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;
; Test Program to interact AY-3-8912 sound synthesizer on VDP S-100 Board
;
;   John Monahan      V0.1  10/20/2012  ;Initial Program
;
;=====
SCROLL      EQU    01H    ;Set scrool direction UP.
LF          EQU    0AH
CR          EQU    0DH
BS          EQU    08H    ;Back space (required for sector display)
BELL        EQU    07H
SPACE       EQU    20H
QUIT        EQU    11H    ;Turns off any screen enhancements (flashing, underline etc).
NO$ENHANCEMENT EQU    17H  ;Turns off whatever is on
FAST        EQU    10H    ;High speed scrool
TAB         EQU    09H    ;TAB ACROSS (8 SPACES FOR SD-BOARD)
ESC         EQU    1BH
CLEAR       EQU    1CH    ;SD Systems Video Board, Clear to EOL. (Use 80 spaces if EOL not
available

                ;on other video cards)

AY_DATA     EQU    049H    ;Data port of sound synthesizer
AY_LATCH    EQU    048H    ;Control LATCH Port of AY-3-8912 sound synthesizer
AY_RESET    EQU    09CH    ;Reset AY chip by pulsing bit 5 low.

        ORG    100H        ;<--- For CPM

begin:      LD      SP,STACK
            LD      HL,SIGN$ON ;Print a welcome message
            CALL    PSTRING

            LD      A,0DFH    ;Reset Chip (Pulse bit 5 low on U20)
            OUT     (AY_RESET),A
            CALL    DELAY
            LD      A,0FFH    ;Restore high
            OUT     (AY_RESET),A

            LD      C,08H    ; Select register #8
            LD      B,0FH    ; Volume channel A full
            CALL    PSGWRITE

            LD      C,00H    ; Select register #0
            LD      B,5DH    ; Write #93 into register #0
            CALL    PSGWRITE

            LD      C,01H    ; Select register #1
            LD      B,0DH    ; Write #13 into register #1
            CALL    PSGWRITE

            LD      C,07H    ; Select register #7
            LD      B,3EH    ; Enable output Channel A (0011 1110)
            CALL    PSGWRITE

            LD      C,0EH    ; Select register #E (Port A)
            LD      B,0FH    ; Enable output Channel A (0011 1110)
            CALL    PSGWRITE

            LD      C,0FH    ; Select register #F (Port B)
            LD      B,0FH    ; Enable output Channel A (0011 1110)
            CALL    PSGWRITE

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CALL  ZCI          ; Stay here until keyboard hit

LD    C,08H        ; Select register #8
LD    B,0FH        ; Volume channel A full
CALL  PSGWRITE

LD    C,00H        ; Select register #0
LD    B,0FEH       ; Write 376 Octal into register #0
CALL  PSGWRITE

LD    C,01H        ; Select register #1
LD    B,0H         ; Write 0 into register #1
CALL  PSGWRITE

LD    C,07H        ; Select register #7
LD    B,3EH        ; Enable output Channel A (0011 1110)
CALL  PSGWRITE

LD    C,0EH        ; Select register #E (Port A)
LD    B,0F0H       ; Enable output Channel A (0011 1110)
CALL  PSGWRITE

LD    C,0FH        ; Select register #F (Port B)
LD    B,0F0H       ; Enable output Channel A (0011 1110)
CALL  PSGWRITE

CALL  ZCI
JP    0            ; Back to CPM

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----- GENERAL SUPPORT ROUTINES -----

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PSGWRITE:          ;ROUTINE TO WRITE THE CONTENTS OF Z80 REGISTER B
LD    A,C          ;TO THE PSG REGISTER SPECIFIED BY Z80 REGISTER C
OUT   (AY_LATCH),A
CALL  DELAY
LD    A,B
OUT   (AY_DATA),A
CALL  DELAY
RET

;PSGREAD:CALL PSGBAR          ;ROUTINE TO READ THE PSG REGISTER SPECIFIED
; IN    A,(AY_DATA) ;BY THE Z80 REGISTER C AND RETURN THE DATA in [B]
; LD    B,A
; CALL  DELAY
; RET

DELAY:            NOP
                NOP
                NOP
                RET

ORG    200H

ZCI:            ;Return keyboard character in [A]
IN     A,0H      ;Get Character in [A]
AND    02H
JP     Z,ZCI
IN     A,01H

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RET

ZCO:  PUSH  AF          ;Write character that is in [C]
ZCO1:  IN    A,0H       ;Show Character
      AND   04H
      JP    Z,ZCO1
      LD   A,C
      OUT  01H,A
      POP  AF
      RET

PSTRING:LD  A,(HL)      ;Print a string in [HL] up to '$'
      CP   '$'
      RET  Z
      LD  C,A
      CALL ZCO
      INC HL
      JP  PSTRING

      ORG  300H

SIGN$ON:  DB   CR,LF,'AY-3-8912 on VDP S-100 Board Test Program 10/20/2012 (V0.1) '
          DB   CR,LF,'Chip reset, sound being sent. Hit any key to abort for another
sound.',CR,LF,'$'

SIGN$ON2: DB   CR,CR,LF,'SECOND Sound being sent.Hit any key to abort.',CR,LF,'$'

          DS   100H
STACK    DW   0H

;END
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