SPRITEMAKER
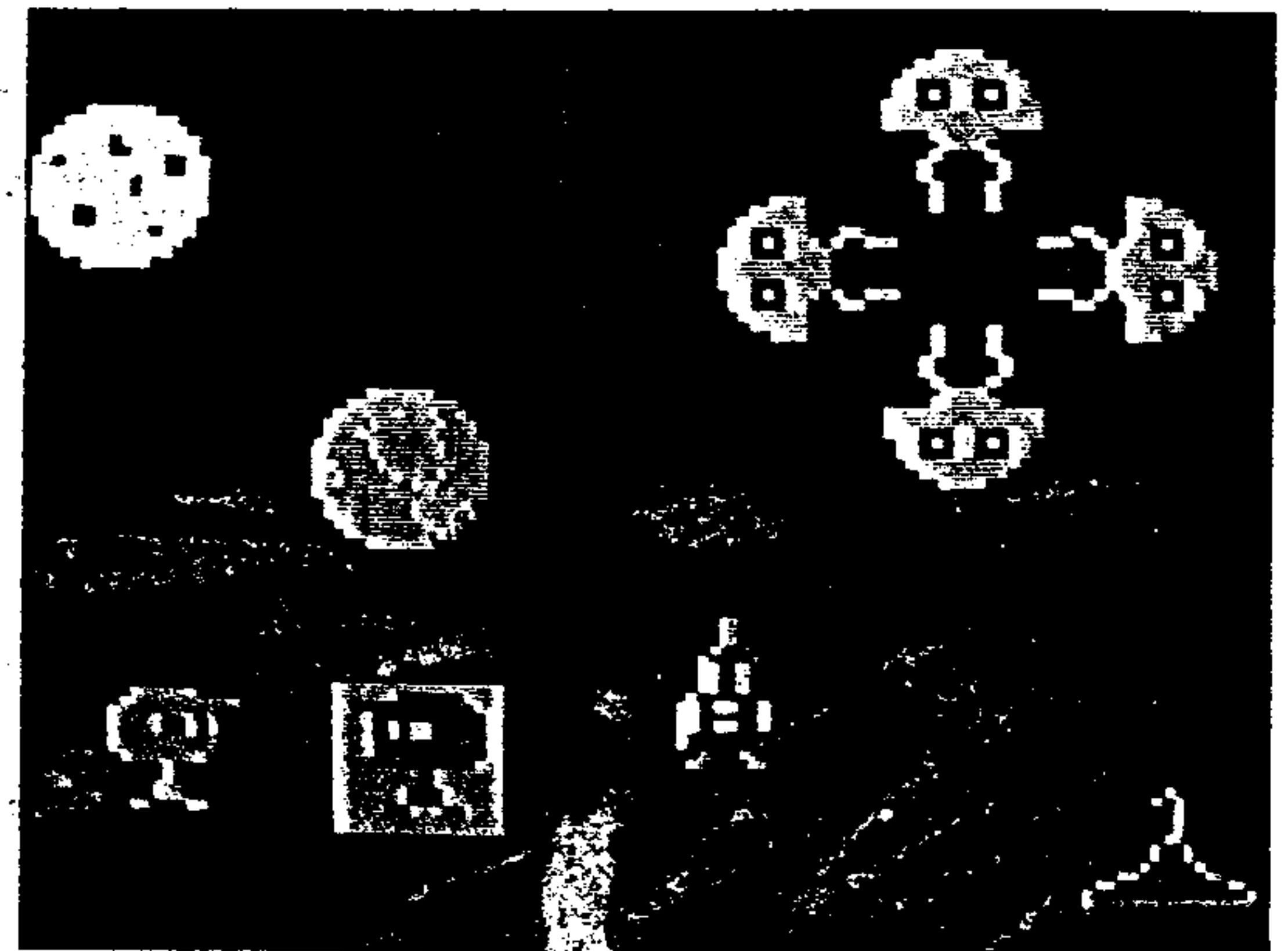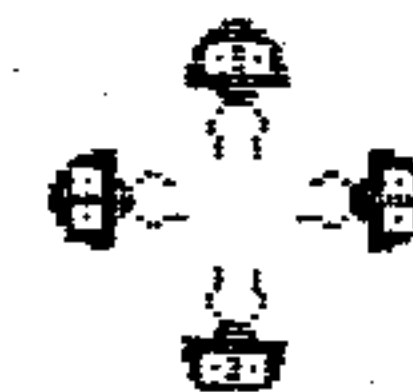
Created by John E. Brown

A must for programmers and people who like to draw. Draw sprites directly onto your computer screen! Sprite Maker allows full manipulation of up to 12 sprites. Special functions include: copy, reverse, modify, rotate, etc. Sets up files for the sprites to be used in your own programs.

Extended BASIC cartridge required.

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S P R I T E

M A K E R

Program type: Programming Aid
     Author: John E. Brown
   Language: TI Extended BASIC

     With SRITE MAKER you can draw sprites directly onto your computer
screen! Our program allows full manipulation of up to 12 sprites.
Special functions include: copy, reverse, modify, rotate, invert, etc.
Save sprites on disk or tape. The disk version of SPRITE MAKER can
create "CALL CHAR" statements which can be merged into your own
programs.   Sprites are small objects on the screen that can be drawn,
made any of 15 colors, and set in motion in any direction at different
speeds.   The following instructions will guide you step by step in
using SPRITE MAKER.

STEP 1 - LOADING THE PROGRAM

LOADING FROM CASSETTE:

(A) REWIND TO BEGINNING OF TAPE.
(B) ENTER EXTENDED BASIC. (See page 11 of the Extended BASIC manual)
(C) TYPE RUN "CS1", PRESS ENTER.
(D) FOLLOW THE DIRECTIONS AS THEY APPEAR ON THE SCREEN.

LOADING FROM DISKETTE:

(A) ENTER EXTENDED BASIC (If the SPRITE MAKER disk is already in the
    drive the program will load automatically. If so, proceed to step
    2).
(B) INSERT THE SPRITE MAKER DISK INTO DISK DRIVE #1.
(C) TYPE RUN "DSK1.LOAD", PRESS ENTER.

STEP 2 - DRAWING THE SPRITE

     As the program begins, SPRITE MAKER is displayed in large letters
across the screen. At the bottom of the screen you are instructed to
"PRESS ANY KEY TO BEGIN". After pressing a key, a menu appears with
three options: 1) Draw Sprite, 2) File Menu, 3) Enter Hex Code. For
now press 1 (draw sprite). Press enter after selecting your choice.
     After pressing enter, a large white square is displayed on the

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screen. You will draw the sprite in this square. A small black square
is shown at the top left corner of the white square. This is called a
cursor. To draw, press the following keys:
   (1) or (,) - places a black square under the cursor and moves the
                cursor one place to the right.
   (0) or (.) - erases the block underneath the cursor.

Certain keys can be used to move the cursor without drawing:

   (X) - Moves the cursor down.
   (E) - Moves the cursor up.
   (D) - Moves the cursor right.
   (S) - Moves the cursor left.

If the cursor should move off the edge of the white square, it will
reappear at the other side. At any time you may press Erase (Function
3) to erase the drawing. Proceed (Function 6) will turn your drawing
into a sprite and bring you to the next part of this program.   Back
(Function 9) will take you to the next part of the program without
turning your drawing into a sprite and your drawing will be lost.
     Once you have made a drawing which you like, press Proceed. After
a brief pause, seven small copies of your drawing will appear to the
right of your actual picture. These smaller pictures are different
sprite magnifications and will be explained later. Underneath your
drawing are the hex codes of the sprite that you have drawn.   The hex
codes are used for creating graphics in BASIC or Extended BASIC. For
more information about hex codes see your BASIC or Extended BASIC
manuals.   The top of the screen should read - "PRESS C TO CONT; R TO
REDO." Now press (C) to continue.

STEP 3 - OPTION MODE

     At the bottom of the screen you should see the following -
"#1 OPTION:1" with a cursor flashing on and off on top of the 1. In
the middle of the screen is the sprite that you drew. The "#1" on the
left of the screen indicates which sprite you can control. The sprite
that you drew is sprite #1. After "OPTION:" is a flashing cursor. The
cursor is waiting for you to select an option and then press enter.
You may choose any integer from 1-18. The default is 1. If you press
enter you will be selecting OPTION #1. Most options allow you to press
R to Return you to this prompt. Press enter to select option #1.

OPTION 1 - "MAGNIFY:"

     Your sprite can be 4 different sizes. Enter 1.   Your sprite is
now much smaller and should look different than it did before. This is
because with magnifications 1 and 2, only the top, left of the sprite
is shown. Try entering 2. This is the same picture, but a little bit
larger. Try 3. Now you see the entire sprite, but it's smaller than
before. Enter 4 - and your sprite is back to normal. When selecting a
magnification, all sprites will be displayed that size.   Type R and
press enter to return to the "OPTION:" prompt. Press 2 and then press
enter.

OPTION 2 - "COLOR:"

There are 16 different colors that you may change your sprite to:

1 - INVISIBLE
2 - BLACK
3 - MEDIUM GREEN
4 - LIGHT GREEN
5 - DARK BLUE
6 - LIGHT BLUE
7 - DARK RED
8 - CYAN

9 - MEDIUM RED
10 - LIGHT RED
11 - DARK YELLOW
12 - LIGHT YELLOW
13 - DARK GREEN
14 - MAGENTA
15 - GRAY
16 - WHITE

Try different colors. The screen color is usually cyan, so by making your sprite cyan, it will not be visible on the screen until you either change its color or change the screen color. When you have picked a color you like, enter R to return to the "OPTION:" prompt. Enter the number 3.

OPTION 3 - "ROW:"

This option allows you to position the sprite vertically on the screen. you may choose any number from 1 to 256, but locations above 192 are off the bottom of the screen. Enter 001, and you will see the sprite disappear and appear at the top of the screen. Experiment with different numbers to see where the sprite goes. Now press R to return to the "OPTION:" prompt and proceed to the next option by entering 4.

OPTION 4 - "COLUMN:"

This option allows you to position the sprite horizontally on the screen. Choose any number from 1 to 256. Enter 224. The sprite should appear on the right side of the screen. Experiment with different numbers before proceeding. Make sure the sprite is in a place easily seen, then enter R, then enter 5.

OPTION 5 - "ROW VEL.:"

You may set the sprite in downward motion with any number from 1 to 127. Upward motion may be from -1 to -128. The farther the number is from 0, the faster the sprite will move. For example, 3 will move the sprite very slowly down the screen. -120, however, will move the sprite very fast up the screen. Try these two values to get an idea of how the sprite moves. Try entering 1, and the sprite will move at a very slow rate. If the sprite is off the screen, it may take a while for it to reappear. Once the sprite is in an easily seen position, enter 0 and the sprite will stop. Now enter R, then enter 6.

OPTION 6 - "COLUMN VEL.:"

You may set the sprite in horizontal motion to the right with any

number from 1 to 127. Motion to the left may be from -1 to -128. The farther the number is from 0, the faster the sprite will move. For example, 3 will move the sprite very slowly to the right. -120, however, will move the sprite very fast to the left. Try these two values to get an idea of how the sprite moves horizontally. When the sprite is in an easily seen position, enter 0 and the sprite will stop. Enter R, then enter 7.

OPTION 7 - "DELSPRITE:"

By selecting a number from 1 to 12 you may erase the selected sprite from the screen. Since the sprite on the screen is sprite number 1, by entering 1, that sprite will disappear. Do that now. 0 erases all the sprites from the screen. Now proceed to option 8 by now you know how to do that yourself.

OPTION 8 - "CONTROL SPRITE:"

This option tells the computer which sprite you want to control. Since sprite #1 is the only one drawn so far, Enter 1. The sprite will reappear and flash a number of different colors. It flashes the colors so that when there are a lot of sprites on the screen, you will see which one you chose. Now proceed to option 9.

OPTION 9 - "SCREEN COLOR:"

This option allows you to choose the color you want the screen to be (see chart under option 2). It is advisable not to choose screen color 2 (black) because that is the color of the letters on the screen and you will not be able to read them. After experimenting with different colors, select a color you like and proceed to the next option.

OPTION 10 - "DRAW SPRITE:"

After selecting option 10, you will see "#1 DRAW SPRITE: #1" at the bottom of the screen. You may choose any sprite from 1 to 12, but for now just enter 2 to draw sprite #2. See step 2 (Drawing the sprite) if you have forgotten the use of the various keys. After you have drawn the sprite, press proceed (Function 6), then press C to continue. At the "OPTION:" prompt, enter 11.

OPTION 11 - "ENTER HEX CODE FOR SPRITE: #"

Hexadecimal is a number system used in computers which is based on 16 numbers (0123456789ABCDEF) rather than the decimal system, based on 10 numbers. With your computer hexadecimal is used in BASIC to create graphics. for more information about using hexadecimal to create graphics, see your BASIC or Extended BASIC manuals.

With this option you may take the hexadecimal numbers written in a

"CALL CHAR" statement in either BASIC or Extended BASIC and input them into the computer to make sprites out of them. Lets try it — first enter 3 to create sprite #3. Now suppose you see a statement in a BASIC program that looks like this — CALL CHAR(96,"3C7EFFFFFFFF7E3C"). To turn this statement into a sprite simply type in the hexadecimal number, then press enter. So you will be entering this number — 3C7EFFFFFFFF7E3C. A small circle will appear on the screen when you press enter, but you may not be able to see it because sprite #2 is directly on top of it. Proceed to the next option.

OPTION 12 — "COPY SPRITE"

When selecting this option, the following prompt will appear on the screen — "#3 SPRITE TO BE COPIED:#". This is asking you to enter the number of the sprite to be copied. Enter the number 3. Now you will see — "#3 NEW SPRITE:#". Here you must enter the number of the new sprite that will look just like sprite number 3. Enter 4. On the screen should be your original Picture and two circles, but the circles are directly on top of each other so you will just see one. To be able to see all the sprites, follow the next sequence of commands:

```
ENTER:
4       (go to option 4)
200     (place sprite #4 at column 200)
R       (return to option prompt)
8       (go to control sprite prompt)
1       (control sprite #1)
4       (go to option 4)
35      (place sprite #1 at column 35)
R       (return to option)
8       (go to control sprite)
2       (control #2)
4       (go to option 4)
70      (place #2 at column 70)
R       (return to option)
```

OPTION 13 — "REVERSE SPRITE"

This option allows you to "flip over" your drawing. If it is faced to the right then it will change to be faced to the left. At the prompt "#4 REVERSE SPRITE #" — Enter 1. After a brief delay, the sprite that you had drawn will flip over. Go to option 14.

OPTION 14 — "MODIFY SPRITE"

This will return you to the "DRAW SPRITE" section of the program and place your drawing in the large white square. Enter 1 to modify your sprite. Now make any changes you feel are necessary. If you do not want to change your drawing, press BACK (Function 9). Go to option 15.

OPTION 15 — "INVERSE SPRITE"

This will make a "cut out" of your drawing. Enter 1 and after a brief delay your sprite will appear inverted. Go to option 16.

OPTION 16 — "ROTATE SPRITE".

This option rotates your sprite clockwise in 90 degree increments. Enter 1 to rotate your drawing and after about 15 seconds, it will rotate to the right. Enter 1 again it will be upside down. Proceed to option 17.

OPTION 17 — "FILE MENU"

This option saves and retrieves your sprites onto and from external devices such as a cassette recorders, disk drives, and printers. On the top half of the screen all of the sprites in memory are displayed and numbered. The bottom of the screen displays the following—

```
1)DISPLAY CODE          5)RETURN
2)INPUT FILE            6)QUIT
3)SAVE FILE
4)SAVE MERGE FILE

ENTER YOUR CHOICE
```

Enter 1 to "DISPLAY CODE".

MENU ITEM 1 — "DISPLAY CODE"

This item will display on your screen the hexadecimal code of whichever sprite you choose. On the screen you should see — "ENTER A SPRITES NUMBER, OR R TO RETURN TO MENU:". Enter the number 3 and the hex code of sprite #3 will appear on the screen. It should look something like this:

```
3C7EFFFFFFFF7E3C
0000000000000000
0000000000000000
0000000000000000
```

Enter R to return to the menu. Enter 3 to go "SAVE FILE" we will return to item 2 afterwards.

MENU ITEM 3 — "SAVE FILE"

This item allows you to save your drawings on tape of disk. The screen should read — "ENTER DEVICE FILENAME". If you are using a tape recorder, put a blank cassette in and type CS1 and press enter. Now follow the instructions as they appear on the screen. If you are using a disk drive enter DSK1.SPRITEFILE. Instead of SPRITEFILE you may type

in any word of 10 letters or less, but when you want to retrieve the sprites from the file, you must remember the name that you gave it. If you have a printer you may enter the printer device name at this prompt (such as RS232 or PIO) and the program will print out the hex code of each sprite that you choose as well as a name that you may input to label each sprite.

The screen should now read - "ENTER A SPRITES NUMBER, OR R TO RETURN TO MENU:" - Enter 1, then 2, then 3, then 4. You may never save more than 12 sprites on a single file.

Enter R to return to the menu, then enter 2.

MENU ITEM 2 - "INPUT FILE"

This is for retrieving sprites from a file that you already created. As in item 2, enter CS1 for tapes or DSK1.SPRITEFILE for disks. This will read the sprites that you had drawn from the file that you just created. When finished, enter 4 if you have a disk drive, 5 if you use a cassette recorder. Item 4 cannot be used with a tape recorder.

MENU ITEM 4 - "SAVE MERGE FILE"

This item can only be used with a disk drive. It allows you to add sprites that you have drawn to your own programs. It will create a "CALL CHAR" statement which Extended BASIC understands for each sprite you choose. These statements can then be merged to already existing programs.

The bottom of the screen should read - "MERGE FILE, ENTER R AT DEVICE-FILENAME OR DEFINE CHAR. TO RETURN","FILENAME:DSK".

Enter "1.SPRITECHAR".
The screen will look like this:

FILENAME:DSK1.SPRITECHAR

DEFINE CHARACTER:96

AT LINE:100

SPRITE NUMBER:1

Enter 96 for "DEFINE CHARACTER", 100 for "AT LINE", and 1 for "SPRITE NUMBER".

This will write a merged program that at line 100 will make a "CALL CHAR" statement which will define characters 96-99 to look like sprite #1. For information about merging this file with your own program, see appendix A.

Enter R, then 5 to go to menu item 5.

MENU ITEM 5 - "RETURN"

This item returns you to the OPTION part of the program. Enter to go to the next option

OPTION 18 - "QUIT"

Option 18 and menu item 6 serve the same purpose. They are leaving SPRITE MAKER. The screen will read "WARNING!","UNSAVED D WILL BE LOST UPON LEAVING THIS PROGRAM","CONTINUE PROGRAM? (Y/N) Entering Y will let you continue with the program, N will stop t program. Enter N, then if you are using the cassete version, ent RUN. With the disk version type RUN DSK1.LOAD and press enter. Wh the title screen appears press any key to begin. When the first me appears enter 2 to go to the file menu. Now try to input the file th you previously created. GOOD LUCK!

APPENDIX A

Following are two programs for recovering sprites that have been saved using SPRITE MAKER. The first program is for cassettes, the second for disks. In line 110 of the second program, change "DSK1.SPRITEFILE" to "DSK1.XXXXXXXXX" where XXXXXXXXX is the name of the file that you saved the sprites with.

CASSETTE

```
100 CALL MAGNIFY(3)
110 OPEN #1:"CS1",INTERNAL,INPUT ,FIXED 65
120 FOR T=1 TO 12 :: INPUT #1:A$ :: IF A$="X" THEN 140 ELSE CALL
    CHAR(92+4*T,A$)
130 NEXT T
140 CLOSE #1
150 CALL CLEAR
160 FOR A=1 TO 12
170 CALL SPRITE(#A,92+4*A,2,10,A)
180 NEXT A
190 GOTO 190
```

DISKETTE

```
100 CALL MAGNIFY(3)
110 OPEN #1:"DSK1.SPRITEFILE",INTERNAL
120 FOR T=1 TO 12 :: INPUT #1:A$ :: IF A$="X" THEN 140 ELSE CALL
    CHAR(92+4*T,A$)
130 NEXT T
140 CLOSE #1
150 CALL CLEAR
160 FOR A=1 TO 12
170 CALL SPRITE(#A,92+4*A,2,10,A)
180 NEXT A
190 GOTO 190
```

MERGING SPRITES WITH YOUR OWN PROGRAMS (DISK ONLY)

STEP:

1) LOAD YOUR PROGRAM
2) TYPE MERGE DSK1.XXXXXXXXX (replace XXXXXXXXX with the name of your merged file.
3) REMOVE THE REM STATEMENTS FROM THE BEGINNING OF THE CALL CHAR STATEMENTS.

APPENDIX B

COLOR TABLE

1 - INVISIBLE	9 - MEDIUM RED
2 - BLACK	10 - LIGHT RED
3 - MEDIUM GREEN	11 - DARK YELLOW
4 - LIGHT GREEN	12 - LIGHT YELLOW
5 - DARK BLUE	13 - DARK GREEN
6 - LIGHT BLUE	14 - MAGENTA
7 - DARK RED	15 - GRAY
8 - CYAN	16 - WHITE

KEYS FOR DRAWING SPRITES

(1) OR (,) - DRAW BLACK
(0) OR (.) - DRAW WHITE
(X) OR (FUNCTION X) - MOVES CURSOR DOWN.
(E) OR (FUNCTION E) - MOVES CURSOR UP.
(D) OR (FUNCTION D) - MOVES CURSOR RIGHT
(S) OR (FUNCTION S) - MOVES CURSOR LEFT.

OPTIONS

NUMBER	OPTION	RANGE
1	MAGNIFY	1 - 4
2	COLOR	1 - 16
3	ROW	1 - 256
4	COLUMN	1 - 256
5	ROW VEL.	-128 - 127
6	COL VEL.	-128 - 127
7	DELSPRITE	0 - 12 (0 deletes all)
8	CONTROL SPRITE	1 - 12
9	SCREEN	1 - 16
10	DRAW SPRITE	1 - 12
11	ENTER HEX CODE	up to 64 hex numbers
12	COPY SPRITE	1 - 12
13	REVERSE SPRITE	1 - 12
14	MODIFY SPRITE	1 - 12
15	INVERSE SPRITE	1 - 12
16	ROTATE SPRITE	1 - 12
17	FILE MENU	1 - 6
18	QUIT	Y/N