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*                                                               *
*          NEW SOUND MASTER SOFTWARE -- VERSION 1.12            *
*                    October 15, 1985                           *
*                                                               *
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```

INTRODUCTION

The Sound Master is a printed curcuit card that plugs into an available slot in
the Apple II series computers. It provides the Apple user a variety of
musical sound effects. The Sound Master utilizes the popular General
Instrument AY8913 Programmable Sound Generator. To make programming easier,
Covox has added eight new commands to Apple Soft BASIC. You can continue to
use PEEKs and POKEs as described in the Sound Master User Manual, but you will
find this software tool kit much easier to use.

Before these commands can be used, you must load in the proper software. To do
this, type:

                         BRUN SBOOT (return).

This program loads another machine language program, "SOUNDS.A". When making
backups of this program, be sure to copy both SOUNDS.A and SBOOT.

NOTE: The Sound Master disk contains an auto-boot program called "MENU". This
program will BRUN SBOOT automatically as well as produce several strange sound
effects. MENU assumes that you have the Sound Master plugged into slot four.
If you are using another slot for your Sound Master other than four, you can
re-assign the variable SL at line number 6.   Be sure to save the updated
version.

                                 &PLAY

This command places the sound parameters defined by &ENABLE, &SOUND, &ENVELOPE,
&NOISE, and &SLOT into the Sound Master circuit card.   The Sound Master will
not be updated with the new settings until this command is issued.

                         &ENABLE:T1,T2,T3,N1,N2,N3

Sets up the mixer control in the Sound Master. The colon must appear in the command as shown. The Sound Master has three tone and three noise channels. Any one, or none, of the six channels can be enabled. For example, the command &ENABLE:T1,T2,N1 will instruct the Sound Master to turn on tone channels one and two, and to turn on noise channel one. The other three channels will be disabled.

&SOUND n,f,v

Sets the frequency and volume of the tone oscillators. Example: &SOUND 3,200,10 sets tone oscillator 3 at a frequency of 200 and a volume level of 10. Range of "n" is 1-3. Range of "f" is 0 to 9999. Range of "v" is 0 to 16. Refer to Table No. 3 in the Sound Master manual for note and frequency values. Also refer to the USR("xx") command listed below.

&ENVELOPE t,f

Sets the envelope shape and period. For example, the command &ENVELOPE 13,20000 defines a "number 13" envelope shape with a period frequency of 20000. Refer to the Sound Master users manual for a description of sound envelope shapes. Only voices that were defined with a volume level of 16 in the &SOUND command will be affected by the envelope modulator. Range of "t" is 0 to 15. Range of "f" is 0 to 65535.

&NOISE s

Sets the frequency of the noise generator. Range of "s" is 0 to 31. Example: &NOISE 4

&SLOT n

Sets the current slot address. The command &SLOT4 will direct all Sound Master commands to the Sound Master card in slot number four. Range of "n" is 1 to 7.

&OFF

Turns off all sound. It is equivalent to the two command sequence &ENABLE::&PLAY

USR("xx")

This is a user function that returns the frequency value of a musical note. For example, to display the frequency value for the note A# in the third octave, type PRINT USR("3A#"). This user command can also be embedded in the &SOUND command, for example, &SOUND3,USR("3A#"),7. The parameter in the USR command must be a string or string variable. It can be from one to three characters in length. If the octave number is left off, such as USR("D"), then it will always default to octave four. An octave is defined as the chromatic scale from "A" to "A".

*** PROGRAMING EXAMPLES ***

These examples assume that you have BRUN SBOOT.

The following short program will play a two octave scale:

```
10 DATA 2C,2D,2E,2F,2G,3A,3B,3C,5C,5D,5E,5F,5G,6A,6B,6C,0
20 &ENABLE:T1
30 READ T$:IF T$="0" THEN GOTO 70
40 &SOUND 1,USR(T$),10
50 &PLAY:FOR K = 1 TO 500: NEXT K :REM SHORT TIME DELAY
60 GO TO 30
70 &OFF
```

You can create a flanging sound effect by changing line 20 to 20 &ENABLE:T1,T2 and inserting line 45 as:

```
45 &SOUND 2,USR(T$)+1,10
```

A gunshot sound can be created by the following commands:

```
&ENABLE:N1:&NOISE10:&ENVELOPE9,2000:&SOUND1,1,16:&PLAY
```

Subsequent &PLAY commands will continue to fire the gun until a &OFF command is issued.

With two Sound Master cards, you can create stereo effects. The following program will switch notes between two speakers. Assume Sound Masters are plugged into slots 3 and 4.

```
5  FOR M=1 TO 20
10 FOR J=3 TO 4
20 &SLOT J
30 &ENABLE:T1
40 &SOUND1,1000/M,10
50 &PLAY
60 FOR K=1TO500:NEXTK: REM DELAY
70 &OFF
80 NEXT J,M
```

The above program can be easily expanded to a quadraphonic system using four Sound Masters! If you are using the Sound Master for speech output, the following should be noted:

1) Speech is generated by tone oscillator one. The other oscillators will continue to function if programmed to do so. Tone one will revert back to its original setting after speaking.

2) You should always BRUN SBOOT after loading in any Voice Master software (e.g. PARTA and PARTB) and after loading speech using the &FIND command. The SBOOT program will relocate the Sound Master software just under HIMEM.