proxima

VEŘEJNÁ OBCHODNÍ SPOLEČNOST

ORFEUS

THE MUSIC ASSEMBLER

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Few words at the beginning:

Spectrum users (and its clones) which makes programs may fall into situation when they like to improve their programs with some music. But when you look around at available music programs you will see that there is only one useful program - WHAM. By using WHAM you can create machine code program which plays melody in two channels with some noises that you can denote as drums with half closed eye. Enormous problem is writing music, you can hardly get good solution by using notes - there are only eighth notes and all other notes you must compose, unfortunately you will hear pulses when you'll play the music, author of WHAM probably doesn't heard about different music scales and flat symbols you must convert to sharp symbols, when you use some "drum" you can't play any note in any channel, if you forget or add something when insert music you must insert all from mistake again. Short time ago is appeared program MUSIC STUDIO, when you look closer it looks like WHAM: two channels - there can be note or drum in each channel (better than WHAM), eighth notes again, music routine sounds differently - overall variation of WHAM with different music routine, editing notes is the same "kindness" like WHAM.

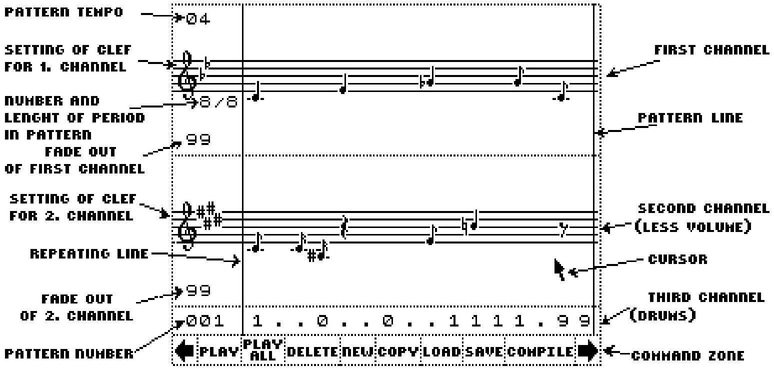
But there are many different music routines with different sounds in games (foreign and inland too) and it seems there must exists some new music program (something like new WHAM). But there isn't any another music program (I don't think about programs which can't create music routine useable in users program) - either this program doesn't exist or it doesn't want to come to us (I think that first alternative is true, I don't understand why it can't come). It means when we want something better than WHAM then we have only choice write it.

ORFEUS can play melody in two channels accompanied by drums. Unlike WHAM drums are third channel and they don't replace music. You can choose any length of note (whole, half, .. sixteenth), same as for rests. Every pattern has own tempo independent from other patterns, sharp and flat symbols (at the start of every row of new pattern) and fade out (you can set tempo for decrease volume of note in every pattern and channel). You can add and remove patterns as you want. It's easy to change notes in pattern. If you have melodies for WHAM you can easy load it to ORFEUS and play them. Whole program is controlled by five defined keys (joystick). Unlike WHAM compiled music routine is relocable (you can run it at any address - without one little exception - see **COMPILE**).

EDITOR

All control is accessible at once, editor isn't special part. For this reason I include only things related to inserting and editation in this chapter.

Area of screen can be divided into three regions. Two bottom lines - there are some labels and arrows (commands), column in the left (five character wide) - some numbers, clefs, this region is ended by vertical line on right side, and last biggest region is the rest - there are notes and drums. Cursor is moving on the screen in first two regions of the screen looks like arrow, in last third region it depends whether cursor is among notes, then cursor looks like note or dash on which pointing, and on place where cursor is situated are shown all ledger lines above and below staff, or drums editing then looks like arrow. In first two regions cursor is moving smooth, in last third region steps from note (drum) to note. You can see screen on picture, only cursor you can't see on place where is shown, because on this place looks different.



First **command zone** (from left to right)
(point cursor at wanted icon and press fire)

arrow left – is instrumental to move to previous pattern, if it isn't possible makes sound alert and do nothing, pattern number you can see upon this icon (pattern number is 001).

play – (play pattern) play whole pattern repeating until fire is pressed again (if you know how is organized keyboard so know that other keys from group of five where fire is placed are tested too, using KEMPSTON you can stop playing by any move of joystick).

play all – play music from start to end, if there is selected pattern from which is music repeated then start again from this pattern, if not then music stops immediately when some channel reach to end. Pattern for repeating is marked by vertical line a few characters from left border, set or reset you can perform by point cursor at pattern number and pressing fire. You can stop music the same way as **PLAY BAR.**

delete – (erase pattern) erase current pattern and move to next pattern, if it is last pattern then move view to previous pattern, if it is last pattern at all then pattern is replaced by minimal pattern (track must hold at least one pattern).

new – (new pattern) if you want add pattern between two existing patterns move to pattern which have to be after new pattern, select this icon and press fire.

copy – (copy pattern) if you select this action then it will copy pattern on the screen and add it at the end of written music. This possibility makes easy inserting identical patterns – if you find pattern which you insert before you have not to insert it again just copy it. After copy view is moved to next pattern – you can easy copy number of patterns this way just repeating pressing of fire key.

load (loading music from tape to computer) – see next.

save (save music from computer to tape) – see next.

compile see next.

arrow right - move view to next pattern, if there isn't any next pattern then add new one (different beep). Last pattern you can know by pattern line which close whole pattern, it is twice time bolder - but if pattern is not complete you know it only that in the course of movement to next pattern there must be added new pattern (beep). If you only watch notes then delete new pattern.

Left column (from the top to bottom):
(point by cursor at described object and press fire and directions)

number (pattern tempo on the picture) - most often 06 after loading, this is tempo with which will be played (1-20). You can set tempo by pressing together fire and directions:
left, right - change tempo in current pattern only
up, down - change tempo in all patterns

clef - pressing fire and up or down you can transpose whole pattern by half-tone step up or down.

staff next to clef (setting of clef for first or second channel) by pressing fire and left or right you can add or reduce sharp symbols (flats symbols) at clef. By pressing fire and up or down you can change sharp symbols to flats symbols and back.

number below staff left from slash (on picture number and length of period in pattern) numerator of pattern is changed just by pressing fire the way that once inserted notes can fit into current pattern - if you want to choose shorter pattern there is only way to delete notes.

number below staff right from slash (number and length of period in pattern on picture) - denominator of pattern, there is applied same as in previous paragraph. Set length of pattern and clef settings at the start of writing music (in new patterns will be already set).

number below clef (fade out of first or second channel) - time fade out of volume, setting is the same as setting tempo (0-99) by pressing fire and direction either in pattern or in whole music. What it means you find out by writing "whole note" and playing it with different setting (you'll see better when you choose 0 and 99).

edge between first and second channel - point with cursor exactly on edge and press fire and scores of first and second channel in current pattern will be switched. Unlike WHAM used music routine plays each channel with different volume (first louder) and there isn't way to switch main melody with accompaniment without changing sound.

pattern number (pattern number on the picture too) - by pressing fire you set (reset) repeating from current pattern (see **PLAY ALL** and **COMPILE**). Repeating is signalized by line (repeating line on picture). Pattern in which is this line shown is the pattern from which will continue music after last pattern, if you want repeat complete music again and again then set repeating line into first pattern.

Main part - inserting notes

right - move cursor to next note, if there isn't any then nothing happens.

left - move cursor to previous note, at last note cursor jump into left column.

up - move note on staff, at the end jump into next channel (if there is some). After leaving channel note return at position where it was when fire was pressed or when cursor was moved.

down - there is applied same as for up.

fire - confirm level of note, when leaving note in direction up or down note returns to this place.

fire and left - change length of note or rest to lower value, when is reached lowest value set highest available value (by pattern setting) again.

fire and right - same as left but contrariwise so length of note or rest increase.

fire, down and left - change dashes (if isn't my idea it is term) step by step: sharp symbol (#), double sharp symbol (X), natural, flat symbol (b) and double flat symbol (bb) before a note.

fire, down and right - add dot after a note - makes the note half as long again.

fire, up and left - erase note on the cursor position and move cursor to next note, if it is last note in channel do nothing.

fire, up and right - opposite of previous - add note after note on cursor position and move cursor to new note, if the channel is full (by length of note) nothing happens.

For drums is applied what have meaning (adding, deleting, changing type). Drums are numbered from 0 to 9, silence is marked by point. Number of possible beats in pattern is given by denominator of pattern, if pattern is for example eighth then fall one beat (quarter - beat on every eighth) on every sixteenth (period).

If pattern is complete (each channel is full) then pattern is closed by pattern line. If it is last pattern then line will be bold.

Magnetophone operations

Load - loads music into program, ask for the name, there is possibility to press only ENTER and then loads first music which founds (it knows own blocks). If error occur when loading then old music rest in memory.

Save - saves music to tape, if you want to verify whether music is saved right then use command **LOAD** (when error occur music remains in memory, if loading pass well then you load same music).

Melodies from WHAM

You can load melodies from WHAM into ORFEUS by using command **LOAD**, program knows music from WHAM and transforms it to own format. Because both channels in WHAM has same volume there is possibility that you will have to switch channels in some (perhaps in all) patterns and transpose melody down one octave for better sound. Playing tempo is set to usual value and maybe you will have to change it. Eventually you can replace couple of notes by corresponding longer note.

Compilation to machine code

After you will be satisfied with the music, you can create machine code routine and use it in your program. Choose option **COMPILE**, program performs some kind of compression of data (identical patterns etc.) and run currently created routine. You can listen to your creation for the last time and after pressing any key (on keyboard not on joystick) program asks you for name and saves music to tape.

Compiled music you can load almost on any address and run from it. The only restriction is that you cannot load it on addresses from 35000-length to 35000+length, where length is length of compiled music, which you make out even by copy program. After start music is moved to address where is executed and after finish is moved back to address where it was initially, original content of memory is moved back too - so nothing will change, before and after playing there is the same thing in memory. Restriction is there because program had been to swap itself by self and what will come out with it is in the stars. Only possible swap is when program is on address where it will be executed that is on address 35000 (this address is in header).

Last chapter is dedicated for those which are acquainted with machine code of **Z80** at least partially. I describe method how join couple of melodies to one in that manner that its will not take more place than is needed, so only one music routine and couple of data.

Actually join of two melodies; next you can join analogical way.

1. Choose longer music (longest at all) and place it at selected address in memory - this address we label as ADR1

2. With help of monitor (VAST, DEVAST..) correct value in three instructions manipulating with SP register, replace number 36081 with number 36073

3. Load next music beyond first one (or elsewhere), address where is loaded we label as ADR2

4. There are two instructions LD BC,number at the start of music, rewrite them to LD BC,number-1011, value number-1011 we label as LENGHT

5. In instruction LD DE,35072 rewrite value 35072 to value ADR1+1083

6. Modify all instructions manipulating with SP register in order to point to empty place

7. In instruction CALL 35072 rewrite address to ADR1

8. Move block with length LENGHT from address ADR2+1083 to address ADR2+72

After successful performance you can run music from address ADR1 or ADR2, total length will be smaller about 1011 bytes than summary of length of both original melodies. You can add arbitrarily many melodies.