

MUSIC ZZ
(New ROMS)

(c) M. K. Bonnycastle February, 1980

81 Wychwood Park,
Toronto, Ontario
M6G 2V5
(416) 654-2381

Music is a program for writing and playing music. It will also save, on tape or disk, a piece which has been written. The piece can be read back into memory for playing again.

The program translates notes as they are entered and writes a table in memory corresponding to the notes entered. (Note Table) The notes are transferred to a machine language program when they are to be played. Up to four notes may be played at once as a chord, and a passage of several notes may be repeated to save space, and to save having to enter them several times. The tempo, or speed that the piece is played, is set at the beginning and may be altered throughout the piece and the notes may be given any duration from 1/32nd note (or even shorter) to a whole note. It is possible to use different voices, or wave forms for each of the four notes entered, although only two voices have been provided with this particular version of the program.

REQUIREMENTS

This program can be run on a standard, 8k PET or larger with a DAC (eg. "Petunia" type) converter on the user port. The signal from the DAC must be taken to a standard amplifier to produce the music.

INSTRUCTIONS FOR USE

Load the program but do not RUN. It is a long program taking virtually all of 8k so it takes almost 2½ minutes to load from tape. It is divided into several sections:

- a) A basic program for handling the entries, translations, etc.
- b) A table for controlling the passages.
- c) A table for the notes.
- d) Two wave form tables. (Up to four tables can be included)
- e) A machine language program to play the music.
- f) A table for translating notes entered into frequencies and for positioning of notes on the screen.
- g) A machine language program to load the table of music into (e) above.
- h) A machine language program to set pointers and partition memory so Basic does not destroy parts (b) to (h).

- see memory map, Appendix 1.

NOTE after loading Type SYS 5522 and then Basic will only use up to location 4670. If another program is loaded after this one, you will probably run out of memory as memory is protected from Basic. When finished, reset you PET by turning it off for a minute, or, better still, reset it with a SYS 64721 command.

Once the program is loaded, Type SYS 5522, then RUN. A music staff will be drawn on the screen and '1 ENTER *' will appear in the top left corner.

To enter notes;

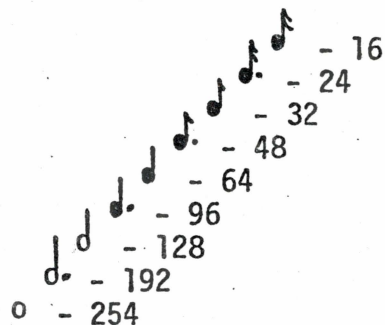
- Notes are entered as C, C#, B', etc. This will put the notes into the middle octave.
- To raise, or lower an octave, enter C+, F#+, B' - etc. Some notes are available beyond the middle three octaves. To get these, enter as B++, G#--, etc. If a note is entered beyond the range of the screen, but within the range of the available notes it will be used in the piece, but will appear on the screen as ↑ or ↓ on the top or bottom of the screen. If the note entered is beyond the range of available notes, "RANGE" will appear on the screen. The set of notes must be re-entered, using notes within the proper range.

- Up to four notes may be entered. Each note is separated by a ".", e.g.

C.F#.G.C+.

This will assign the first voice to middle C, the second voice to F#, the third to G and the fourth to C above middle C.

- When a set of notes has been entered, press RETURN. DUR'N * will appear in the top right corner. Enter the duration of the set of notes as a number between 1 and 254, using the following guide (and then press RETURN):



Do NOT use 255 as this is used as an end marker for the passage

- A set of symbols will appear on the staff to show the position of the notes. The symbols do not represent the duration of the notes (whole notes, quarter notes), they only represent the position of the notes on the staff as a guide in entering the notes and creating the note table.
- When the note has been written, '2 ENTER *' will again appear. The 2 indicates that the second group of notes is to be entered. The number of groups of notes that can be entered depends on the size of the PET, ranging from 275 for and 8k PET to 2900 for a 32k PET. It is wise to keep track of the note numbers as you can go back later to alter notes if they are wrong.

- If you have made a mistake, 'SYMB ERR' will appear for a few moments

- The first voice in this version of the program is slightly different than the other three. To keep a particular voice silent, enter 0 (zero) in place of the note, e.g. 0.C.F# would assign C to the second voice and F# to the third voice. The first voice would remain silent.

Other Instructions:

Instead of notes, special instructions may be entered, followed by RETURN;

R will put a REST in the piece. Again the duration for the rest must be entered in the usual manner.

X will ERASE the last set of notes. If this is used, the last set of notes on the screen will disappear and the note counter will be decreased by 1. Several X's can be entered in a row.

N gives you a new staff. When the end of the screen is reached a new staff must be written or else the screen display will do peculiar things. (The notes will be all right in the note table.) This DOES NOT erase the note table.

T means set the TEMPO. This does several things. Firstly it records the note number for the BEGINNING of a passage in the passabe table. It also saves the tempo for that passage. A moderate tempo (MODERATO) is 80 to 90, fast (VIVACE) would be 40 to 50 and slow (ANDANTE) would be 110 to 120.

When the piece is played, the passage table is used to start each passage, and the passage plays until an end marker is reached in the note table. Then the passage table is checked for the next passage. If only one tempo setting has been made, only one passage is played.

M sets an "end of passage" marker (255) in the note table. When a passage is played, each note is scanned for this end marker. When it is found, control is returned to the passage table.

P When P (RETURN) is entered, a temporary end marker is set in the note table and the piece is played up to that point using a machine language routine to play the notes. When the next note is written, the temporary end marker is erased.

L This plays a piece whcih has been loaded from tape or disk (or the piece included in the program). NO temporary end markers are set, and no tempos are set - the programme assumes these are in place. CAUTION - Do NOT use this unless the piece you are writing has been fully developed

and end markers have been properly set or else the piece may go wandering off into space and play forever. (or until you turn off the machine and loose everything!!!) While the piece is playing, pressing the "B" key will 'Break' out of the playing part back into the Music program.

- J This instruction allows you to jump to various notes to either change the notes themselves, or to set the tempo for a passage starting with that note.

-e.g. You have written several notes and played them only to find that the second note must be changed.

First jot down the number of the note you're on - you'll want to return there later.

Then enter J (RETURN) and after NOTE #?* appears, enter 2 (RETURN). The prompt 2 ENTER * will appear indicating you may re-write note # 2. Enter the note group as it should be. When 3 ENTER * appears, enter J (RETURN) and jump back to the note # where you left off. This will correct the bad note.

- W means write the passage on the tape. When the piece is fully developed and you want to save it, enter W. LAST NOTE will appear and you enter the number of the last note in the piece. The program will exit after setting the pointers and you can then "save" the music programme, together with the piece with a normal "SAVE" command. To return to the program, enter "SYS 5522" to restore the pointers, then "RUN". The music piece will still remain in place and can be altered, added to, etc. If you want to find the last note, type RUN 4000 - this will display the Tempo table and ask for a note in the last passage. Enter any note number in the last passage and the programme will find the final note number.

- S When you enter S (RETURN) you will exit from the Basic program. BUT your piece is still in the protected area. You may type RUN, and then Jump to the end of the piece and continue adding to it. If you do this, however, the pointers to the passage table are reset. This is the only way to re-write the passage control table with, say, different tempos.

LOADING a "SAVED" piece of music is the same as loading the original programme. Simply LOAD "Song name" and then enter SYS 5522 before running.

NOTE you cannot change the program in any way and expect it to run properly as the SYS 5522 command sets pointers to the end of the Basic program. If an instruction is changed, these pointers will point to the wrong place and the program will crash.

MEMORY MAP

<u>Decimal</u>	<u>Hex</u>	
42,43 AND 201,202	2A,2B C9,CA	Pointer to top of Basic coding
52,53	34,35	Pointer to end of memory available to Basic
1024	400	Start of Basic
4670	123E	Top of memory available to Basic as set by MUSIC ZZ
4671 - 4817	123F - 12D1	Note Translation Table
4818 - 4863	12D2 - 12FF	Machine language program that passes notes to playing routine
4864 - 5119	1300 - 13FF	Voice 1 - flute wave form
5120 - 5375	1400 - 14FF	Voice 2, 3 & 4 wave form
5376 - 5494	1500 - 1576	Machine language program to play notes
5495 - 5543	1577 - 15A7	Machine language program to reset pointers, etc.
5544 - 5567	15A8 - 15BF	Swaps out a portion of zero page and replaces it after playing music passage.
5570 - 5623	15C2 - 15F7	Passage control table
5624 - End of Memory	15F8 - E0M	Note table