The Hi-Res Shape Combiner/Splitter

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Manipulating shape tables by hand is a long, tedious, and difficult task, usually viewed with trepidation by even the most experienced Apple owner. If a programmer wants to use that great rocket shape he made the other day as the 7th shape in a large shape table, most likely he will just resign himself to having to draw it again. Is this really necessary? Sure, shape tables are complicated and intricate groups of little-understood numbers, but isn't number manipulation what computers were made for? Why not make a program for manipulating shape tables?

That's exactly what "Shape Combine" is. It is a comprehensive, but not complex, program that will allow you to put together shape tables in any combination you want. You can break up large tables into component single-shape tables, and you can combine many single-shape tables into long, multi-shape tables with this program. Suddenly, shape tables are not those nearly impossible things they used to be.

HOW TO USE IT

When you run "Shape Combine", you will see a menu with two options: 1) Combine single-shape tables and 2) Break large table up. I will cover each option in order.

COMBINE SINGLE-SHAPE TABLES

As its name implies, choosing option one will allow you to combine several single-shape shape tables into one multi-shape shape table.

When you press the return key after choosing option one, the computer will present you with a catalog of the disk in your drive. Examine the catalog and find the name of the shape table you want in the first position of your new table. (Note: if the shape tables you type in contain more than one shape, the program will automatically use only the first shape in the table.) The computer will verify each shape table name, check for errors, and then give you the catalog again, and ask for another name. Continue entering shape table names until you have entered all those to be in your planned shape table. Then, enter a "Q" (Quit) to tell the computer you are finished entering names.

The computer should print "<Please wait while the table is compiled>", and the disk drive should come on. Depending on how many shapes you entered, the program will take from 10 seconds to several minutes to combine tables.

When it is finished combining your shapes, it will display them all on the screen, and then save them on disk, if you want it to. When it saves them to disk, it will also save a sequential text file, with the name you typed in, plus the word "FILE." If you type 'EXEC shapename FILE" at a later date, it will load the shape table and do the pokes necessary for using it.

BREAK LARGE TABLE UP

When you choose option two from the menu, you will see a catalog of the disk in your drive. From this menu, choose the shape table to be split up into component parts, and enter the name when the computer asks for it.

The program will load the shape table and will draw the table shapes one by one in the middle of the screen. After it draws each shape, it will ask you if the shape should be saved on disk. If you reply Y, it then asks you the name to use and saves the shape along with a sequential text file on disk. The next shape will then be drawn until every shape in the table has been displayed.

HOW IT WORKS

COMBINE SINGLE-SHAPE TABLES

The shape combination section of the program contains, in itself, sections. The input section is extremely simple — the computer simply shows the user a catalog, inputs the name of the shape table to be broken up, and loads the file. The next section, however, is not so simple.

The program always loads the shape tables at memory location contained in variable MS, and since the first number in any shape table is the number of shapes in the table, PEEK(MS) equals the number of shapes in the table. The program sets up a loop from 1 to the NUMber of shapes, and extracts each shape from the table in order. It extracts the shapes as follows. First, it finds out where in memory the shape is from the shape table index. The memory address of shape #I is always contained in bytes $S + I * 2$ and $S + I * 2 + 1$, if S is the starting address of the table. (See "Shape Writer" for more information.) Once it has found the shape in memory, it copies the shape from that address to the address MB + 4 (MB through MB + 3 contain the index for a single shape table). When it is finished copying, it has a single-shape table stored at

memory location MB. It displays the shape on the screen, and jumps to the disk save routine. If you want to save the shape, it will save it; if not, it won't. When it returns from the disk save routine, it extracts the next shape, and continues until every shape in the table has been shown.

CUSTOMIZATION

Shape Combine can be customized in several ways, some easy, others harder. The first and easiest way to customize it is to simply change the values of the variables in the variable initialization section in lines 3000-3070. Variables you may want to change are:

MS (Memory Starting address) — In combine section, location of final completed table. In break-up section, location of large table to be broken up.

MEM (current MEMory address) — Used in both sections to keep track of the next memory location to use.

MB (Memory Beginning address) — Used in break-up section. Location where extracted tables go.

You can change MS and MB to whatever locations you like, so long as they don't conflict with the program or its variables. You might want to change the Dimension of A$ to a higher number so that you can combine more small tables into larger ones.

Another simple change you might want to make is in the disk-save section. The program makes a sequential text file to go along with every shape you save. This section, in lines 4110-4150, can easily be deleted, changed, or expanded. All you need to do to make a command or commands in the text file is to put a Print statement containing the commands in this area. For example: suppose you wanted the text file to draw shape number 1 once in the middle of the HGR screen. You would simply add the line 4145 as follows.

4145 PRINT "HGR:HCOLOR=3:DRAW 1 at 139,79"

Each time you EXECuted the file, it would draw shape #1 in the middle of the screen.

These are just a few examples of things you might want to change — many other possibilities exist. Exploit them!

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      ******************************
      **  SHAPE COMBINER PROGRAM  **
      **       BY CHRIS CARROLL    **
      **    COPYRIGHT (C) 1980 BY  **
      **      MICRO-SPARC, INC.    **
      **       LINCOLN, MA 01773   **
      ******************************
1000 :
1010  REM      SHAPE COMBINE
1020  REM      NOVEMBER 18,1980
1030  REM      CHRIS CARROLL
1040 :
1050  GOSUB 3000: REM  INIT VARS
1060  GOTO 5000
1070 :
1080 "  COMBINE SEVERAL TABLES
1090 "  FROM DISK INTO ONE
1100 :
1110 :
1120 :
1130  REM   INPUT NAMES OF SHAPES
1140  REM   TO BE COMBINED.
1150 :
1160  HOME : INVERSE : PRINT "FIND TABLES TO COMBINE, EN
      TER Q TO QUIT",: NORMAL : POKE 34,2: HOME : PRINT
1170  PRINT D$"CATALOG"
1180  PRINT : PRINT "NAME OF SHAPE #"NUM + 1,: INPUT " >
      ";A$: IF A$ = "" THEN 1180
1190  IF A$ = "Q" THEN 1240
1200  PRINT D$"VERIFY "A$:A$(NUM) = A$:NUM = NUM + 1: GOTO
      1170
1210 :
1220 "  COMBINE REQUESTED TABLES
1230 :
1240  TEXT : HOME : VTAB 4: PRINT " (PLEASE WAIT WHILE T
      ABLE IS COMPILED)"
1250  POKE MEM,NUM:MEM = MEM + 1: POKE MEM,0
1260  MEM = (NUM + 1) * 2 + MS
1270  FOR I = 1 TO NUM
1280  POKE I * 2 + MS,((MEM - MS) / 256 - INT ((MEM - M
      S) / 256)) * 256: POKE I * 2 + MS + 1, INT ((MEM -
      MS) / 256)
1290  PRINT D$"BLOAD "A$(I - 1),A"MEM
1300  X = PEEK (MEM):SL = X * 2 + 2
1310  FOR K = MEM TO MEM + SL: POKE K, PEEK (K + SL): NEXT
      :MEM = MEM + SL + 1
1320  IF  PEEK (MEM) = 0 THEN 1340
1330  POKE MEM, PEEK (MEM + SL):MEM = MEM + 1: GOTO 1320
1340  NEXT : GOSUB 4050: REM   DISPLAY SHAPES,SAVE TO DI
      SK
1350  END
1360 :
1370 "  END OF COMBINE TABLE
1380 "  SECTION.
1390 :
2000 :
2010  REM  ERROR CONTROL
2020 :
2030  Y = PEEK (222): IF Y = 6 THEN  PRINT : PRINT G$"FI
      LE NOT FOUND.PLEASE RE-ENTER THE NAME.": FOR K = 1 TO
      4000: NEXT : ON A GOTO 1170,6070
2040  IF Y = 8 THEN  PRINT : PRINT G$"I/O ERROR. ABORT",
      : INPUT " ?",A$: IF  LEFT$ (A$,1) < > "Y" THEN  ON
      A GOTO 1170,6070
2050  IF Y = 8 THEN  TEXT : HOME : END
2060  IF Y = 11 THEN  PRINT : PRINT G$"SYNTAX ERROR. PLE
      ASE INPUT AGAIN": ON A GOTO 1170,6070
2070  IF Y = 10 THEN  PRINT : PRINT G$"DISK FULL.PLEASE
      INSERT ANOTHER": INPUT "HIT RETURN WHEN NEW DISK IS
      READY",A$: GOTO 4090
2080  IF Y = 13 THEN  PRINT : PRINT G$"FILE TYPE MISMATC
      H. PLEASE ENTER CORRECT",: PRINT "NAME FOR "A$(I -
      1);: INPUT " ?";A$(I - 1): PRINT : ON A GOTO 1290,6
      090
2090  PRINT G$"ERROR NUMBER "Y: STOP
3000  GOTO 3040
3010 :
3020 "  INITIALIZE VARIABLES
3030 :
3040  D$ = CHR$ (4):G$ = CHR$ (7): TEXT : HOME :MS = 16
      384:MEM = MS:MB = 768: SCALE= 1: ROT= 0: DIM A$(40)
      : ONERR  GOTO 2000
3050  PLO = ((MS / 256) - INT (MS / 256)) * 256:PHI = INT
      (MS / 256)
3060  POKE 232,PLO: POKE 233,PHI
3070  RETURN
```

```
4000 :
4010  REM   DISPLAY SHAPES ON
4020  REM   SCREEN, SAVE TO
4030  REM   DISK IF APPROVED.
4040 :
4050  HGR : HCOLOR= 3:J = 0:Y = 20:X = 28: FOR R = 1 TO
      I - 1: DRAW R AT X,Y:J = J + 1:X = X + 28: IF J > 8
      THEN Y = Y + 40:X = 28:J = 0
4060  NEXT
4070  HOME : VTAB 12: PRINT "SHAPE ENTERED FROM "MS" TO
      "MEM: PRINT
4080  PRINT "SAVE TO DISK ?";: GET A$: IF A$ = "N" THEN
      TEXT : HOME : RETURN
4090  HOME : VTAB 12: INPUT "WHAT NAME TO USE ?";A$: IF
      LEN (A$) = 0 THEN  PRINT G$: GOTO 4090
4100  TEXT : HOME : PRINT D$"BSAVE "A$",A"MS",L"(MEM + 1
      ) - MS
4110  PRINT D$"OPEN "A$" FILE": PRINT D$"WRITE "A$" FILE
      "
4120  PRINT "BLOAD "A$
4130  PRINT "POKE 232,"PLO": POKE 233,"PHI
4140  PRINT "SCALE=1:ROT=0"
4150  PRINT D$"CLOSE"
4160  RETURN
5000 :
5010  REM   CHOOSE WHERE TO GO
5020 :
5040  TEXT : HOME : VTAB 4: PRINT "CHOICES-": PRINT : PRINT
5050  PRINT  TAB( 5)"(1) COMBINE SINGLE-SHAPE TABLES"
5060  PRINT
5070  PRINT  TAB( 5)"(2) BREAK LARGE TABLE UP"
5080  PRINT
5100  PRINT : INPUT "YOUR CHOICE ?";A$:A = VAL (A$): IF
      A < 1 OR A > 2 THEN 5100
5110  ON A GOTO 1130,6000
6000 :
6010  REM   CONVERT LARGE SHAPE
6020  REM   TABLE INTO SMALL
6030  REM   SHAPE TABLES.
6040 :
6050  POKE 232,((MB / 256) - INT (MB / 256)) * 256: POKE
      233, INT (MB / 256): REM  POKE IN BEGINNING ADDRESS
      OF SHAPE TABLE
6060  HOME : PRINT "FIND TABLE TO BREAK UP ": POKE 34,2:
      HOME : PRINT
6070  PRINT D$"CATALOG":I = 1
6080  INPUT "NAME OF SHAPE TO SPLIT?";A$(0)
6090  PRINT D$"BLOAD "A$(0)",A"MS
6100  NUM = PEEK (MS): FOR J = 0 TO 3: READ K: POKE MB +
      J,K: NEXT : REM  POKE IN BEGINNING OF SHAPE TABLE
6110 :
6120  REM   NUM=NUMBER OF SHAPES
6130  REM   IN TABLE. FOR EACH
6140  REM   TABLE, MOVE IT TO M2
6150 :
6160  FOR J = 1 TO NUM:ML = MB + 4
6170  MEM = PEEK (J * 2 + MS) + PEEK (J * 2 + 1 + MS) *
      256 + MS
6180  POKE ML, PEEK (MEM): IF  PEEK (MEM) = 0 THEN 6200
6190  MEM = MEM + 1:ML = ML + 1: GOTO 6180
6200  SL = MS:R = MEM:MS = MB:MEM = ML: HGR : HCOLOR= 3: DRAW
      1 AT 139,79: GOSUB 4070: REM  SAVE SINGLE SHAPE TO
      DISK
6210  MEM = R:MS = SL
6220  NEXT : END
7000 :
7010  REM   DATA FOR SINGLE
7020  REM   SHAPE TABLE.
7030 :
7040  DATA 1,0,4,0
```