PROGRAM PROLOGUE
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```
   LOC   OBJECT CODE      ADDR1 ADDR2    STMT     SOURCE STATEMENT

                                          2  ***********************************************************************
                                             *                                                                     *
                                             *  MICHAEL BEAVER                                                      *
                                          3  *  CS 310, SPRING 2013                                                 *
                                             *  PROGRAM 2                                                           *
                                             *  DUE: MARCH 11, 2013                                                 *
                                          4  *                                                                     *
                                             *  DESCRIPTION:                                                        *
                                             *     THIS PROGRAM EXPECTS AS INPUT A DATA FILE CONTAINING 20 LINES OF  *
                                          5  *     INTEGER DATA (ONE INTEGER PER LINE). THE PROGRAM WILL READ IN THE *
                                             *     DATA FROM THE FILE AND STORE IT INTO A TABLE. NEXT, THE PROGRAM   *
                                             *     WILL PRINT THE DATA FROM THE TABLE FROM FIRST-TO-LAST (IN THE     *
                                          6  *     ORDER THE DATA WAS ORIGINALLY READ). NEXT, THE PROGRAM WILL PRINT *
                                             *     THE DATA FROM THE TABLE FROM LAST-TO-FIRST (IN THE OPPOSITE ORDER *
                                             *     THE DATA WAS ORIGINALLY READ). FINALLY, THE PROGRAM TERMINATES.   *
                                          7  *                                                                     *
                                             *  REGISTER KEY:                                                       *
                                             *     REG 2: INDEX POINTER FOR SUBROUTINES' LOOP-BASED TABLE OPERATIONS *
                                          8  *     REG 3: DATA VALUE HOLDER FOR SUBROUTINES' OPERATIONS              *
                                             *     REG 8: STEP-SIZE HOLDER FOR SUBROUTINES' LOOPS                    *
                                             *     REG 9: TERMINAL VALUE HOLDER FOR SUBROUTINES' LOOPS               *
                                          9  *     REG11: SUBROUTINE BRANCHING (BREAD CRUMBS)                        *
                                             *                                                                     *
                                             ***********************************************************************
```

```
  LOC   OBJECT CODE    ADDR1 ADDR2    STMT     SOURCE STATEMENT

000000                                11 MBPROG2  START


000000 90EC D00C           0000C      13           STM   14,12,12(13)        BEGINNING HOUSEKEEPING
000004 05C0                            14           BALR  12,0
000006                                 15           USING SAVING,12
000006 50D0 C022           00028       16 SAVING    ST    13,SAVEAREA+4
00000A 41D0 C01E           00024       17           LA    13,SAVEAREA


00000E 45B0 C114           0011A       19           BAL   11,DATAREAD        READ IN DATA TO TABLE


000012 45B0 C134           0013A       21           BAL   11,PRINTFTL        PRINT TABLE FIRST-TO-LAST


000016 45B0 C1A6           001AC       23           BAL   11,PRINTLTF        PRINT TABLE LAST-TO-FIRST


00001A 58D0 C022           00028       25           L     13,SAVEAREA+4      ENDING HOUSEKEEPING
00001E 98EC D00C           0000C       26           LM    14,12,12(13)
000022 07FE                            27           BR    14


000024                                 29 SAVEAREA DS    18F
00006C                                 30 DATATAB  DS    20F
0000BC                                 31 CARD     DS    CL80
00010C 40                              32 CARRIAGE DC    C' '
00010D                                 33 OUTLINE  DS    CL12
```

```
  LOC   OBJECT CODE     ADDR1 ADDR2   STMT    SOURCE STATEMENT

00011A 4120 C066              0006C    35 DATAREAD LA   2,DATATAB            TOP OF TABLE
00011E 4180 0004              00004    36          LA   8,4
000122 4190 C0B2              000B8    37          LA   9,DATATAB+76         BOTTOM OF TABLE


000126 E000 C0B6 0050 000BC            39 TOPREAD  XREAD CARD,80            LOOP THRU FILE & STORE DATA
00012C 5330 C0B6              000BC    40          XDECI 3,CARD
000130 5032 0000              00000    41          ST   3,0(2)
000134 8728 C120              00126    42          BXLE 2,8,TOPREAD


000138 07FB                            44          BR   11
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```
  LOC   OBJECT CODE     ADDR1 ADDR2    STMT     SOURCE STATEMENT

00013A E020 C160 0029 00166            46 PRINTFTL XPRNT PFTLSTRT,41


000140 4120 C066          0006C        48          LA    2,DATATAB          TOP OF TABLE
000144 4180 0004          00004        49          LA    8,4
000148 4190 C0B2          000B8        50          LA    9,DATATAB+76       BOTTOM OF TABLE


00014C 5832 0000          00000        52 TOPPFTL  L     3,0(2)             LOOP & PRINT FIRST-TO-LAST
000150 5230 C107          0010D        53          XDECO 3,OUTLINE
000154 E020 C106 000D 0010C           54          XPRNT CARRIAGE,13
00015A 8728 C146          0014C        55          BXLE  2,8,TOPPFTL


00015E E020 C189 001D 0018F           57          XPRNT PFTLEND,29
000164 07FB                            58          BR    11
000166 F1D7D9C9D5E3C9D5                59 PFTLSTRT DC    C'1PRINTING TABLE FROM FIRST-TO-LAST VALUE:'
00018F 40C4D6D5C540D7D9                60 PFTLEND  DC    C' DONE PRINTING FIRST-TO-LAST.'
```

```
  LOC   OBJECT CODE     ADDR1 ADDR2   STMT     SOURCE STATEMENT

0001AC E020 C1D2 0029 001D8           62 PRINTLTF XPRNT PLTFSTRT,41


0001B2 4120 C0B2          000B8       64          LA    2,DATATAB+76          BOTTOM OF TABLE
0001B6 5880 C21A          00220       65          L     8,=F'-4'
0001BA 4190 C062          00068       66          LA    9,DATATAB-4           TOP OF TABLE-1


0001BE 5832 0000          00000       68 TOPPLTF  L     3,0(2)               LOOP & PRINT LAST-TO-FIRST
0001C2 5230 C107          0010D       69          XDECO 3,OUTLINE
0001C6 E020 C106 000D 0010C           70          XPRNT CARRIAGE,13
0001CC 8628 C1B8          001BE       71          BXH   2,8,TOPPLTF


0001D0 E020 C1FB 001D 00201           73          XPRNT PLTFEND,29
0001D6 07FB                           74          BR    11
0001D8 F1D7D9C9D5E3C9D5               75 PLTFSTRT DC    C'1PRINTING TABLE FROM LAST-TO-FIRST VALUE:'
000201 40C4D6D5C540D7D9               76 PLTFEND  DC    C' DONE PRINTING LAST-TO-FIRST.'
                                      77          END   MBPROG2
000220 FFFFFFFC                                   =F'-4'
```

*** 0 STATEMENTS FLAGGED - 0 WARNINGS, 0 ERRORS

*** PROGRAM EXECUTION BEGINNING -
ANY OUTPUT BEFORE EXECUTION COMPLETE MESSAGE IS PRODUCED BY USER PROGRAM ***

```
PRINTING TABLE FROM FIRST-TO-LAST VALUE:
         99
         93
         88
         87
         82
         80
         76
         75
         71
         69
         67
         66
         63
         62
         58
         56
         55
         50
         42
         33
DONE PRINTING FIRST-TO-LAST.
```

```
PRINTING TABLE FROM LAST-TO-FIRST VALUE:
            33
            42
            50
            55
            56
            58
            62
            63
            66
            67
            69
            71
            75
            76
            80
            82
            87
            88
            93
            99
DONE PRINTING LAST-TO-FIRST.

*** EXECUTION COMPLETED ***
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```