Amsoft
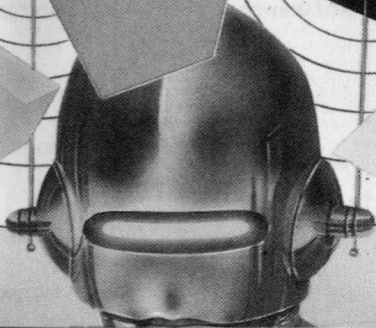
SHAPE & sound

AMSOFT SHAPE AND SOUND EFFECT GENERATOR

SECTION 1 INTRODUCTION AND LOADING INSTRUCTIONS

INTRODUCTION

Welcome to Shape & Sound. The programs in this package have been carefully designed to enable you to produce large multi-colour sprites and great sound effects for use in your Basic or machine code programs. Included in the package is a Basic demonstration program showing you the power of the Shape & Sound system. The Shape Generator program will produce hardcopy output of shape definitions on any EPSON or EPSON compatible printer, such as the AMSTRAD DMP2.

LOADING INSTRUCTIONS

1. Switch your Amstrad off, then on again.
2. Place the Shape & Sound disc in drive A.
3. Key in RUN "DISC" then press ENTER.
4. You will now be presented with a menu.
   Pressing 1 will run the Shape Generator program.
   2 will run the Sound Effect program.
   3 will run the Demonstration program.

SECTION 2   SHAPE GENERATOR

N.B. ↑ is used throughout this text to represent the CTRL key. When you see this symbol, you must press and hold the CTRL key, then press and release the other specified key, then release the CTRL key.

OPTION SELECTION
When you run the program, you will be asked:-
MODE 0 OR 1?
Press either 0 or 1 as appropriate. In mode 0 the program enables you to design shapes of up to 16 pixels wide by up to 32 pixels deep, in mode 1 you can have shapes up to 32 pixels wide by up to 32 pixels deep. You will then be asked:-
DOES PRINTER DO AUTO LINEFEED (N) ?
Either press Y, N or ENTER. Some printers will automatically do a line feed when they receive a carriage return character. Answering Y to this question indicates to the program that your printer does. An answer of N means that your printer needs to be sent line feed characters. Pressing ENTER here is the same as pressing N. The Last Option is:-
DO YOU NEED CONDENSED PRINT (N) ?
Yet again press Y, N or ENTER. If your printer can only print 80 normal sized characters to a line you should press Y so that the program's Hardcopy output will fit across the paper. Pressing ENTER is the same as pressing N.

SCREEN DISPLAY
The screen is split up into 5 sections (refer to diagram below):-
1. The Main Shape Definition Grid. This is a grid 16

or 32 cells wide, depending on mode, by 32 cells deep. In it you can move a cursor and set the pen of individual cells. You can also, by means of control commands, do such things as mirror, rotate, and fill. The main grid, is four times normal size.

2. The Shape Display Area. This section of the screen displays the main grid in normal size. This is what your shapes will actually look like. Any change made to the main grid, will be reflected here.

3. The Shape Storage Area. This is where you store shapes when you have finished working on them. It can store 4 rows of 4 shapes each. Once a shape is stored here you are free to work on another shape in the main grid. You can, of course, retrieve shapes from here and put them back into the main grid for further modification.

4. The Prompt Area. The computer will communicate with you through this section of the screen. Whenever a command is executed, the name of the command will be displayed at the top of the Prompt Area. The rest of this area is used to issue prompts, receive your responses and to display any messages, resulting from command execution.

5. The Palette Line. This section of the screen is used to display the pen colours available. You may, of course, change the inks of any pen, with the PALETTE command.
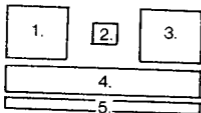
CURSOR MOVEMENT

The cursor is a flashing bar within the main shape definition grid. It is used to mark your position within the grid. The cursor is moved by means of the keys on the numeric key pad, in any of 8 directions as shown in the diagram:-
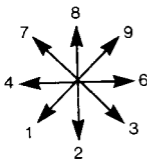
The cursor normally moves by one grid cell at a time, however, you can move the cursor to the edge of the grid, by pressing CTRL and the required cursor movement key. E.G. 17 will move the cursor in an upwards and left direction, as far as it can go. When dealing with the main grid cursor, you will always have to use the numeric key pad keys, to control cursor movement.

THE SHAPE SELECTION CURSOR

The shape selection cursor is a large flashing square that is used, as it's name suggests, to select shapes or shape storage areas, in the storage area at the right of the screen. This cursor is controlled by means of the 'normal' cursor control keys. Unlike the main grid cursor, the shape selection cursor does not stop at the edges of the shape storage area, but will 'wrap round' to the next or previous, row or column, as required. The shape selection cursor is used by commands such as ANIMATE and STORE. When dealing with the shape selection cursor, you will

always have to use the 4 'normal' cursor keys to control it's movement.

SETTING THE COLOUR OF PIXELS
The colour of individual cells in the main shape definition grid, is controlled by way of the main keyboard. In mode 0, the keys '0-9' and 'A-F', representing the sixteen pens available in that mode. In mode 1 you are of course limited to four different pens, and as such only the keys '0-3' may be used. As you move around the main grid, setting the colours of cells, your actions will be reflected in the small shape display area just to the right of the main grid. You will notice a single character displayed just above the shape display area, this character is the pen 'number' of the cell currently holding the cursor.

COMMANDS
N.B. * against a prompt, is used to indicate the last point, within a command, at which that command can be aborted.

!@ – ROTATE
This command allows you to rotate the grid by one quarter turn clockwise. When in mode 1, an exact rotation will occur, however, in mode 0 pixels are not 'square' and as such the shape is treated as being 16 pixels wide, by 16 double pixels deep. (An exact mode 0 half turn rotation can be achieved by a double mirror !!). Note: 4 consecutive rotations will bring the main grid display back to what it was originally.

!A – ANIMATE
This command enables you to display a sequence of shapes, with a fixed time interval between each shape display. You will first be asked:-
* Same Shape ?
You may reply with either Y or N, followed by

ENTER, or ENTER alone to abort the command. A reply of Y indicates that you will use the shapes specified in a previous execution of Animate. A reply of N means that you wish to specify a new series of shapes. The next question is:-

What Shapes ...

Move the shape selection cursor to the first shape desired and press ⏸A. The computer will acknowledge your selection with a 'beep'. Now move the cursor to each desired shape in turn, signalling to the computer each time you wish to include the shape for animation, by pressing ⏸A. Continue in this way until you have selected all the required shapes. When you have completed your shape selection, press ENTER. N.B. You are only allowed to select up to 128 shapes for animation. Should you try to exceed this limit the program will respond with:-

ONLY 128 ALLOWED !

After completing your shape selection, you will be asked:-

No. of Flys ?

The computer is now asking you for the number of frame flybacks to wait for, between displaying each shape in turn. Reply with a number between 1 and 255, then press ENTER.

The computer will now start displaying your selected sequence, in the shape display area, with the message:-

PRESS ENTER ...

Whilst animation is in progress, you can 'freeze' at a particular point by pressing and holding, the 'F' key. Releasing 'F', will allow the computer to continue with your animation. When you have finished looking at the animation, press ENTER as requested above.

1B – BORDER

The border colour can be set to any of the Amstrad's

27 colours, by use of this command. The computer will show you the current settings of the Border inks and the number 1, will be shown above the palette line. You can change the border colour by use of the up and down cursor keys. To obtain a flashing border, press the COPY key, which will cause a 2 to be displayed above the palette line. Whilst the ink indicator is displayed as 1, both border inks will be changed by the up/down cursor keys. Whilst a 2 is displayed, only the second border ink will be affected.

!C – COPY QUARTER
Execution of this command will cause the top left quarter of the grid to be copied to the other three quarters of the grid. This command is intended for use in situations where you are defining small shapes and wish to see a block of shapes together.

!D – DISK
This command enables you to save or load shape definition files to or from disc. You will first be asked:-
* Save or Load?
Reply with either S or L followed by ENTER, or ENTER alone to abort the command. You will now be asked to:-
    Enter File Name
Respond by typing in a legal file name and when you are ready, press ENTER. N.B. If saving to disc, and no file name extension has been given, the file will be saved with an extension of 'SHG'. If loading from disc, and no file name extension has been given, the following file name extensions will be tried in turn:- ' ', 'BAS', 'BIN', 'SHG'.
    Should any error(s) occur whilst saving or loading, you will be required to press ENTER to proceed with the program.

!F – FILL RECTANGLE
This command allows you to fill any rectangular area

of the main grid, with pixels in a pen of your choice.
You will be asked:-

* Which Pen ?

Respond by pressing a 'pen key' (0-9, A-F for mode
0 or 0-3 for mode 1), or ENTER to abort the
command. The computer will now ask you to:-

    Set top left …

You now have control of the main grid cursor. Move
the cursor to the top left hand corner of the
rectangle you wish to fill, then press ENTER. The
computer will next ask you:-

    & Bottom right …

Now move the cursor to the bottom right hand
corner of your rectangle. As soon as you press
ENTER, the rectangle you have specified will be
filled in the pen that you have specified. Should you,
by mistake, specify a top left hand corner that is
further down or to the right than your bottom right
hand corner, the computer will return to the 'Set top
left …' prompt and you must try again.

1G – GENERATE DATA

This command enables you to store away shapes in
memory (you will not be able to actually see these
shapes) or to write these stored shapes to disk as a
data file suitable for use in your Basic programs.
You are allowed to store 64 shapes maximum. You
will see the prompt:-

    Store or Write data ?

Respond by pressing S or W followed by ENTER, or
Enter alone to abort the command.

Storing

If you pressed 'S', you will now see the following:-

* STORE AS DATA
    ?? stored (64 MAX)
    What Shape(s)

The ?? in the text is the number of shapes already
stored. Move the shape selection cursor to the

desired shape(s) in turn. A shape will be added to those stored already, when you press ↑G, and the ?? above will be changed accordingly. When you have finished storing shapes, press ENTER.

N.B. If you attempt to store more than 64 shapes, the following message will be displayed:-

    maximum of 64 data
    shapes are already
    stored !!

and you must press ENTER for the computer to proceed.

Writing

If you chose to 'write', you will now see:-

    WRITE AS DATA

Disc or Tape ? Displayed. Reply with D or T followed by ENTER, or Enter alone to abort the command.

You will now be asked to:-

    Enter File Name

You must now type in a valid file name, followed when you are ready to write, by ENTER. N.B. If writing to disk, and no file name extension is given, then the file will be saved with a file name extension of '.DAT'.

Should any errors occur during writing, you will be required to press ENTER to proceed with the program.

After you data file has been written to disc or tape, the computer will display the following:-

    !! IMPORTANT !!
    FILE LENGTH &hhhh

The characters 'hhhh' in the text, give the length (in hexidecimal) of the data file just written. This number is very important, it is the amount by which you will have to reduce HIMEM, in order to use the shapes in your Basic program.

!H – HARDCOPY

This command produces a printout of the shape in the main grid. You need not print the whole grid, but can select a rectangle for printing. You will first be asked to:-

Set top left . . .

Using the numeric keypad keys, move the cursor to the cell that you want to be the top left hand corner of your rectangle, then press ENTER. You will now see:-

& bottom right . . .

displayed. Move the cursor to the cell you want to be the bottom right hand corner of your rectangle, then press ENTER. Should you, by mistake, have specified a top left hand corner that is lower or further to the right than the bottom right hand corner chosen, the computer will return to the 'Set top left' prompt, and you must try again.

The computer will now print out information in three sections:- (Please refer also to notes at the end of this section)

The first two lines of printout will consist of pairs of numbers, one above the other, showing the colour values of the border and the pens, as defined on the palette line at the bottom of the screen.

Next will be printed a line of information for each row of your rectangle. Each line will take the following form:- First will be a series of characters corresponding to the pen of each cell across your rectangle, these will be followed by the values in hexidecimal & decimal of the screen memory bytes representing these cells.

The 3rd section of your printout will be a 'screen dump' of your rectangle, in dual-density bit image graphics mode. In this section, the blackness of each pixel, represents the actual grey-scale value used for the ink of that pixel. Only the first ink for a

pen is taken into account, so a pen defined as flashing between red and green for example, will be treated as red only.

N.B. Hardcopy works in units of screen bytes rather than pixels. The effect of this is that, even though you select your rectangle on a pixel basis, the printout will be in terms of screen bytes. The left hand edge of your rectangle will be adjusted (if necessary) to the left-most pixel of a screen byte. The right hand edge will (if necessary) be adjusted to the right-most pixel of a byte. Printouts in mode 0 will always contain pairs of pixels, and mode 1 printouts, will always be multiples of 4 pixels wide. Basically speaking, your printout may be wider than the rectangle which you originally specified !!

* You can abort a printout at any time after rectangle selection, by pressing and holding down, the ESC key until the Hardcopy prompts are cleared from the screen. While the ESC key is held down, characters that are being sent for printing, do not in fact reach the printer. This means that if you do not hold down the ESC key for long enough, the characters that were not sent to the printer may have included printer control codes, and as a result of this the printout may be total nonsense.

!I – SPEED INK

This command is exactly the same as its Basic counterpart. It allows you to specify the amount of time, in 1/50ths of a second, for which each of a pen's two inks are displayed. You will be asked the following question:-

Values ?

You should respond by typing in either a number between 0 and 255, or two such numbers separated by a comma, then press ENTER. (0 is interpreted as 256). If only one number is given, it is used for both values.

¦M – MIRROR
Using this command you can mirror the main grid about either a horizontal or vertical axis. You will be prompted with:-
* Which way ?
You can now press any of the 4 normal cursor control keys. Pressing either up or down will mirror the grid about a horizontal axis (the top will become the bottom and vice versa). Pressing left or right will mirror about a vertical axis (the left will become the right and vice versa).

N.B. Reference was made in the explanation of Rotate to a double mirror technique used for a mode 0 half turn rotate. This is achieved by first executing a vertical mirror (cursor up or cursor down), then a horizontal mirror (cursor left or cursor right). It doesn't actually matter which mirror is done first, so long as one vertical and one horizontal are done.

¦O – OVERLAY
This command lets you select a stored shape and bring it back into the main grid, overlaying what is already there. Pixels in the stored shape that are NOT pen 0, are copied to the main grid. Where pixels in the selected shape ARE pen 0, the corresponding main grid pixels will remain unchanged. You will be prompted with:-
* Select Shape . . .
Use the 'normal' cursor keys to move the shape selection cursor. When it is over the desired shape, press ¦O and the main grid will be overlayed by the selected shape. To abort this command, merely press ENTER.

¦P – PALETTE
The ink(s) associated with the 16 mode 0, or 4 mode 1 pens can be changed with this command. You will

see the following in the prompt area:-
* Pen 0 is i1 i2.
Where i1 i2 are the two ink numbers associated
with pen 0. You will also see a 1 immediately above
the 0 in the palette line. You can now, by using the
'normal' cursor keys change the ink(s) of pen 0.

Pressing the up cursor key will increase the ink
number, pressing down will decrease it. The ink
numbers 'wrap round' after 26. As you increase or
decrease the ink numbers, the values displayed for
i1 and i2 above will reflect the new values, as will all
pixels on screen of that pen.

If you press the COPY key, the 1 above the
palette line will change to a 2. Pressing the up or
down keys will now only affect the 2nd ink
associated with the pen; only the i2 value will
change – this is how you set a flashing ink. Pressing
the COPY key will alternate between 1 – changing
both inks and 2 – changing the 2nd ink only.

The left and right cursor keys are used to move
from one pen to the next. When you reach the end
of the palette line, the ink indicator number will
'wrap round' to the other end of the line.

When you have finished changing inks, press
ENTER to continue.

N.B. Do not change Pen F (mode 0) or Pen 3
(mode 1) to the same ink values as Pen 0. This will
have the somewhat undesirable effect, of making all
the prompts and messages etc. disappear !!

↑R – RETRIEVE

Pressing ↑R lets you select a shape in the shape
storage area and copy it to the main grid. This action
loses what was in the main grid. You will be
prompted with:-
* Select Shape . . .
Move the shape selection cursor to the desired

shape, then press ⏐R. The selected shape will now be copied into the main grid completely erasing what was there before. You can abort this command by pressing ENTER.

⏐S - STORE
This command is the opposite of ⏐R. It allows you to store a copy of the main grid in the shape storage area. The prompt is:-
* Select Location . . .
Move the shape selection cursor to the desired location and press ⏐S. The main grid will be copied to the selected location, destroying anything that was previously there. This command can be aborted by pressing ENTER.

⏐U - UNDERLAY
This command is similar to Overlay, except, the selected shape is put under the existing main grid shape, not over it. You are prompted with:-
* Select Shape . . .
Move the shape selection cursor to the desired location, then press ⏐U. The main grid is scanned and where pixels ARE pen 0, the corresponding selected shape pixel is copied to the main grid. Pixels in the main grid that are NOT pen 0, remain unchanged. To abort this command, press ENTER.

⏐X - CHANGE PIXELS
This command enables you to change all pixels in a chosen pen, to a different pen. The following will be displayed:-
   in pen
Respond by pressing the pen key of the pixels that you wish to change, the computer will now display:-
   in pen ? to pen
where ?, is the pen key you just pressed. Now press the pen key that you want to change the pixels to. This command cannot be aborted, however, if you

press the same pen key both times, nothing in the grid will change.

SHIFT/CURSOR – PIXEL SHIFT

This command will shift the main grid either up, down, left or right. Press and hold the SHIFT key, then press and release one of the normal cursor keys, finally release the SHIFT key. The direction in which the grid pixels are shifted is determined by which cursor key is pressed. Any pixels at the edge of the grid in the direction of shift, will be 'wrapped round' to the other side of the grid. This command cannot be aborted.

SHAPE GENERATOR FILES

The Shape Generator program produces 2 different types of files. It is important that you do not confuse these two different file types:-

The Shape File

The !D command produces a fixed length file, containing palette and shape data, suitable for loading back into the Shape Generator, by means of the load option of the !D command. NOTE: You must not try to load a shape file produced in mode 0 when running the Shape Generator in mode 1, or Vice Versa.

The Data File

The !G write option produces a totally different format file, this type of file does not contain palette information, has a section of machine code program appended to the end of it, is not of fixed length and must not be loaded by means of the load option of the !D command.

A File Description follows, for use by machine code programmers:-

File Type   – Binary

File Length   – As reported by the write option
                    of the ↑G command.

File Layout:-

File Offset	Description
0 – 1	Offset to m/c Entry Point
2 – 257	Sprite 1 screen data
2 – 9	Row 0 data
10 – 17	Row 1 data
. . .	. . .
. . .	. . .
250 – 257	Row 31 data
258 – 513	Sprite 2 screen data
. . .	. . .
. . .	. . .
. . .	. . .
(n–1)*256+2 – (n–1)*256+257	Sprite n screen data
n*256+2 – E.O.F.	RSX M/C

SECTION 3   SOUND EFFECT GENERATOR

GENERAL INFORMATION

This program is designed to help you understand the various complex interactions of the ENV, ENT and SOUND commands. With the aid of this program's graphical displays, you will be able to see the exact effects of the many parameters of these three commands in great detail. You are first referred to the relevant sections of your Amstrad User Manual for an explanation of the commands.

   The only aspects of the three commands not covered by this program are as follows:-
1. Multi channel sound,
2. Rendezvous,
3. Hold.

   Although supported by the program, the following are not taken into account when drawing the graphical display, due to their extreme complexity:-
1. Hardware sound enveloping,
2. Noise.

SCREEN DISPLAY

The screen is divided into 5 sections:-
1. ENV section. At the top left hand side of the screen, you will see details of the Amplitude Envelope that you have specified.
2. ENT section. This section of the screen, immediately below the ENV section, shows details of your Tone Envelope Command.
3. The graphs of Volume and Tone Period, resulting from your ENV, ENT and SOUND commands, are displayed here.

4. SOUND section. Near the bottom of the screen, is the SOUND command you are executing.
5. Prompt line. This line, at the bottom of the screen, is used to display prompts and for you to respond to questions.

Throughout the program, the values contained within the brackets of a prompt, give the range of legal responses to that prompt. Two other responses can be made:- you can press the 'X' key followed by ENTER, or type nothing and just press ENTER. An 'X' response indicates that you do not wish to provide any more parameters for the command, whereas an ENTER response means that you do not want to change the value of that parameter.

The colours used on screen have significance; anything relating to the ENV command is displayed in red, things relating to ENT are displayed in green, SOUND information is displayed in yellow.

THE 1V AND V COMMANDS
These commands enable you to change the ENV command parameters.
1V command.
The 1V command asks one question, before carrying on as if you had just pressed V. That question is:-

How many ENV sections (1 to 5) ?

Key in the number of ENV sections required. The modified ENV command will be displayed and the computer will proceed with:-
V command questions.
The V command is used to change the parameters of the ENV command. The first question presented to you is:-

Which section (1 to x) ?

The x represents the number of sections you specified with a previous 1V command (this value is 5, before you do a 1V command). Key in the

number of the section you want to change, then press ENTER.

The relevant section of the ENV command will be highlighted by being shown in yellow. You will be asked:-

Steps/Hardware (0 to 127/=0 to =15) ?

Respond with either a number of steps or, a hardware envelope number. If you respond with a number of steps, you will be asked the following two questions:-

Step size (-128 to 127) ?
Pause time (0 to 255) ?

Reply, as appropriate, to these. If however, you replied to the Steps/Hardware question with a hardware envelope, you will be asked the following question instead:-

Envelope Period (0 to 65535) ?

Enter the required period. You have now completed the entry/modification of a section of the ENV command, and the program will again ask you which section you want to modify. Continue as outlined above, until the ENV command display, is as you want it. As explained at the beginning of this section, you can exit from a command, at any time, by keying 'X'.

When you exit from the IV or V commands, the graphs of volume and tone period, will be recalculated and redrawn. This may, if you have very complicated ENV and ENT commands, take a little time. The whole of the vertical height of the graph, is used to represent the volume range of the computer, from 0 to 15. Displayed in red, just below the horizontal axis of the graph, is the duration, in seconds, of your volume envelope. The full width of the graph, represents the total time duration of the noise effect produced by your ENV, ENT and SOUND commands. The red line on the graph,

shows how the volume of the noise effect, varies during this time. N.B. If you have used a hardware envelope in your ENV command, the effect of this will not be shown on the graph.

The ↑T and T COMMANDS

These commands allow you, in similar fashion to the ↑V and V commands, to specify the parameters for your ENT command.

↑T command.

When you execute this command, you will be asked two questions, before the program continues as if you had issued a T command. The first of these questions is:-

      Repeating Tone Envelope (Y or N) ?

Reply as required, the ENT command display will reflect your answer. You will then be asked:-

      How many sections (1 to 5) ?

Respond with the number of sections required for your ENT command. The ENT command display will be updated, and the computer will carry on with:-

T command questions.

The first of these questions is:-

      Which section (1 to x) ?

where the x in the prompt is the number of sections that you gave as a reply to the ↑T question previously (or 5 if you have not executed a ↑T command). Reply with the number of the section you want to change. The relevant section will be highlighted in the ENT display in yellow. You will now be asked:-

      Steps/Period (0 to 239/=0 to =4095) ?

Respond with either a number of steps, or a tone period setting, for the section.

If you respond with a number of steps, you will be asked the following two questions:-

      Step size (−128 to 127) ?
      Pause time (0 to 255) ?

Type in and enter the appropriate replies. If on the other hand, your reply was in the form of a tone period setting, you will only be asked the pause time question. You have now completed data entry/modification, for one section of the ENT command, and the computer will ask you again which section to modify. Just as you did with the ENV command, continue as outlined above. You exit from the command by replying with 'X' to a prompt.

As before, when you exit from the command, the screen display will be updated to reflect your new ENT command. The numbers in green at the side of the vertical axis of the graph, show the maximum and minimum tone period values produced by the combination of ENV, ENT and SOUND commands. The green number below the centre of the horizontal axis, shows the duration in seconds, of your tone envelope. The graph of tone period vs. time, is in fact upside down; the graph is drawn in this way as it is easier to visualise the resultant sound in terms of pitch, rather than tone period. Tone period is inversely proportional to pitch, so the lower the tone period, the higher the pitch, and the higher the tone period, the lower the pitch. The graph represents the variation in tone period across the time taken for the whole noise effect to play through.

THE S COMMAND

The SOUND command of your Amstrad, has seven parameters. Using the S key, you can control all aspects of its operation. The first prompt is:-

Status (1 or 129) ?

Reply as appropriate. You will next see:-

Period (0 to 4095) ?

Enter your initial tone period. Next you will be asked:-

Duration (-32768 to 32767) ?

Be warned that if you are using a volume envelope, and reply with a large negative value to this prompt, the volume trace on the graph will take quite some time to calculate and draw; the resulting graph may be so complicated that, in practical terms, it loses all sense of meaning. After setting the sound duration you will be asked:-

Volume (0 to 15) ?

Reply by entering your initial volume setting. Next comes:-

Volume Envelope (0 or 1) ?

Key in 0 if you want to try the sound without a volume envelope, or 1 if you want the volume envelope used. This question is followed by:-

Tone Envelope (0 or 1) ?

Reply in the same way as you did for the volume envelope. The last question asked by this command is:-

Noise Period (0 to 31) ?

You can now specify the noise element of your sound. Basically speaking, the inclusion of noise in your sound, adds random white noise elements to the tones produced. Because of its randomness, the effects of noise on the tone trace of the graph, are not shown.

Just as you could with the V and T commands, pressing ENTER alone in response to a prompt, will leave the value of that parameter unchanged. You can also reply with 'X' to terminate data entry/modification. When you have finished with the S command, the screen display will be updated and the duration in seconds, of the sound will be displayed to the right of the ENV and ENT durations.

THE P COMMANDS

This command enables you to hear the noise effect you have created. Merely press the P key, and you will hear the result of your labours. Whilst the sound

is playing, a yellow line will be drawn across the top of the ENV and ENT graphs. This line follows the sound as it plays, enabling you to see clearly, what tone and volume settings are in effect at any point in time. If you have specified a sound status of 129, you will be able to press the P key again, before the sound has finished, to restart the sound from the beginning. Pressing any of the other command keys will flush the sound, taking you into the relevant command.

The ! COMMAND
This command will return you to Basic. The purpose of this command is that you can 'break out' of the program to perform calculations etc., then return to where you were by entering CONT. N.B. if you try to RUN the program after using the ! command, any changes you have made to the ENV, ENT and SOUND commands, will be lost. Should you try to modify the program you will not be able to CONTinue. You must not use any of the program's variables whilst in Basic; if you need to set variables, try using such variable names as:- XXX, ZZZ, ABC, XYZ and the like. You are free to issue ENV, ENT and SOUND commands when in Basic, the program reestablishes these when you CONTinue.

SECTION 4   SHAPE GENERATOR
                DEMONSTRATION PROGRAM

INSTRUCTIONS

This demonstration program has been written to
show you what sort of things can be done, using the
Shape & Sound package.

You have control of a crossbow, that can be
moved left and right, across the bottom of the
screen by means of the left and right cursor keys.

In the crossbow is a crossbow bolt. You can fire
this bolt by pressing the space bar. The crossbow
will re-cock itself when the bolt either hits a target,
or, when it travels off the screen.

From time to time various different types of target
will move across the screen. Your job is to try to hit
them. The smaller the target and the faster it is
moving, the more points you score for hitting it.

When the game is finished, the screen will clear
and the program will be listed. A careful study of the
listing will help you understand the method involved,
in using each of the RSX commands supplied.

Happy Hunting !!

DEMO FILES

One of the first things the program does, is to lower
HIMEM sufficiently to fit the data file into memory.
This is the purpose of the message given to you at
the end of the !G command in the Shape Generator
program, the length of the demonstration program's
data file, is &15D3 bytes.

To work out the correct value for a MEMORY
command, do the following:-

1. Switch the computer off, then on again,
2. Key in:- PRINT HIMEM-&hhhh
   (where &hhhh is the hexidecimal number reported by 1G.)
3. The value printed, let's call it mmmmm, is what you use in a MEMORY statement, before loading a data file.

To load a data file,

4. Key in:- MEMORY mmmmm
5. Key in:- LOAD "filename", mmmmm+1
   (where "filename" is the name of your data file & 'mmmmm' is the value worked out above).

To check what you have done,

6. Key in:- CALL mmmmm+1+PEEK (mmmmm+1) +256*PEEK (mmmmm+2)
   This CALL serves two purposes, first it relocates the machine code section contained in the data file, second it activates the sprite system RSXs.

To activate the RSXs,

7. Key in:- ¦SPROFF, Ø
   If the computer responds with:- Bad Command, then something has gone wrong and you will have to start again from point 1 above. Otherwise the RSXs are correctly installed and the data is ready for use.

Last, but by no means, least,

8. Load (or write) your Basic program !!

N.B. You can, of course, include the above in your program. The Demonstration program does just this. You are advised to use the techniques shown by the demonstration program.

The demonstration program's data file was created using two shape files. These files are named DEMO1.SHG and DEMO2.SHG.

The data file was created by first loading in the DEMO1 shape file with a ¦D command, then storing all the shapes using the ¦G command, the DEMO2

shape file was then loaded with a ↑D command, then the shapes from the DEMO2 file were stored using the ↑G command. Finally, the write option of the ↑G command was used to create the DEMODAT.DAT data file.

THE RSXs

The machine code contained in your data file, contains the code of 3 RSXs. These are:- SPRSIZE, SPRITE and SPROFF.

↑SPRSIZE

Even though you defined your sprite shapes in a grid that was 8 bytes wide by 32 pixels deep, you do not have to use the full width and depth when you display a sprite. The SPRSIZE RSX, sets the size that you wish for later execution of the SPRITE and SPROFF RSXs. E.G.:-

↑SPRSIZE,5,19

will set the RSXs such that any subsequent use of SPRSIZE and SPROFF will deal with sprites 5 screen bytes wide, by 19 pixel lines deep.

The format required for this RSX is:-

↑SPRSIZE,width,depth

where 'width' is the width in bytes of sprites, and 'depth' is the depth of sprites in pixel lines. The '↑' character is a shifted '@' character – next to 'P' on the keyboard. The 2 commas are compulsory. The range of legal values for 'width' is from 1 to 8, 'depth' must be in the range 1 to 32.

↑SPRITE

This is the command that activates a sprite. With this RSX, you control the position and shape, of the sprites on screen. E.G.:-

↑SPRITE,3,100,200,12

The SPRITE command does two things, first if the sprite is already displayed on the screen, the SPRITE command turns it off: second the sprite is drawn at the position specified in the command,

with the shape specified. The above example command would place, or move, the 4th sprite, to a position of 100,200, the sprite would be displayed using the 13th shape stored in the data file.

The format required by this RSX is:-

     !SPRITE,number,x,y,shape

where:- number is the sprite number in the range 0 to 15, or, 128 to 143. By adding 128 to your sprite number, you can have your sprite drawn at frame flyback time. This will help to stop your sprites from flickering.

     x is the graphics x coord. of the top left corner of the sprite,

     y is the graphics y coord. of the top left corner of the sprite,

     shape is the shape number to be used.

  !SPROFF

The RSXs give you control of up to 16 sprites at a time. This command will remove a sprite from the screen. Be sure that the RSXs are working with the correct sprite size, before using SPROFF. To turn a sprite off, you could, for example key in:-

     !SPROFF,7

The format required by this RSX is:-

     !SPROFF,number

where 'number' is a value between 0 and 15, specifying which sprite to turn off. Initially, all sprites are off; turning off a sprite that is not 'on' has no effect whatsoever.

POINTS TO REMEMBER ABOUT THE RSXs

1. Sprite number is in the range 0 to 15, NOT 1 to 16. In the case of the SPRITE command only, you can refer to sprites using 128 to 143.
2. Sprite shapes start at 0, NOT 1. They are all 8 bytes wide by 32 pixel lines deep. The SPRSIZE command determines how much of this data is to be used.

3. Sprite coordinates are expressed in terms of normal graphics coordinates; 0,0 is the bottom left hand corner of the screen.
4. You must have the correct sprite size set, when you use SPROFF or SPRITE. If you don't, corruption of your screen will occur.
5. You MUST turn all active sprites off, before clearing the screen. If you don't, screen corruption will occur.
6. You must not, PRINT, DRAW, PLOT Etc. over a sprite, UNLESS this is done in XOR mode. (Sprites are drawn by the RSXs in XOR mode.)

RSX ERRORS

The following will cause a SYNTAX error:-
Missing out the ' : ' preceeding the command name, misspelling the command name, missing out the comma between the command name and the parameters, missing out the comma(s) between parameters.

The following will cause a Bad Command message to be displayed:-
Incorrect no. of parameters, incorrect parameter value.

Errors resulting from the incorrect use of the RSX commands, are not reported as such. It is up to your skill as a programmer, to deal with these.

With a little imagination and skill, the programs in the Shape & Sound package will help you produce great games. We would however, remind you that the code contained in the programs, is copyrighted. You are completely free to use the programs in this package for your own pleasure, but should you wish to use the RSXs in a commercial program, you will first need the written permission of either AMSOFT or GEM SOFTWARE.