHECK

P R O G R A M W O R K A R E A



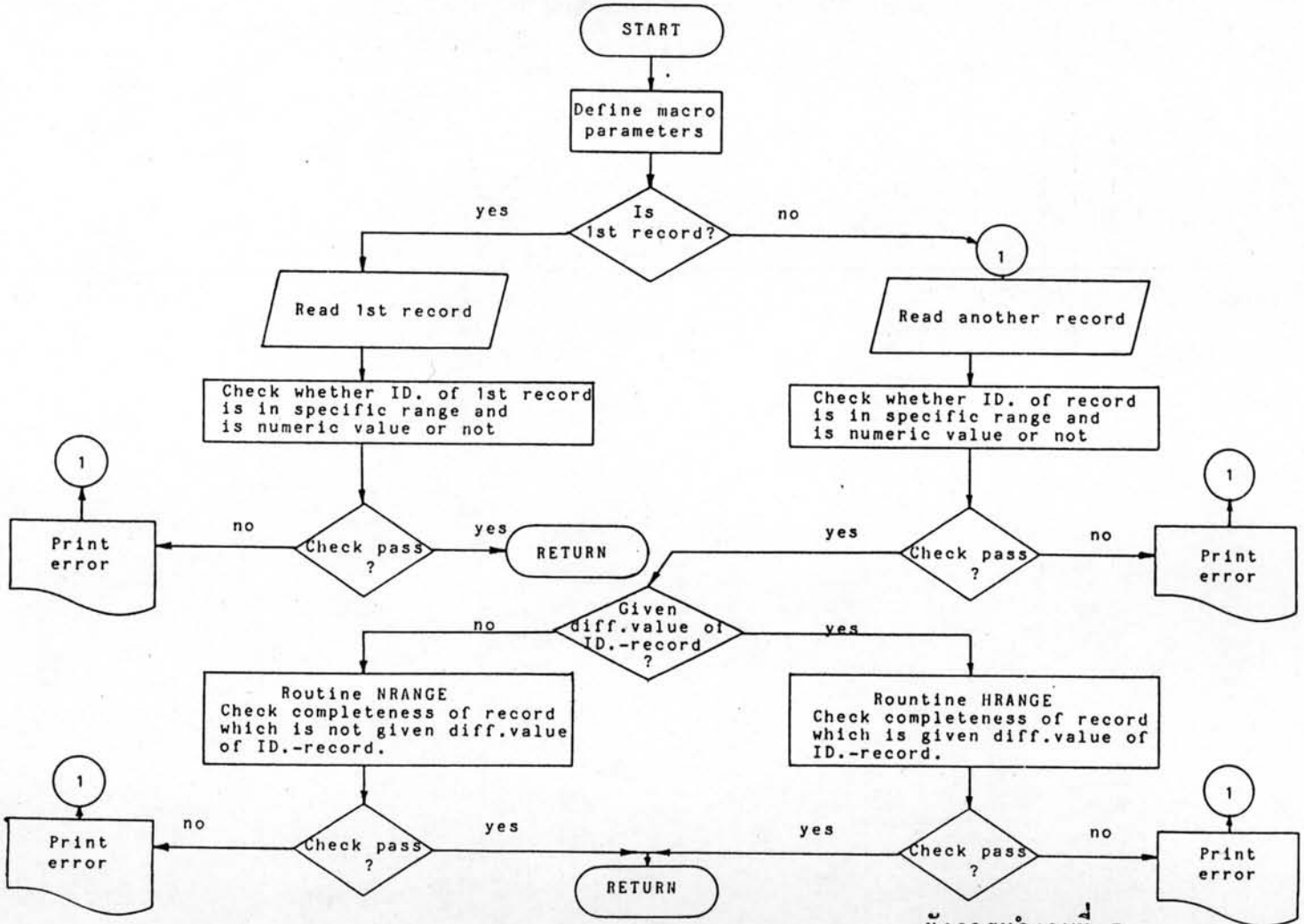
ผังการทำงานที่ 3
โปรแกรม WORKAREA

P R O G R A M Z E R O F L D O

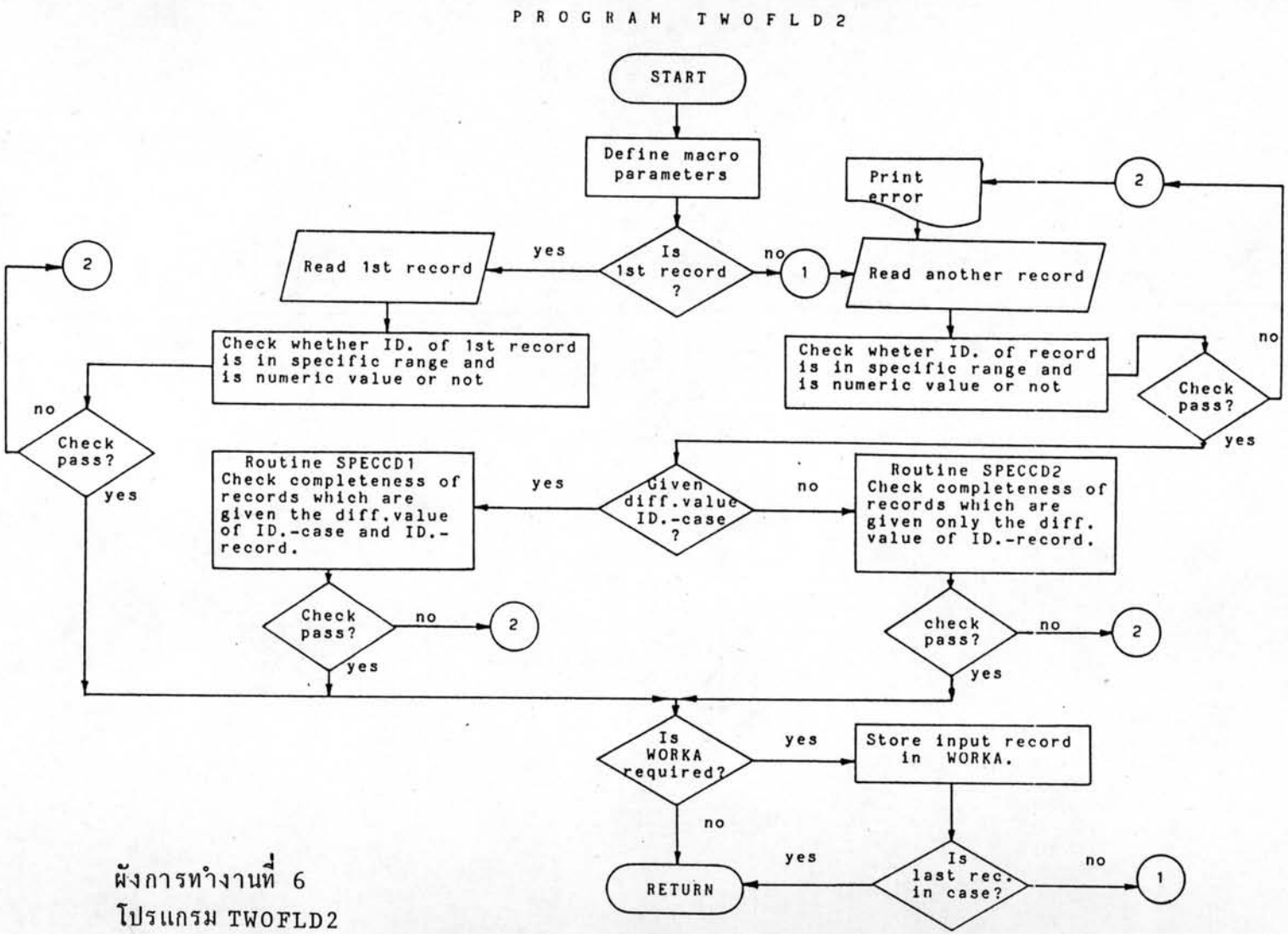


ผังการทำงานที่ 4
โปรแกรม ZEROFLDO

PROGRAM ONEFLD1

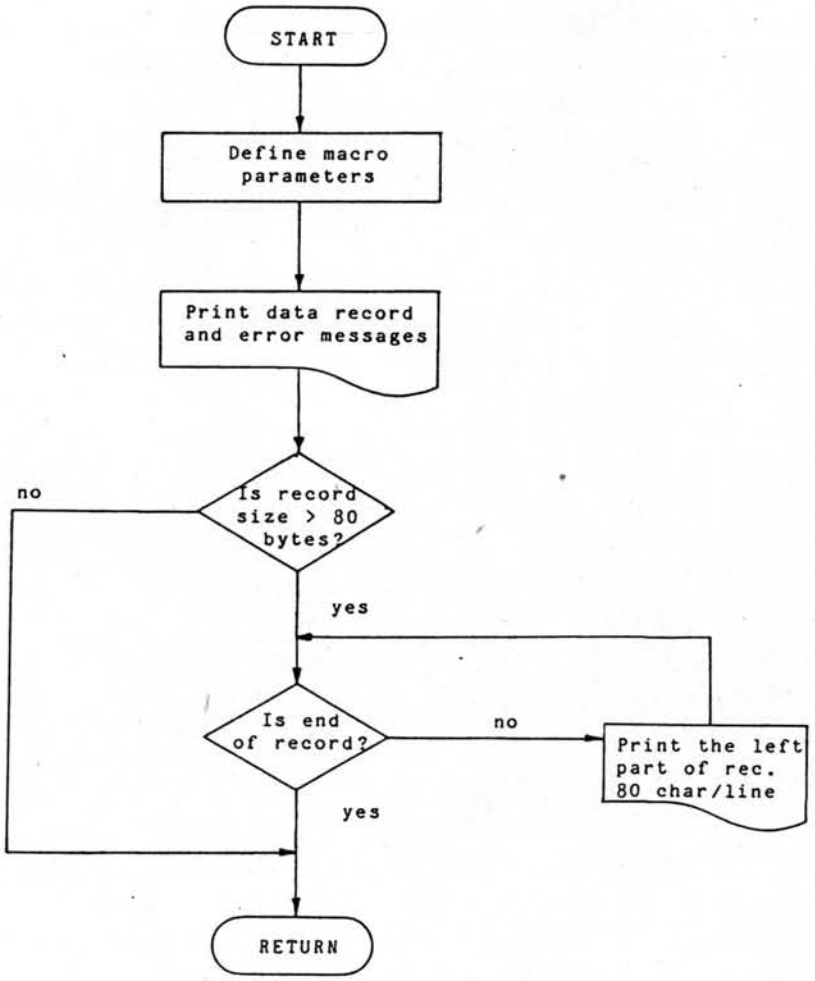


ผังการทำงานที่ 5
โปรมแกรม ONEFLD1

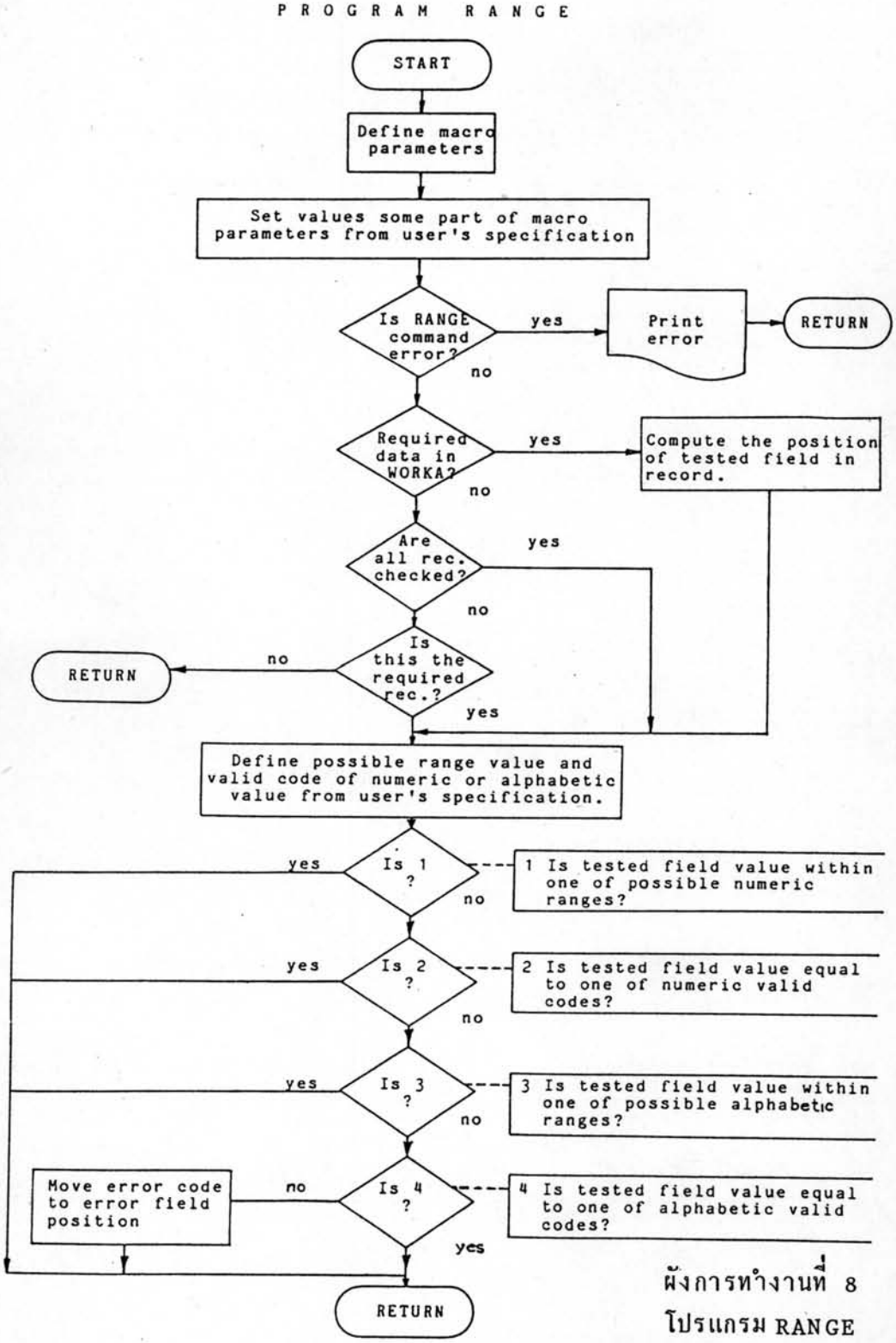


ผังการทำงานที่ 6
โปรแกรม TWOFLD2

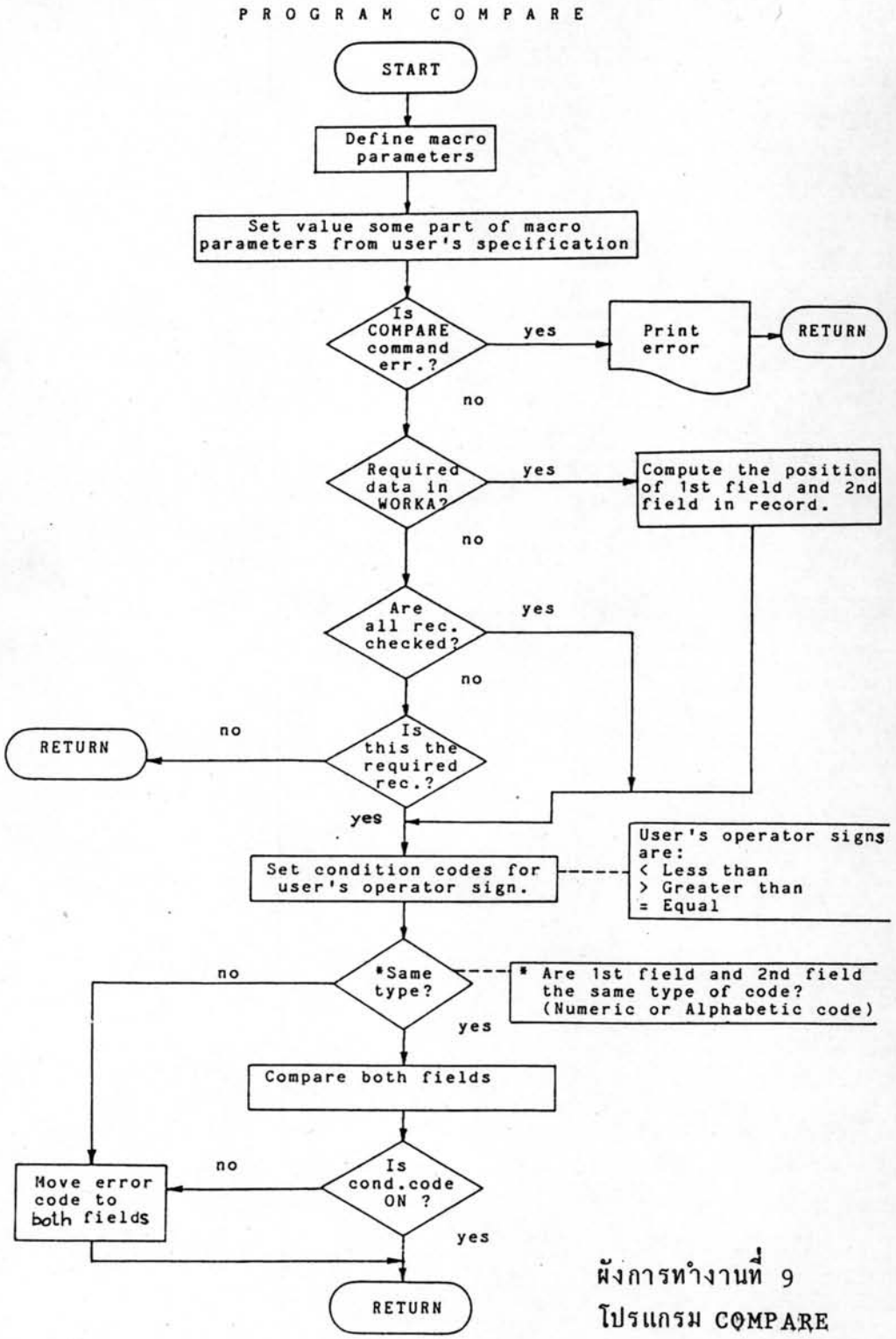
P R O G R A M P R I N T R E C



ผังการทำงานที่ 7
โปรแกรม PRINTREC

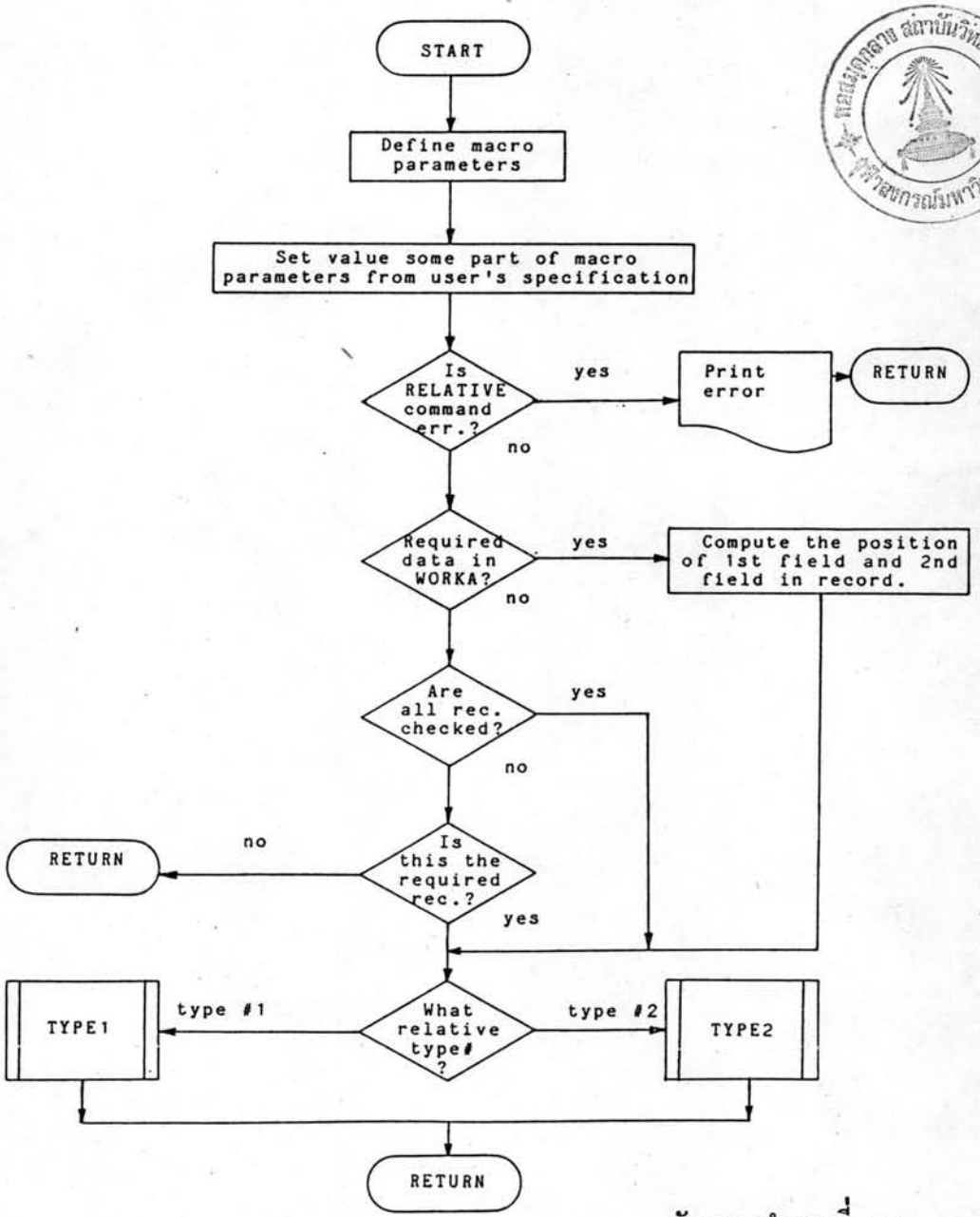


ผังการทำงานที่ 8
โปรแกรม RANGE

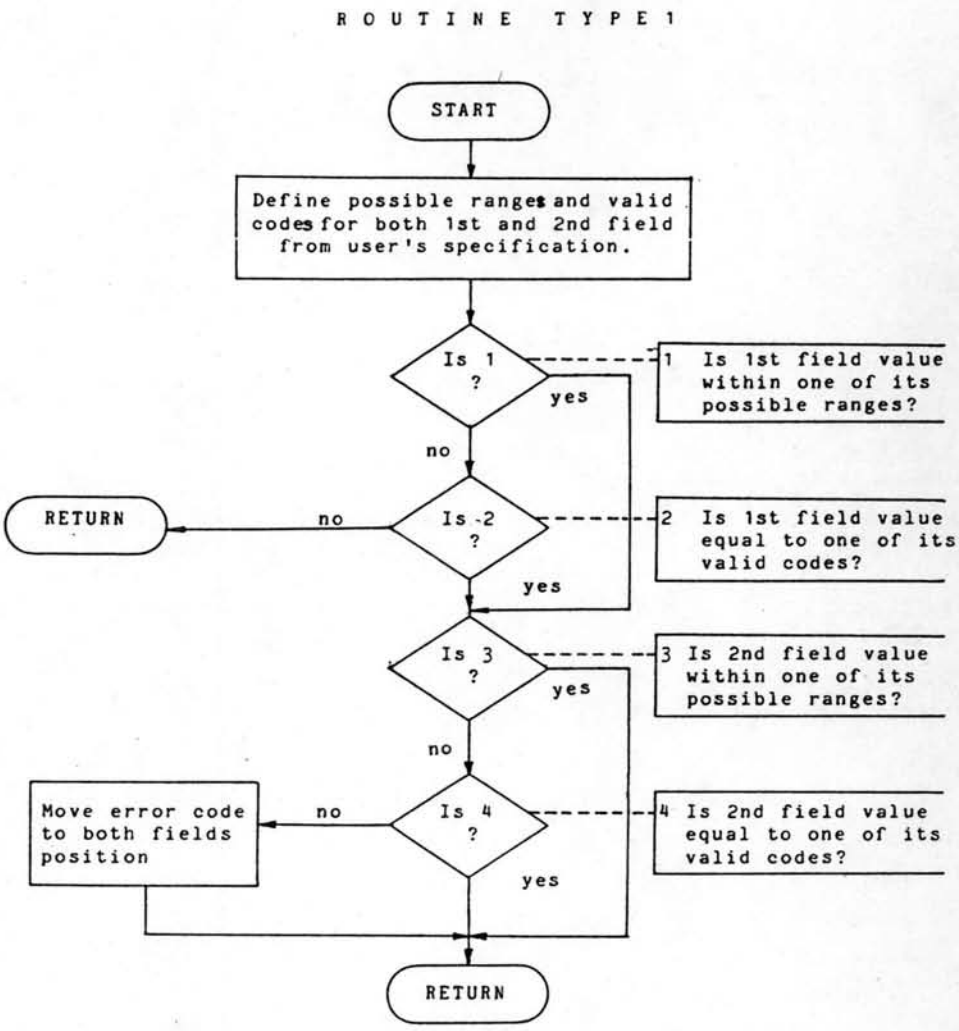


ผังการทำงานที่ 9
โปรแกรม COMPARE

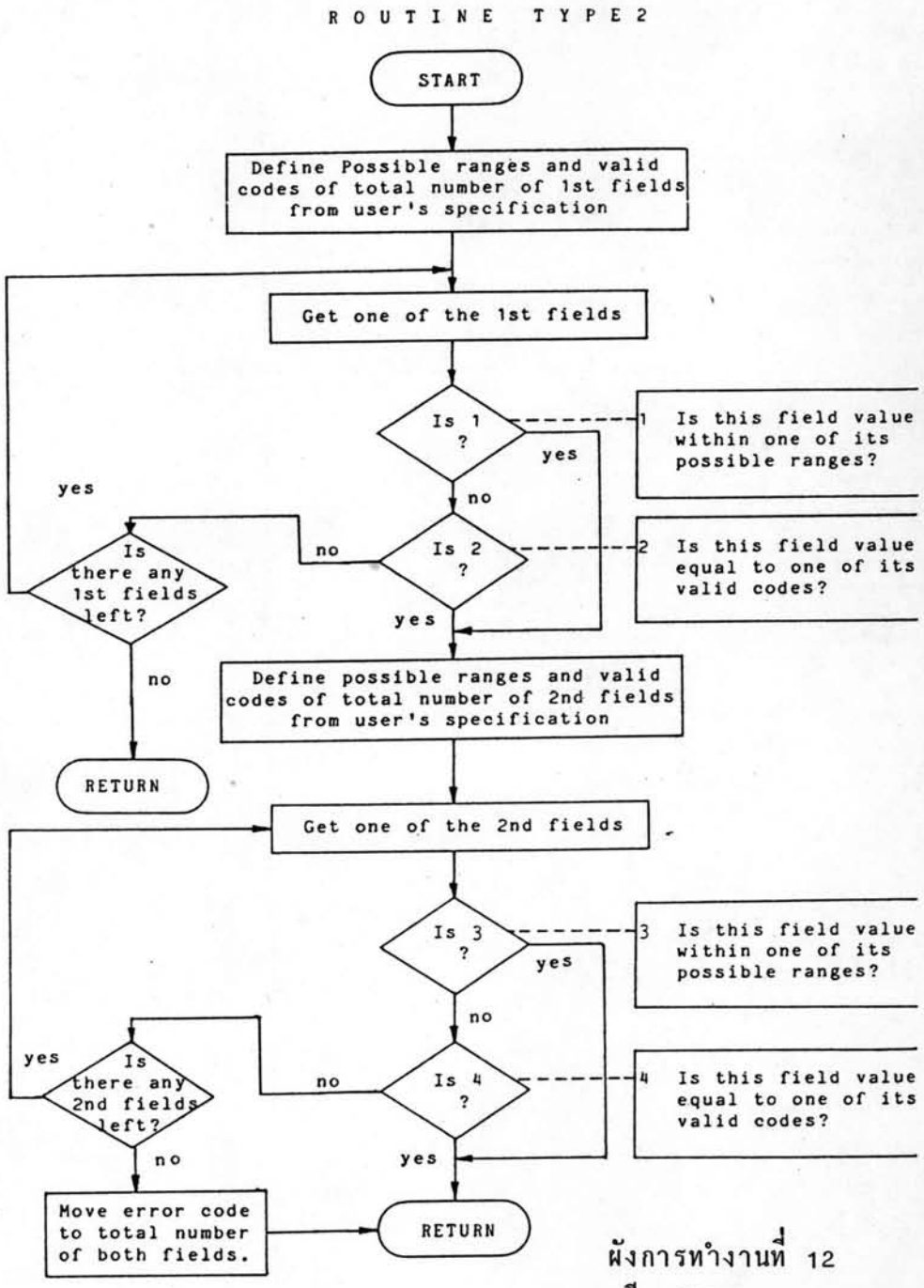
P R O G R A M R E L A T I V E



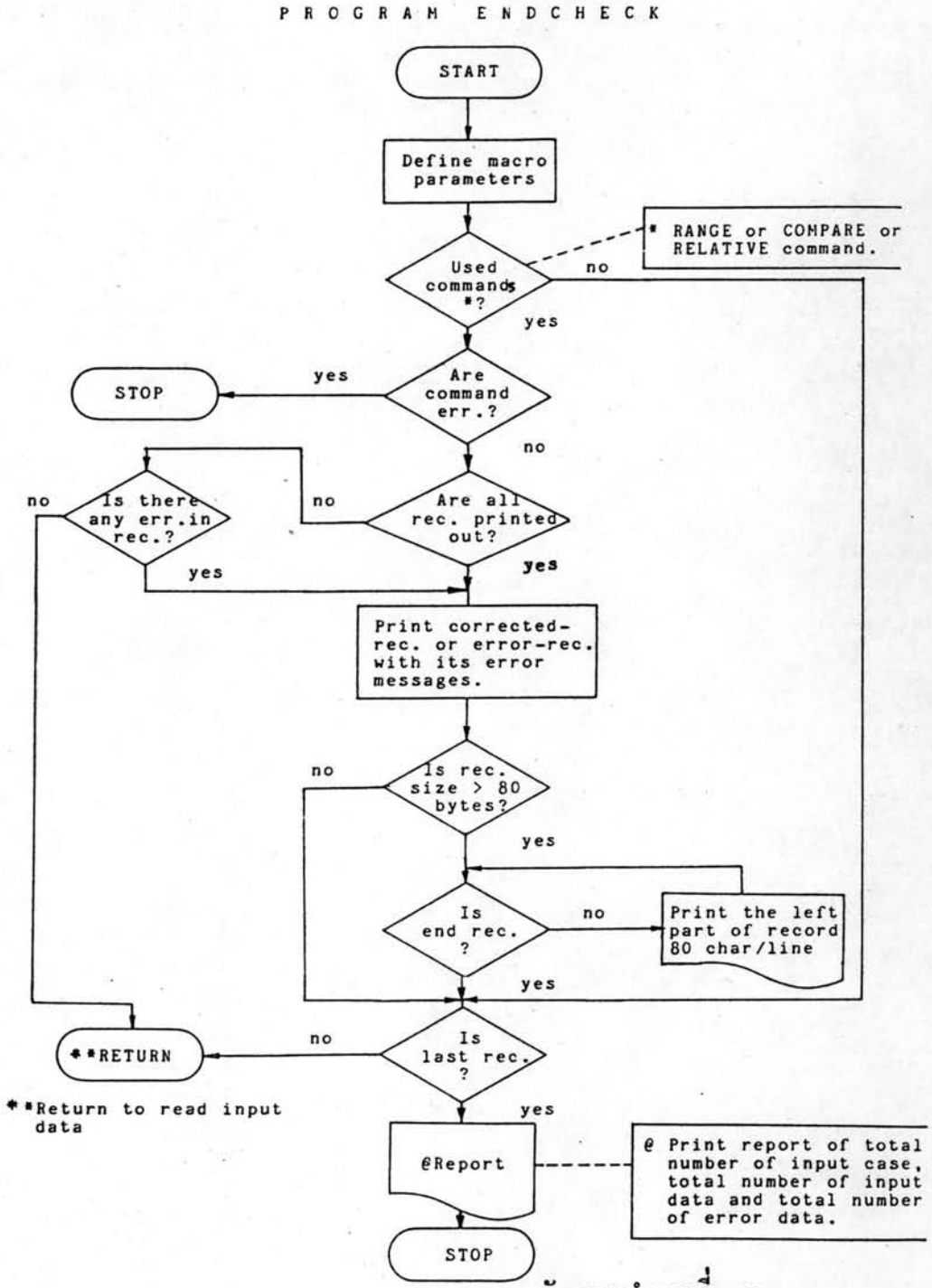
ผังการทำงานที่ 10
โปรแกรม RELATIVE



ผังการทำงานที่ 11
รูทีน TYPE1



ผังการทำงานที่ 12
รูทีน TYPE2



ผังการทำงานที่ 13
โปรแกรม ENDCHECK

ภาคผนวก ข.

แสดงโปรแกรมย่อยแต่ละโปรแกรมภายในระบบการทำงานของโปรแกรมสำเร็จรูป

ซียู-อีดิท

```
LOC  OBJECT CODE    ADDR1 ADDR2 STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                    1 ***************************************************************************
                                    2 *
                                    3
                                    4          MACRO
                                    5          IDCHECK &SYSIN=SYS012,                                          X
                                                       &A=(80,80),                                             X
                                                       &IDRANGE=(0,C),                                         X
                                                       &PROJECT=,                                              X
                                                       &MIN=,                                                  X
                                                       &MAX=,                                                  X
                                                       &C=,                                                    X
                                                       &L=,                                                    X
                                                       &CARDS=,                                                X
                                                       &INDEV=,                                                X
                                                       &OUTPUT=,                                               X
                                                       &REMARK=
                                    6 *
                                    7 ***************************************************************************
                                    8 * MODULE NAME : IDCHECK                                                 *
                                    9 * PURPOSE: 1.SET SOME MACRO PARAMETERS FROM USER'S SPECIFICATION.       *
                                   10 *          2.GENERATE THE BEGINNING PART OF AN ASSEMBLY PROGRAM.         *
                                   11 *            3.CALLING ONE OF THESE MODULES WORKAREA,ZEROFLDO,ONEFLD1   *
                                   12 *              AND TWOFLD2 TO GENERATE AN ASSEMBLY PROGRAM FOR READING  *
                                   13 *              INPUT DATA OF BOTH READING AND CHECKING IC OF INPUT      *
                                   14 *              DATA.                                                    *
                                   15 ***************************************************************************
                                   16 *
                                   17          GBLA  &AA
                                   18          GBLA  &OUT
                                   19          GBLA  &RECSIZA
                                   20          GBLA  &LG1,&LG2
                                   21          GBLA  &CG1,&CGG2
                                   22          GBLA  &NC,&NL
                                   23          GBLA  &NCARD
                                   24          GBLA  &IDRNG1,&IDRNG2
                                   25          GBLA  &IDCHK
                                   26          GBLA  &LCD
                                   27          GBLC  &PROJ
                                   28          GBLC  &REMARKX
                                   29          GBLC  &OUTPUTX
                                   30          GBLC  &MINN1,&MINN2
                                   31          GBLC  &MAXX1,&MAXX2
                                   32          LCLA  &NMIN,&NMAX
                                   33          LCLA  &LP,&LPP
                                   34          LCLA  &AB
                                   35 *
                                   36 ***************************************************************************
                                   37 *
                                   38 &OUTPUTX SETC  '&OUTPUT'
                                   39 &REMARKX SETC  '&REMARK'
                                   40 &IDCHK   SETA  0
```


ข.1 โปรแกรม IDCHECK

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-CE-CS
                                   41 &OUT      SETA  0
                                   42 &NC       SETA  N'&C
                                   43 &NL       SETA  N'&L
                                   44           AIF   (&NC EQ 0).GCNXT
                                   45 *
                                   46 *--------SET MINIMUM AND MAXIMUM VALUE OF CASE ID OF MULTIPLE REC./CASE
                                   47 *---------OR RECORD ID OF ONE REC. PER CASE.
                                   48 *
                                   49 &MINN1    SETC  '&MIN(1)'
                                   50 &MAXX1    SETC  '&MAX(1)'
                                   51 &CG1      SETA  &C(1)
                                   52 &LG1      SETA  &L(1)
                                   53 &IDRNG1   SETA  &IDRANGE(1)
                                   54           AIF   (&NC EQ 1).GCNXT
                                   55 *---------SET MINIMUM AND MAXIMUM VALUE OF RECORD ID OF  MULTIPLE
                                   56 *--------RECORDS PER CASE.
                                   57 *
                                   58 *
                                   59 &MINN2    SETC  '&MIN(2)'
                                   60 &MAXX2    SETC  '&MAX(2)'
                                   61 &CGG2     SETA  &C(2)
                                   62 &LG2      SETA  &L(2)
                                   63 &IDRNG2   SETA  &IDRANGE(2)
                                   64           AIF   (&NC EQ 2).GCNXT
                                   65           AGO   .EXIT
                                   66 .GCNXT    ANOP
                                   67 &NMIN     SETA  N'&MIN
                                   68 &NMAX     SETA  N'&MAX
                                   69           AIF   ('&CARDS' EQ '').IDCHK1
                                   70 &NCARD    SETA  &CARDS
                                   71 &LCD      SETA  K'&CARDS
                                   72 .IDCHK1   ANOP
                                   73 &AA       SETA  &A(1)
                                   74           AIF   ('&REMARKX' EQ 'YES').GCNXTX
                                   75 &RECSIZA  SETA  &AA
                                   76           AGO   .GCNXTY
                                   77 .GCNXTX   ANOP
                                   78 *--------COMPUTE THE RECORD SIZE OF RECORDS STORED IN WORKAREA WORKA.
                                   79 &RECSIZA  SETA  &NCARD*80
                                   80 .GCNXTY   ANOP
                                   81 &AB       SETA  &RECSIZA
                                   82           AIF   (&NC NE &NL).ERR0001
                                   83           AIF   (&NMIN NE &NMAX).ERR0002
                                   84           AIF   (&NMIN NE &NL).ERR0003
                                   85           AGO   .OUT1
                                   86 *
                                   87 ************************************************************************
                                   88 *
                                   89 .ERR0001 MNOTE *,' '
                                   90           MNOTE *,'NUMBER OF FIELDS IN C AND L OPERANDS ARE NOT'
                                   91           MNOTE *,'CORRESPOND.'
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    OS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                   92          MNOTE *,' '
                                   93          AGO   .STOP
                                   94 .ERRC002 MNOTE *,' '
                                   95          MNOTE *,'NUMBER OF FIELDS IN MIN AND MAX OPERANDS ARE NOT'
                                   96          MNOTE *,'CORRESPOND.'
                                   97          MNOTE *,' '
                                   98          AGO   .STOP
                                   99 .ERRC003 MNOTE *,' '
                                  100          MNOTE *,'NUMBER OF FIELDS IN MIN AND L OPERANDS ARE NOT '
                                  101          MNOTE *,'CORRESPOND.'
                                  102          MNOTE *,' '
                                  103          AGO   .STOP
                                  104 .EXIT    MNOTE *,' '
                                  105          MNOTE *,'IT IS OUT OF THE ABILITY OF THIS EDITING PACKAGE '
                                  106          MNOTE *,'TO CHECK IDENTIFICATION OF YOUR DATA.'
                                  107          MNOTE *,' '
                                  108 .STOP    ANOP
                                  109          AGO   .OUT2
                                  110 .OUT1    ANOP
                                  111          MNOTE *,' '
                                  112          MNOTE *,'IDCHECK COMMAND STATEMENT IS CORRECT.'
                                  113          MNOTE *,' '
                                  114 *
                                  115 *********************************************************************
                                  116 * FROM THIS PART IS THE BEGINNING OF ASSEMBLY PROGRAM WHICH THIS    *
                                  117 * PACKAGE WILL START TO EXECUTE.                                    *
                                  118 ***-------------------------------------**
                                  119 * REGISTERS USED:BASE REGISTERS ARE REG.8,9,10,11,12,13,14,15,1 AND 2*
                                  120 *            WORKING REGISTERS ARE REG. 3,4,5,6,7
                                  121 *            REG. 3 USED AS INPUT CASE COUNTER.                     *
                                  122 *              REG. 4 USED AS ERROR DATA COUNTING.                  *
                                  123 *              REG. 5 USED AS GENERAL PURPOSE REGISTER.             *
                                  124 *              REG. 6 USED AS PAGING COUNTER.                       *
                                  125 *              REG. 7 USED AS AN INPUT DATA COUNTER.                *
                                  126 *********************************************************************
                                  127          START 0
                                  128          BALR  8,0
                                  129          USING HERE,8,9,10,11,12
                                  130 HERE     LM    9,12,BASE
                                  131          B     FIRST
                                  132 BASE     DC    A(HERE+4096,HERE+8192,HERE+12288,HERE+16384)
                                  133 *
                                  134 *********************************************************************
                                  135 *
                                  136 * INPUT AND OUTPUT FILE USED FOR I/O DEVICE ARE FILE CARD, FILE TAPE *
                                  137 * AND FILE PRINT.                                                   *
                                  138 *********************************************************************
                                  139 *
                                  140          AIF   ('&INDEV' EQ 'CARD').CARD
                                  141          AIF   (&A(1) EQ &A(2)).AX
                                  142 *********************************************************************
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                  143 TAPE     DTFMT IOAREA1=TAPE1,IOAREA2=TAPE2,WORKA=YES,FILABL=NO,        X
                                                EOFADDR=STOP,DEVADDR=&SYSIN,BLKSIZE=&A(2),                    X
                                                RECSIZE=&A(1),RECFORM=FIXBLK
                                  144 TAPE1    DS    CL&A(2)
                                  145 TAPE2    DS    CL&A(2)
                                  146 CTAPE    DS    CL&A(1)
                                  147          AGO   .AY
                                  148 *-----------------------------*
                                  149 .CARD    ANOP
                                  150 TAPE     DTFCD IOAREA1=TAPE1,IOAREA2=TAPE2,WORKA=YES,BLKSIZE=80,       X
                                                EOFADDR=STOP,DEVADDR=SYSIPT,TYPEFLE=INPUT
                                  151 TAPE1    DS    CL80
                                  152 TAPE2    DS    CL80
                                  153 CTAPE    DS    CL80
                                  154          CDMOD IOAREA2=YES,WORKA=YES
                                  155          AGO   .AXX
                                  156 **-----------------------------**
                                  157 .AX      ANOP
                                  158 TAPE     DTFMT IOAREA1=TAPE1,IOAREA2=TAPE2,WORKA=YES,                  X
                                                EOFADDR=STOP,FILABL=NO,TYPEFLE=INPUT,                         X
                                                DEVADDR=&SYSIN,BLKSIZE=&A(1)
                                  159 TAPE1    DS    CL&A(1)
                                  160 TAPE2    DS    CL&A(1)
                                  161 CTAPE    DS    CL&A(1)
                                  162 .AY      ANOP
                                  163          MTMOD TYPEFLE=INPUT,WORKA=YES
                                  164 **-----------------------------**
                                  165 .AXX     ANOP
                                  166 PRINT    DTFPR DEVADDR=SYSLST,IOAREA1=PAREA1,IOAREA2=PAREA2,WORKA=YES, X
                                                CTLCHR=ASA,BLKSIZE=133
                                  167 PAREA1   DC    CL133' '
                                  168 PAREA2   DC    CL133' '
                                  169 BLANK    DC    CL80' '
                                  170 WPRINT   DS    0CL133
                                  171          DC    CL2' '
                                  172 CASENO   DS    CL7
                                  173 DS       DC    CL5' '
                                  174 PRT      DS    CL82
                                  175 DC       DC    CL4' '
                                  176 MESSAGE  DS    CL33
                                  177          PRMOD IOAREA2=YES,WORKA=YES,CTLCHR=ASA
                                  178 *
                                  179 ********************************************************************************
                                  180 *
                                  181 HEAD     DC    CL100'1         10        20        30        40        5X
                                                      0         60        70        80'
                                  182 HEAD1    DC    CL100'          90        100       110       120       13X
                                                      0         140       150       160'
                                  183 HEAD2    DC    CL100'          170       180       190       200       21X
                                                      0         220       230       240'
                                  184 HEAD3    DC    CL100'          250       260       270       280       29X
```

LOC OBJECT CODE ADDR1 ADDR2 STMT SOURCE STATEMENT DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09

```
                                                                0       300         310         320'
185 HEAD4    DC    CL100'                                    330         340         350         360         37X
                                                                0       390         400'
186 HEAD5    DC    CL100'                                    410         420         430         440         45X
                                                                0       470         480'
187 HEAD6    DC    CL100'                                    490         500         510         520         53X
                                                                0       550         560'
188 HEAD7    DC    CL100'                                    570         580         590         600         61X
                                                                0       630         640'
189 HEAD8    DC    CL100'                                    650         660         670         680         69X
                                                                0       710         720'
190 HEAD9    DC    CL100'                                    730         740         750         760         77X
                                                                0       790         800'
191 HEAD10   DC    CL100'                                    810         820         830         840         85X
                                                                0       870         880'
192 HEAD11   DC    CL100'                                    890         900         910         920         93X
                                                                0       950         960'
193 HEAD12   DC    CL100'                                    970         980         990         1000        10X
                                                               00      1030        1040'
194 HEAD13   DC    CL100'                                   1050        1060        1070        1080        10X
                                                               90      1110        1120'
195 HEAD14   DC    CL100'                                   1130        1140        1150        1160        11X
                                                               70      1190        1200'
196 HEAD15   DC    CL100'                                   1210        1220        1230        1240        12X
                                                               50      1270        1280'
197 HEAD16   DC    CL100'                                   1290        1300        1310        1320        13X
                                                               30      1350        1360'
198 HEAD17   DC    CL100'                                   1370        1380        1390        1400        14X
                                                               10      1430        1440'
199 HEAD18   DC    CL100'                                   1450        1460        1470        1480        14X
                                                               90      1510        1520'
200 HEAD19   DC    CL100'                                   1530        1540        1550        1560        15X
                                                               70      1590        1600'
201 HEAD20   DC    CL100'                                   1610        1620        1630        1640        16X
                                                               50      1670        1680'
202 HEAD21   DC    CL100'                                   1690        1700        1710        1720        17X
                                                               30      1750        1760'
203 HEAD22   DC    CL100'                                   1770        1780        1790        1800        18X
                                                               10      1830        1840'
204 HEAD23   DC    CL100'                                   1850        1860        1870        1880        18X
                                                               90      1910        1920'
205 HEAD24   DC    CL100'                                   1930        1940        1950        1960        19X
                                                               70      1990        2000'
206 HEAD25   DC    CL100'                                   2010        2020        2030        2040        20X
                                                               50      2070        2080'
207 HEAD26   DC    CL100'                                   2090        2100        2110        2120        21X
                                                               30      2150        2160'
208 HEAD27   DC    CL100'                                   2170        2180        2190        2200        22X
                                                               10      2230        2240'
209 HEAD28   DC    CL100'                                   2250        2260        2270        2280        22X
                                                               90      2310        2320'
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 12.42 82-04-28

                                 210 HEAD29   DC    CL100'        2330      2340      2350      2360      23X
                                                    70      2380      2390      2400'
                                 211 LINE     DC    CL100'---------+---------+---------+---------+---------+X
                                                    ---------+---------+---------+'
                                 212 SAVE1    DS    2F
                                 213 SAVE2    DS    F
                                 214 SAVE3    DS    2F
                                 215 SAVE4    DS    2F
                                 216 SAVE     DS    D
                                 217 SAVEX    DS    D
                                 218 SAVEY    DS    D
                                 219 SAVEZ    DS    D
                                 220 ABC      DC    CL8'0'
                                 221 ABCD     DC    CL8'0'
                                 222 FIFTY    DC    H'50'
                                 223 ATAPE    DS    CL1
                                 224 *--------WORKAREA 'WORKA' COMPOSES OF AREA NAME WTAPE(N).(N=1,2,....10)
                                 225 WTAPE1   DS    CL&A(1)
                                 226 WTAPE2   DS    CL80
                                 227 WTAPE3   DS    CL80
                                 228 WTAPE4   DS    CL80
                                 229 WTAPE5   DS    CL80
                                 230 WTAPE6   DS    CL80
                                 231 WTAPE7   DS    CL80
                                 232 WTAPE8   DS    CL80
                                 233 WTAPE9   DS    CL80
                                 234 WTAPE10  DS    CL80
                                 235 WTAPE11  DS    CL80
                                 236 WTAPE12  DS    CL80
                                 237 WTAPE13  DS    CL80
                                 238 WTAPE14  DS    CL80
                                 239 WTAPE15  DS    CL80
                                 240 WTAPE16  DS    CL80
                                 241 WTAPE17  DS    CL80
                                 242 WTAPE18  DS    CL80
                                 243 WTAPE19  DS    CL80
                                 244 WTAPE20  DS    CL80
                                 245 WTAPE21  DS    CL80
                                 246 WTAPE22  DS    CL80
                                 247 STAPE    DS   CL&A(1)
                                 248 WTAPE    DC    CL80' '
                                 249 DTAPE    DC    CL1' '
                                 250 ETAPE    DS    CL&A(1)
                                 251 BLANKX   DC    CL80' '
                                 252 AERR     DC    CL1' '
                                 253          DC    &AB.C' '
                                 254          DC    80C' '
                                 255 COMERR   DC    CL1' '
                                 256          DC    &AB.C' '
                                 257          DC    80C' '
                                 258 RELERR1  DC    CL1' '
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 12.42 82-06-28
                                  259            DC    &AB.C' '
                                  260            DC    80C' '
                                  261 RELERR2    DC    CL1' '
                                  262            DC    &AB.C' '
                                  263            DC    80C' '
                                  264 RELERR3    DC    CL1' '
                                  265            DC    &AB.C' '
                                  266            DC    80C' '
                                  267 CHE        DC    C'0'
                                  268 CHK        DC    CL1'0'
                                  269 CHR        DC    C'0'
                                  270 RNG        DC    C'0'
                                  271 COM        DC    C'0'
                                  272 REL        DC    C'0'
                                  273 UNDERLN    DC    150L1'_'
                                  274 SEQCASE    DC    CL7'SEQ.NO.'
                                  275 ERRMSGN    DC    CL13'ERROR MESSAGE'
                                  276 ********************************************************************************
                                  277            CNOP  0,4
                                  278 FIRST      EQU   *
                                  279            OPEN  TAPE,PRINT
                                  280            MVC   WPRINT+1(132),BLANK
                                  281            MVI   WPRINT,C'1'
                                  282            PUT   PRINT,WPRINT
                                  283            MVI   WPRINT,C' '
                                  284            AIF   ('&PROJECT' EQ '').PRINTH
                                  285 *--------PRINT PROJECT'S NAME HEADING.
                                  286            B     CROSS
                                  287 PROJNAME   DC    C&PROJECT
                                  288            CNOP  0,4
                                  289 CROSS      EQU   *
                                  290 &LP        SETA  K'&PROJECT
                                  291 &LP        SETA  &LP-2
                                  292            MVC   PRT(13),=C'PROJECT NAME:'
                                  293            MVC   PRT+13(&LP),PROJNAME
                                  294            L     15,=A(FORPRINT)
                                  295            BALR  14,15
                                  296            MVC   WPRINT+1(132),BLANK
                                  297            L     15,=A(FORPRINT)
                                  298            BALR  14,15
                                  299 .PRINTH    ANOP
                                  300 *--------PRINT LINE HEADING.
                                  301            AIF   (&RECSIZA GT 80).CALLX
                                  302            MVC   WPRINT+1(132),BLANK
                                  303            MVC   CASENO(7),SEQCASE
                                  304            MVC   PRT(82),HEAD
                                  305            MVC   MESSAGE(13),ERRMSGN
                                  306            L     15,=A(FORPRINT)
                                  307            BALR  14,15
                                  308            MVC   WPRINT+1(132),BLANK
                                  309            MVC   CASENO(7),UNDERLN
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                                  DOS/VS ASSEMBLER REL 34.0 12.42 82-05-28
                                  310            MVC   PRT(80),LINE
                                  311            MVC   MESSAGE(13),UNDERLN
                                  312            L     15,=A(FORPRINT)
                                  313            BALR  14,15
                                  314 .CALLX     ANOP
                                  315            LA    3,0
                                  316            LA    4,0
                                  317            LA    5,0
                                  318            LA    7,0
                                  319            AIF   (&NC EQ 0 AND '&REMARKX' EQ 'YES').WORKA
                                  320            AIF   (&NC EQ 0).ZERO
                                  321            AIF   (&NC EQ 1).ONE
                                  322            AIF   (&NC EQ 2).TWO
                                  323 .WORKA     ANOP
                                  324            WORKAREA
                                  325            AGO   .OUT
                                  326 .ZERO      ANOP
                                  327            ZEROFLDO
                                  328            AGO   .OUT
                                  329 .ONE       ANOP
                                  330            ONEFLD1
                                  331            AGO   .OUT
                                  332 .TWO       ANOP
                                  333            TWOFLD2
                                  334            AGO   .OUT
                                  335 .OUT2      ANOP
                                  336 &IDCHK     SETA  1
                                  337            ENDCHECK
                                  338 .OUT       ANOP
                                  339            MEND
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    OOS/VS ASSEMELER REL 34.0 18.14 82-06-05
                                  330 *
                                  331 ********************************************************************************
                                  332 *
                                  333          MACRO
                                  334          WORKAREA
                                  335 *
                                  336 ********************************************************************************
                                  337 * MODULE NAME: WORKAREA                                                       *
                                  338 * PURPOSE : TO READ INPUT RECORDS OF MULITPLE RECORDS PER CASE                *
                                  339 *           TO STORE IN WORKAREA WORKA.                                       *
                                  340 ********************************************************************************
                                  341 *
                                  342          GBLA  &LG2
                                  343          GBLA  &NCARD
                                  344          GBLA  &NCARDX
                                  345          LCLA  &N
                                  346          LCLA  &LL
                                  347 &LL      SETA  &LG2
                                  348 &NCARDX  SETA  &NCARD
                                  349          B     READ2
                                  350 FORPRINT EQU *
                                  351 *--------PRINT ROUTINE
                                  352          STM   14,15,SAVE1
                                  353          PUT   PRINT,WPRINT
                                  354          MVC   WPRINT+1(132),BLANK
                                  355          LM    14,15,SAVE1
                                  356          BR    14
                                  357 READ2    EQU   *
                                  358 &N       SETA  1
                                  359 .READ2   ANOP
                                  360          AIF   (&N GT &NCARDX).EQUL
                                  361 .MOVE    ANOP
                                  362          GET   TAPE,CTAPE
                                  363          MVC   WTAPE&N.(80),CTAPE
                                  364          LA    7,1(7)
                                  365 &N       SETA  &N+1
                                  366          AGO   .READ2
                                  367 .EQUL    ANOP
                                  368 EQUL     EQU   *
                                  369          LA    3,1(3)
                                  370          B     LITERAL
                                  371          LTORG
                                  372          CNOP  0,4
                                  373 LITERAL  EQU   *
                                  374          MEND
```

ข.2 โปรแกรม WORKAREA

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    OS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                  376 *
                                  377 ********************************************************************************
                                  378 *
                                  379          MACRO
                                  380          ZEROFLDO
                                  381 *
                                  382 ********************************************************************************
                                  383 * MODULE NAME : ZEROFLDO                                                       *
                                  384 * PURPOSE : TO GENERATE AN ASSEMBLY PART FOR READING AN INPUT DATA.  *
                                  385 ********************************************************************************
                                  386 *
                                  387          GBLA  &AA
                                  388          LCLA  &AB
                                  389 &AB      SETA  &AA
                                  390 *
                                  391 ********************************************************************************
                                  392 *
                                  393          CNOP  0,4
                                  394 READ2    EQU   *
                                  395          STM   1,2,SAVE3
                                  396          STM   14,15,SAVE4
                                  397          GET   TAPE,CTAPE
                                  398          LM    1,2,SAVE3
                                  399          LM    14,15,SAVE4
                                  400          MVC   WTAPE1(&AB),CTAPE
                                  401          LA    7,1(7)
                                  402          LA    3,1(3)
                                  403          B     EQUL
                                  404 FORPRINT EQU   *
                                  405 *--------PRINT ROUTINE
                                  406          STM   14,15,SAVE1
                                  407          PUT   PRINT,WPRINT
                                  408          MVC   WPRINT+1(132),BLANK
                                  409          LM    14,15,SAVE1
                                  410          AIF   (&AB GT 80).NOCOUN1
                                  411          LA    6,1(6)
                                  412 .NOCOUN1 ANOP
                                  413          BR    14
                                  414          CNOP  0,4
                                  415 EQUL     EQU   *
                                  416          B     LITERAL
                                  417          LTORG
                                  418          CNOP  0,4
                                  419 LITERAL  EQU   *
                                  420          MEND
```


ข.3 โปรแกรม ZEROFLDO

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                  422 *
                                  423 *********************************************************************
                                  424 *
                                  425          MACRO
                                  426          ONEFLD1
                                  427 *
                                  428 *********************************************************************
                                  429 * MODULE NAME : ONEFLD1                                             *
                                  430 * PURPOSE : TO GENERATE AN ASSEMBLY PART FOR READING AND CHECKING   *
                                  431 *           ID. OF ONE RECORD IN A CASE.                            *
                                  432 * ABILITY OF CHECKING:                                              *
                                  433 *          1.CHECK ID. OUT OF RANGE SPECIFICATION.                  *
                                  434 *          2.CHECK NUMERIC VALUE IN ID.                             *
                                  435 *          3.CHECK ERROR IN ID.                                     *
                                  436 *          4.CHECK MISSING RECORD.                                  *
                                  437 *          5.CHECK DUPLICATED ID OR DUPLICATED DATA.                *
                                  438 *********************************************************************
                                  439 *
                                  440          GBLA  &AA,&IDRNG1,&CG1,&LG1
                                  441          GBLC  &MINN1,&MAXX1
                                  442          LCLA  &AB,&I,&LL,&CG
                                  443          LCLA  &AIDRNG
                                  444 &LL      SETA  &LG1
                                  445 &CG      SETA  &CG1
                                  446 &AB      SETA  &AA
                                  447 &AIDRNG  SETA  &IDRNG1
                                  448          B     STEP1
                                  449 *
                                  450 *********************************************************************
                                  451 *
                                  452 SMIN     DC    C'&MINN1'
                                  453 SMAX     DC    C'&MAXX1'
                                  454 IDEN1    DC    CL&LL'0'
                                  455 OLDID1   DC    PL&LL'0'
                                  456 PIDEN1   DC    PL&LL'0'
                                  457 PIDRNG   DC    P'&IDRNG1'
                                  458 *
                                  459 *********************************************************************
                                  460 *
                                  461          CNOP  0,4
                                  462 STEP1    EQU   *
                                  463 READ1    EQU   *
                                  464 *---------READ ONLY FIRST RECORD OF ALL INPUT DATA.
                                  465          STM   14,15,SAVE4
                                  466          GET   TAPE,CTAPE
                                  467          LM    14,15,SAVE4
                                  468          MVC   WTAPE1(&AE),CTAPE
                                  469          LA    7,1(7)
                                  470          LA    3,1(3)
                                  471          MVC   IDEN1(&LL),ATAPE+&CG
                                  472          CLC   IDEN1(&LL),SMIN
```

ข.3 โปรแกรม ONEFLD1

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    OS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                  473            BL    RNGERR1
                                  474            CLC   IDEN1(&LL),SMAX
                                  475            BH    RNGERR1
                                  476            ST    5,SAVE
                                  477 &I         SETA  1
                                  478            LA    5,IDEN1
                                  479 .STEP2     ANOP
                                  480            CLI   0(5),C'0'
                                  481            BL    NTNUMER1
                                  482            CLI   0(5),C'9'
                                  483            BH    NTNUMER1
                                  484            AIF   (&I GE &LG1).STEP3
                                  485 &I         SETA  &I+1
                                  486            LA    5,1(5)
                                  487            AGO   .STEP2
                                  488 .STEP3     ANOP
                                  489            L     5,SAVE
                                  490            PACK  OLDID1(&LL),IDEN1
                                  491            MVC   STAPE(&AB),WTAPE1
                                  492            B     EQUL
                                  493 RNGERR1    EQU   *
                                  494            PRINTREC MSGNERR='ID OUT OF RANGE'
                                  495            MVC   WPRINT+1(132),BLANK
                                  496            L     15,=A(FORPRINT)
                                  497            BALR  14,15
                                  498            A     4,=F'1'
                                  499            B     READ1
                                  500 NTNUMER1   EQU   *
                                  501            PRINTREC MSGNERR='ID NOT NUMERIC'
                                  502            MVC   WPRINT+1(132),BLANK
                                  503            L     15,=A(FORPRINT)
                                  504            BALR  14,15
                                  505            A     4,=F'1'
                                  506            B     READ1
                                  507 *
                                  508 ********************************************************************************
                                  509 *
                                  510 READ2      EQU   *
                                  511 *--------READ THE REMAINING RECORDS.
                                  512            STM   1,2,SAVE3
                                  513            STM   14,15,SAVE4
                                  514            GET   TAPE,CTAPE
                                  515            LM    1,2,SAVE3
                                  516            LM    14,15,SAVE4
                                  517            MVC   WTAPE1(&AB),CTAPE
                                  518            LA    7,1(7)
                                  519            LA    3,1(3)
                                  520            MVC   IDEN1(&LL),ATAPE+&CG
                                  521            CLC   IDEN1(&LL),SMIN
                                  522            BL    RNGERR2
                                  523            CLC   IDEN1(&LL),SMAX
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    OS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                  524            BH    RNGERR2
                                  525            LA    5,IDEN1
                                  526 &I         SETA  1
                                  527 .STEP4     ANOP
                                  528            CLI   0(5),C'0'
                                  529            BL    NTNUMER2
                                  530            CLI   0(5),C'9'
                                  531            BH    NTNUMER2
                                  532            AIF   (&I GE &LG1).STEP5
                                  533 &I         SETA  &I+1
                                  534            LA    5,1(5)
                                  535            AGO   .STEP4
                                  536 .STEP5     ANOP
                                  537            AIF   (&AIDRNG NE 0).HRANGE
                                  538 .NRANGE    ANOP
                                  539 *
                                  540 * ROUTINE NRANGE IS THE ROUTINE FOR CHECKING ID OF DATA WHICH HAVE    *
                                  541 * NOT EQUAL RANGE BETWEEN ID.                                          *
                                  542 *
                                  543            PACK  PIDEN1(&LL),IDEN1
                                  544            CP    OLDID1(&LL),PIDEN1
                                  545            BH    IDERR1
                                  546            BL    STEP61
                                  547            CLC   STAPE(&AB),WTAPE1
                                  548            BNE   IDDUP
                                  549            B     DATADUP
                                  550 STEP61     EQU   *
                                  551            PACK  OLDID1(&LL),IDEN1
                                  552            B     EQUL
                                  553 ***-------------------------------------**
                                  554 .HRANGE    ANOP
                                  555 *
                                  556 * ROUTINE HRANGE IS THE ROUTINE FOR CHECKING ID OF DATA WHICH HAVE    *
                                  557 * EQUAL RANGE BETWEEN ID.                                             *
                                  558 *
                                  559            PACK  PIDEN1(&LL),IDEN1
                                  560            AP    OLDID1(&LL),PIRNG
                                  561            CP    OLDID1(&LL),PIDEN1
                                  562            BL    MISSERR1
                                  563            BH    DUP
                                  564            B     EQUL
                                  565 RNGERR2    EQU   *
                                  566            PRINTREC MSGNERR='ID OUT OF RANGE'
                                  567            MVC   WPRINT+1(132),BLANK
                                  568            L     15,=A(FORPRINT)
                                  569            BALR  14,15
                                  570            A     4,=F'1'
                                  571            B     READ2
                                  572 NTNUMER2   EQU   *
                                  573            PRINTREC MSGNERR='ID NOT NUMERIC'
                                  574            MVC   WPRINT+1(132),BLANK
```

```
                        586          L     15,=A(FORPRINT)
                        587          BALR  14,15
                        588          A     4,=F'1'
                        589          B     READ2
                        590 MISSERR1 EQU   *
                        591          PRINTREC CODE=1,MSGNERR='PRECEEDING DATA'
                        592          PRINTREC CODE=2,MSGNERR='MISSING DATA'
                        593          PRINTREC MSGNERR='NEXT DATA'
                        594          PACK  OLDID1(&LL),IDEN1
                        595          MVC   WPRINT+1(132),BLANK
                        596          L     15,=A(FORPRINT)
                        597          BALR  14,15
                        598          B     EQUL
                        599 DUP      EQU   *
                        600          CLC   STAPE(&AB),NTAPE1
                        601          BNE   IDDUP
                        602          B     DATADUP
                        603 IDDUP    EQU   *
                        604          PRINTREC CODE=1,MSGNERR='PRECEEDING DATA'
                        605          PRINTREC MSGNERR='DUPLICATED ID'
                        606          MVC   WPRINT+1(132),BLANK
                        607          L     15,=A(FORPRINT)
                        608          BALR  14,15
                        609          PACK  OLDID1(&LL),IDEN1
                        610          MVC   STAPE(&AB),CTAPE
                        611          A     4,=F'1'
                        612          B     READ2
                        613 DATADUP  EQU   *
                        614          PRINTREC CODE=1,MSGNERR='PRECEEDING DATA'
                        615          PRINTREC MSGNERR='DUPLICATED DATA'
                        616          MVC   WPRINT+1(132),BLANK
                        617          L     15,=A(FORPRINT)
                        618          BALR  14,15
                        619          PACK  OLDID1(&LL),IDEN1
                        620          A     4,=F'1'
                        621          B     READ2
                        622 IDERR1   EQU   *
                        623          PRINTREC MSGNERR='ERROR IN ID'
                        624          MVC   WPRINT+1(132),BLANK
                        625          L     15,=A(FORPRINT)
                        626          BALR  14,15
                        627          A     4,=F'1'
                        628          B     READ2
                        629 FORPRINT EQU   *
                        630 *--------PRINT ROUTINE
                        631          STM   14,15,SAVE1
                        632          PUT   PRINT,WPRINT
                        633          MVC   WPRINT+1(132),BLANK
                        634          LM    14,15,SAVE1
                        635          AIF   (&AB GT 80).NOCOUN2
                        636          LA    6,1(6)
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT
                                  637 .NOCOMN2 ANOP
                                  638          BR     14
                                  639 EQUL     EQU    *
                                  640          MVC    STAPE(&AB),WTAPE1
                                  641          B      LITERAL
                                  642          LTORG
                                  643          CNOP   0,4
                                  644 LITERAL  EQU    *
                                  645          MEND
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                   634 *
                                   635 ********************************************************************************
                                   636 *
                                   637          MACRO
                                   638          TWOFLD2
                                   639 *
                                   640 ********************************************************************************
                                   641 * MODULE NAME : TWOFLD2                                                        *
                                   642 * PURPOSE : TO GENERATE AN ASSEMBLY PART FOR READING AND CHECKING ID          *
                                   643 *           MULTIPLE RECORDS IN A CASE.                                        *
                                   644 * ABILITY OF CHECKING:                                                         *
                                   645 *          1.CHECK ID OUT OF RANGE SPECIFIED.                                  *
                                   646 *          2.CHECK NOT NUMERIC VALUE IN ID.                                    *
                                   647 *          3.CHECK ERROR IN ID.                                                *
                                   648 *          4.CHECK MISSING RECORD.                                             *
                                   649 *          5.CHECK DUPLICATED ID OR DUPLICATED DATA.                           *
                                   650 ********************************************************************************
                                   651 *
                                   652          GBLA  &AA
                                   653          GBLA  &NCARD
                                   654          GBLA  &CG1,&CGG2
                                   655          GBLA  &LG1,&LG2
                                   656          GBLA  &IDRNG1,&IDRNG2
                                   657          GBLC  &REMARKX
                                   658          GBLC  &MINN1,&MINN2
                                   659          GBLC  &MAXX1,&MAXX2
                                   660          LCLA  &AIDRNG1,&AIDRNG2
                                   661          LCLA  &AB,&I,&N,&LL1,&LL2
                                   662          LCLA  &LL3
                                   663 *
                                   664 ********************************************************************************
                                   665 *
                                   666 &LL1      SETA  &LG1
                                   667 &LL2      SETA  &LG2
                                   668 &AB       SETA  &AA
                                   669 &AIDRNG1 SETA  &IDRNG1
                                   670 &AIDRNG2 SETA  &IDRNG2
                                   671 &LL3      SETA  &LL2-1
                                   672          B     SECOND
                                   673 *
                                   674 ********************************************************************************
                                   675 IDER      DC    C'0'
                                   676 SMIN1     DC    C'&MINN1'
                                   677 SMIN2     DC    C'&MINN2'
                                   678 SMAX1     DC    C'&MAXX1'
                                   679 SMAX2     DC    C'&MAXX2'
                                   680 IDEN1     DS    CL&LL1
                                   681 IDEN2     DS    CL&LL2
                                   682 PMIN1     DC    P'&MINN1'
                                   683 PMIN2     DC    P'&MINN2'
                                   684 PMAX1     DC    P'&MAXX1'
```


ข.5 โปรแกรม TWOFLD2

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                  685 PMAX2     DC     P'&MAXX2'
                                  686 OLDID1    DC     PL&LL1'0'
                                  687 CLCIC2    DC     PL&LL2'0'
                                  688 PIDEN1    DC     PL&LL1'0'
                                  689 PIDEN2    DC     PL&LL2'0'
                                  690 CNTR      DC     P'&NCARD'
                                  691 CNTR1     DC     PL&LL2'0'
                                  692 COUP      DC     PL&LL2'0'
                                  693 PIDRNG1   DC     P'&IDRNG1'
                                  694 PIDRNG2   DC     P'&IDRNG2'
                                  695 *
                                  696 ********************************************************************************
                                  697           CNOP   0,4
                                  698 SECOND    EQU    *
                                  699 READ1     EQU    *
                                  700 *---------READ ONLY FIRST RECORD OF ALL INPUT DATA.
                                  701           STM    14,15,SAVE4
                                  702           GET    TAPE,CTAPE
                                  703           LM     14,15,SAVE4
                                  704           MVC    WTAPE1(&AB),CTAPE
                                  705           MVC    WTAPE(&AB),CTAPE
                                  706           LA     7,1(7)
                                  707           LA     3,1(3)
                                  708           MVC    IDEN1(&LL1),ATAPE+&CG1
                                  709           MVC    IDEN2(&LL2),ATAPE+&CGG2
                                  710           CLC    IDEN1(&LL1),SMIN1
                                  711           BL     RNGERR1
                                  712           CLC    IDEN2(&LL2),SMIN2
                                  713           BL     RNGERR1
                                  714           CLC    IDEN1(&LL1),SMAX1
                                  715           BH     RNGERR1
                                  716           CLC    IDEN2(&LL2),SMAX2
                                  717           BH     RNGERR1
                                  718 &I        SETA   1
                                  719           LA     5,IDEN1
                                  720 .STEP2    ANOP
                                  721           CLI    0(5),C'0'
                                  722           BL     NTNUMER1
                                  723           CLI    0(5),C'9'
                                  724           BH     NTNUMER1
                                  725           AIF    (&I GE &LC1).STEP3
                                  726           LA     5,1(5)
                                  727 &I        SETA   &I+1
                                  728           AGO    .STEP2
                                  729 .STEP3    ANOP
                                  730 &I        SETA   1
                                  731           SR     5,5
                                  732           LA     5,IDEN2
                                  733 .STEP4    ANOP
                                  734           CLI    0(5),C'0'
                                  735           BL     NTNUMER1
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    OS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                  736            CLI   0(5),C'9'
                                  737            BH    NTNUMER1
                                  738            AIF   (&I GE &LG2).STEP5
                                  739 &I         SETA  &I+1
                                  740            LA    5,1(5)
                                  741            AGO   .STEP4
                                  742 .STEP5     ANOP
                                  743            PACK  OLDID1(&LL1),IDEN1
                                  744            PACK  OLDID2(&LL2),IDEN2
                                  745            AP    CNTR1(&LL2),=P'1'
                                  746            AP    OLDID2(&LL2),PIDRNG2
                                  747            MVC   STAPE(&AE),WTAPE1
                                  748            B     ENDREAD1
                                  749 RNGERR1    EQU   *
                                  750            PRINTREC MSGNERR='ID OUT OF RANGE'
                                  751            MVC   WPRINT+1(132),BLANK
                                  752            L     15,=A(FCRPRINT)
                                  753            BALR  14,15
                                  754            A     4,=F'1'
                                  755            AP    CNTR1(&LL2),=P'1'
                                  756            MVI   IDER,C'1'
                                  757            B     READ1
                                  758 NTNUMER1   EQU   *
                                  759            PRINTREC MSGNERR='ID NOT NUMERIC'
                                  760            L     15,=A(FCRPRINT)
                                  761            BALR  14,15
                                  762            A     4,=F'1'
                                  763            AP    CNTR1(&LL2),=P'1'
                                  764            MVI   IDER,C'1'
                                  765            B     READ1
                                  766 ENDREAD1   EQU   *
                                  767            AIF   ('&REMARK)' EQ 'YES').READ2
                                  768            B     EQULY
                                  769 ************************************************************************
                                  770 .READ2     ANOP
                                  771 READ2      EQU   *
                                  772            AIF   ('&REMARK)' NE 'YES').READ3
                                  773            ST    13,SAVE2
                                  774            LA    13,ATAPE+1
                                  775 .READ3     ANOP
                                  776 READ3      EQU   *
                                  777 *--------READ THE REMAINING RECORDS.
                                  778            STM   1,2,SAVE3
                                  779            STM   14,15,SAVE4
                                  780            GET   TAPE,CTAPE
                                  781            MVC   WTAPE1(&AE),CTAPE
                                  782            LM    1,2,SAVE3
                                  783            LM    14,15,SAVE4
                                  784            LA    7,1(7)
                                  785            MVC   IDEN1(&LL1),ATAPE+&CG1
                                  786            MVC   IDEN2(&LL2),ATAPE+&CGG2
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09

                                  787           CLC   IDEN1(&LL1),SMIN1
                                  788           BL    RNGERR2
                                  789           CLC   IDEN2(&LL2),SMIN2
                                  790           BL    RNGERR2
                                  791           CLC   IDEN1(&LL1),SMAX1
                                  792           BH    RNGERR2
                                  793           CLC   IDEN2(&LL2),SMAX2
                                  794           BH    RNGERR2
                                  795           ST    5,SAVE
                                  796           LA    5,IDEN1
                                  797 &I        SETA  1
                                  798 .STEP6    ANOP
                                  799           CLI   0(5),C'0'
                                  800           BL    NTNUMER2
                                  801           CLI   0(5),C'9'
                                  802           BH    NTNUMER2
                                  803           AIF   (&I GE &LG1).STEP7
                                  804 &I        SETA  &I+1
                                  805           LA    5,1(5)
                                  806           AGO   .STEP6
                                  807 .STEP7    ANOP
                                  808 &I        SETA  1
                                  809           SR    5,5
                                  810           LA    5,IDEN2
                                  811 .STEP8    ANOP
                                  812           CLI   0(5),C'0'
                                  813           BL    NTNUMER2
                                  814           CLI   0(5),C'9'
                                  815           BH    NTNUMER2
                                  816           AIF   (&I GE &LG2).STEP9
                                  817 &I        SETA  &I+1
                                  818           LA    5,1(5)
                                  819           AGO   .STEP8
                                  820 .STEP9    ANOP
                                  821           L     5,SAVE
                                  822 *
                                  823 .SPECCD   ANOP
                                  824           AIF   (&AIDRNG1 EQ 0).SPECCD2
                                  825 *
                                  826 ********************************
                                  827 .SPECCD1 ANOP
                                  828 SPECCD1  EQU   *
                                  829 * ROUTINE SPECCD1,CHECK COMPLETENESS OF RECORD WHICH HAVE EQUAL RANGE*
                                  830 * BETWEEN ID OF CASE.                                               *
                                  831           CP    CNTR1(&LL2),CNTR
                                  832           BNL   STEP10
                                  833           PACK  PIDEN1(&LL1),IDEN1
                                  834           CP    OLDID1(&LL1),PIDEN1
                                  835           BL    MISSERR1
                                  836           BH    STEP11
                                  837           PACK  PIDEN2(&LL2),IDEN2
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 12.42 82-06-28

                                851            CP     OLDID2(&LL2),PIDEN2
                                852            BL     MISSERR2
                                853            BH     DUPERR1
                                854            AP     CNTR1(&LL2),=P'1'
                                855            AP     OLDID2(&LL2),PIDRNG2
                                856            B      EQUL
                                857 MISSERR2   EQU    *
                                858            PRINTREC CODE=1,MSGNERR='PRECEEDING DATA'
                                859            PRINTREC CODE=2,MSGNERR='MISSING DATA WITHIN THIS CASE'
                                860            PRINTREC MSGNERR='NEXT DATA'
                                861            MVC    WPRINT+1(132),BLANK
                                862            L      15,=A(FORPRINT)
                                863            BALR   14,15
                                864            SP     PIDEN2(&LL2),OLDID2
                                865            AP     CNTR1(&LL2),PIDEN2
                                866            AP     CNTR1(&LL2),=P'1'
                                867            PACK   OLDID2(&LL2),IDEN2
                                868            AP     OLDID2(&LL2),PIDRNG2
                                869            MVI    IDER,C'1'
                                870            B      EQUL
                                871 DUPERR1    EQU    *
                                872            PRINTREC CODE=1,MSGNERR='PRECEEDING DATA'
                                873            CLC    STAPE(&AB),WTAPE1
                                874            BE     DUPDATA1
                                875            PRINTREC MSGNERR='DUPLICATED ID'
                                876            B      DUPERR11
                                877 DUPDATA1   EQU    *
                                878            PRINTREC MSGNERR='DUPLICATED DATA'
                                879 DUPERR11   EQU    *
                                880            MVC    WPRINT+1(132),BLANK
                                881            L      15,=A(FORPRINT)
                                882            BALR   14,15
                                883            PACK   OLDID2(&LL2),IDEN2
                                884            AP     OLDID2(&LL2),PIDRNG2
                                885            AP     CDUP(&LL2),=P'1'
                                886            AP     CNTR1(&LL2),=P'1'
                                887            A      4,=F'1'
                                888            MVI    IDER,C'1'
                                889            MVC    STAPE(&AB),CTAPE
                                890            B      READ3
                                891 STEP11     EQU    *
                                892            CLC    IDEN2(&LL2),SMAX2
                                893            BNE    IDERR1
                                894            PRINTREC CODE=1,MSGNERR='PRECEEDING DATA'
                                895            CLC    STAPE(&AB),WTAPE1
                                896            BE     DATADUP2
                                897            PRINTREC MSGNERR='DUPLICATED ID'
                                898            B      STEP111
                                899 DATADUP2   EQU    *
                                900            PRINTREC MSGNERR='DUPLICATED DATA'
```

```
                        902          MVC   WPRINT+1(132),BLANK
                        903          L     15,=A(FORPRINT)
                        904          BALR  14,15
                        905          A     4,=F'1'
                        906          PACK  OLDID2(&LL2),SMIN2
                        907          MVC   STAPE(&AB),CTAPE
                        908          B     READ3
                        909 IDERR1   EQU   *
                        910          PRINTREC MSGNERR='ERROR IN ID'
                        911          A     4,=F'1'
                        912          MVI   IDER,C'1'
                        913          B     READ3
                        914 MISSERR1 EQU   *
                        915          PRINTREC CODE=1,MSGNERR='PRECEEDING DATA'
                        916          PRINTREC CODE=2,                                X
                                            MSGNERR='MISSING FIRST OR LAST DATA'
                        917          SP    CNTR1(&LL2),CNTR1
                        918          LA    13,ATAPE+1
                        919          LA    3,1(3)
                        920          MVC   WPRINT+1(132),BLANK
                        921          L     15,=A(FORPRINT)
                        922          BALR  14,15
                        923          CLC   IDEN2(&LL2),SMIN2
                        924          BL    IDERR2
                        925          BH    MISSER11
                        926          AP    OLDID1(&LL1),PIDRNG1
                        927          PACK  OLDID2(&LL2),IDEN2
                        928          AP    OLDID2(&LL2),PIDRNG2
                        929          MVC   WTAPE(&AB),CTAPE
                        930          MVC   STAPE(&AB),CTAPE
                        931          AP    CNTR1(&LL2),=P'1'
                        932          AIF   ('&REMARKX' EQ 'YES').GTRD3
                        933          B     EQULY
                        934          AGO   .GTRD3X
                        935 .GTRD3   ANOP
                        936          B     READ3
                        937 .GTRD3X  ANOP
                        938 IDERR2   EQU   *
                        939          PRINTREC MSGNERR='ERROR IN ID'
                        940          PACK  OLDID1(&LL1),IDEN1
                        941          PACK  OLDID2(&LL2),SMIN2
                        942          AP    OLDID2(&LL2),PIDRNG2
                        943          AP    CNTR1(&LL2),=P'1'
                        944          A     4,=F'1'
                        945          MVI   IDER,C'1'
                        946          B     READ3
                        947 MISSER11 EQU   *
                        948          PRINTREC MSGNERR='MISSING FIRST DATA OF THIS CASE'
                        949          PACK  PIDEN2(&LL2),IDEN2
                        950          SP    PIDEN2(&LL2),PMIN2
                        951          AP    CNTR1(&LL2),PIDEN2
```

```
                        952            AP     CNTR1(&LL2),=P'1'
                        953            AP     OLDID1(&LL1),PIDRNG1
                        954            PACK   OLDID2(&LL2),IDEN2
                        955            AP     OLDID2(&LL2),PIDRNG2
                        956            MVI    IDER,C'1'
                        957            MVC    WPRINT+1(132),BLANK
                        958            L      15,=A(FORPRINT)
                        959            BALR   14,15
                        960            B      EQUL
                        961 STEP10     EQU    *
                        962            CP     COUP(&LL2),=P'0'
                        963            BE     STEP12
                        964            PACK   PIDEN1(&LL1),IDEN1
                        965            CP     OLDID1(&LL1),PIDEN1
                        966            BNE    IDERR3
                        967            PACK   PIDEN2(&LL2),IDEN2
                        968            CP     PIDEN2(&LL2),PMAX2
                        969            BH     IDERR3
                        970            SP     COUP(&LL2),=P'1'
                        971            AIF    ('&REMARKX' EQ 'YES').GTRD31
                        972            B      EQULY
                        973            AGO    .GTRD32
                        974 .GTRD31    ANOP
                        975            B      READ3
                        976 .GTRD32    ANOP
                        977 IDERR3     EQU    *
                        978            PRINTREC MSGNERR='ERROR IN ID'
                        979            MVC    WPRINT+1(132),BLANK
                        980            L      15,=A(FORPRINT)
                        981            BALR   14,15
                        982            SP     COUP(&LL2),=P'1'
                        983            A      4,=F'1'
                        984            B      READ3
                        985 STEP12     EQU    *
                        986            SP     CNTR1(&LL2),CNTR1
                        987            AP     OLDID1(&LL1),PIDRNG1
                        988            LA     3,1(3)
                        989            PACK   OLDID2(&LL2),SMIN2
                        990            MVC    WTAPE(&AB),CTAPE
                        991            B      SPECC01
                        992            AGO    .ENDPRC
                        993 ********************************
                        994 .SPECC02 ANOP
                        995 * ROUTINE SPECC02, CHECK COMPLETENESS OF RECORD WHICH HAVE NOT EQUAL*
                        996 * RANGE BETWEEN ID OF CASE.                                        *
                        997 SPEC 02    EQU    *
                        998            CP     CNTR1(&LL2),CNTR
                        999            BNL    STEP15
                       1000            PACK   PIDEN1(&LL1),IDEN1
                       1001            CP     OLDID1(&LL1),PIDEN1
                       1002            BH     IDERR4
```

LOC OBJECT CODE ADDR1 ADDR2 STMT SOURCE STATEMENT DOS/VS ASSEMBLER REL 34.0 12.42 82-06-28

```
1003                BL     MISSERR4
1004                PACK   PIDEN2(&LL2),IDEN2
1005                CP     OLDID2(&LL2),PIDEN2
1006                BL     MISSERR3
1007                BH     DUPERR3
1008                AP     CNTR1(&LL2),=P'1'
1009                AP     OLDID2(&LL2),PIDRNG2
1010                B      EQUL
1011 MISSERR3       EQU    *
1012                PRINTREC CODE=1,MSGNERR='PRECEEDING DATA'
1013                PRINTREC CODE=2,MSGNERR='MISSING DATA WITHIN THIS CASE'
1014                PRINTREC MSGNERR='NEXT DATA'
1015                MVC    WPRINT+1(132),BLANK
1016                L      15,=A(FORPRINT)
1017                BALR   14,15
1018                SP     PIDEN2(&LL2),OLDID2
1019                AP     CNTR1(&LL2),PIDEN2
1020                AP     CNTR1(&LL2),=P'1'
1021                PACK   OLDID2(&LL2),IDEN2
1022                AP     OLDID2(&LL2),PIDRNG2
1023                MVI    IDER,C'1'
1024                B      EQUL
1025 DUPERR3        EQU    *
1026                PRINTREC CODE=1,MSGNERR='PRECEEDING DATA'
1027                CLC    STAPE(&AB),WTAPE1
1028                BE     DATADUP3
1029                PRINTREC MSGNERR='DUPLICATED ID'
1030                B      DUPERR31
1031 DATADUP3      EQU    *
1032                PRINTREC MSGNERR='DUPLICATED DATA'
1033 DUPERR31      EQU    *
1034                MVC    WPRINT+1(132),BLANK
1035                L      15,=A(FORPRINT)
1036                BALR   14,15
1037                AP     CNTR1(&LL2),=P'1'
1038                AP     CDUP(&LL2),=P'1'
1039                PACK   OLDID2(&LL2),IDEN2
1040                AP     OLDID2(&LL2),PIDRNG2
1041                MVI    IDER,C'1'
1042                A      4,=F'1'
1043                MVC    STAPE(&AB),CTAPE
1044                B      READ3
1045 IDERR4         EQU    *
1046                PRINTREC MSGNERR='ERROR IN ID'
1047                L      15,=A(FORPRINT)
1048              BALR     14,15
1049                A      4,=F'1'
1050                MVI    IDER,C'1'
1051                B      READ3
1052 MISSERR4       EQU    *
1053                PRINTREC CODE=1,MSGNERR='PRECEEDING DATA'
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 12.42 82-06-28
                                 1054           PRINTREC CODE=2,                                                X
                                                      MSGNERR='MISSING FIRST OR LAST DATA'
                                 1055           MVC    WPRINT+1(132),BLANK
                                 1056           L      15,=A(FORPRINT)
                                 1057           BALR   14,15
                                 1058           SP     CNTR1(&LL2),CNTR1
                                 1059           LA     3,1(3)
                                 1060 STEP14    EQU    *
                                 1061           LA     13,ATAPE+1
                                 1062           PACK   PIDEN2(&LL2),IDEN2
                                 1063           CP     PIDEN2(&LL2),PMIN2
                                 1064           BL     IDERR5
                                 1065           BH     MISSERR5
                                 1066           PACK   OLDID1(&LL1),IDEN1
                                 1067           PACK   OLDID2(&LL2),IDEN2
                                 1068           AP     OLDID2(&LL2),PIDRNG2
                                 1069           AP     CNTR1(&LL2),=P'1'
                                 1070           MVC    WTAPE(&AB),CTAPE
                                 1071           MVC    STAPE(&AB),CTAPE
                                 1072           AIF    ('&REMARKX' EQ 'YES').GTRD4
                                 1073           B      EQULY
                                 1074           AGO    .GTRD4X
                                 1075 .GTRD4    ANOP
                                 1076           B      READ3
                                 1077 .GTRD4X   ANOP
                                 1078 IDERR5    EQU    *
                                 1079           PRINTREC MSGNERR='ERROR IN ID'
                                 1080           MVC    WPRINT+1(132),BLANK
                                 1081           L      15,=A(FORPRINT)
                                 1082           BALR   14,15
                                 1083           PACK   OLDID1(&LL1),IDEN1
                                 1084           PACK   OLDID2(&LL2),SMIN2
                                 1085           AP     OLDID2(&LL2),PIDRNG2
                                 1086           AP     CNTR1(&LL2),=P'1'
                                 1087           A      4,=F'1'
                                 1088           MVI    IDER,C'1'
                                 1089           B      READ3
                                 1090 MISSERR5  EQU    *
                                 1091           PRINTREC CODE=2,MSGNERR='MISSING FIRST DATA OF THIS CASE'
                                 1092           PACK   PIDEN2(&LL2),IDEN2
                                 1093           SP     PIDEN2(&LL2),PMIN2
                                 1094           AP     CNTR1(&LL2),PIDEN2
                                 1095           AP     CNTR1(&LL2),=P'1'
                                 1096           PACK   OLDID1(&LL1),IDEN1
                                 1097           PACK   OLDID2(&LL2),IDEN2
                                 1098           AP     OLDID2(&LL2),PIDRNG2
                                 1099           MVI    IDER,C'1'
                                 1100           B      EQUL
                                 1101 STEP15    EQU    *
                                 1102           CP     COUP(&LL2),=P'0'
                                 1103           BNE    STEP16
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 12.42 82-06-28

                                1104          SP     CNTR1(&LL2),CNTR1
                                1105          LA     3,1(3)
                                1106          PACK   PIDEN1(&LL1),IDEN1
                                1107          CP     OLDID1(&LL1),PIDEN1
                                1108          BL     STEP14
                                1109          BH     IDERR6
                                1110          PACK   PIDEN2(&LL2),IDEN2
                                1111          CP     PIDEN2(&LL2),PMAX2
                                1112          BNE    IDERR6
                                1113          PRINTREC CODE=1,MSGNERR='PRECEEDING DATA'
                                1114          CLC    STAPE(&AB),WTAPE1
                                1115          BE     DATADUP4
                                1116          PRINTREC MSGNERR='DUPLICATED ID'
                                1117          B      STEP151
                                1118 DATADUP4 EQU    *
                                1119          PRINTREC MSGNERR='DUPLICATED DATA'
                                1120 STEP151  EQU    *
                                1121          L      15,=A(FORPRINT)
                                1122        BALR     14,15
                                1123          PACK   OLDID2(&LL2),SMIN2
                                1124          A      4,=F'1'
                                1125          MVC    STAPE(&AB),CTAPE
                                1126          B      READ3
                                1127 IDERR6   EQU    *
                                1128          PRINTREC MSGNERR='ERROR IN ID'
                                1129          MVC    WPRINT+1(132),BLANK
                                1130          L      15,=A(FORPRINT)
                                1131          BALR   14,15
                                1132          A      4,=F'1'
                                1133          B      READ3
                                1134 STEP25   EQU    *
                                1135          PACK   PIDEN1(&LL1),IDEN1
                                1136          CP     OLDID1(&LL1),PIDEN1
                                1137          BNE    IDERR61
                                1138          PACK   PIDEN2(&LL2),IDEN2
                                1139          CP     PIDEN2(&LL2),PMAX2
                                1140          BH     IDERR61
                                1141          SP     CDUP(&LL2),=P'1'
                                1142          AIF    ('&REMARKX' EQ 'YES').GTRD41
                                1143          B      EQULY
                                1144          AGO    .GTRD42
                                1145 .GTRD41  ANOP
                                1146          B      READ3
                                1147 .GTRD42  ANOP
                                1148 IDERR61  EQU    *
                                1149          PRINTREC MSGNERR='ERROR IN ID.'
                                1150          MVC    WPRINT+1(132),BLANK
                                1151          L      15,=A(FORPRINT)
                                1152          BALR   14,15
                                1153          SP     CDUP(&LL2),=P'1'
                                1154          A      4,=F'1'
```

```
                        1155              B       READ3
                        1156 .ENDPRC      ANOP
                        1157 RNGERR2      EQU     *
                        1158              PRINTREC MSGNERR='ID OUT OF RANGE'
                        1159              MVC     WPRINT+1(132),BLANK
                        1160              L       15,=A(FORPRINT)
                        1161              BALR    14,15
                        1162              A       4,=F'1'
                        1163              AP      CNTR1(&LL2),=P'1'
                        1164              MVI     IDER,C'1'
                        1165              B       READ3
                        1166 NTNUMER2     EQU     *
                        1167              PRINTREC MSGNERR='ID NOT NUMERIC'
                        1168              MVC     WPRINT+1(132),BLANK
                        1169              L       15,=A(FORPRINT)
                        1170              BALR    14,15
                        1171              A       4,=F'1'
                        1172              AP      CNTR1(&LL2),=P'1'
                        1173              MVI     IDER,C'1'
                        1174              B       READ3
                        1175 FORPRINT     EQU     *
                        1176 *--------PRINT ROUTINE
                        1177              STM     14,15,SAVE1
                        1178              PUT     PRINT,WPRINT
                        1179              MVC     WPRINT+1(132),BLANK
                        1180              LM      14,15,SAVE1
                        1181              AIF     (&AB GT 80).NOCOUN3
                        1182              LA      6,1(6)
                        1183 .NOCOUN3     ANOP
                        1184              BR      14
                        1185 EQUL         EQU     *
                        1186              MVC     STAPE(&AB),WTAPE1
                        1187              AIF     ('&REMARKX' EQ 'YES').EQULX
                        1188              AGO     .EQULY
                        1189 .EQULX       ANOP
                        1190              CP      CNTR1+&LL3.(1),=P'1'
                        1191              BNE     EQULW
                        1192              MVC     WTAPE(&AB),CTAPE
                        1193              B       READ3
                        1194 EQULW        EQU     *
                        1195              LA      13,80(13)
                        1196              MVC     0(80,13),CTAPE
                        1197              CP      CNTR1(&LL2),CNTR
                        1198              BNL     EQULX
                        1199              B       READ3
                        1200 EQULX        EQU     *
                        1201 *--------STORE DATA IN WORKAREA WTAPE(N), (N = 1,2,3,.....10)
                        1202              MVC     WTAPE1(&AB),WTAPE
                        1203              CLI     IDER,C'1'
                        1204              BNE     EQULY
                        1205              MVI     IDER,C'0'
```

```
                        1206              B       READ2
                        1207 .EQULY       ANOP
                        1208 EQULY        EQU     *
                        1209              L       13,SAVE2
                        1210              B       LITERAL
                        1211              LTORG
                        1212              CNOP    0,4
                        1213 LITERAL      EQU     *
                        1214              MEND
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09

                                 *
                                 ***********************************************************************
                                 *
                                          MACRO
                                          PRINTREC &CODE=0,                                          X
                                                &MSGNERR=
                                 *
                                 ***********************************************************************
                                 * MODULE NAME : PRINTREC                                              *
                                 * PURPOSE : TO BE CALLED BY ONEFLD1 AND TWOFLD2 MODULE FOR PRINTING   *
                                 *           ERROR IN ID. RECORD.                                      *
                                 ***********************************************************************
                                 *                                                                     *
                                          GBLA  &AA
                                          GBLA  &CG1,&CGG2
                                          GBLA  &LG1,&LG2
                                          GBLC  &REMARKX
                                          LCLA  &K,&N
                                          LCLA  &LL,&LL1,&LL2,&LL3
                                          LCLA  &AB,&CL,&CCL
                                          LCLA  &MULT,&RESULT,&RECSIZE
                                 &RECSIZE SETA  &AA
                                 &AB      SETA  &AA
                                 &LL      SETA  &LG1+&LG2
                                 &LL2     SETA  K'&MSGNERR
                                 &LL2     SETA  &LL2-2
                                 &LL3     SETA  &LL2+6
                                 &K       SETA  1
                                 &N       SETA  1
                                          B     CO&SYSNDX
                                 IDEN&SYSNDX DC CL&LL'0'
                                 MSGN&SYSNDX DC C&MSGNERR
                                 *
                                 ***********************************************************************
                                 *
                                          CNOP  0,4
                                 CO&SYSNDX EQU *
                                 *
                                 *--------CHECK TYPE OF RECORD TO BE PRINTED.
                                 *--------CODE 0 =CURRENT RECORD.
                                 *--------CODE 1 =PREVIOUSLY RECORD.
                                 *--------CODE 2 =MISSING RECORD.
                                 *
                                          AIF   (&CODE EQ 1).PRECEED
                                          AIF   (&CODE NE 2).FOLLOW
                                          MVC   WPRINT+1(132),BLANK
                                          MVC   MESSAGE(&LL2),MSGN&SYSNDX
                                          L     15,=A(FORPRINT)
                                        BALR    14,15
                                          AGO   .BACK
                                 .FOLLOW  ANOP
```

ข.6 โปรแกรม PRINTREC

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09

                                 1246 *--------MOVE CURRENT RECORD TO WORKAREA ETAPE.
                                 1247          MVC   ETAPE(&AB),&TAPE1
                                 1248          AGO   .CHEKFD
                                 1249 .PRECEED ANOP
                                 1250 *--------MOVE PREVIOUSLY RECORD TO WORKAREA ETAPE.
                                 1251          MVC   ETAPE(&AB),STAPE
                                 1252          S     7,=F'1'
                                 1253 *
                                 1254 ********************************
                                 1255 *
                                 1256 .CHEKFD  ANOP
                                 1257 *--------CHECK TYPE OF CASE.(1 REC./CASE OR N REC./CASE.)
                                 1258          AIF   (&LG2 NE 0).TWOFD
                                 1259 .ONEFD   ANOP
                                 1260          MVC   IDEN&SYSNDX(&LG1),DTAPE+&CG1
                                 1261          AGO   .RECORD
                                 1262 .TWOFD   ANOP
                                 1263          MVC   IDEN&SYSNDX(&LG1),DTAPE+&CG1
                                 1264          MVC   IDEN&SYSNDX+&LG1.(&LG2),DTAPE+&CG2
                                 1265 ********************************
                                 1266          AIF   ('&REMARKX' NE 'YES').RECORD
                                 1267 *---------PRINT HEADING OF DATA IN WORKAREA WORKA.
                                 1268          AIF   (&CODE NE 1).PRNTMSG
                                 1269          MVC   WPRINT+1(132),BLANK
                                 1270          MVC   CASENO(7),SECCASE
                                 1271          MVC   PRT(82),HEAD
                                 1272          MVC   MESSAGE(13),ERRMSGN
                                 1273          L     15,=A(FORPRINT)
                                 1274          BALR  14,15
                                 1275          MVC   CASENO(7),UNDERLN
                                 1276          MVC   PRT(80),LINE
                                 1277          MVC   MESSAGE(13),UNDERLN
                                 1278          L     15,=A(FORPRINT)
                                 1279          BALR  14,15
                                 1280          AGO   .PRNTMSG
                                 1281 .RECORD  ANOP
                                 1282 *--------COMPUTE NUMBER OF LINES PER RECORD TO BE PRINTED.
                                 1283 &MULT    SETA  &K*80
                                 1284 &RESULT  SETA  &RECSIZE-&MULT
                                 1285          AIF   (&RESULT LE 0).RECORD1
                                 1286 &K       SETA  &K+1
                                 1287          AGO   .RECORD
                                 1288 .RECORD1 ANOP
                                 1289          AIF   (&AB GT &C).TPREC
                                 1290 .CDREC   ANOP
                                 1291 *--------PRINT LINE HEADING OF DATA IN CARD OR TAPE WHICH RECORD SIZE
                                 1292 *--------IS NOT GREATER THAN 80 BYTES
                                 1293 PRNT&SYSNDX EQU *
                                 1294          LA    6,1(6)
                                 1295          CH    6,FIFTY
                                 1296          BNH   BACK&SYSNDX
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT    SOURCE STATEMENT                    OCS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 1297            LA    6,0
                                 1298            MVC   WPRINT+1(132),BLANK
                                 1299            MVC   PRT(82),HEAD
                                 1300            STM   1,2,SAVE3
                                 1301            STM   14,15,SAVE4
                                 1302            PUT   PRINT,WPRINT
                                 1303            LM    1,2,SAVE3
                                 1304            LM    14,15,SAVE4
                                 1305            MVC   WPRINT+1(132),BLANK
                                 1306            MVC   PRT(80),LINE
                                 1307            STM   1,2,SAVE3
                                 1308            STM   14,15,SAVE4
                                 1309            PUT   PRINT,WPRINT
                                 1310            LM    1,2,SAVE3
                                 1311            LM    14,15,SAVE4
                                 1312            MVC   WPRINT+1(132),BLANK
                                 1313            MVI   WPRINT,C'1'
                                 1314            MVC   CASENO(7),SECCASE
                                 1315            MVC   PRT(82),HEAD
                                 1316            MVC   MESSAGE(13),ERRMSGN
                                 1317            STM   1,2,SAVE3
                                 1318            STM   14,15,SAVE4
                                 1319            PUT   PRINT,WPRINT
                                 1320            LM    1,2,SAVE3
                                 1321            LM    14,15,SAVE4
                                 1322            MVI   WPRINT,C' '
                                 1323            MVC   CASENO(7),UNDERLN
                                 1324            MVC   PRT(80),LINE
                                 1325            MVC   MESSAGE(13),UNDERLN
                                 1326            STM   1,2,SAVE3
                                 1327            STM   14,15,SAVE4
                                 1328            PUT   PRINT,WPRINT
                                 1329            LM    1,2,SAVE3
                                 1330            LM    14,15,SAVE4
                                 1331            MVC   WPRINT+1(132),BLANK
                                 1332 BACK&SYSNDX EQU *
                                 1333            AGO   .PRNTMSG
                                 1334 .TPREC     ANOP
                                 1335 *--------PRINT LINE HEADING OF DATA IN TAPE WHICH RECORD SIZE IS
                                 1336 *--------GREATER THAN 80 BYTES.
                                 1337            C     7,=F'1'
                                 1338            BE    TREC&SYSNDX
                                 1339 PRT&SYSNDX EQU *
                                 1340            MVC   WPRINT+1(132),BLANK
                                 1341            MVC   CASENO(7),SECCASE
                                 1342            MVC   PRT(82),HEAD
                                 1343            MVC   MESSAGE(13),ERRMSGN
                                 1344            L     15,=A(FCRPRINT)
                                 1345          BALR    14,15
                                 1346            MVC   CASENO(7),UNDERLN
                                 1347            MVC   PRT(80),LINE
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-05
                                 1348           MVC   MESSAGE(13),UNDERLN
                                 1349           L     15,=A(FORPRINT)
                                 1350 .         BALR  14,15
                                 1351 .PRNTMSG ANOP
                                 1352 *--------COMPUTE CASE NO. OR RECORD NO. TO BE PRINTED.
                                 1353 TREC&SYSNDX EQU *
                                 1354           MVC   WPRINT+1(132),BLANK
                                 1355           AIF   ('&REMARKX' NE 'YES').QQ0
                                 1356           CVD   3,ABC
                                 1357           AGO   .QQ1
                                 1358 .QQ0      ANOP
                                 1359           CVD   7,ABC
                                 1360 .QQ1      ANOP
                                 1361           UNPK  ABCD(8),AEC
                                 1362           OI    ABCD+7,X'F0'
                                 1363           ST    5,SAVEX
                                 1364           LA    5,6
                                 1365           ST    6,SAVE
                                 1366           LA    6,ABCD+2
                                 1367 QQ1&SYSNDX CLI  0(6),C'0'
                                 1368           BNE   QQ2&SYSNDX
                                 1369           MVI   0(6),C' '
                                 1370           LA    6,1(6)
                                 1371           BCT   5,QQ1&SYSNDX
                                 1372 QQ2&SYSNDX EQU *
                                 1373           MVC   CASENO(6),AECD+2
                                 1374           L     5,SAVEX
                                 1375           L     6,SAVE
                                 1376           MVC   PRT(80),DTAPE+1
                                 1377           MVC   MESSAGE(&LL2),MSGN&SYSNDX
                                 1378           MVC   MESSAGE+&LL2.(6),=C', ID = '
                                 1379           MVC   MESSAGE+&LL3.(&LL),IDEN&SYSNDX
                                 1380           L     15,=A(FORPRINT)
                                 1381           BALR  14,15
                                 1382           AIF   (&CODE NE 11).RECORD2
                                 1383           A     7,=F'1'
                                 1384 .RECORD2 ANOP
                                 1385 &CL       SETA  &CL+80
                                 1386 &COL      SETA  &CL+1
                                 1387 &N        SETA  &N+1
                                 1388 &K        SETA  &K-1
                                 1389           AIF   (&K EQ 0).BACK
                                 1390           MVC   WPRINT+1(132),BLANK
                                 1391           MVC   PRT(82),HEAD&N
                                 1392           L     15,=A(FORPRINT)
                                 1393           BALR  14,15
                                 1394           MVC   PRT(80),LINE
                                 1395           L     15,=A(FORPRINT)
                                 1396           BALR  14,15
                                 1397           MVC   PRT(80),DTAPE+&COL
                                 1398           L     15,=A(FORPRINT)
```

LOC OBJECT CODE ADDR1 ADDR2 STMT SOURCE STATEMENT COS/VS ASSEMBLER REL 34.0 18.14 82-06-09

```
                        1399            BALR  14,15
                        1400            AGO   .RECORD2
                        1401 .BACK      ANOP
                        1402            MEND
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 1404 ***********************************************************************
                                 1405 *
                                 1406          MACRO
                                 1407          RANGE &CDNUM=0,&CCLM=,&LEN=,                                  X
                                                     &C=,                                                      X
                                                     &L=,                                                      X
                                                     &N1=,                                                     X
                                                     &N2=,                                                     X
                                                     &A1=,                                                     X
                                                     &A2=,                                                     X
                                                     &RSIGN=?
                                 1408 *
                                 1409 ***********************************************************************
                                 1410 * MODULE NAME : RANGE                                                 *
                                 1411 * PURPOSE :TO CHECK POSSIBLE CODE OF EACH DATA FIELD AS USER REQUIRED*
                                 1412 * ABILITY OF CHECKING :                                               *
                                 1413 *          1.CHECK WHETHER THAT CODE OF TESTED FIELD IS IN ONE OF      *
                                 1414 *            POSSIBLE RANGES FOR THAT FIELD OR NOT.                   *
                                 1415 *          2.CHECK WHETHER THAT CODE OF TESTED FIELD IS EQUAL TO ONE   *
                                 1416 *             OF THE VALID CODES OF THAT FIELD OR NOT.                 *
                                 1417 ***********************************************************************
                                 1418 *
                                 1419          GBLA  &AA
                                 1420          GBLA  &CA
                                 1421          GBLA  &RNGCHK
                                 1422          GBLA  &RNGFLAG
                                 1423          GBLA  &RNGCODE
                                 1424          GBLC  &REMARKX
                                 1425          LCLA  &I
                                 1426          LCLA  &CX,&CAX
                                 1427          LCLA  &NM1,&NM2,&NM3,&NM4
                                 1428 *
                                 1429 ***********************************************************************
                                 1430 *
                                 1431 &RNGCHK  SETA  0
                                 1432 &RNGFLAG SETA  1
                                 1433 &I       SETA  1
                                 1434 &RNGCODE SETA  0
                                 1435 *
                                 1436 ***********************************************************************
                                 1437 *
                                 1438 RNG0&SYSNDX EQU *
                                 1439          BALR  13,0
                                 1440          USING RNG1&SYSNDX,13
                                 1441 RNG1&SYSNDX EQU *
                                 1442          AIF   ('&C' EQ '' OR &C LT 0 OR &C GT &AA).STERR1
                                 1443          AIF   ('&L' EQ '' OR &L LT 0).STERR2
                                 1444          AIF   ('&N1(1)' NE '').STARTCK
                                 1445          AIF   ('&N2(1)' NE '').STARTCK
                                 1446          AIF   ('&A1(1)' NE '').STARTCK
                                 1447          AIF   ('&A2(1)' NE '').STARTCK
```


ข.7 โปรแกรม RANGE

LOC OBJECT CODE ADDR1 ADDR2 STMT SOURCE STATEMENT DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09

```
1448 .ERRCR   ANOP
1449          MNOTE *,' '
1450          MNOTE *,'RANGE COMMAND STATEMENT IS ERRCR DUE TC MISSING '
1451          MNOTE *,'VALUE IN CPERAND 2 AND N.'
1452          MNOTE *,' '
1453          AGO   .STERR3
1454 .STERR1  ANOP
1455          MNOTE *,' '
1456          MNOTE *,'RANGE COMMAND STATEMENT IS ERRCR IN C CPERAND.'
1457          MNOTE *,' '
1458          AGO   .STERR3
1459 .STERR2  ANOP
1460          MNOTE *,' '
1461          MNOTE *,'RANGE CCMMAND STATEMENT IS ERRCR IN L CPERANC.'
1462          MNOTE *,' '
1463 .STERR3  ANOP
1464 ERNGCHK  SETA  1
1465          AGO   .ERRR
1466 .STARTCK ANOP
1467          MNOTE *,' '
1468          MNOTE *,'RANGE COMMAND STATEMENT IS CORRECT.'
1469          MNOTE *,' '
1470          AIF   (ECONUM NE 0).RNG1
1471          AGO   .RNG2
1472 .RNG1    ANOP
1473          AIF   ('&REMARKX' EC 'YES').RNG3
1474 *--------DETERMINE THE REQUIRED RECCRC TC BE CHECKED.
1475          CLC   ATAPE+&CCLM.(&LEN),=C'&CONUM'
1476          BNE   CORR&SYSNDX
1477 .RNG2    ANOP
1478 &CX      SETA  &C
1479          AGO   .RNG4
1480 .RNG3    ANOP
1481 *
1482 *--------COMPUTE THE FIELD POSITION TC BE CHECKED FRCM WCRKAREA WORKA.
1483 *
1484 &CX      SETA  (&CONUM-1)*&C+&C
1485 .RNG4    ANOP
1486          B     STEP&SYSNDX
1487          CNOP  0,4
1488 *
1489 ************************************************************************
1490 *
1491 *--------STORE POSSIBLE RANGES AND VALID CCDES.
1492 *
1493 RSGN&SYSNDX DC &L.C'&RSIGN'
1494 &NM1     SETA  N'&N1
1495          AIF   ('&N1(1)' EC '').SETCOD2
1496 NUM1&SYSNDX DC C'&N1(1)'
1497 .LP1     ANOP
1498          AIF   (&I GE &NM1).SETCOD2
```

```
                                1499 &I       SETA  &I+1
                                1500          DC    C'&N1(&I)'
                                1501          AGO   .LP1
                                1502 .SETCOD2 ANOP
                                1503          AIF   ('&N2(1)' EQ '').SETCOD3
                                1504 &NM2     SETA  N'&N2
                                1505 &I       SETA  1
                                1506 NUM2&SYSNDX DC C'&N2(1)'
                                1507 .LP2     ANOP
                                1508          AIF   (&I GE &NM2).SETCOD3
                                1509 &I       SETA  &I+1
                                1510          DC    C'&N2(&I)'
                                1511          AGO   .LP2
                                1512 .SETCOD3 ANOP
                                1513          AIF   ('&A1(1)' EQ '').SETCOD4
                                1514 &NM3     SETA  N'&A1
                                1515 &I       SETA  1
                                1516 ALP1&SYSNDX DC C'&A1(1)'
                                1517 .LP3     ANOP
                                1518          AIF   (&I GE &NM3).SETCOD4
                                1519 &I       SETA  &I+1
                                1520          DC    C'&A1(&I)'
                                1521          AGO   .LP3
                                1522 .SETCOD4 ANOP
                                1523          AIF   ('&A2(1)' EQ '').OUTSS
                                1524 &NM4     SETA  N'&A2
                                1525 &I       SETA  1
                                1526          AIF   ('&A2(1)' NE '&').JUX
                                1527 ALP2&SYSNDX DC &L.C' '
                                1528          AGO   .LP4
                                1529 .JUX     ANOP
                                1530 ALP2&SYSNDX DC C'&A2(1)'
                                1531 .LP4     ANOP
                                1532          AIF   (&I GE &NM4).OUTSS
                                1533 &I       SETA  &I+1
                                1534          AIF   ('&A2(&I)' NE '&').JUY
                                1535          DC    &L.C' '
                                1536          AGO   .LP4
                                1537 .JUY     ANOP
                                1538          DC    C'&A2(&I)'
                                1539          AGO   .LP4
                                1540 .OUTSS   ANOP
                                1541 *
                                1542 *********************************************************************
                                1543 *
                                1544          CNOP  0,4
                                1545 STEP&SYSNDX EQU *
                                1546          ST    3,SAVEX
                                1547          ST    4,SAVEY
                                1548          ST    5,SAVE
                                1549          AIF   ('&N1(1)' EQ '').NUMER2
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 1550           LA    5,NUM1&SYSNDX
                                 1551           LA    3,&NM1
                                 1552 .NUMER1   ANOP
                                 1553 *--------COMPARE TESTED FIELD CODE TO ITS NUMERIC RANGES.
                                 1554 NMR1&SYSNDX EQU *
                                 1555 NM1&SYSNDX CLC ATAPE+&CX.(&L),0(5)
                                 1556           BL    NMR2&SYSNDX
                                 1557           BE    CORR&SYSNDX
                                 1558           LA    5,&L.(5)
                                 1559           LA    5,1(5)
                                 1560           CLC   ATAPE+&CX.(&L),0(5)
                                 1561           BH    CTN&SYSNDX
                                 1562           LA    4,ATAPE+&CX
                                 1563           LA    5,&L
                                 1564 CHK&SYSNDX EQU *
                                 1565           CLI   0(4),C'0'
                                 1566           BL    ERR&SYSNDX
                                 1567           CLI   0(4),C'9'
                                 1568           BH    ERR&SYSNDX
                                 1569           LA    4,1(4)
                                 1570           BCT   5,CHK&SYSNDX
                                 1571           B     CORR&SYSNDX
                                 1572 CTN&SYSNDX EQU *
                                 1573           LA    5,&L.(5)
                                 1574           BCT   3,NM1&SYSNDX
                                 1575 .NUMER2   ANOP
                                 1576 *--------COMPARE TESTED FIELD CODE TO ITS NUMERIC VALID CODES.
                                 1577 NMR2&SYSNDX EQU *
                                 1578           AIF   ('&N2(1)' EQ '').ALPHA1
                                 1579           LA    5,NUM2&SYSNDX
                                 1580           LA    3,&NM2
                                 1581 CON&SYSNDX CLC ATAPE+&CX.(&L),0(5)
                                 1582           BE    CORR&SYSNDX
                                 1583           LA    5,&L.(5)
                                 1584           BCT   3,CON&SYSNDX
                                 1585 .ALPHA1   ANOP
                                 1586 *--------COMPARE TESTED FIELD CODE TO ITS ALPHANUMERIC RANGES.
                                 1587 APH1&SYSNDX EQU *
                                 1588           AIF   ('&A1(1)' EQ '').ALPHA2
                                 1589           LA    5,ALP1&SYSNDX
                                 1590           LA    3,&NM3
                                 1591 CN&SYSNDX CLC ATAPE+&CX.(&L),0(5)
                                 1592           BL    APH2&SYSNDX
                                 1593           BE    CORR&SYSNDX
                                 1594           LA    5,&L.(5)
                                 1595           LA    5,1(5)
                                 1596           CLC   ATAPE+&CX.(&L),0(5)
                                 1597           BNH   CORR&SYSNDX
                                 1598           LA    5,&L.(5)
                                 1599           BCT   3,CN&SYSNDX
                                 1600 .ALPHA2   ANOP
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 1601 *--------COMPARE TESTED FIELD CODE TO ITS ALPHANUMERIC VALID CODES.
                                 1602 APH2&SYSNDX EQU *
                                 1603          AIF   ('&A2(1)' EC '').ERR1
                                 1604          LA    5,ALP2&SYSNDX
                                 1605          LA    3,&NM4
                                 1606 CU&SYSNDX CLC ATAPE+&CX.(&L),0(5)
                                 1607          BE    CORR&SYSNDX
                                 1608          LA    5,&L.(5)
                                 1609          BCT   3,CU&SYSNDX
                                 1610 .ERR1    ANOP
                                 1611 ERR&SYSNDX EQU *
                                 1612 *--------MOVE POSSIBLE ERROR CODE TO AERR WORKAREA.
                                 1613          MVC   AERR+&CX.(&L),RSGN&SYSNDX
                                 1614          MVI   RNG,C'1'
                                 1615 CORR&SYSNDX EQU *
                                 1616 .ERRR    ANOP
                                 1617          L     3,SAVEX
                                 1618          L     4,SAVEY
                                 1619          L     5,SAVE
                                 1620          MEND
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    OS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 1622 *
                                 1623 ********************************************************************************
                                 1624 *
                                 1625          MACRO
                                 1626          COMPARE &CONUM1=0,&CCLM1=,&LEN1=,                                  X
                                                       &C=,                                                        X
                                                       &L=,                                                        X
                                                       &OPERATE=,                                                  X
                                                       &CONUM2=0,&CCLM2=,&LEN2=,                                   X
                                                       &CA=,                                                       X
                                                       &LA=,                                                       X
                                                       &COMSIGN=*
                                 1627 *
                                 1628 ********************************************************************************
                                 1629 * MODULE NAME : COMPARE                                                      *
                                 1630 * PURPOSE : TO CHECK ARITHMETICS RELATIONSHIP BETWEEN TWO FIELDS.           *
                                 1631 * ABILITY OF CHECKING:                                                       *
                                 1632 *          1.CHECK WHETHER 1ST FIELD IS EQUAL TO 2ND. FIELD OR NOT.          *
                                 1633 *            2. CHECK WHETHER 1ST.FIELD IS GREATER OR EQUAL TO               *
                                 1634 *              2ND. FIELD OR NOT.                                            *
                                 1635 *          3.CHECK WHETHER 1ST. FIELD IS LESS OR EQUAL TO 2ND. OR NOT.*
                                 1636 ********************************************************************************
                                 1637 *
                                 1638          GBLA  &AA
                                 1639          GBLA  &COMCODE
                                 1640          GBLA  &COMFLAG
                                 1641          GBLA  &COMCHK
                                 1642          GBLC  &REMARKX
                                 1643          LCLA  &LE,&LL
                                 1644          LCLA  &CX,&CAX
                                 1645 *
                                 1646 ********************************************************************************
                                 1647 *
                                 1648 &COMFLAG SETA  1
                                 1649 &COMCHK  SETA  0
                                 1650 &COMCODE SETA  0
                                 1651 CMP0&SYSNDX EQU *
                                 1652          BALR  13,0
                                 1653          USING CMP1&SYSNDX,13
                                 1654 CMP1&SYSNDX EQU *
                                 1655          B     CMP&SYSNDX
                                 1656 EFAG&SYSNDX DC CL1'0'
                                 1657 LFAG&SYSNDX DC CL1'0'
                                 1658 GFAG&SYSNDX DC CL1'0'
                                 1659 NFAG&SYSNDX DC CL1'0'
                                 1660 AFAG&SYSNDX DC CL1'0'
                                 1661 CSGX&SYSNDX DC &L.C'&COMSIGN'
                                 1662 CSGN&SYSNDX DC &LA.C'&CCMSIGN'
                                 1663 ********************************************************************************
                                 1664          CNOP  0,4
                                 1665 CMP&SYSNDX EQU *
```


ข.8 โปรแกรม COMPARE

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 1666           AIF   ('&C' EQ '' OR &C LT 0 OR &C GT &AA).COMERR1
                                 1667           AIF   ('&L' EQ '' OR &L LT 0).COMERR2
                                 1668           AIF   ('&OPERATE' EQ '').COMERR3
                                 1669 .CHEKTY1 ANOP
                                 1670           AIF   ('&OPERATE(1)' EQ '=').SETEQ1
                                 1671           AIF   ('&OPERATE(1)' EQ '>').SETGR1
                                 1672           AIF   ('&OPERATE(1)' EQ '<').SETLE1
                                 1673           AGO   .COMERR6
                                 1674 *--------SET CONDITION CODE OF 1ST.OPERATOR SIGN SPECIFIED BY USERS.
                                 1675 .SETEQ1  ANOP
                                 1676           MVI   EFAG&SYSNDX,C'1'
                                 1677           AGO   .CHEKTY2
                                 1678 .SETGR1  ANOP
                                 1679           MVI   GFAG&SYSNDX,C'1'
                                 1680           AGO   .CHEKTY2
                                 1681 .SETLE1  ANOP
                                 1682           MVI   LFAG&SYSNDX,C'1'
                                 1683 ********************************
                                 1684 .CHEKTY2 ANOP
                                 1685           AIF   ('&OPERATE(2)' EQ '').CHEKFD2
                                 1686           AIF   ('&OPERATE(2)' EQ '=').SETEQ2
                                 1687           AIF   ('&OPERATE(2)' EQ '>').SETGR2
                                 1688           AIF   ('&OPERATE(2)' EQ '<').SETLE2
                                 1689           AGO   .COMERR6
                                 1690 *--------SET CONDITION CODE OF 2ND. OPERATOR SIGN SPECIFIED BY USERS.
                                 1691 .SETEQ2  ANOP
                                 1692           MVI   EFAG&SYSNDX,C'1'
                                 1693           AGO   .CHEKFD2
                                 1694 .SETGR2  ANOP
                                 1695           MVI   GFAG&SYSNDX,C'1'
                                 1696           AGO   .CHEKFD2
                                 1697 .SETLE2  ANOP
                                 1698           MVI   LFAG&SYSNDX,C'1'
                                 1699 .CHEKFD2 ANOP
                                 1700           AIF   ('&CA' EQ '' OR &CA LT 0 OR &CA GT &AA).COMERR4
                                 1701           AIF   ('&LA' EQ '' OR &LA LT 0).COMERR5
                                 1702 .COMERR0 ANOP
                                 1703           MNOTE *,' '
                                 1704           MNOTE *,'COMPARE COMMAND STATEMENT IS CORRECT.'
                                 1705           MNOTE *,' '
                                 1706 *
                                 1707 ************************************************************************
                                 1708 *
                                 1709           AIF   (&CONUM1 NE 0).CMP1
                                 1710           AGO   .CMP2
                                 1711 .CMP1    ANOP
                                 1712           AIF   ('&REMARK)' EQ 'YES').CMP2
                                 1713 *--------DETERMINE THE RECORD TO BE CHECKED.
                                 1714           CLC   ATAPE+&CCLM1.(&LEN1),=C'&CONUM1'
                                 1715           BNE   CPCR&SYSNDX
                                 1716 .CMP2    ANOP
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-05
                                 1717 &CX      SETA  &C
                                 1718          AGO   .CMP4
                                 1719 .CMP3    ANOP
                                 1720 *--------COMPUTE 1ST. FIELD POSITION IN WORKAREA WORKA.
                                 1721 &CX      SETA  (&CONUM1-1)*80+&C
                                 1722 .CMP4    ANOP
                                 1723          AIF   (&CONUM2 NE 0).CMP5
                                 1724          AGO   .CMP6
                                 1725 .CMP5    ANOP
                                 1726          AIF   ('&REMARKX' EQ 'YES').CMP7
                                 1727 *--------DETERMINE THE REQUIRED RECORD TO BE CHECKED.
                                 1728          CLC   ATAPE+&COLM2.(&LEN2),=C'&CONUM2'
                                 1729          BNE   CPCR&SYSNDX
                                 1730 .CMP6    ANOP
                                 1731 &CAX     SETA  &CA
                                 1732          AGO   .CMP8
                                 1733 .CMP7    ANOP
                                 1734 *--------COMPUTE 2ND. FIELD POSITION IN WORKAREA WORKA.
                                 1735 &CAX     SETA  (&CONUM2-1)*80+&CA
                                 1736 .CMP8    ANOP
                                 1737          AGO   .ALFANUM
                                 1738 *
                                 1739 ********************************************************************************
                                 1740 *
                                 1741 .COMERR1 ANOP
                                 1742          MNOTE *,' '
                                 1743          MNOTE *,'COMPARE COMMAND STATEMENT IS ERROR IN C OPERAND'
                                 1744          MNOTE *,' '
                                 1745          AGO   .COMERR7
                                 1746 .COMERR2 ANOP
                                 1747          MNOTE *,' '
                                 1748          MNOTE *,'COMPARE COMMAND STATEMENT IS ERROR IN L OPERAND'
                                 1749          MNOTE *,' '
                                 1750          AGO   .COMERR7
                                 1751 .COMERR3 ANOP
                                 1752          MNOTE *,' '
                                 1753          MNOTE *,'COMPARE COMMAND STATEMENT IS ERROR BECAUSE OF'
                                 1754          MNOTE *,'MISSING VALUE IN OPERATE OPERAND.'
                                 1755          MNOTE *,' '
                                 1756          AGO   .COMERR7
                                 1757 .COMERR4 ANOP
                                 1758          MNOTE *,' '
                                 1759          MNOTE *,'COMPARE COMMAND STATEMENT IS ERROR IN CA OPERAND'
                                 1760          MNOTE *,' '
                                 1761          AGO   .COMERR7
                                 1762 .COMERR5 ANOP
                                 1763          MNOTE *,' '
                                 1764          MNOTE *,'COMPARE COMMAND STATEMENT IS ERROR IN LA OPERAND'
                                 1765          MNOTE *,' '
                                 1766          AGO   .COMERR7
                                 1767 .COMERR6 ANOP
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    EOS/VS ASSEMBLER REL 34.0 18.14 82-06-05
                                 1768          MNOTE *,' '
                                 1769          MNOTE  *,'COMPARE COMMAND STATEMENT IS ERROR'
                                 1770          MNOTE *,'IN OPERATE OPERAND.'
                                 1771          MNOTE *,' '
                                 1772 .CCMERR7 ANOP
                                 1773 &COMCHK  SETA  1
                                 1774          AGO   .COMCOR
                                 1775 ********************************************************************************
                                 1776 .ALFANUM ANOP
                                 1777 *--------CHECK TYPE OF CODE OF 1ST.FIELD.
                                 1778 AN1&SYSNDX EQU *
                                 1779          ST    3,SAVEX
                                 1780          ST    4,SAVEY
                                 1781          LA    5,ATAPE+&CX
                                 1782          LA    4,&L
                                 1783 AN11&SYSNDX EQU *
                                 1784          CLI   0(5),C'0'
                                 1785          BL    PHA1&SYSNDX
                                 1786          CLI   0(5),C'9'
                                 1787          BH    PHA1&SYSNDX
                                 1788          LA    5,1(5)
                                 1789          BCT   4,AN11&SYSNDX
                                 1790 RIC1&SYSNDX EQU *
                                 1791          MVI   NFAG&SYSNDX,C'1'
                                 1792          B     AN2&SYSNDX
                                 1793 PHA1&SYSNDX EQU *
                                 1794          MVI   AFAG&SYSNDX,C'1'
                                 1795 ****************************
                                 1796 *--------CHECK TYPE OF CODE OF 2ND. FIELD.
                                 1797 AN2&SYSNDX EQU *
                                 1798          LA    5,ATAPE+&CA
                                 1799          LA    4,&LA
                                 1800 AN21&SYSNDX CLI 0(5),C'0'
                                 1801          BL    PHA2&SYSNDX
                                 1802          CLI   0(5),C'9'
                                 1803          BH    PHA2&SYSNDX
                                 1804          LA    5,1(5)
                                 1805          BCT   4,AN21&SYSNDX
                                 1806 RIC2&SYSNDX EQU *
                                 1807          CLI   NFAG&SYSNDX,C'1'
                                 1808          BNE   CPER&SYSNDX
                                 1809          B     NRTN&SYSNDX
                                 1810 PHA2&SYSNDX EQU *
                                 1811          CLI   AFAG&SYSNDX,C'1'
                                 1812          BNE   CPER&SYSNDX
                                 1813 ********************************************************************************
                                 1814 .ARUTIN  ANOP
                                 1815 *--------EXTEND ALPHANUMERIC FIELD LENGTH.
                                 1816          AIF   (&L LT &LA).EXTEND1
                                 1817          AIF   (&L GT &LA).EXTEND2
                                 1818 &LL       SETA  &L
```

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LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09

                                 1819          B      MVE&SYSNDX
                                 1820 ***-------------------------------------**
                                 1821 COM1&SYSNDX DC CL&L.' '
                                 1822 COM2&SYSNDX DC CL&LA.' '
                                 1823 ***-------------------------------------**
                                 1824          CNOP   0,4
                                 1825 MVE&SYSNDX EQU *
                                 1826          MVC    COM1&SYSNDX(&L),ATAPE+&CX
                                 1827          MVC    COM2&SYSNDX(&LA),ATAPE+&CAX
                                 1828          AGO    .CPALFA
                                 1829 ******************************
                                 1830 .EXTEND1 ANOP
                                 1831 *--------EXTEND 1ST.FIELD'S LENGTH.
                                 1832 &LL       SETA   &LA
                                 1833 &LE       SETA   &LA-&L
                                 1834          B      MVL&SYSNDX
                                 1835 ***-------------------------------------**
                                 1836 COM1&SYSNDX DC CL&LA.' '
                                 1837 COM2&SYSNDX DC CL&LA.' '
                                 1838 ***-------------------------------------**
                                 1839          CNOP   0,4
                                 1840 MVL&SYSNDX EQU *
                                 1841          MVC    COM1&SYSNDX(&L),ATAPE+&CX
                                 1842          MVC    COM1&SYSNDX+&L.(&LE),BLANK
                                 1843          MVC    COM2&SYSNDX(&LA),ATAPE+&CAX
                                 1844          AGO    .CPALFA
                                 1845 ******************************
                                 1846 .EXTEND2 ANOP
                                 1847 *--------EXTEND 2ND.FIELD'S LENGTH.
                                 1848 &LL       SETA   &L
                                 1849 &LE       SETA   &L-&LA
                                 1850          B      MVG&SYSNDX
                                 1851 ***-------------------------------------**
                                 1852 COM1&SYSNDX DC CL&L.' '
                                 1853 COM2&SYSNDX DC CL&L.' '
                                 1854 ***-------------------------------------**
                                 1855          CNOP   0,4
                                 1856 MVG&SYSNDX EQU *
                                 1857          MVC    COM2&SYSNDX(&LA),ATAPE+&CAX
                                 1858          MVC    COM2&SYSNDX+&LA.(&LE),BLANK
                                 1859          MVC    COM1&SYSNDX(&L),ATAPE+&CX
                                 1860 ******************************
                                 1861 .CPALFA  ANOP
                                 1862 CPAL&SYSNDX EQU *
                                 1863 *--------COMPARE ALPHANUMERIC
                                 1864          CLC    COM1&SYSNDX(&LL),COM2&SYSNDX
                                 1865          BL     LOW&SYSNDX
                                 1866          BH     HI&SYSNDX
                                 1867          B      EQ&SYSNDX
                                 1868 ***-------------------------------------**
                                 1869 NRTN&SYSNDX EQU *
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-05

                                 1870           B     MVP&SYSNDX
                                 1871 ***-------------------------------------**
                                 1872 FLD1&SYSNDX DC PL&L.'0'
                                 1873 FLD2&SYSNDX DC PL&LA.'0'
                                 1874 ***-------------------------------------**
                                 1875           CNOP  0,4
                                 1876 MVP&SYSNDX EQU *
                                 1877 *--------PACK 1ST.FIELD AND 2ND. FIELD.
                                 1878           PACK  FLD1&SYSNDX(&L),ATAPE+&CX.(&L)
                                 1879           PACK  FLD2&SYSNDX(&LA),ATAPE+&CAX.(&LA)
                                 1880 ********************************
                                 1881 .CPNUMER ANOP
                                 1882 *--------COMPARE NUMERIC.
                                 1883 CPNU&SYSNDX EQU *
                                 1884           CP    FLD1&SYSNDX(&L),FLD2&SYSNDX
                                 1885           BL    LOW&SYSNDX
                                 1886           BH    HI&SYSNDX
                                 1887 ********************************
                                 1888 EQ&SYSNDX EQU  *
                                 1889           CLI   EFAG&SYSNDX,C'1'
                                 1890           BNE   CPER&SYSNDX
                                 1891           B     CPCR&SYSNDX
                                 1892 LOW&SYSNDX EQU *
                                 1893           CLI   LFAG&SYSNDX,C'1'
                                 1894           BNE   CPER&SYSNDX
                                 1895           B     CPCR&SYSNDX
                                 1896 HI&SYSNDX EQU  *
                                 1897           CLI   GFAG&SYSNDX,C'1'
                                 1898           BNE   CPER&SYSNDX
                                 1899           B     CPCR&SYSNDX
                                 1900 ************************************************************************
                                 1901 CPER&SYSNDX EQU *
                                 1902 .CCMERR  ANOP
                                 1903 *--------MOVE ERROR CODE OF 1ST. FIELD AND 2ND. FIELD TO WORKAREA
                                 1904 *------------COMERR.
                                 1905           MVC   COMERR+&CX.(&L),CSGX&SYSNDX
                                 1906           MVC   COMERR+&CAX.(&LA),CSGA&SYSNDX
                                 1907           MVI   COM,C'1'
                                 1908 .CCMCOR  ANOP
                                 1909 CPCR&SYSNDX EQU *
                                 1910           L     3,SAVEX
                                 1911           L     4,SAVEY
                                 1912           MEND
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 1914 *
                                 1915 ********************************************************************************
                                 1916 *
                                 1917          MACRO
                                 1918          RELATIVE &TYPE=,                                                      X
                                                       &CONUM1=0,&CCLM1=,&LEN1=,                                     X
                                                       &C=,                                                          X
                                                       &L=,                                                          X
                                                       &A1=,                                                         X
                                                       &A2=,                                                         X
                                                       &CONUM2=0,&CCLM2=,&LEN2=,                                     X
                                                       &CA=,                                                         X
                                                       &LA=,                                                         X
                                                       &AA1=,                                                        X
                                                       &AA2=,                                                        X
                                                       &RESIGN1=1,                                                   X
                                                       &RESIGN2=1
                                 1919 *
                                 1920 ********************************************************************************
                                 1921 * MODULE NAME : RELATIVE                                                      *
                                 1922 * PURPOSE : TO CHECK CONSISTENCY OF CODING BETWEEN 2 FIELDS.                 *
                                 1923 ********************************************************************************
                                 1924 *
                                 1925          GBLA  &AA
                                 1926          GBLA  &RELCODE
                                 1927          GBLA  &RELFLAG
                                 1928          GBLA  &RELCHK
                                 1929          GBLA  &RECODE1,&RECODE2,&RECODE3
                                 1930          GBLC  &REMARKX
                                 1931          LCLA  &I,&K1,&K2,&M1,&M2
                                 1932          LCLA  &N,&L1,&L2
                                 1933          LCLA  &CY,&CAY
                                 1934          LCLA  &CX(20),&CAX(20)
                                 1935 *
                                 1936 ********************************************************************************
                                 1937 *
                                 1938 &I       SETA  1
                                 1939 &RELCODE SETA  0
                                 1940 &RELFLAG SETA  1
                                 1941 &RELCHK  SETA  0
                                 1942 *
                                 1943 ********************************************************************************
                                 1944 RELO&SYSNDX EQU *
                                 1945          BALR  13,0
                                 1946          USING REL1&SYSNDX,13
                                 1947 REL1&SYSNDX EQU *
                                 1948          AIF   (&TYPE EQ 1).PRETYP1
                                 1949          AIF   (&TYPE EQ 2).PRETYP2
                                 1950 .ACTYPE  ANOP
                                 1951          MNOTE *,' '
                                 1952          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR IN TYPE OPERAND.'
```


ข.9 โปรแกรม RELATIVE

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1953 &RELCHK  SETA  1
1954          AGO   .OFF
1955 *
1956 ********************************************************************************
1957 *
1958 *
1959 ********************************
1960 .PRETYP1 ANOP
1961          AIF   ('&C' EQ '' OR &C LT 0 OR &C GT &AA).RELERR2
1962          AIF   ('&L' EQ '' OR &L LT 0).RELERR3
1963          AIF   ('&A1' NE '').CHEKCA
1964          AIF   ('&A2' EQ '').RELERR4
1965 .CHEKCA  ANOP
1966          AIF   ('&CA' EQ '' OR &CA LT 0 OR &CA GT &AA).RELERR5
1967          AIF   ('&LA' EQ '' OR &LA LT 0).RELERR6
1968          AIF   ('&AA1' NE '').CHEKTYP
1969          AIF   ('&AA2' EQ '').RELERR7
1970 .CHEKTYP ANOP
1971          AIF   (&CONUM1 NE 0).REL1
1972          AGO   .REL2
1973 .REL1    ANOP
1974          AIF   ('&REMARK)' EQ 'YES').REL3
1975 *--------DETERMINE THE REQUIRED RECORD TO BE CHECKED.
1976          CLC   ATAPE+&CCLM1.(&LEN1),=C'&CONUM1'
1977          BNE   RN&SYSNDX
1978 .REL2    ANOP
1979 &CY      SETA  &C
1980          AGO   .REL4
1981 .REL3    ANOP
1982 *--------COMPUTE 1ST. FIELD POSITION IN WORKAREA WORKA.
1983 &CY      SETA  (&CONUM1-1)*80+&C
1984 .REL4    ANOP
1985          AIF   (&CONUM2 NE 0).REL5
1986          AGO   .REL6
1987 .REL5    ANOP
1988          AIF   ('&REMARK)' EQ 'YES').REL7
1989 *--------DETERMINE THE RECORD TO BE CHECKED.
1990          CLC   ATAPE+&CCLM2.(&LEN2),=C'&CONUM2'
1991          BNE   RN&SYSNDX
1992 .REL6    ANOP
1993 &CAY     SETA  &CA
1994          AGO   .REL8
1995 .REL7    ANOP
1996 *--------COMPUTE THE 2ND. FIELD POSITION IN WORKAREA WORKA.
1997 &CAY     SETA  (&CONUM2-1)*80+&CA
1998          AGO   .REL8
1999 .REL8    ANOP
2000          AGO   .TYPE1
2001 .RELERR2 ANOP
2002          MNOTE *,' '
2003          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR IN C OPERAND'
```

```
                        2004          MNOTE *,' '
                        2005          AGO   .RELERR8
                        2006 .RELERR3 ANOP
                        2007          MNOTE *,' '
                        2008          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR IN L OPERAND'
                        2009          MNOTE *,' '
                        2010          AGO   .RELERR8
                        2011 .RELERR4 ANOP
                        2012          MNOTE *,' '
                        2013          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR BECAUSE OF '
                        2014          MNOTE *,'MISSING VALUE IN A OPERAND.'
                        2015          MNOTE *,' '
                        2016          AGO   .RELERR8
                        2017 .RELERR5 ANOP
                        2018          MNOTE *,' '
                        2019          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR IN CA OPERAND'
                        2020          MNOTE *,' '
                        2021          AGO   .RELERR8
                        2022 .RELERR6 ANOP
                        2023          MNOTE *,' '
                        2024          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR IN LA OPERAND'
                        2025          MNOTE *,' '
                        2026          AGO   .RELERR8
                        2027 .RELERR7 ANOP
                        2028          MNOTE *,' '
                        2029          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR BECAUSE OF '
                        2030          MNOTE *,'MISSING VALUE IN AA OPERAND.'
                        2031          MNOTE *,' '
                        2032 .RELERR8 ANOP
                        2033 &RELCHK  SETA  1
                        2034          AGO   .OFF
                        2035 .TYPE1   ANOP
                        2036 *
                        2037 *********************************************************************
                        2038 *        TYPE1 CHECK WHETHER 1ST. FIELD IS IN ONE OF ITS POSSIBLE   *
                        2039 *              RANGES OR EQUAL TO ONE OF ITS VALID CODES AND 2ND.    *
                        2040 *              WHICH RELATED TO 1ST. FIELD IS IN ONE OF ITS POSSIBLE *
                        2041 *              RANGES OR EQUAL TO ONE OF ITS VALID CODES OF NOT.     *
                        2042 *********************************************************************
                        2043 *
                        2044          MNOTE *,' '
                        2045          MNOTE *,'RELATIVE COMMAND SATEMENT IS CORRECT.'
                        2046          MNOTE *,' '
                        2047          B     TYP1&SYSNDX
                        2048 *
                        2049 *********************************************************************
                        2050 *
                        2051 RES1&SYSNDX DC  AL.C'&RESIGN1'
                        2052 RES2&SYSNDX DC  ALA.C'&RESIGN1'
                        2053 .SETYP1  ANOP
                        2054 &I       SETA  1
```

```
                        2055 &K1       SETA  1
                        2056           AIF   ('&A1(1)' EQ '').SETYP2
                        2057 SET1&SYSNDX DC  C'&A1(1)'
                        2058 .AGAIN1   ANOP
                        2059           AIF   (&I GE N'&A1).SETYP2
                        2060 &I        SETA  &I+1
                        2061           DC    C'&A1(&I)'
                        2062 &K1       SETA  &K1+1
                        2063           AGO   .AGAIN1
                        2064 .SETYP2   ANOP
                        2065           AIF   ('&A2(1)' EQ '').SETYP3
                        2066 &I        SETA  1
                        2067 &K2       SETA  1
                        2068           AIF   ('&A2(1)' NE 'A').NTBLK1
                        2069 SET2&SYSNDX DC  &L.C' '
                        2070           AGO   .AGAIN2
                        2071 .NTBLK1   ANOP
                        2072 SET2&SYSNDX DC  C'&A2(1)'
                        2073 .AGAIN2   ANOP
                        2074           AIF   (&I GE N'&A2).SETYP3
                        2075 &I        SETA  &I+1
                        2076           AIF   ('&A2(&I)' NE 'A').AGN
                        2077           DC    &L.C' '
                        2078           AGO   .COUNT1
                        2079 .AGN      ANOP
                        2080           DC    C'&A2(&I)'
                        2081 .COUNT1   ANOP
                        2082 &K2       SETA  &K2+1
                        2083           AGO   .AGAIN2
                        2084 .SETYP3   ANOP
                        2085 &I        SETA  1
                        2086 &M1       SETA  1
                        2087           AIF   ('&AA1(1)' EQ '').SETYP4
                        2088 SET1&SYSNDX DC  C'&AA1(1)'
                        2089 .AGAIN3   ANOP
                        2090           AIF   (&I GE N'&AA1).SETYP4
                        2091 &I        SETA  &I+1
                        2092           DC    C'&AA1(&I)'
                        2093 &M1       SETA  &M1+1
                        2094           AGO   .AGAIN3
                        2095 .SETYP4   ANOP
                        2096 &I        SETA  1
                        2097 &M2       SETA  1
                        2098           AIF   ('&AA2(1)' EQ '').SETYP5
                        2099           AIF   ('&AA2(1)' NE 'A').NTBLK2
                        2100 SET2&SYSNDX DC  &LA.C' '
                        2101           AGO   .AGAIN4
                        2102 .NTBLK2   ANOP
                        2103 SET2&SYSNDX DC  C'&AA2(1)'
                        2104 .AGAIN4   ANOP
                        2105           AIF   (&I GE N'&AA2).SETYP5
```

```
                    2106 &I       SETA  &I+1
                    2107          AIF   ('&AA2(&I)' NE '@').AGN1
                    2108          DC    &LA.C' '
                    2109          AGO   .COUNT2
                    2110 .AGN1    ANOP
                    2111          DC    C'&AA2(&I)'
                    2112 .COUNT2  ANOP
                    2113 &M2      SETA  &M2+1
                    2114          AGO   .AGAIN4
                    2115 .SETYP5  ANOP
                    2116 *
                    2117 *********************************************************************
                    2118 *
                    2119          CNOP  0,4
                    2120 .TYP1    ANOP
                    2121 TYP1&SYSNDX EQU *
                    2122          ST    3,SAVEX
                    2123          ST    4,SAVEY
                    2124          ST    5,SAVE
                    2125          AIF   ('&A1' EQ '').TYP2
                    2126          LA    5,SET1&SYSNDX
                    2127          LA    4,&K1
                    2128 CONT&SYSNDX EQU *
                    2129 *--------COMPARE 1ST. FIELD TO ITS POSSIBLE RANGES.
                    2130          CLC   ATAPE+&CY.(&L),0(5)
                    2131          BL    TYP2&SYSNDX
                    2132          LA    5,&L.(5)
                    2133          LA    5,1(5)
                    2134          CLC   ATAPE+&CY.(&L),0(5)
                    2135          BNH   TYP3&SYSNDX
                    2136          LA    5,&L.(5)
                    2137          BCT   4,CONT&SYSNDX
                    2138 .TYP2    ANOP
                    2139 TYP2&SYSNDX EQU *
                    2140          AIF   ('&A2' EQ '').TYP21
                    2141          LA    5,SET2&SYSNDX
                    2142          LA    4,&K2
                    2143 CNUE&SYSNDX EQU *
                    2144 *--------COMPARE 1ST. FIELD TO ITS VALID CODES.
                    2145          CLC   ATAPE+&CY.(&L),0(5)
                    2146          BE    TYP3&SYSNDX
                    2147          LA    5,&L.(5)
                    2148          BCT   4,CNUE&SYSNDX
                    2149 .TYP21   ANOP
                    2150          B     OUT&SYSNDX
                    2151 .TYP3    ANOP
                    2152 TYP3&SYSNDX EQU *
                    2153          AIF   ('&AA1' EQ '').TYP4
                    2154          LA    5,SEZ1&SYSNDX
                    2155          LA    4,&M1
                    2156 CNTU&SYSNDX EQU *
```

```
2157 *---------COMPARE 2ND. FIELD TO ITS POSSIBLE RANGES.
2158          CLC   ATAPE+&CAY.(&LA),0(5)
2159          BL    TYP4&SYSNDX
2160          LA    5,&LA.(5)
2161          LA    5,1(5)
2162          CLC   ATAPE+&CAY.(&LA),0(5)
2163          BNH   OUT&SYSNDX
2164          LA    5,&LA.(5)
2165          BCT   4,CNTU&SYSNDX
2166 .TYP4    ANOP
2167 TYP4&SYSNDX EQU *
2168          AIF   ('&AA2' EQ '').RERROR2
2169          LA    5,SEZ2&SYSNDX
2170          LA    4,&M2
2171 CNTI&SYSNDX EQU *
2172 *---------COMPARE 2ND. FIELD TO ITS VALID CODES.
2173          CLC   ATAPE+&CAY.(&LA),0(5)
2174          BE    OUT&SYSNDX
2175          LA    5,&LA.(5)
2176          BCT   4,CNTI&SYSNDX
2177 .RERROR2 ANOP
2178 RERR&SYSNDX EQU *
2179 *---------MOVE ERROR OF 1ST. FIELD AND 2ND. FIELD TO
2180 *----------WORKAREA RELERR1
2181          MVC   RELERR1+&CY.(&L),RES1&SYSNDX
2182          MVC   RELERR1+&CAY.(&LA),RES2&SYSNDX
2183          MVI   REL,C'1'
2184 OUT&SYSNDX EQU *
2185          L     5,SAVE
2186          L     3,SAVEX
2187          L     4,SAVEY
2188 .CUTOFF  ANOP
2189          AGO   .OFF
2190 *
2191 ********************************
2192 *
2193 .PRETYP2 ANOP
2194          AIF   (N'&C NE N'&L).RELERR1
2195          AIF   (N'&CA NE N'&LA).RELERRX
2196          AIF   ('&C' EQ '').RELERRA
2197          AIF   ('&L' EQ '').RELERRB
2198          AIF   ('&A1' NE '').CHEKA
2199          AIF   ('&A2' EQ '').RELERRF
2200 .CHEKA   ANOP
2201          AIF   ('&CA' EQ '').RELERRD
2202          AIF   ('&LA' EQ '').RELERRE
2203          AIF   ('&AA1' NE '').CHEKB
2204          AIF   ('&AA2' EQ '').RELERRF
2205 .CHEKB   ANOP
2206 &N       SETA  1
2207 .CHEKCB  ANOP
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 2208           AIF   (&C(&N) LT 0 OR &C(&N) GT &AA).RELERRA
                                 2209           AIF   (&L(&N) LT 0).RELERRB
                                 2210           AIF   (&N EQ N'&C).CHEKCC
                                 2211 &N        SETA  &N+1
                                 2212           AGO   .CHEKCB
                                 2213 .CHEKCC   ANOP
                                 2214 &N        SETA  1
                                 2215 .CHEKCD   ANOP
                                 2216           AIF   (&CA(&N) LT 0 OR &CA(&N) GT &AA).RELERRD
                                 2217           AIF   (&LA(&N) LT 0).RELERRE
                                 2218           AIF   (&N EQ N'&CA).RELA
                                 2219 &N        SETA  &N+1
                                 2220           AGO   .CHEKCD
                                 2221 .RELA     ANOP
                                 2222 &N        SETA  1
                                 2223 .RELB     ANOP
                                 2224           AIF   (&CONUM1(1) NE 0).RELC
                                 2225           AGO   .RELD
                                 2226 .RELC     ANOP
                                 2227           AIF   ('&REMARK' EQ 'YES').RELE
                                 2228 *--------DETERMINE THE REQUIRED RECORD.
                                 2229           CLC   ATAPE+&COLM1.(&LEN1),=C'&CONUM1(1)'
                                 2230           BNE   RN&SYSNDX
                                 2231 .RELD     ANOP
                                 2232 &CX(&N)   SETA  &C(&N)
                                 2233           AIF   (&N EQ N'&C).RELF
                                 2234 &N        SETA  &N+1
                                 2235           AGO   .RELD
                                 2236 .RELE     ANOP
                                 2237           AIF   (N'&CONUM1 NE N'&C).RELERRO
                                 2238 *--------COMPUTE THE 1ST. FIELD POSITION IN WORKAREA WORKA.
                                 2239 &CX(&N)   SETA  (&CONUM1(&N)-1)*80+&C(&N)
                                 2240           AIF   (&N EQ N'&C).RELF
                                 2241 &N        SETA  &N+1
                                 2242           AGO   .RELE
                                 2243 .RELF     ANOP
                                 2244 &N        SETA  1
                                 2245 .RELG     ANOP
                                 2246           AIF   (&CONUM2(1) NE 0).RELH
                                 2247           AGO   .RELI
                                 2248 .RELH     ANOP
                                 2249           AIF   ('&REMARK' EQ 'YES').RELJ
                                 2250 *--------DETERMINE THE REQUIRED RECORD.
                                 2251           CLC   ATAPE+&COLM2.(&LEN2),=C'&CONUM2(1)'
                                 2252           BNE   RN&SYSNDX
                                 2253 .RELI     ANOP
                                 2254 &CAX(&N)  SETA  &CA(&N)
                                 2255           AIF   (&N EQ N'&CA).TYPE2
                                 2256 &N        SETA  &N+1
                                 2257           AGO   .RELI
                                 2258 .RELJ     ANOP
```

```
                        2259          AIF   (N'&CONUM2 NE N'&CA).RELERRO
                        2260 *--------COMPUTE THE 2ND. FIELD POSITION IN WORKAREA WORKA.
                        2261 &CAX(&N) SETA  (&CONUM2(&N)-1)*80+&CA(&N)
                        2262          AIF   (&N EQ N'&CA).TYPE2
                        2263 &N       SETA  &N+1
                        2264          AGO   .RELJ
                        2265 .RELERRO ANOP
                        2266          MNOTE *,' '
                        2267          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR BECAUSE OF NOT'
                        2268          MNOTE *,'CORRESPONDING IN OPERAND CONUM1 AND C OR '
                        2269          MNOTE *,'CONUM2 AND CA'
                        2270          MNOTE *,' '
                        2271          AGO   .RELERRG
                        2272 .RELERR1 ANOP
                        2273          MNOTE *,' '
                        2274          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR BECAUSE OF'
                        2275          MNOTE *,'NOT CORRESPONDING IN OPERAND C AND OPERAND L'
                        2276          MNOTE *,' '
                        2277          AGO   .RELERRG
                        2278 .RELERRX ANOP
                        2279          MNOTE *,' '
                        2280          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR BECAUSE OF '
                        2281          MNOTE *,'NOT CORRESPONDING IN OPERAND CA AND OPERAND LA'
                        2282          MNOTE *,' '
                        2283          AGO   .RELERRG
                        2284 .RELERRA ANOP
                        2285          MNOTE *,' '
                        2286          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR IN C OPERAND'
                        2287          MNOTE *,' '
                        2288          AGO   .RELERRG
                        2289 .RELERRB ANOP
                        2290          MNOTE *,' '
                        2291          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR IN L OPERAND'
                        2292          MNOTE *,' '
                        2293          AGO   .RELERRG
                        2294 .RELERRC ANOP
                        2295          MNOTE *,' '
                        2296          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR BECAUSE OF '
                        2297          MNOTE *,'MISSING VALUE IN A OPERAND.'
                        2298          MNOTE *,' '
                        2299          AGO   .RELERRG
                        2300 .RELERRD ANOP
                        2301          MNOTE *,' '
                        2302          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR IN CA OPERAND'
                        2303          MNOTE *,' '
                        2304          AGO   .RELERRG
                        2305 .RELERRE ANOP
                        2306          MNOTE *,' '
                        2307          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR IN LA OPERAND'
                        2308          MNOTE *,' '
                        2309          AGO   .RELERRG
```

```
2310 .RELERRF ANOP
2311          MNOTE *,' '
2312          MNOTE *,'RELATIVE COMMAND STATEMENT IS ERROR BECAUSE OF '
2313          MNOTE *,'MISSING VALUE IN AN OPERAND.'
2314          MNOTE *,' '
2315          AGO   .RELERRG
2316 .RELERRG ANOP
2317 &RELCHK  SETA  1
2318          AGO   .OFF
2319 .TYPE2   ANOP
2320 *
2321 *********************************************************************
2322 *         TYPE2 CHECK WHETHER ONE OF THE FIELD OF 1ST. CONDITION IS  *
2323 *               IN ONE OF ITS POSSIBLE RANGES OR EQUAL TO ONE OF ITS *
2324 *               VALID CODES AND ONE OF THE FIELDS OF 2ND. CONDITION  *
2325 *               WHICH RELATED TO 1ST. CONDITION IS IN ONE OF ITS     *
2326 *               POSSIBLE RANGES OR EQUAL TO ONE OF ITS VALID CODES   *
2327 *               OR NOT.                                              *
2328 *********************************************************************
2329 *
2330          MNOTE *,' '
2331          MNOTE *,'RELATIVE COMMAND STATEMENT IS CORRECT.'
2332          MNOTE *,' '
2333          ST    3,SAVEX
2334          ST    4,SAVEY
2335 &N       SETA  1
2336 &K1      SETA  1
2337 &K2      SETA  1
2338 &L1      SETA  1
2339 &L2      SETA  1
2340 .LOOP1   ANOP
2341          B     PT&N&SYSNDX
2342 *****************************
2343 .SETYPE1 ANOP
2344 *--------STORE POSSIBLE RANGES AND VALID CODES OF 1ST.FIELD NO. &N.
2345 RE1&N&SYSNDX DC &L(&N).C'&RESIGN2'
2346          AIF   ('&A1(&L1)' EQ '').SETYPE2
2347 STA&N&SYSNDX DC C'&A1(&L1)'
2348 .NEXT    ANOP
2349          AIF   ('&A1(&L1+1)' EQ '').SETYPE2
2350          AIF   (&L1 EQ N'&A1).NEXT11
2351 &L1      SETA  &L1+1
2352          DC    C'&A1(&L1)'
2353 &K1      SETA  &K1+1
2354          AGO   .NEXT
2355 .NEXT11  ANOP
2356          AIF   (&L2 EQ N'&A2).NEXT2
2357 .SETYPE2 ANOP
2358          AIF   ('&A2(&L2)' EQ '').NEX13
2359          AIF   ('&A2(&L2)' NE '&').SETYPE4
2360 STB&N&SYSNDX DC &L(&N).C' '
```

```
                        2361          AGO   .SETYPE5
                        2362 .SETYPE4 ANOP
                        2363 STB&N&SYSNDX DC C'&A2(&L2)'
                        2364 .SETYPE5 ANOP
                        2365          AIF   ('&A2(&L2+1)' EQ '').NEXT3
                        2366 .NEXT1   ANOP
                        2367          AIF   (&L2 EQ N'&A2).NEXT2
                        2368 &L2      SETA  &L2+1
                        2369          AIF   ('&A2(&L2)' NE '@').SETYPE6
                        2370          DC    &L(&N).C' '
                        2371          AGO   .STYPE61
                        2372 .SETYPE6 ANOP
                        2373          DC    C'&A2(&L2)'
                        2374 .STYPE61 ANOP
                        2375 &K2      SETA  &K2+1
                        2376          AGO   .SETYPE5
                        2377 .NEXT2   ANOP
                        2378          AIF   (&N NE N'&C).RELERR2
                        2379 .NEXT3   ANOP
                        2380 *
                        2381 ********************************************************************************
                        2382 *
                        2383          CNOP  0,4
                        2384 PT&N&SYSNDX EQU *
                        2385          AIF   ('&A1(&L1)' EQ '').NXT1
                        2386          LA    5,STA&N&SYSNDX
                        2387          LA    4,&K1
                        2388 PU&N&SYSNDX EQU *
                        2389 *--------COMPARE 1ST.FIELD NO.&N TO ITS POSSIBLE RANGES.
                        2390          CLC   ATAPE+&CX(&N).(&L(&N)),0(5)
                        2391          BL    PV&N&SYSNDX
                        2392          LA    5,&L(&N).(5)
                        2393          LA    5,1(5)
                        2394          CLC   ATAPE+&CX(&N).(&L(&N)),0(5)
                        2395          BH    CNT&N&SYSNDX
                        2396          B     RTN&SYSNDX
                        2397 CNT&N&SYSNDX EQU *
                        2398          LA    5,&L(&N).(5)
                        2399          BCT   4,PU&N&SYSNDX
                        2400 .NXT1    ANOP
                        2401 PV&N&SYSNDX EQU *
                        2402          AIF   ('&A2(&L2)' EQ '').ISANY1
                        2403          LA    5,STB&N&SYSNDX
                        2404          LA    4,&K2
                        2405 PW&N&SYSNDX EQU *
                        2406 *--------COMPARE 1ST. FIELD NO.&N TO ITS VALID CODES
                        2407          CLC   ATAPE+&CX(&N).(&L(&N)),0(5)
                        2408          BE    RTN&SYSNDX
                        2409          LA    5,&L(&N).(5)
                        2410          BCT   4,PW&N&SYSNDX
                        2411 .ISANY1  ANOP
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 2412           AIF   (&N EQ N'&C).EXPAND2
                                 2413 .RESET1   ANOP
                                 2414 &N        SETA  &N+1
                                 2415 &L1       SETA  &L1+2
                                 2416 &L2       SETA  &L2+2
                                 2417 &K1       SETA  1
                                 2418 &K2       SETA  1
                                 2419           AGO   .LOOP1
                                 2420 *
                                 2421 ********************************************************************************
                                 2422 *
                                 2423 .EXPAND2  ANOP
                                 2424           B     RN&SYSNDX
                                 2425 RTN&SYSNDX EQU *
                                 2426 &N        SETA  1
                                 2427 &L2       SETA  1
                                 2428 &L1       SETA  1
                                 2429 &K1       SETA  1
                                 2430 &K2       SETA  1
                                 2431 .LOOP2    ANOP
                                 2432           B     PZ&N&SYSNDX
                                 2433 *
                                 2434 ********************************************************************************
                                 2435 *
                                 2436 *--------STORE POSSIBLE RANGES AND VALID CODES OF 2ND. NC.&N.
                                 2437 RE2&N&SYSNDX DC &LA(&N).C'&RESIGN2'
                                 2438 .SETYPE7 ANOP
                                 2439           AIF   ('&AA1(&L1)' EQ '').SETYPE8
                                 2440 SZA&N&SYSNDX DC C'&AA1(&L1)'
                                 2441 .NEXT4    ANOP
                                 2442           AIF   ('&AA1(&L1+1)' EQ '').SETYPE8
                                 2443           AIF   (&L1 EQ N'&AA1).NEXT41
                                 2444 &L1       SETA  &L1+1
                                 2445           DC    C'&AA1(&L1)'
                                 2446 &K1       SETA  &K1+1
                                 2447           AGO   .NEXT4
                                 2448 .NEXT41   ANOP
                                 2449           AIF   (&L2 EQ N'&AA2).NEXT8
                                 2450 .SETYPE8  ANOP
                                 2451           AIF   ('&AA2(&L2)' EQ '').NEXT7
                                 2452           AIF   ('&AA2(&L2)' NE '&').STYPE10
                                 2453 SZB&N&SYSNDX DC &LA(&N).C' '
                                 2454           AGO   .STYPE11
                                 2455 .STYPE10  ANOP
                                 2456 SZB&N&SYSNDX DC C'&AA2(&L2)'
                                 2457 .STYPE11  ANOP
                                 2458           AIF   ('&AA2(&L2+1)' EQ '').NEXT7
                                 2459 .NEXT5    ANOP
                                 2460           AIF   (&L2 EQ N'&AA2).NEXT8
                                 2461 &L2       SETA  &L2+1
                                 2462           AIF   ('&AA2(&L2)' NE '&').STYPE12
```

LOC OBJECT CODE ADDR1 ADDR2 STMT SOURCE STATEMENT DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09

```
                        2463           DC    &LA(&N).C' '
                        2464           AGO   .STYP121
                        2465 .STYPE12  ANOP
                        2466           DC    C'&AA2(&L2)'
                        2467 .STYP121  ANOP
                        2468 &K2       SETA  &K2+1
                        2469           AGO   .STYPE11
                        2470 .NEXT6    ANOP
                        2471           AIF   (&N NE N'&CA).RELERR5
                        2472 .NEXT7    ANOP
                        2473 *
                        2474 *********************************************************************
                        2475 *
                        2476           CNOP  0,4
                        2477 PZ&N&SYSNDX EQU *
                        2478           AIF   ('&AA1(&L1)' EQ '').NXT2
                        2479           LA    5,SZA&N&SYSNDX
                        2480           LA    4,&K1
                        2481 PA&N&SYSNDX EQU *
                        2482 *--------COMPARE 2ND.FIELD NO.&N TO ITS POSSIBLE RANGES.
                        2483           CLC   ATAPE+&CA*(&N).(&LA(&N)),0(5)
                        2484           BL    PB&N&SYSNDX
                        2485           LA    5,&LA(&N).(5)
                        2486           LA    5,1(5)
                        2487           CLC   ATAPE+&CA*(&N).(&LA(&N)),0(5)
                        2488           BH    CT&N&SYSNDX
                        2489           B     RN&SYSNDX
                        2490 CT&N&SYSNDX EQU *
                        2491           LA    5,&LA(&N).(5)
                        2492           BCT   4,PA&N&SYSNDX
                        2493 .NXT2     ANOP
                        2494 PB&N&SYSNDX EQU *
                        2495           AIF   ('&AA2(&L2)' EQ '').ISANY2
                        2496           LA    5,SZB&N&SYSNDX
                        2497           LA    4,&K2
                        2498 PC&N&SYSNDX EQU *
                        2499 *--------COMPARE 2ND.FIELD NO.&N TO ITS VALID CODES.
                        2500           CLC   ATAPE+&CA*(&N).(&LA(&N)),0(5)
                        2501           BE    RN&SYSNDX
                        2502           LA    5,&LA(&N).(5)
                        2503           BCT   4,PC&N&SYSNDX
                        2504 .ISANY2   ANOP
                        2505           AIF   (&N EQ N'&CA).TYPER3
                        2506 SET&N&SYSNDX EQU *
                        2507 .RESET2   ANOP
                        2508 &N        SETA  &N+1
                        2509 &L1       SETA  &L1+2
                        2510 &L2       SETA  &L2+2
                        2511 &K1       SETA  1
                        2512 &K2       SETA  1
                        2513           AGO   .LOOP2
```

```
                        2514 .TYPER3  ANOP
                        2515 &N       SETA  1
                        2516 .TYPER31 ANOP
                        2517 *--------MOVE ERROR CODE OF 1ST. FIELD NO. &N TO WORKAREA RELERR2.
                        2518          MVC   RELERR2+&CX(&N).(&L(&N)),FE1&N&SYSNDX
                        2519          AIF   (&N EQ N'&C).TYPER32
                        2520 &N       SETA  &N+1
                        2521          AGO   .TYPER31
                        2522 .TYPER32 ANOP
                        2523 &N       SETA  1
                        2524 .TYPER33 ANOP
                        2525 *--------MOVE ERROR CODE OF 2ND.FIELD NO.&N TO WORKAREA RELERR2.
                        2526          MVC   RELERR2+&CA)(&N).(&LA(&N)),RE2&N&SYSNDX
                        2527          AIF   (&N EQ N'&CA).ENTYPE3
                        2528 &N       SETA  &N+1
                        2529          AGO   .TYPER33
                        2530 .ENTYPE3 ANOP
                        2531          MVI   REL,C'1'
                        2532 RN&SYSNDX EQU *
                        2533          L     3,SAVEX
                        2534          L     4,SAVEY
                        2535 .OFF     ANOP
                        2536          MEND
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 2538 *
                                 2539 ********************************************************************************
                                 2540 *
                                 2541          MACRO
                                 2542          ENDCHECK
                                 2543 *
                                 2544 ********************************************************************************
                                 2545 * MODULE NAME : ENDCHECK                                                       *
                                 2546 * PURPOSE : 1.TO PRINT;                                                        *
                                 2547 *               -POSSIBLE ERROR RECORD                                         *
                                 2548 *               -COMPARATIVE ERROR RECORD                                      *
                                 2549 *               -RELATIVE ERROR RECORD                                         *
                                 2550 *               -TOTAL INPUT CASE                                              *
                                 2551 *               -TOTAL INPUT DATA                                              *
                                 2552 *               -TOTAL ERROR DATA                                              *
                                 2553 *             2.BRANCH TO READ ROUTINE                                         *
                                 2554 ********************************************************************************
                                 2555 *
                                 2556 *
                                 2557          GBLA  &RECSIZA
                                 2558          GBLA  &OUT
                                 2559          GBLC  &OUTPUTX
                                 2560          GBLA  &IDCHK
                                 2561          GBLA  &LCD
                                 2562          GBLC  &REMARKX
                                 2563          GBLA  &NCARD
                                 2564          GBLA  &RNGFLAG,&RNGCHK
                                 2565          GBLA  &COMFLAG,&COMCHK
                                 2566          GBLA  &RELFLAG,&RELCHK
                                 2567          LCLA  &LN,&LC
                                 2568          LCLA  &AB
                                 2569          LCLA  &N
                                 2570          LCLA  &M
                                 2571          LCLA  &K
                                 2572          LCLA  &KX
                                 2573          LCLA  &KY
                                 2574          LCLA  &MULT
                                 2575          LCLA  &RESULT
                                 2576          LCLA  &EX
                                 2577          LCLA  &RECSIZE
                                 2578          LCLA  &CL,&COL
                                 2579          LCLC  &CRD
                                 2580 *
                                 2581 ********************************************************************************
                                 2582 *
                                 2583 &N       SETA  1
                                 2584 &EX      SETA  0
                                 2585 &K       SETA  1
                                 2586 &CL      SETA  0
                                 2587 &RECSIZE SETA  &RECSIZA
                                 2588 &AB      SETA  &RECSIZA
```

ข.10 โปรแกรม ENDCHECK

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    OCS/VS ASSEMBLER REL 34.0 18.14 82-06-05
                                 2589 LASTC    EQU   *
                                 2590          ST    13,SAVE2
                                 2591          BALR  14,0
                                 2592          USING LAST1,14,15,1,2
                                 2593 LAST1    LM    15,2,LAST2
                                 2594          B     LAST3
                                 2595 LAST2    DC    A(LAST1+4096,LAST1+8192,LAST1+12288)
                                 2596 ERROR1   DC    CL12'INVALID CODE'
                                 2597 ERROR2   DC    CL17'COMPARATIVE ERROR'
                                 2598 ERROR3   DC    CL20'RELATIVE ERROR TYPE1'
                                 2599 ERROR4   DC    CL20'RELATIVE ERROR TYPE2'
                                 2600 SUMMARY1 DC    CL23'TOTAL NUMBER OF CASE = '
                                 2601 SUMMARY2 DC    CL29'TOTAL NUMBER OF INPUT DATA = '
                                 2602 SUMMARY3 DC    CL29'TOTAL NUMBER OF ERROR DATA = '
                                 2603 LINEND   DC    CL40'****************************************'
                                 2604 BLANKET1 DC    CL2'( '
                                 2605 BLANKET2 DC    CL10'REC./CASE)'
                                 2606          CNOP  0,4
                                 2607 LAST3    EQU   *
                                 2608 .ROUTINE ANOP
                                 2609 *--------COMPUTE NUMBER OF LINES PER RECORD TO BE PRINTED.
                                 2610 &MULT    SETA  &K*80
                                 2611 &RESULT  SETA  &RECSIZE-&MULT
                                 2612          AIF   (&RESULT LE 0).OUTPUT0
                                 2613 &K       SETA  &K+1
                                 2614          AGO   .ROUTINE
                                 2615 .OUTPUT0 ANOP
                                 2616 &KX      SETA  &K
                                 2617 &KY      SETA  &K
                                 2618 *--------CHECK FOR NON-EXPANDED MACRO.
                                 2619          AIF   (&IDCHK NE 0).ENDXX
                                 2620          AIF   (&RNGCHK NE 0).ENDX
                                 2621          AIF   (&COMCHK NE 0).ENDX
                                 2622          AIF   (&RELCHK EQ 0).OPT2
                                 2623 .ENDX    ANOP
                                 2624 &EX      SETA  1
                                 2625          AGO   .STOPX
                                 2626 .OPT2    ANOP
                                 2627          AIF   ('&OUTPUT' EQ 'YES').OUTPUT3
                                 2628 *--------CHECK USER'S REQUIREMENT OF PRINTING ALL RECORDS.
                                 2629 .OUTPUT2 ANOP
                                 2630 *--------PRE-CHECK BEFORE PRINTING ERROR RECORD.
                                 2631          CLI   RNG,C'0'
                                 2632          BNE   OUT&N
                                 2633          CLI   COM,C'0'
                                 2634          BNE   OUT&N
                                 2635          CLI   REL,C'0'
                                 2636          BNE   OUT&N
                                 2637 .OUTPUT3 ANOP
                                 2638          B     RETURN4
                                 2639 OUT&N    EQU   *
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 2640 &CL       SETA  0
                                 2641 .OUTPUT1  ANOP
                                 2642 &CCL      SETA  &CL+1
                                 2643 *--------CHECK FOR EXPANDED MACRO.
                                 2644           AIF   (&RNGFLAG GT 0).RNGX
                                 2645           AIF   (&COMFLAG GT 0).COMX
                                 2646           AIF   (&RELFLAG GT 0).RELX
                                 2647           AGO   .RETURN4
                                 2648 *
                                 2649 ********************************************************************************
                                 2650 *
                                 2651           CNOP  0,4
                                 2652 .RNGX      ANOP
                                 2653 *--------CHECK POSSIBLE ERROR IN RECORD.
                                 2654           CLC   AERR+&CCL.(80),BLANK
                                 2655           BNE   OM&N
                                 2656           AIF   (&AB LE 8C).ONX
                                 2657           CLI   CHK,C'1'
                                 2658           BE    ON&N
                                 2659           BAL   5,PR&N
                                 2660           MVC   WPRINT+1(132),BLANK
                                 2661           AIF   (&N GT 1).ONY
                                 2662           BAL   13,SQC
                                 2663 .ONY      ANOP
                                 2664           MVC   PRT(80),ATAPE+&COL
                                 2665           STM   14,15,SAVE4
                                 2666           LM    1,2,SAVE3
                                 2667           PUT   PRINT,WPRINT
                                 2668           LM    1,2,SAVE3
                                 2669           LM    14,15,SAVE4
                                 2670           MVI   CHK,C'1'
                                 2671 .ONX      ANOP
                                 2672           B     ON&N
                                 2673 OM&N      EQU   *
                                 2674           CLI   CHK,C'1'
                                 2675           BE    OA&N
                                 2676           BAL   5,PR&N
                                 2677           MVC   WPRINT+1(132),BLANK
                                 2678           AIF   (&N GT 1).AA
                                 2679           BAL   13,SQC
                                 2680 .AA       ANOP
                                 2681           MVC   PRT(80),ATAPE+&CCL
                                 2682           STM   1,2,SAVE3
                                 2683           STM   14,15,SAVE4
                                 2684           PUT   PRINT,WPRINT
                                 2685           LM    1,2,SAVE3
                                 2686           LM    14,15,SAVE4
                                 2687           MVI   CHK,C'1'
                                 2688 OA&N      EQU   *
                                 2689           BAL   5,PR&N
                                 2690           MVC   WPRINT+1(132),BLANK
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-05
                                 2691           MVC   PRT(80),AERR+&COL
                                 2692           MVC   MESSAGE(12),ERROR1
                                 2693 *--------PRINT ERROR MESSAGE OF POSSIBLE ERROR.
                                 2694           STM   1,2,SAVE3
                                 2695           STM   14,15,SAVE4
                                 2696           PUT   PRINT,WPRINT
                                 2697           LM    1,2,SAVE3
                                 2698           LM    14,15,SAVE4
                                 2699           MVI   CHK,C'1'
                                 2700 CN&N      EQU   *
                                 2701 *--------CHECK FOR ANOTHER EXPANDED MACRO.
                                 2702           AIF   (&COMFLAG NE 0).COMXX
                                 2703           AIF   (&RELFLAG NE 0).RELXX
                                 2704           MVI   CHK,C'0'
                                 2705           B     OK&N
                                 2706 .COMX     ANOP
                                 2707 .COMXX    ANOP
                                 2708 *--------CHECK COMPARATIVE ERROR IN RECORD.
                                 2709           CLC   COMERR+&COL.(80),BLANK
                                 2710           BNE   OP&N
                                 2711           AIF   (&AB LE 8).ORX
                                 2712           CLI   CHK,C'1'
                                 2713           BE    OR&N
                                 2714           BAL   5,PR&N
                                 2715           MVC   WPRINT+1(132),BLANK
                                 2716           AIF   (&N GT 1).CRY
                                 2717           BAL   13,SQC
                                 2718 .CRY      ANOP
                                 2719           MVC   PRT(80),ATAPE+&COL
                                 2720           STM   1,2,SAVE3
                                 2721           STM   14,15,SAVE4
                                 2722           PUT   PRINT,WPRINT
                                 2723           LM    1,2,SAVE3
                                 2724           LM    14,15,SAVE4
                                 2725           MVI   CHK,C'1'
                                 2726 .ORX      ANOP
                                 2727           B     OR&N
                                 2728 OP&N      EQU   *
                                 2729           CLI   CHK,C'1'
                                 2730           BE    OQ&N
                                 2731           BAL   5,PR&N
                                 2732           MVC   WPRINT+1(132),BLANK
                                 2733           AIF   (&N GT 1).BB
                                 2734           BAL   13,SQC
                                 2735 .BB       ANOP
                                 2736           MVC   PRT(80),ATAPE+&COL
                                 2737           STM   1,2,SAVE3
                                 2738           STM   14,15,SAVE4
                                 2739           PUT   PRINT,WPRINT
                                 2740           LM    1,2,SAVE3
                                 2741           LM    14,15,SAVE4
```

```
                        2742            MVI   CHK,C'1'
                        2743 CC&N       EQU   *
                        2744            BAL   5,PR&N
                        2745            MVC   WPRINT+1(132),BLANK
                        2746            MVC   PRT(80),CCMERR+&CCL
                        2747            MVC   MESSAGE(17),ERROR2
                        2748 *--------PRINT ERROR MESSAGE OF COMPARATIVE ERROR.
                        2749            STM   1,2,SAVE3
                        2750            STM   14,15,SAVE4
                        2751            PUT   PRINT,WPRINT
                        2752            LM    1,2,SAVE3
                        2753            LM    14,15,SAVE4
                        2754            MVI   CHE,C'1'
                        2755 CR&N       EQU   *
                        2756 *--------CHECK FOR THE LAST EXPANDED MACRO.
                        2757            AIF   (&RELFLAG NE 0).RELXX
                        2758            MVI   CHK,C'0'
                        2759            B     OK&N
                        2760 .RELX      ANOP
                        2761 .RELXX     ANOP
                        2762 *--------CHECK RELATIVE ERROR TYPE1 IN RECORD.
                        2763            CLC   RELERR1+&CCL.(80),BLANK
                        2764            BNE   OS&N
                        2765            AIF   (&AB LE 80).CUX
                        2766            CLI   CHK,C'1'
                        2767            BE    OU&N
                        2768            BAL   5,PR&N
                        2769            MVC   WPRINT+1(132),BLANK
                        2770            AIF   (&N GT 1).OUY
                        2771            BAL   13,SQC
                        2772 .OUY       ANOP
                        2773            MVC   PRT(80),ATAPE+&COL
                        2774            STM   1,2,SAVE3
                        2775            STM   14,15,SAVE4
                        2776            PUT   PRINT,WPRINT
                        2777            LM    1,2,SAVE3
                        2778            LM    14,15,SAVE4
                        2779            MVI   CHK,C'1'
                        2780 .OUX       ANOP
                        2781            B     OU&N
                        2782 CS&N       EQU   *
                        2783            CLI   CHK,C'1'
                        2784            BE    OT&N
                        2785            BAL   5,PR&N
                        2786            MVC   WPRINT+1(132),BLANK
                        2787            AIF   (&N GT 1).CC
                        2788            BAL   13,SQC
                        2789 .CC        ANOP
                        2790            MVC   PRT(80),ATAPE+&CCL
                        2791            STM   1,2,SAVE3
                        2792            STM   14,15,SAVE4
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 2793           PUT   PRINT,WPRINT
                                 2794           LM    14,15,SAVE4
                                 2795           LM    1,2,SAVE3
                                 2796           MVI   CHK,C'1'
                                 2797 OT&N      EQU   *
                                 2798           BAL   5,PR&N
                                 2799           MVC   WPRINT+1(132),BLANK
                                 2800           MVC   PRT(80),RELERR1+&COL
                                 2801           MVC   MESSAGE(20),ERROR3
                                 2802           MVI   CHE,C'1'
                                 2803           STM   1,2,SAVE3
                                 2804           STM   14,15,SAVE4
                                 2805           PUT   PRINT,WPRINT
                                 2806           LM    1,2,SAVE3
                                 2807           LM    14,15,SAVE4
                                 2808 CL&N      EQU   *
                                 2809 *---------CHECK RELATIVE ERROR TYPE2 IN RECORD.
                                 2810           CLC   RELERR2+&COL.(80),BLANK
                                 2811           BNE   OV&N
                                 2812           AIF   (&AB LE 80).OXX
                                 2813           CLI   CHK,C'1'
                                 2814           BE    OK&N
                                 2815           BAL   5,PR&N
                                 2816           MVC   WPRINT+1(132),BLANK
                                 2817           AIF   (&N GT 1).CXY
                                 2818           BAL   13,SQC
                                 2819 .OXY      ANOP
                                 2820           MVC   PRT(80),ATAPE+&COL
                                 2821           STM   1,2,SAVE3
                                 2822           STM   14,15,SAVE4
                                 2823           PUT   PRINT,WPRINT
                                 2824           LM    1,2,SAVE3
                                 2825           LM    14,15,SAVE4
                                 2826           MVI   CHK,C'1'
                                 2827 .CXX      ANOP
                                 2828           B     OK&N
                                 2829 OV&N      EQU   *
                                 2830           CLI   CHK,C'1'
                                 2831           BE    OW&N
                                 2832           BAL   5,PR&N
                                 2833           MVC   WPRINT+1(132),BLANK
                                 2834           AIF   (&N GT 1).DC
                                 2835           BAL   13,SQC
                                 2836 .DD       ANOP
                                 2837           MVC   PRT(80),ATAPE+&COL
                                 2838           STM   1,2,SAVE3
                                 2839           STM   14,15,SAVE4
                                 2840           PUT   PRINT,WPRINT
                                 2841           LM    1,2,SAVE3
                                 2842           LM    14,15,SAVE4
                                 2843           MVI   CHK,C'1'
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    COS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 2844 CWEN     EQU   *
                                 2845          BAL   5,PREN
                                 2846          MVC   WPRINT+1(132),BLANK
                                 2847          MVC   PRT(80),RELERR2+ECOL
                                 2848          MVC   MESSAGE(2C),ERROR4
                                 2849          STM   1,2,SAVE3
                                 2850 *--------PRINT ERROR MESSAGE FOR RELATIVE ERROR TYPE2.
                                 2851           STM   14,15,SAVE4
                                 2852          PUT   PRINT,WPRINT
                                 2853          LM    1,2,SAVE3
                                 2854          LM    14,15,SAVE4
                                 2855          MVI   CHR,C'1'
                                 2856          B     OKEN
                                 2857 PREN     EQU   *
                                 2858          AIF   ('&REMARK)' EQ 'YES').PRINTRM
                                 2859          AIF   (&AB GT 8C).PRINTMT
                                 2860          AGO   .PRINTCD
                                 2861 .PRINTRM ANOP
                                 2862 *--------PRINT LINE HEADING OF DATA IN WORKAREA.
                                 2863          CLI   CHR,C'1'
                                 2864          BE    FIEN
                                 2865          MVC   WPRINT+1(132),BLANK
                                 2866          MVC   CASENO(7),SECCASE
                                 2867          MVC   PRT(82),HEAD
                                 2868          MVC   MESSAGE(13),ERRMSGN
                                 2869          STM   1,2,SAVE3
                                 2870          STM   14,15,SAVE4
                                 2871          PUT   PRINT,WPRINT
                                 2872          LM    1,2,SAVE3
                                 2873          LM    14,15,SAVE4
                                 2874          MVC   WPRINT+1(132),BLANK
                                 2875          MVC   CASENO(7),UNDERLN
                                 2876          MVC   PRT(80),LINE
                                 2877          MVC   MESSAGE(13),UNDERLN
                                 2878          STM   1,2,SAVE3
                                 2879          STM   14,15,SAVE4
                                 2880          PUT   PRINT,WPRINT
                                 2881          LM    1,2,SAVE3
                                 2882          LM    14,15,SAVE4
                                 2883          MVI   CHR,C'1'
                                 2884          AGO   .FINISH
                                 2885 .PRINTCD ANOP
                                 2886 *--------PRINT LINE HEADING OF DATA IN CARD OR TAPE WHICH RECORD SIZE
                                 2887 *--------IS NOT GREATER THAN 80 BYTES
                                 2888          LA    6,1(6)
                                 2889          CH    6,FIFTY
                                 2890          BNH   TIEN
                                 2891          LA    6,0
                                 2892          LA    6,1(6)
                                 2893 TNEN     EQU   *
                                 2894          MVC   WPRINT+1(132),BLANK
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-05

                                2895          MVC    PRT(82),HEAD
                                2896          STM    1,2,SAVE3
                                2897          STM    14,15,SAVE4
                                2898          PUT    PRINT,WPRINT
                                2899          LM     1,2,SAVE3
                                2900          LM     14,15,SAVE4
                                2901          MVC    WPRINT+1(132),BLANK
                                2902          MVC    PRT(80),LINE
                                2903          STM    1,2,SAVE3
                                2904          STM    14,15,SAVE4
                                2905          PUT    PRINT,WPRINT
                                2906          LM     1,2,SAVE3
                                2907          LM     14,15,SAVE4
                                2908          MVI    WPRINT,C'1'
                                2909          MVC    CASENO(7),SEQCASE
                                2910          MVG    PRT(82),HEAD
                                2911          MVC    MESSAGE(13),ERRMSGN
                                2912          STM    1,2,SAVE3
                                2913          STM    14,15,SAVE4
                                2914          PUT    PRINT,WPRINT
                                2915          LM     1,2,SAVE3
                                2916          LM     14,15,SAVE4
                                2917          MVI    WPRINT,C' '
                                2918          MVC    WPRINT+1(132),BLANK
                                2919          MVC    CASENO(7),UNDERLN
                                2920          MVC    PRT(80),LINE
                                2921          MVC    MESSAGE(13),UNDERLN
                                2922          STM    1,2,SAVE3
                                2923          STM    14,15,SAVE4
                                2924          PUT    PRINT,WPRINT
                                2925          LM     1,2,SAVE3
                                2926          LM     14,15,SAVE4
                                2927          MVC    WPRINT+1(132),BLANK
                                2928          CLI    CHK,C'0'
                                2929          BE     TI&N
                                2930          BAL    13,SQC
                                2931          MVC    PRT(80),ATAPE+1
                                2932          STM    1,2,SAVE3
                                2933          STM    14,15,SAVE4
                                2934          PUT    PRINT,WPRINT
                                2935          LM     1,2,SAVE3
                                2936          LM     14,15,SAVE4
                                2937          MVI    CHK,C'1'
                                2938          CNOP   0,4
                                2939 TI&N     EQU    *
                                2940          AGO    .FINISH
                                2941 .PRINTMT ANOP
                                2942 *--------PRINT LINE HEADING OF DATA IN TAPE WHICH RECORD SIZE IS
                                2943 *--------GREATER THAN 80 BYTES.
                                2944          B      SRC&N
                                2945 CHI&N    DC     C'0'
```

```
                        2946                CNOP  0,4
                        2947 SRC&N          EQU   *
                        2948                AIF   (&N EQ 1).CHKD
                        2949                AGO   .PRNTREG
                        2950 .CHKD          ANOP
                        2951                CLI   CHI&N,C'1'
                        2952                BE    FI&N
                        2953                MVC   WPRINT+1(132),BLANK
                        2954                MVC   CASENO(7),SECCASE
                        2955                MVC   PRT(82),HEAD
                        2956                MVC   MESSAGE(13),ERRMSGN
                        2957                STM   1,2,SAVE3
                        2958                STM   14,15,SAVE4
                        2959                PUT   PRINT,WPRINT
                        2960                LM    1,2,SAVE3
                        2961                LM    14,15,SAVE4
                        2962                MVC   WPRINT+1(132),BLANK
                        2963                MVC   CASENO(7),UNDERLN
                        2964                MVC   PRT(80),LINE
                        2965                MVC   MESSAGE(13),UNDERLN
                        2966                STM   1,2,SAVE3
                        2967                STM   14,15,SAVE4
                        2968                PUT   PRINT,WPRINT
                        2969                LM    1,2,SAVE3
                        2970                LM    14,15,SAVE4
                        2971                MVI   CHI&N,C'1'
                        2972                AGO   .FINISH
                        2973 .PRNTREG       ANOP
                        2974                CLI   CHI&N,C'1'
                        2975                BE    FI&N
                        2976 &N             SETA  &N-1
                        2977                MVC   WPRINT+1(132),BLANK
                        2978                MVC   PRT(82),HEAD&N
                        2979                STM   1,2,SAVE3
                        2980                STM   14,15,SAVE4
                        2981                PUT   PRINT,WPRINT
                        2982                LM    1,2,SAVE3
                        2983                LM    14,15,SAVE4
                        2984                MVC   WPRINT+1(132),BLANK
                        2985                MVC   PRT(80),LINE
                        2986                STM   1,2,SAVE3
                        2987                STM   14,15,SAVE4
                        2988                PUT   PRINT,WPRINT
                        2989                LM    1,2,SAVE3
                        2990                LM    14,15,SAVE4
                        2991 &N             SETA  &N+1
                        2992                MVI   CHI&N,C'1'
                        2993 .FINISH        ANOP
                        2994 FI&N           EQU   *
                        2995                BR    5
                        2996 CK&N           EQU   *
```

```
                        2997           AIF   ('&REMARK)' EQ 'YES').CKRM
                        2998           AIF   (&AB GT 80).CK1
                        2999           CLI   CHE,C'1'
                        3000           BE    OKX&N
                        3001           BAL   5,PR&N
                        3002           CLI   CHK,C'1'
                        3003           BE    OKX&N
                        3004           BAL   13,SQC
                        3005           MVC   PRT(80),ATAPE+&CCL
                        3006           STM   1,2,SAVE3
                        3007           STM   14,15,SAVE4
                        3008           PUT   PRINT,WPRINT
                        3009           LM    1,2,SAVE3
                        3010           LM    14,15,SAVE4
                        3011           AGO   .OK2
                        3012 .CK1      ANOP
                        3013           MVI   CHI&N,C'0'
                        3014 .OK2      ANOP
                        3015 OKX&N     EQU   *
                        3016 .CKRM     ANOP
                        3017           AIF   ('&REMARK)' NE 'YES').CKRK
                        3018           CLI   CHE,C'1'
                        3019           BNE   OKRK&N
                        3020           LA    4,1(4)
                        3021           MVI   CHE,C'0'
                        3022 .CKRK     ANOP
                        3023 OKRK&N    EQU   *
                        3024 &K        SETA  &K-1
                        3025           AIF   (&K EQ 0).RETURN1
                        3026 &CL       SETA  &CL+80
                        3027 &N        SETA  &N+1
                        3028           MVI   CHK,C'0'
                        3029           AGO   .OUTPUT1
                        3030 .RETURN1  ANOP
                        3031           MVI   CHR,C'0'
                        3032 &CL       SETA  0
                        3033 .RETURN2  ANOP
                        3034 *--------CLEAR WORKAREA AERR,COMERR,RELERR1 AND RELERR2.
                        3035 &CCL      SETA  &CL+1
                        3036           MVC   AERR+&CCL.(EC),AERR
                        3037           MVC   COMERR+&CCL.(80),COMERR
                        3038           MVC   RELERR1+&CCL.(80),RELERR1
                        3039           MVC   RELERR2+&CCL.(80),RELERR2
                        3040           MVC   RELERR3+&CCL.(80),RELERR3
                        3041 &KY       SETA  &KY-1
                        3042           AIF   (&KY EQ 0).RETURN3
                        3043 &CL       SETA  &CL+80
                        3044           AGO   .RETURN2
                        3045 .RETURN3  ANOP
                        3046           AIF   ('&REMARKX' EQ 'YES').RETURNK
                        3047           CLI   CHE,C'1'
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 3048           BNE   RETURN3
                                 3049           LA    4,1(4)
                                 3050 RETURN3   EQU   *
                                 3051 .RETURNK  ANOP
                                 3052           MVI   CHK,C'0'
                                 3053           MVI   CHE,C'0'
                                 3054           MVI   RNG,C'0'
                                 3055           MVI   COM,C'0'
                                 3056           MVI   REL,C'0'
                                 3057           MVC   WPRINT+1(132),BLANK
                                 3058           STM   1,2,SAVE3
                                 3059           STM   14,15,SAVE4
                                 3060           PUT   PRINT,WPRINT
                                 3061           LM    1,2,SAVE3
                                 3062           LM    14,15,SAVE4
                                 3063           AIF   (&AB GT 80).RETURN4
                                 3064           LA    6,1(6)
                                 3065 .RETURN4  ANOP
                                 3066 RETURN4   EQU   *
                                 3067           B     READ2
                                 3068 SQC       EQU   *
                                 3069 *--------COMPUTE CASE NO. OR RECORD NO. TO BE PRINTED.
                                 3070           AIF   ('&REMARK)' NE 'YES').SQC
                                 3071           CVD   3,ABC
                                 3072           AGO   .SQCX
                                 3073 .SQC      ANOP
                                 3074           CVD   7,ABC
                                 3075 .SQCX     ANOP
                                 3076           UNPK  ABCD(8),ABC
                                 3077           OI    ABCD+7,X'F0'
                                 3078           ST    5,SAVEX
                                 3079           LA    5,6
                                 3080           ST    6,SAVE
                                 3081           LA    6,ABCD+2
                                 3082 PP1       CLI   0(6),C'0'
                                 3083           BNE   PP2
                                 3084           MVI   0(6),C' '
                                 3085           LA    6,1(6)
                                 3086           BCT   5,PP1
                                 3087 PP2       EQU   *
                                 3088           MVC   CASENO(6),ABCD+2
                                 3089           L     5,SAVEX
                                 3090           L     6,SAVE
                                 3091           BR    13
                                 3092 STOP      EQU   *
                                 3093 *--------PRINT SUMMARY
                                 3094 .STOPX    ANOP
                                 3095           AIF   (&EX EQ 1).ENDY
                                 3096           LM    14,15,SAVE4
                                 3097           MVC   WPRINT+1(132),BLANK
                                 3098           MVC   PRT+31(23),SUMMARY1
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    DOS/VS ASSEMBLER REL 34.C 18.14 82-06-09
                                 3099           CVD   3,ABC
                                 3100           UNPK  ABCD(8),ABC
                                 3101           OI    ABCD+7,X'F0'
                                 3102           ST    5,SAVEX
                                 3103           LA    5,6
                                 3104           ST    6,SAVE
                                 3105           LA    6,ABCD+2
                                 3106 GG1       CLI   0(6),C'0'
                                 3107           BNE   GG2
                                 3108           MVI   0(6),C' '
                                 3109           LA    6,1(6)
                                 3110           BCT   5,GG1
                                 3111 GG2       EQU   *
                                 3112           MVC   PRT+54(6),ABCD+2
                                 3113           L     5,SAVEX
                                 3114           L     6,SAVE
                                 3115           STM   1,2,SAVE3
                                 3116           STM   14,15,SAVE4
                                 3117           PUT   PRINT,WPRINT
                                 3118           LM    1,2,SAVE3
                                 3119           LM    14,15,SAVE4
                                 3120 STOP1     EQU   *
                                 3121           CVD   7,ABC
                                 3122           UNPK  ABCD(8),ABC
                                 3123           OI    ABCD+7,X'F0'
                                 3124           LA    5,6
                                 3125           LA    6,ABCD+2
                                 3126 STOP2     EQU   *
                                 3127           CLI   0(6),C'0'
                                 3128           BNE   STOP3
                                 3129           MVI   0(6),C' '
                                 3130           LA    6,1(6)
                                 3131           BCT   5,STOP2
                                 3132 STOP3     EQU   *
                                 3133           MVC   WPRINT+1(132),BLANK
                                 3134           MVC   PRT+31(29),SUMMARY2
                                 3135           MVC   PRT+60(6),ABCD+2
                                 3136           AIF   (&NCARD EC C).GG2X
                                 3137 &CRD      SETC  '&NCARD'
                                 3138 &LN       SETA  &LCD
                                 3139           B     STP
                                 3140 CRDX      DC    C'&CRD'
                                 3141           CNOP  0,4
                                 3142 STP       EQU   *
                                 3143           MVC   PRT+66(2),BLANKET1
                                 3144           MVC   PRT+68(&LN),CRDX
                                 3145 &LC       SETA  &LN+68
                                 3146           MVC   PRT+&LC.(10),BLANKET2
                                 3147 .GG2X     ANOP
                                 3148           STM   1,2,SAVE3
                                 3149           STM   14,15,SAVE4
```

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT   SOURCE STATEMENT                    OS/VS ASSEMBLER REL 34.0 18.14 82-06-09
                                 3150           PUT   PRINT,WPRINT
                                 3151           LM    1,2,SAVE3
                                 3152           LM    14,15,SAVE4
                                 3153 STOP4     EQU   *
                                 3154           CVD   4,ABC
                                 3155           UNPK  ABCD(8),ABC
                                 3156           OI    ABCD+7,X'F0'
                                 3157           LA    5,6
                                 3158           LA    6,ABCD+2
                                 3159 STOP5     EQU   *
                                 3160           CLI   0(6),C'0'
                                 3161           BNE   STOP6
                                 3162           MVI   0(6),C' '
                                 3163           LA    6,1(6)
                                 3164           BCT   5,STOP5
                                 3165 STOP6     EQU   *
                                 3166           MVC   WPRINT+1(132),BLANK
                                 3167           MVC   PRT+31(29),SUMMARY3
                                 3168           MVC   PRT+60(6),ABCD+2
                                 3169           STM   1,2,SAVE3
                                 3170           STM   14,15,SAVE4
                                 3171           PUT   PRINT,WPRINT
                                 3172           LM    1,2,SAVE3
                                 3173           LM    14,15,SAVE4
                                 3174           MVC   WPRINT+1(132),BLANK
                                 3175           MVC   PRT+29(4C),LINEND
                                 3176           STM   1,2,SAVE3
                                 3177           STM   14,15,SAVE4
                                 3178           PUT   PRINT,WPRINT
                                 3179           LM    1,2,SAVE3
                                 3180           LM    14,15,SAVE4
                                 3181           L     13,SAVE2
                                 3182 .ENDY     ANOP
                                 3183           CLOSE TAPE,PRINT
                                 3184 .ENDXX    ANOP
                                 3185           EOJ
                                 3186           B     LITERALX
                                 3187           LTORG
                                 3188           CNOP  0,4
                                 3189 LITERALX  EQU   *
                                 3190           MEND
```

คำศัพท์

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ประวัติการศึกษา

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