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1: ; EAN_String_Conversion_Driver.asm
2: ;
3: ; Author:          D. Haley
4: ; Student Number:  Faculty
5: ; Course:          CST8216 Processor Architecture
6: ; Date:            12 Nov 2022
7: ;
8: ; Purpose:         Driver program to convert 17 character EANs to
9: ;                 a 10 Digit ISBN using a subroutine that skips the EAN's
10: ;                 "978-" characters and any Hyphens ('-') within the
11: ;                 EAN and converts the remaining ASCII values to Digits.
12: ;
13: ; Note:            EAN stands for European Article Numbering, also referred
14: ;                 to as EAN-13 (used in supermarkets) or ISBN-13 (used by
15: ;                 textbook publishers).
16: ;
17: ;                 The subroutine you write will convert 17 character
18: ;                 ISBN-13 Dual strings to 10 digit ISBN-10 values
19: ;                 by stripping off (removing) "978-" and any Hyphens "-"
20: ;                 from the string and converting the remaining characters
21: ;                 to numeric digits.
22: ;
23: ; Sources:         https://www.activebarcode.com/codes/isbn13dual
24: ;                 https://www.activebarcode.com/codes/isbn10
25: ;
26: ;
27: ; Example:         ASCII format of EAN -> 978-0-684-84438-5
28: ;                 Digit format of ISBN -> 0684844385
29: ;
30: ; Program Constants
31: EAN_LENGTH      equ    17          ; Each ASCII EAN has 17 ASCII characters
32: ISBN_LENGTH     equ    10          ; Each numeric ISBN has 10 digits
33: NUMBER_OF_EANS  equ    06          ; Total of six EANs to Validate
34: ASCII_HYPHEN    equ    '-'        ; Hyphen to be removed from ASCII EAN
35:
36:      org        $1000
37: Start_ASCII_EAN
38: #include EAN.txt
39: End_ASCII_EAN
40:
41:      org        $1070          ; Aligns Values in Simulator Address Window
42: Start_Numeric_ISBN
43: ;      ds        EAN_LENGTH*NUMBER_OF_EANS    ; The commented-out line was
44:      ds        ISBN_LENGTH*NUMBER_OF_EANS    ; provided to in the Starter
45: End_Numeric_ISBN              ; Code to calculate storage for
46:                               ; numeric ISBN digits.
47:                               ; It is actually incorrect, but
48:                               ; will have no effect on the
49:                               ; results in this assignment
50:                               ; and is corrected in A4
51:                               ; However, in this assignment,
52:                               ; I did not remember that
53:                               ; that this array
54:                               ; will be smaller than the
55:                               ; EAN array because we skip
56:                               ; EAN's "978-" and remove
57:                               ; the Hyphens ('-')

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58:                                     ; So, array is #EANS *(4 + 3)
59:                                     ; shorter than EAN array,
60:                                     ; where 4 = length of "978-" and
61:                                     ; 3 = number of hyphens;
62:                                     ; So, this array is 6 * 7 or
63:                                     ; 42 bytes shorter than the EAN
64:                                     ; Source Array.
65:
66:      org          $2000
67:
68:      ldx          #Start_ASCII_EAN      ; Pointer to Source Array
69:      ldy          #Start_Numeric_ISBN   ; Pointer to Destination Array
70:      ldaa         #EAN_LENGTH*NUMBER_OF_EANS ; Number of ASCII EAN Characters
71:                                     ; to process
72:      ldab         #ASCII_HYPHEN         ; Character to Remove from EANs
73:                                     ; Subroutine to strip "978-" and
74:                                     ; Hyphens '-' from ASCII EAN and
75:                                     ; convert ASCII values to Digits
76:      jsr          EAN_String_Conversion ; Destination Array will be
77:                                     ; filled with ISBN Digits
78:      swi
79: #include EAN_String_Conversion.asm      ; Subroutine to be completed
80:      end
```