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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

      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

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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,0FOH       ; Enable output Channel A (0011 1110)
CALL  PSGWRITE

LD    C,0FH        ; Select register #F (Port B)
LD    B,0FOH       ; 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
NOP
RET

ORG    200H

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

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```
INC    HL
JP     PSTRING
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ORG    300H
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```
SIGN$ON:  DB    CR,LF,'AY-3-8912 on VDP S-100 Board Test Program 10/20/2012 (V0.1) '
           DB    CR,LF,'Chip reset, sound being sent. Hit any key to abort for another
sound.',CR,LF,'$'
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SIGN$ON2: DB    CR,CR,LF,'SECOND Sound being sent.Hit any key to abort.',CR,LF,'$'
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           DS    100H
STACK    DW    0H
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;END
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