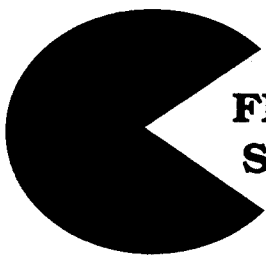
Micro-Music Creator



FIRST BYTE
SOFTWARE

Micro-Music Creator

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Micro-Music Creator

Introduction

Congratulations on your purchase of the *Micro-Music Creator* (*MMC*). We feel confident you won't be disappointed. You now possess a powerful tool that gives you the ability to create thrilling three-channel music which - if you have an amplifier and speakers (such as Dk'tronics' Speech Synthesizer, Siren's Sound Blaster or Vanguard's Maestro) - will be reproduced in startling stereo.

If you desire life-like, exciting sound effects then look no further than the *Micro-Music Creator*'s sound digitizing capabilities. Your micro will be brought to life.

Any music or digitized sound you create with the *MMC* can be faithfully replayed from within your own programs. And there's no fuss or bother usually associated with this type of setup. To see just how good the capabilities of the *MMC* are try running our free game, *Empty Tummy*. Or watch (listen to) the demo.

Once you've tasted what the *MMC* has to offer, you'll find the composer inside you emerging. Go ahead, let your creativity flow. The *Micro-Music Creator* lets it all happen.

Loading from cassette

Switch on your Amstrad CPC computer. Insert the *MMC* cassette into the tape deck ensuring it has been rewound to the beginning of side A. If you have a CPC 464 machine then type:

```
RUN ""
```

followed by a tap of the enter key. Press PLAY on the tape deck when prompted. Alternatively hold down CTRL and hit the small enter key (found on the function keypad). Then press PLAY when asked to do so.

Users of CPC 664 and CPC 6128 computers type:

```
|TAPE:RUN ""
```

and then press return.

Loading from disk

Switch on your Amstrad CPC computer (and if you have a CPC 464 with disk drive make sure you switch the drive on). Place the *MMC* disk - side 1 face up - into drive A. Type:

```
RUN "disc"
```

and press return (or enter on a CPC 464).

Installing and running from rom

The *Micro-Music Creator* comes on two roms. A disk is also supplied - this contains *Empty Tummy*, demos, examples and help files. The roms may be plugged into any free rom-sockets on your romboard (with the exception of position 0). Take care when inserting the roms not to bend the legs. They are fragile and will break if undue pressure is applied to them. Consult your romboard's manual for full fitting instructions.

To start the *Micro-Music Creator* enter:

```
|MMC
```

followed by a touch of the return (or enter) key.

The instructions for cassette and disk versions of the *MMC* also apply for the rom version. If the rom version differs in any way this will be highlighted in a box.

The main title screen

Once the *MMC* has loaded you will be presented with a title screen. At the bottom right of the picture you should see an options menu. If you don't, simply press any key on the numeric keypad between 1 and 5 (or *f1* and *f5*). The menu should read:

```
Micro-Music
Creator

1. Compozer
2. Digitizer
3. Demo
4. Empty Tummy
5. Help
```

Think of this as the main menu; from here you can go to any of the sections of the *MMC*. To select an option from the menu simply press the required key - between 1 and 5 - found on the main keyboard (and not the numeric keypad).

The music and effects you hear have all been produced using the *Micro-Music Creator*. Pressing a number on the keypad (between 1 and 5) causes that particular number to be spoken by the computer. Go on, try it. They are digitized sounds. More of them later.

The *Micro-Music Creator* is split into two main parts: *Compozer* and *Digitizer*. The *Compozer* is reached by pressing the 1 key (next to ESC at the top left of the matrix) on the main keyboard. Hitting 1 causes the *Compozer* to load - loading takes a few minutes from cassette, a few seconds from disk, and is virtually instantaneous from rom.

From the *Compozer* you can string musical notes together and play them back, or save them and then play them back from within your own programs. You are free to choose the speed at which notes play - and indeed, the sounds that particular notes make. Present are 15 pre-defined sounds ranging from Piano to an assortment of drum noises. These may be used as is or, if you feel adventurous, can be modified. Long compositions can be made; over 1,500 individual notes may be entered.

The sound *Digitizer* - got to by pressing 2 on the main keyboard - is terrific for adding real everyday sounds into a musical composition, your own software, or just for marveling at what the CPC computer is capable of. The *Digitizer* picks up anything it hears on an audio cassette and places it into the computers memory. In essence it converts analogue data into digital data. Technical it may sound, but there's nothing to it for the computer does all the hard conversion work. Once a sound, like your voice or the latest by the Bee Gees, has been captured by the *Digitizer* it can be played back at different speeds, reversed or chopped and changed.

All the other options, although nice to have, don't play any major part in allowing you to create sounds. Option 3, *Demo*, is reached by pressing 3 on the main keyboard. It shows you what it possible using the *MMC*. Option 4, *Empty Tummy*, is a splendid free game that gives you the best in terms of playability and sound. All the sound was made using the *MMC*. The final option, Help, is selected by pressing 5 (again from the main keyboard). This simply prints a help file to either screen or printer summarising major points made in the manual.

Rom users

Only two options appear on the main menu:

```
Micro-Music
Creator

1. Compozer
2. Digitizer
```

The disk that comes supplied with the rom package contains the help file, demos and *Empty Tummy*. If you wish any of the these extra features simply insert te disk into drive A. Then type:

```
RUN "disc"
```

and press return. A menu will appear:

```
1. Demo
2. Empty Tummy
3. Help
```

Simply press a key between 1 and 3 to load the required function.

The Compozer

Introduction

The *Compozer* has specifically been designed to allow you to create music on a conventional music stave and then save the completed composition as a machine code program to be used in games to give added interest to them.

Music entered on the stave is stored as data which can then be compiled and saved along with a machine code routine as a complete music playing program. The resultant machine code is totally self-running and interrupt-driven which leaves the game or utility software free to get on with other tasks. The music itself is switched on and off via RSX (bar) commands thus making it very simple to use.

The music can be located anywhere in the central 32k of memory as the *MMC* allows the user to specify the intended run address before saving in its completed form.

The *Compozer* consists of two parts, firstly the Music Editor with which you create your composition and secondly the Envelope Designer with which you can design your own custom sounds or voices.

The Envelope Designer is useful as a test-bed for developing sound effects as you can actually see the waveform of each sound created. Voices can be saved giving you the opportunity to build up a library of voices for use in other compositions. To start you off there are a number of preset voices ready for use, but these can be modified or changed altogether to give new ones.

Getting started

Once loaded you will be in the Music Editor ready to enter notes. Before you do this it would be best to familiarise yourself with the screen layout.

The music stave: the first thing obviously is the music stave itself which has the normal treble and bass staves ranging from F to F giving a total of four octaves on screen. The octave range can be changed to alter the pitch further although it could make some notes go out of range.

Status line: at the top of the screen is a status line which gives the current state of a number of values used in the music program. Most of these values are changed via the status window. This is pulled down by pressing the S key and then using the cursor keys to flick through the options and alter the value. When you have finished simply press return or enter.

Information window: below the stave area is an information window which is updated every time a note is entered, deleted, or altered. It gives the channels and voice numbers of the notes directly above it from top to bottom. The channels are called A,B and C and the voices are numbered from 1 to 15. Rests have only their channel printed below them as they are silent.

To the left of this window are three note counts which inform you of the current number of notes entered in each channel to a maximum of 500 per channel. By pressing and holding the *f9* key, on the function keypad, the note counts will be overwritten by three new values which give the time duration of each channel for the bar in which the cursor is located (if the cursor is on a bar line it will be the bar immediately to the right of the cursor). With these time counts it is easy to see if the channels in each bar have the same duration so that they stay in step with one another. Releasing the *f9* key restores the note count totals. The information window is also used for prompt messages and to access the extra commands.

Pages: memory is divided up into 80 pages (0-79) and as the screen is scrolled left and right the page boundaries are shown by a dotted line down the screen. The page number is displayed on the top status line. If the screen display is split over two pages then it always refers to the one on the left. Note that the page number does not refer to the one the note cursor is in.

Screen colours: on start-up the background or paper colours are set to pink (16), and black (0) for the foreground colour. You may prefer a different arrangement. This is easily done by pressing X to access the Extra commands in the information window. Press I and you will be prompted to input the new background colour (must be between 0 and 26. Press return after each entry or ESC to abort. Both colour numbers must be entered or no changes will be made.

Using the music editor

Channels: there are three sound channels (A,B, and C) available; all of which can be used to store notes, enabling the user to create complex compositions. The channel can be changed at any time and all notes entered are assigned to the current channel.

The current channel is shown on the extreme left of the status line and can be changed via the pull-down status window described later. The channel can also be changed more quickly by using the function keys *f4*, *f5* and *f6* for A,B and C respectively.

It is important to keep careful track of which channel you are in to avoid confusion when entering, deleting or altering notes.

Playback: music can be played back at any time by pressing P for Play and all channels with notes will play simultaneously. If errors have been made a beep will be sounded. Possible reasons for this are:

- ☛ Octave setting too high.
- ☛ Notes below low note resolution.

Note capacity: each of the 80 pages is divided into 12 "note slots" giving a total of 960 note slots available for storing notes. Each of these note slots can hold a note for all three channels, theoretically giving a maximum storage capacity of 2880 notes, that is, 960 per channel. In practice the number of notes per channel is limited to 500 and a note count for each channel is shown on the left of the information window. Once this total is reached no more notes can be entered for that channel. The note slots are also used for storing bar lines which do not affect the note capacity.

Note cursor: on entering the Music Editor you will see a flashing cursor on the left of the stave at a pitch of Middle C. This is the note cursor which is moved up or down (to set the note pitch) and left or right (to move to the next note slot).

The cursor keys are used to move the cursor which automatically positions itself at the next note slot when moving left or right, or the next pitch position when moving up or down. The cursor keys normally auto-repeat if held down, unless another key is held at the same time.

When the cursor reaches the left or right-hand side of the screen the stave will be scrolled one note slot left or right to show the next note slot. To step through the pages quickly use:

CONTROL + cursor right - step one page to right (max 79)
CONTROL + left cursor - step one page to left (min 0)

Entering notes: to enter a note onto the stave move the cursor to the required pitch and note slot and press one of the following keys to set the appropriate note duration:

1. Demisemiquaver
2. Semiquaver
3. Quaver
4. Crotchet
5. Minim
6. Semibreve

The note entered will be always be assigned to the current channel which is shown on the status line. Channel A is set at start-up but notes can be assigned to channels B and C by changing the channel via the status window, or alternately by using the function keys *f4*, *f5*, and *f6*.

Make sure you know which channel you are in at all times when entering notes - it avoids confusion.

Note-pitch position: when notes have been entered you may wish to alter or delete them but to do this usually requires that you locate the note cursor at the correct note pitch position to identify the note you wish to change. So for a note at Middle C the cursor must be on Middle C to alter or delete the note.

Delete note: to delete a note move the cursor onto the note-pitch position and press the space bar. Deleting a tied note automatically removes the tie but not the second tied note. The note may be any channel when deleting.

Alter duration: the duration of a note can easily be changed without having to delete the old note first. Ensure you are in the same channel as the note to be changed, then move the cursor onto the note-pitch position and press the required note duration key (1 to 6). The duration of a tied note can also be changed in this way. Any accidental or dot on the old note will still be present on the new note.

Alter pitch: a note can easily be moved up and down in pitch without having to delete the old note first. Ensure you are in the same channel and note slot as the note to be moved. Move the cursor to the new pitch position and press the same duration key (1 to 6). The note will be shifted to the new pitch without any other changes. If a different duration key is pressed then the duration will be changed at the same time.

Tied notes may also be changed in this way; both notes moving to the new pitch together.

Invert note: the note is printed tail up by default, but if you wish to print a note tail down move the cursor onto the note pitch position and press F to flip. Pressing F again will flip the note in the opposite direction. If the note is too close to the bottom of the bass stave it will not be inverted. Tied notes may also be flipped this way, from either note. The note may be in any channel when inverting.

Tied notes: these are set by moving the cursor onto the left-hand note pitch position and pressing T. Pressing T again will remove the tie. The tie can also be removed whilst the cursor is on the right-hand note, but not set from it.

Notes may be tied across bars and any accidentals on the right-hand note are automatically removed when the tie is set. Both notes must be in the same channel and at the same pitch when adding a tie. Ties can be set or removed while in another channel to the tied notes.

Rests: to convert a note to a rest, move the cursor onto the note-pitch position and press R. Pressing R again restores the note and any accidental or dot it may have had. A tied note cannot be converted to a rest.

Rest-pitch position: when a rest has been entered you may wish to add a dot, remove a dot or even delete the rest. To do this successfully you must locate the cursor at the correct rest-pitch position to enable you to identify the rest to be altered. This is normally at the base of the rest with the sole exception of a demisemiquaver rest when it is one screen row higher.

Delete rest: to delete a rest move the cursor onto the rest pitch position and press the space bar. Be careful not to confuse a minim rest with a semibreve rest. The rest may be in any channel when deleting.

Alter rest duration: this can easily be changed without having to delete the old rest first. First ensure you are in the same channel as the rest to be altered. Move the cursor onto the rest-pitch position and press the required note duration key (1 to 6). Any dot on the old rest will still be present on the new rest.

Move rest: a rest can easily be moved up and down the stave without having to delete the old rest first. Ensure you are in the same channel and note slot as the rest to be moved. Move the cursor to the new pitch position and press the same duration key (1 to 6). The rest will be shifted to the new pitch position without any other changes. If a different duration key is pressed then the duration will be changed at the same time. Any dot on the old rest will still be present on the new rest.

Accidentals: to add an accidental to a note move the cursor onto the note-pitch position and press A to cycle through the accidentals until the required one is found. A right-tied note cannot have an accidental added, only the left. The notes may be in any channel when adding accidentals.

Dotted notes: to dot a note or rest move the cursor onto the note or rest-pitch position and press D. Pressing D again will remove the dot. The note or rest may be in any channel when adding a dot.

Bar lines: to set a bar line move the note cursor to the required note slot and press B. A bar line will be inserted by moving all note slots up one position. If inserting a bar between tied notes the tie will automatically be extended. Pressing B again will remove the bar and close up the note slots and any tie across the bar will be shortened.

The vertical position of the cursor does not make any difference. Notes and bars may not occupy the same note slot.

Erase note slot: pressing CONTROL and E will erase the note slot at the cursor position. All the note slots to the right of the current one are moved down by one, right up to the end of page 79. This can be used to remove unwanted gaps between notes or to remove the notes themselves. The cursor does not need to be on a note to do this and all three note channels are cleared.

Erasing a slot with a tied note in it automatically removes the tie from the other tied note. Erase note slot can also be used to erase a bar line between tied notes, although not really necessary as pressing B has the same effect.

Insert note slot: pressing CONTROL and I inserts an empty note slot at the cursor position. All note slots from the current one to the end of page 79 are moved up by one to make room for the new one. This means the last note slot in page 79 will be lost, so make sure no notes are there. This can be used to open up a gap between notes to allow new notes to be inserted. A note slot cannot be inserted between tied notes.

Reset program: pressing SHIFT, CONTROL and ESC together resets the program with all default values. Music data is lost. If you wish to leave the voices unchanged then use the erase channel command.

Go to page: use this to go directly to a particular page. Pressing G causes a request for a page number. Enter a number from 0 to 79 then press return.

Erase channel: to erase all the notes in the current channel press f8. A confirmation prompt will appear. Simply hit Y or N - alternatively hit ESC to abort.

Help window: to remind you of which keys to use the help window can be summoned by pressing the H key. There are two help pages. These are flipped between by tapping H. Exit by pressing return.

Status window

The values on the top status line are changed by pressing S. This brings down the status window. By using the up and down cursor keys you can highlight an item. To alter the value of a particular item use the left and right cursor keys. When you have finished press return or enter.

Tempo: use the left and right cursor keys to increase and decrease the value between 2 and 100. The lower the value, the faster the tempo. The lowest note setting is used in conjunction with the tempo to enable finer resolution.

Octave: use the left and right cursor keys to increase and decrease the value between 0 and 6. Certain settings may make the note pitch go out of range. In that case the music will refuse to play when P is pressed. Change the octave if this happens and try again.

Lowest note: sets the lowest permissible note duration from 1 to 6. Use this to give finer control of the tempo when longer note durations are being used. Each increase in the low note setting speeds up the tempo by a factor of two. Use the left and right cursor keys to increase and decrease the value. If a note is entered with a duration which is below this value then the music will not play when P is pressed. Change the setting or the offending note and try again.

Key signature: to set the key signature between C Major and Cb Major use the left and right cursor keys. If the intended key makes any notes go off the stave then a beep will sound and the key will not change. All notes and accidentals are correctly transposed into the new key.

Repeat: a tune can be made to repeat or not by pressing the left and right cursor keys. The repeat option is also saved with the machine code.

Sound channel: use the left and right cursor keys to select the new channel A, B or C. All notes entered are assigned to the current channel. The channel can also be changed from outside the status window by using the function keys *f4*, *f5*, or *f6* for channels A, B, and C respectively.

Voices

Voices are numbered from 1 to 15. They use the same envelope numbers to avoid confusion. When a note is entered onto the stave the current voice is assigned to that note. The voice can be altered later if required either on individual notes or collectively. Tied notes always take the voice of the left-tied note even though the right-tied note may have had a different voice set. The voice number of each note and the channel it is in are shown directly beneath in the information window.

Select current voice: press V to pull down the voice window then use the up and down arrow keys to highlight the voice required. Press return to exit. The current voice is shown on the status line.

Change note voice: to modify the voice of a particular note first set the new voice. If not already set use the pull-down menu. Then move the cursor onto the note-pitch position and press CONTROL and C. The note voice will be changed to the current one and the new voice number will be shown in the information window directly below the note. The note may be any channel.

Replace voice throughout channel: first set the new voice and channel. Then press *f7*. You will be asked for the voice number to be replaced in the current channel. Enter a number from 1 to 15 then press return. All notes with that voice in the selected channel will be replaced with the new one. The voice will only be replaced in the current channel.

Loading and saving

Saving data: while working on a composition it is often necessary to save the uncompiled music data for a future working session. The *Compozer* has the facility to save the data (together with current tempo, octave and key) and then reload it later for further development.

To save uncompiled music data press the X key to access the Extra commands in the information area. Press S to save data. You will be requested to input a filename under which the data will be saved. Once you have entered the filename press return and the data will save. You must give the data files a name ending in .DAT to identify them as data. This avoids confusion with other file types.

Loading data: to load back uncompiled music data press X to access the extra commands in the information area. Press L to load data. You will be requested to input the filename of the uncompiled data which you wish to load. When the filename has been entered press return. The data will load into the Music Editor for further development. Data already present will be overwritten.

Saving music: when you are satisfied with a completed music data file it can be saved as a block of machine code for use in your own programs. You must specify the address at which the music will sit. This must be in the central 32k of memory, that is, above 16384. The music data file will be compiled, compressed and relocated so that it will run from your chosen address.

To save the compiled machine-code music program press X for the extra commands and then press M to save MUSIC. You will then be requested to input the address at which the music will be located in your own programs. This must be a five-digit number or an error report will be generated. When this has been correctly entered three values will be displayed in the information window.

☛ MUSIC ON is the address at which the code must be located in your own program and this address has to be called to log on the RSX commands.
☛ REPEAT is located 37 bytes higher than MUSIC ON and is the address which can be poked to enable a tune to auto-repeat or not as required. Poke with 1 for a repeating tune or 0 for a non-repeating tune.
☛ MUSIC END is the last address of the music code. It lets you know how much memory has been used and where it starts and ends.

Make a note of these addresses when saving to enable you to use the machine code from within your own program. If you do forget these values it is a simple matter to load the uncompiled data again and re-save in the compiled form.

Saving voice envelopes: if you have created your own voices using the Envelope Designer these can also be saved as a complete set of fifteen. The names of the voices are also saved as well as the fixed pitch values, initial amplitudes, and noise values.

To save the voices press the X key to access the extra commands in the information area. Press V to save voices and you will be requested to input the filename of the voice data which you wish to save. When the filename has been entered press return and the voice data will be saved. It is suggested that you give the voice envelope files a name ending in .ENV to identify them from other files.

Loading voice envelopes: to reload a set of voice envelopes press the X key to access the extra commands. Press Z to load voices. You will be requested to input the filename of the voice envelope data you wish to load. When the filename has been entered press return.

Those of you with the disk and rom versions have two extra options:

Erase file: to erase a disk file press X to access the extra commands and then C to display the disk contents on the upper screen. Now press E to erase a file. You will be prompted for the name of the file to be erased. Press return when entered or ESC to abort. The file will be erased and the new disk contents will be displayed on the upper screen.

Rename file: to rename a disk file press X to access the extra commands and then C to display the disk contents on the upper screen. Now press R to rename a file. You will be prompted for the new and old names. Press return when entered or ESC if you change your mind. The file will be renamed and the new disk contents will be displayed on the upper screen.

Using the Envelope designer

To enter the Envelope Designer from the Music Editor press CONTROL and Z simultaneously. To return to the Music Editor press ESC.

The Envelope Designer is used to modify existing voices or create your own. These can be saved and reloaded independently of the music data.

To enable you make full use of the Envelope Designer it is suggested that you read the relevant sections of the Amstrad User Instructions manual. It describes how to design volume and tone envelopes and explains how they work.

A voice can only be heard from within the Music Editor if a note is set that uses the voice required and P is pressed. If the duration of the note is shorter than the volume envelope then the note will finish before all the volume steps have been completed. Similarly, if the duration of the note is longer than the volume envelope then the note will continue after all the volume steps have been completed, and will remain constant at the final volume level of the envelope.

The amplitude (volume) and tone envelopes are used in pairs by the voices so that VOICE 1 uses amplitude envelope 1 and tone envelope 1, VOICE 2 uses amplitude envelope 2 and tone envelope 2, and so on. This avoids confusion as to which envelopes a voice uses. It also means there is a maximum of fifteen voices, all of which can be used in a music composition.

On entering the Envelope Designer the amplitude envelope of the current voice will be displayed in the envelope window. There is a maximum volume line across the window which indicates when the maximum volume of 15 has been exceeded. The time duration of the amplitude envelope is displayed below the envelope window. To see its corresponding tone envelope press T. Pressing A gets you back to the amplitude envelope. You can switch from amplitude to tone at any time while working on a voice.

Below the envelope window is the envelope-values window which displays the fifteen values that define the shape of the amplitude or tone envelope. Each envelope can have up to five sections and each section is made up of three values as follows:

Volume:

```
Step count: 0 to 127
Step size : -128 to 127
Pause time: 0 to 255
```

Tone:

```
Step count: 0 to 239
Step size : -128 to 127
Pause time: 0 to 255
```

The manner in which these values define the envelope shape is explained in greater detail in the Amstrad manual.

The current value is pointed to by an arrow. This can be moved by the cursor keys to point to a new value. The current value can be altered by pressing E. It will be highlighted in inverse inks. Enter the new value at the flashing cursor and press return. Any values out of range will be ignored.

To see the new envelope shape after making changes to the values press U.

Fixed pitch voices: these are used for creating fixed sound effects which can be incorporated in a composition to add rhythm. By adding noise to the basic pitch all manner of drum sounds are possible. A number of preset rhythm voices are included for you to experiment with and possibly modify.

To the right of the envelope values is the pitch value which is either on or off. If it is on then the basic pitch of that voice is fixed and any notes with that voice will have the same pitch no matter where they are on the stave. If it is off then the pitch is not fixed and any notes with that particular voice will vary in pitch according to their position on the stave and the octave setting.

Press F to flip the fixed pitch value between on and off. To alter the pitch value for a fixed pitch voice press P and you will be requested to input a new pitch value between 0 and 4095 which correspond to the frequency values in the User instructions. Extremely low or high values may not be.

On the top status line are the other envelope parameters which are changed as follows:

Initial amplitude: used to set the starting volume of a particular voice. Press I and then use the left and right cursor keys to increase or decrease between 0 and 15. Return to exit.

Noise: used to create percussion-type sound effects, such as, drums and cymbals. Press N and then use the left and right cursor keys to increase or decrease between 0 and 31. A value of 0 means no noise. Return to exit.

Sections: this is the number of sections used to define the envelope shape, between 1 and 5. Press S and then use the left and right cursor keys to increase or decrease from -5 to 5. Negative values indicate a repeating envelope. This must be set to the right value or the envelope shape will not be correct.

Magnification: this is the magnification factor used to change the size of the envelope waveform on the screen. It has no effect on the actual voice. Press M and then use the left and right cursor keys to increase or decrease between 1 and 5.

Rename voice: any voice can be renamed and the name is also saved with the voice envelopes. Press R and enter the new voice name at the input prompt (10 characters maximum).

Cancel voice: press C to cancel all changes to current voice and restore default voice in its place. Enter Y or N at the input prompt.

Select voice: press V to pull down the voice window and then use the up and down cursor keys to highlight the voice. Press return to exit. On return to the Music Editor the last voice selected in the Envelope Designer will be also the current voice for entering notes.

Help window: press H to pull down the help window.

Using the music code in your own Basic programs

The machine code music program created by the *Compozer* is interrupt-driven. This means your own program can get on with other tasks - you could even have the music playing while word-processing.

When you save the music data as machine code take care to note down the value of MUSIC ON. For arguments sake we shall call it start (in practice it will be a number, such as, 28672 or 32678). Within your Basic program place the line:

```
100 MEMORY start-1:LOAD"music",start:CALL start:|MUSICON
```

Note that any line number may be used. The command `|MUSICON` turns the music on. `|MUSICOFF` does the opposite; it switches the music off. Don't forget that start is our imaginary number. You must replace start with the value of MUSIC ON.

If you had the repeat option on when you saved the music data as machine code then the music will continue ad infinitum. That is unless you enter `|MUSICOFF` or enter a Basic command, POKE, to switch the repeat option off:

```
POKE start + 37,0 - switches repeat off
POKE start + 37,1 - switches repeat on
```

Sometimes a tune is used as an introduction to a game and when finished the game commences. The problem is knowing exactly when the music has stopped so that the game can start. To enable you to use the music in this way there is a "play off" variable which can be PEEKed to detect whether the music is still playing or has stopped:

```
play=PEEK(start+38)
```

If play equals 0 then the music is still playing. If it is set to 1 then the music has finished. Of course the repeat option must be off if you intend to use the music in this way or you'll be waiting forever.

Using the music from machine code

It is possible to use the music code from within a machine code program by jumping to specific addresses in the code. First load the compiled machine code music to its intended run address as normal, but don't call the start address to log on the RSX commands. Instead call the following addresses (assume start is the load address):

```
start + 39 - enable the music interrupt
start + 54 - disable the music interrupt
start + 37 - repeat flag (0 for off, 1 for on)
start + 38 - play off flag (0 for playing, 1 for finished)
```

Points to note

As the music is interrupt-driven anything which interferes with or disables the interrupt will affect the music. Loading, saving and break events are common examples. Disabling interrupts from Basic or machine code will stop the music playing.

When using your own sound effects as well as the music interrupt, the envelopes can clash if care is not taken. For example, if you define an envelope from Basic after the music is enabled then any voices using that envelope number will use the envelope defined by the Basic program instead of the one in the music program. Conversely, if you define an envelope from Basic before the music is enabled then any sound effect will use the envelope defined by the music program. This happens because all envelopes are initialised when the music interrupt is first enabled.

If you want to define envelopes for your own sound effects from Basic then you must do so after the music has been enabled. And use envelopes which are not taken by the music program voices. Make a note of any voices unused by your music composition if you intend to use separate sound effects.

The simplest solution, of course, is to define the envelopes for any sound effects from within the Envelope Designer and these will be initialised when the music is enabled. All you have to do then is use the SOUND command as normal with the relevant envelope number.

The music should stop playing whilst other sound effects are in operation, but will continue afterwards from where it left off.

Key control summary

Music Editor:

A - Add accidental
B - Insert/delete barline
D - Dot/undot note or rest
F - Flip note
G - Go to page
H - Help window
P - Play music
R - Set/unset rest
S - Status window
T - Tie/untie note
V - Voice window
X - Extra commands

CTRL-C - Change note voice
CTRL-E - Erase note slot
CTRL-I - Insert note slot
CTRL-Z - Envelope Designer

f4 - Set channel A
f5 - Set channel B
f6 - Set channel C
f7 - Replace note voice
f8 - Clear channel
f9 - Bar durations
SPACE - Delete note/rest.

Cursor keys move the note cursor.
SHIFT, CONTROL and ESC pressed together will restart program.

Envelope designer:

A - Amplitude envelope
C - Cancel voice changes
E - Envelope value
F - Fixed pitch on/off
H - Help window
I - Initial amplitude
M - Magnification

N - Noise
P - Pitch
R - Rename voice
S - Sections
T - Tone envelope
U - Update envelope
V - Voice window

Cursor keys move arrow.
ESCAPE return you to the Music Editor.

The Digitizer

Introduction

The sound *Digitizer* has been created to allow you to sample real sounds (like your voice, a dog barking or music) and have your CPC computer play them back. These sounds can be played back from within your own programs to really give them sparkle.

Digitized data can be played back at different speeds; sections may be cut, paste, deleted and even reversed. Great sound effects can be created with little effort. When sounds are saved for later inclusion into your own programs, all the characteristics are saved: length, speed, volume and so on. This means there are no awkward commands to remember.

Getting started

Once the *Digitizer* has loaded you will notice two columns of options; one to the left of the screen and the other to the right. This is the main menu. The top option on the left side of the screen will appear in inverse. This occurs because the cursor is resting on that particular option. To move the cursor simply use the up, down, left and right arrow keys situated on the function keypad. If you have a joystick plugged in then you may use that to move around the screen.

An option is selected by pressing the space bar or the fire button on the joystick. And that is all there is to it. There are no complicated key controls to remember.

Cassette menu:

```
Baud:     0                    Record
Catalogue                      Playback
Load                           Volume:    15
Save                           Speed:     10
Foreground                     Location:  08192
Background                     Length:    28672
Restore                        Reverse
Quit                           Block:     COPY
```

Disk and rom menu:

```
Drive:    A                    Record
Catalogue                      Playback
Load                           Volume:    15
Save                           Speed:     10
Rename                         Location:  08192
Erase                          Length:    28672
Format                         Reverse
Quit                           Block:     COPY
```

Filing options

The options located in the left-hand column don't play any part in creating or editing sounds. Instead they are used for loading and saving files, setting colours and performing other useful operations.

Cassette users

Baud: is used for setting the speed at which data is saved to tape. Use left and right arrow keys or the joystick. A value of 0 is equivalent to Basic's SPEED WRITE 0. Similarly a value of 1 means SPEED WRITE 1. The baud rate does not affect loading; only saving.

Catalogue: selecting this feature will prompt you to insert a cassette into the tape-deck and press a key. The names of any files on the cassette will be displayed. To exit from this option press ESC.

Load: you will be asked for a filename (maximum of 12 characters). Simply pressing return will load the first file located on the cassette. Note that the file will load at the location represented by the left-most bar (known as the location bar). If there is not enough room to load the file then an error message will appear.

When the file has loaded a graph representing the sound will be printed on the screen. All the previous Location, Length, Sound, Speed and Volume values will be replaced with new ones relating to the loaded file. To get back the previous values click on the Restore option.

Save: will save whatever is held between the two bars at the specified Baud rate. The values of Volume, Speed, Location and Length will also be saved. You will be prompted for a filename (which can have a maximum of 12 characters). If you simply press return the file will save with the name SOUND.SAM. We suggest you save any sampled-sound files with the extension .SAM. This avoids confusion with other file types.

Foreground: every time this option is chosen the pen colour is altered.

Background: changes the paper colour when selected.

Restore: acts as a toggle between previous Volume, Speed, Location, and Length settings and current values.

Quit: resets the computer.

Disk and rom users

Drive: alternates between drive A and B. Use left and right arrow keys or the joystick.

Catalogue: requests that you place a disk in the currently selected drive and then proceeds to shows all the files on that disk.

Load: you prompt you for a filename. Note that the file will load at the location represented by the left-most bar (known as the location bar). If there is not enough room to load the file then an error message will appear. An error will also result if the specified file is not on the disk, a disk is not inserted or you enter an incorrect filename. Remember disk filenames consist of a maximum of eight characters with an optional full stop and a further 3 characters (SAMPLE.SAM, NOISE.BIN, VOICEMIX.SAM for example).

When the file has loaded a graph representing the sound will be printed on the screen. All the previous Location, Length, Sound, Speed and Volume values will be replaced with new settings relating to the loaded file. To get back the previous values click on the Restore option.

Save: will save whatever is held between the two bars to the specified drive. The values of Volume, Speed, Location and Length will also be saved. You will be prompted for a filename. An error message will be displayed if either a disk isn't present, you entered an incorrect filename, the disk is full or you have chosen a drive that doesn't exist. We suggest you save any sampled-sound files with the extension .SAM. This avoids confusion with other file types.

Rename: a prompt requesting the old filename will appear. After entering the filename press return. A second prompt will appear asking for the new filename. After entering the name and then pressing return the file will be renamed. An error will occur if the filename specified doesn't exist, is incorrect or you try to rename a file to one that already exists on the disk.

Erase: this options enables you to erase a file of your choice. Simply enter the filename when prompted and press return.

Format: use this option with care. It will completely erase all the contents of a disk. A confirmatory message will appear. Simply elect to proceed or exit by highlighting YES or NO respectively and then pressing the space bar (or fire button). Another message will appear letting you choose either Data or CPM format. Again press space bar or the fire button to choose. Formatting will take place unless the disk is write-protected or the disk is missing.

Quit: resets the computer.

On disk and rom versions of the Digitizer there are no visible options to alter colours or toggle between settings. Instead there are certain key controls that may be used:

F - alters foreground (pen) colour.
B - alters background (paper) colour.TAB - toggles between settings (same as Restore in cassette version).

Recording and replaying

The recording and play back options are all located in the right-most column. To highlight a particular option move the cursor with either the arrow keys or the joystick. To select a highlighted option press space or the fire button.

Any sound that is recorded on a cassette may be transferred into the Amstrad's memory and then played back. To perform this operation you will need an external tape deck (unless, of course, you own a CPC 464). Before you start recording make sure all the settings are to your liking (including Location, Length, Speed and Volume). To start recording select Record. You will be asked to insert a sound tape into the deck and press a key. The cassette motor will start up. When you wish to start recording press space or fire.

Record: will record sounds from a music tape and store it into the computers memory. The length of the recording and the speed at which it records depends on the settings of Location, Length, and Speed (the smaller the value of Speed, the faster the recording). When the computer prompts you, place a cassette into the tape deck. Press a key to start recording.

Playback: replays previously recorded sounds through the Amstrad's internal speaker (unless you have a stereo amplifier and speakers attached). When playing back the Volume, Speed, Location and Length may all be set.

Volume: this alters the volume at which sound is output from the Amstrad's speaker. The volume ranges from 0 to 15. Altered by moving either left and right arrow keys or by using the joystick. When the setting is at the required loudness press space or fire to exit.

Speed: this changes the speed at which sound data is recorded or played back. Speed ranges from 0 to 15 (the fastest being 0 and slowest 15). Speed is changed by moving either left and right arrow keys or by using the joystick. When the setting is at the required loudness press space or fire to exit.

Location: on start-up (usually 08192 - &2000) this represents the lowest position in memory that data may be placed. To alter the value move the arrow keys or joystick. If the SHIFT is held with an arrow then Location is moved in jumps of 100. If CONTROL is held with an arrow key then Location moves in jumps of 1000. When positioned to your liking press space or fire to exit. Altering the value of Location will also alter the position of the left-most bar.

Length: on start-up (usually 28672 - &7000) this shows the maximum space available for storing digitized data. To alter this value move the left and right arrow keys or use a joystick. If SHIFT is held with an arrow then Length is incremented or decremented in step of 100. If CONTROL is pressed with an arrow then Length is moved in steps of 1000. The right-most bar will change as the value of Length is altered. The value of Length determines how long the recording or playback will be.

Reverse: will invert any music data between the two bars. It can be useful for creating amusing sound effects.

Block: this allows you to perform certain operations on sections of digitized data contained within the two bars. There are three:

- COPY lets you move the area of data surrounded by the two bars into a buffer. The buffer is 4096 bytes long: if Length is greater than this value an error will occur.
- CUT will delete any data held between the two bars. You will be prompted, but be warned cut data is not recoverable.
- PASTE enables you to insert the contents of the buffer at the position of Location (or the left-most bar).

Using digitized data in your own Basic programs

When you save digitized data to cassette or disk take note of the value of Location. Write it down somewhere. To replay digitized sounds you will need to include a small machine code routine into your listing:

```
1000 FOR t=&BE80 TO &BF0B:READ a$
1010 POKE t,VAL("&"+a$):NEXT t
1020 DATA 1A,32,AE,BE,13,1A,32,DF,BE,13,1A,6F,13,1A
1030 DATA 67,13,E5,1A,6F,13,1A,67,EB,E1,E5,D5,CD,C1
1040 DATA BE,D1,E1,06,08,CB,06,C5,DC,DB,BE,D4,E5,BE
1050 DATA C1,10,F4,3E,06,FE,00,28,03,3D,18,FB,23,1B
1060 DATA 7A,B3,20,E3,CD,A7,BC,FB,C9,CD,A7,BC,F3,3E
1070 DATA 03,0E,00,CD,EF,BE,3E,07,0E,3D,CD,EF,BE,3E
1080 DATA 02,0E,00,CD,EF,BE,C9,F5,3E,09,0E,0F,CD,EF
1090 DATA BE,F1,C9,F5,3E,09,0E,00,CD,EF,BE,F1,C9,F5
1100 DATA 3E,C0,06,F6,ED,79,06,F4,F1,ED,79,06,F6,3E
1110 DATA 80,ED,79,06,F4,ED,49,06,F6,AF,ED,79,C9,00
```

This routine sits high in memory (48768 or &BE80) and will not interfere with your own programs. It isn't necessary to type in the listing as it is present on the MMC cassette and disk as LONE.BAS and LONE.BIN (binary file). If you wish to use the Basic file you may merge it into your own program thus:

```
MERGE "lone.bas"
```

If you decide to use the binary version then include the following line in your listing:

```
10 LOAD "lone.bin",&BE80
```

You must load the digitized data into the memory address specified by Location (you did write the value down, didn't you?). Then simply type:

```
CALL &BE80,start
```

where start is the load address of the digitized data.

The resulting listing may look something like:

```
10 LOAD "lone.bin"
20 MEMORY 8191:LOAD "sound.sam",8192
30 CALL &BE80,8192
```

If you do wish to load digitized data into a memory address other than the location at which it was saved then add the following to your listing:

```
10 LOAD "lone.bin"
20 location=28672:MEMORY location-1
30 LOAD "sound.sam",location
40 POKE location+3,location\256
50 POKE location+2,location-(location\256)*256
60 CALL &BE80,location
```

Using digitized data in your own machine code programs

To replay digitized sound from machine code programs include the following source code into you program:

```
replay
        LD A,(DE)
        LD (delay+1),A
        INC DE
        LD A,(DE)
        LD (level+1),A
        INC DE
        LD A,(DE)
        LD L,A
        INC DE
        LD A,(DE)
        LD H,A
        INC DE
        PUSH HL
        LD A,(DE)
        LD L,A
        INC DE
        LD A,(DE)
        LD H,A
        EX DE,HL
        POP HL
        PUSH HL
        PUSH DE
        CALL where1
        POP DE
        POP HL
lp9
        LD B,8
lp8
        RLC (HL)
        PUSH BC
        CALL C,where2
        CALL NC,where3
        POP BC
        DJNZ lp8
delay
        LD A,6
        CP 0
delay1
        JR Z,cont
        DEC A
        JR delay1
cont
        INC HL
        DEC DE
        LD A,D
        OR E
        JR NZ,lp9
        CALL &BCA7
        EI
        RET
where1
        CALL &BCA7
        DI
        LD A,3
        LD C,0
        CALL where4
        LD A,7
        LD C,&3D
        CALL where4
        LD A,2
        LD C,0
        CALL where4
        RET

where2
        PUSH AF
        LD A,9
level
        LD C,&F
        CALL where4
        POP AF
        RET

where3
        PUSH AF
        LD A,9
        LD C,0
        CALL where4
        POP AF
        RET

where4
        PUSH AF
        LD A,&C0
        LD B,&F6
        OUT (C),A
        LD B,&F4
        POP AF
        OUT (C),A
        LD B,&F6
        LD A,&80
        OUT (C),A
        LD B,&F4
        OUT (C),C
        LD B,&F6
        XOR A
        OUT (C),A
        RET
```

This source file exists on the *MMC* cassette and disk as LONE.ASM. It can be located anywhere in memory. To replay a section of digitized data, the DE register must point to a parameter block. The block must contain the following:

```
Byte 0 - speed sound is to be replayed (0 in 15)
Byte 1 - Volume of sound (0 to 15)
Byte 2 and 3 - start address of digitized data
Byte 4 and 5 - length of digitized data
```

Quick Tutorial - Compozer

If you can't stand the thought of ploughing your way through the whole manual, then try this quick tutorial section. It's aim is not to be comprehensive, but rapid in demonstrating all the major features of the Compozer.

Cassette users type `RUN ""` followed by return, disk users type `RUN "disc"` followed by return and rom users - after plugging in the roms - enter `|MMC` followed by return. From the title screen press 1 on the main keyboard. The Compozer will load. When it has loaded press X. Then press L (Load Data) and to the Filename? prompt type `QUICK.DAT` followed by a tap of the return key. Cassette users make sure you insert the *MMC* tape with side B face up. Rom and disk users ensure the *MMC* disk is in the drive.

When the file has loaded press X again. This time press Z (Load Voices). When asked for a filename enter `QUICK.VOC`. Once the file has loaded press S (status window). Move the cursor using the up and down arrow keys until Tempo is highlighted. Alter the value of Tempo - by using left or right arrow keys - until the value displayed is 10. Press the down cursor key until Repeat is highlighted. By using the left and right arrow keys make sure Repeat is switched on.

Insert a fresh cassette into the tape deck (rom and disk users insert another disk into drive A). Press X followed by M (Save Music). A message Run From? will appear. Type 28672 followed by return. Then when prompted for a filename enter QUICK.BIN.

```
10 MEMORY 28671:LOAD"quick.bin",28672
20 CALL 28672:|MUSICON
```

Quick Tutorial - Digitizer

If you can't stand the thought of ploughing your way through the whole manual, then try this quick tutorial section. It's aim is not to be comprehensive, but fast in showing all the major features of the *Digitizer.*

Cassette users type `RUN ""` followed by return, disk users type `RUN "disc"` followed by return and rom users - after plugging in the roms - enter `|MMC` followed by return. From the title screen press 2 on the main keyboard. The *Digitizer* will load. When it has loaded move the cursor by using the arrow keys until Load is highlighted. Cassette users make sure you insert the *MMC* tape with side B face up, and fast forward to just past `QUICK.VOC`. Rom and disk users ensure the *MMC* disk is in the drive. Press the space bar, and to the prompt type `QUICK.SAM` followed by a tap of the return key.

Move the cursor so that it highlights Speed. Press space and proceed to alter the value to 0. Press space when finished. Move the cursor down to volume and change the setting to 15. Press space when finished. Insert a fresh cassette into the tape deck (rom and disk users insert another disk into drive A). Highlight Save with the cursor and press space. When the program asks for a filename enter `QUICK.SAM`. Hit the return key.Once the file has saved switch the computer off and then on again. Cassette users rewind to the beginning of `QUICK1.BIN`.

Enter this short Basic routine and type `RUN` followed by return:

```
10 MEMORY 8191:LOAD"quick1.bin",8192
20 FOR t=&BE80 TO &BF0B:READ a$
30 POKE t,VAL("&"+a$):NEXT:CALL &BE80,8192
40 DATA 1A,32,AE,BE,13,1A,32,DF,BE,13,1A,6F,13,1A
50 DATA 67,13,E5,1A,6F,13,1A,67,EB,E1,E5,D5,CD,C1
60 DATA BE,D1,E1,06,08,CB,06,C5,DC,DB,BE,D4,E5,BE
70 DATA C1,10,F4,3E,06,FE,00,28,03,3D,18,FB,23,1B
80 DATA 7A,B3,20,E3,CD,A7,BC,FB,C9,CD,A7,BC,F3,3E
90 DATA 03,0E,00,CD,EF,BE,3E,07,0E,3D,CD,EF,BE,3E
100 DATA 02,0E,00,CD,EF,BE,C9,F5,3E,09,0E,0F,CD,EF
110 DATA BE,F1,C9,F5,3E,09,0E,00,CD,EF,BE,F1,C9,F5
120 DATA 3E,C0,06,F6,ED,79,06,F4,F1,ED,79,06,F6,3E
130 DATA 80,ED,79,06,F4,ED,49,06,F6,AF,ED,79,C9,00
```

Disk and rom users may save themselves the bother of typing all the data by doing the following:

- Insert the MMC disk into drive A
- Type LOAD "lone.bin" followed by return
- Insert the disk with QUICK1.BIN on it
- Type in the listing below and then RUN it

```
10 MEMORY 8191:LOAD"quick1.bin",8192
20 CALL &BE80,8192
```

Cassette users may follow a similar procedure. `LONE.BIN` can be found on side B of the *MMC* tape after `QUICK.SAM`.

EMPTY TUMMY

Empty Tummy comes free with the *Micro Music Creator*. Consult the *Micro Music Creator*'s manual for loading instructions if you obtained the game in this manner.

Features

- Hungry Herbert
- Herbacious cookies and magic sacks
- Hideous inhabitants of Hawk
- Six levels; 12 rooms per level
- Colour or green screen option
- Joystick or keyboard control
- Digitized speech
- Three-channel, foot-tapping sound track

Scenario

Poor Herbert the Herapod, he was so hungry that he was forced to leave his home planet, Hermania. In his search for grub Herbi encountered a little known planet called Hawk. To his delight herbacious cookies where abundant and so too were magic sacks in which he could store them. However, things are never as good as they first seem. Indeed, the inhabitants of hawk are not very friendly. And they like the idea of someone gobbling up their herbacious goodies even less.

Aim

Guide Hungry Herbert across the 12 horrifying haunts of Hawk. Collect a magic sack and then eat the cookies. Each sack holds roughly 30 cookies. When the sack is full you must find another. Once all 12 rooms are cleared you move on to the next level. There are 6 levels in all. While travelling around Hawk beware of the evil inhabitants. They will hunt you down. Be quick, be prepared.

Loading

Cassette users:

Insert the cassette into the tape deck and type:

```
RUN ""
```

followed by a press of the return key. If your computer is a CPC 664 or CPC 6128 then type:

```
|TAPE:RUN ""
```

followed by return.

Disk users:

Insert the disk into drive A and type:

```
RUN "disc"
```

followed by a tap of the return key.

Start the game

You will be asked whether or not you have a colour monitor. Press either Y or N as appropriate. To start the game press the space bar. You now have the choice of which level to start on. Press any key between 0 and 5. Finally hit the space bar or the joystick fire button to enter Hawk. Good luck.

Controls

Hungry Herbert may be controlled with either joystick or the following keys:

Q — up
A — down
O — left
P — right