ALTER DOUBLER

This BASIC program offers a convenient way
to change the DOS/ProDOS allocation for a
Doubleboot disk.

Entering the Monitor to make changes to Doubler (part of Doubleboot System, *Nibble* Vol. 6/No. 8) each time you want to change its disk-space allocations is, to say the least, a hassle. Alter Doubler is an Applesoft program used with Doubler that gives you up to 10 different space allocation choices. The program allows you the choice of 80, 112, 144, 176, 208, 240, 272, 304, 336, or 368 DOS 3.3 sectors. The remainder of the disk is allocated to as many as 229 ProDOS blocks with the first menu choice or as few as 85 blocks with the last choice. And additional, more exacting choices may easily be included as needed.

Use Alter Doubler to eliminate any worry you might have about entering the wrong configuration values into Doubler. Best of all, the amount of space you allocate to each disk operating system will be your choice, not Doubler's!

USING ALTER DOUBLER

First ensure that your diskette is ProDOS formatted. Then insert ALTER.DOUBLER into the default drive and enter:

RUN ALTER.DOUBLER

You should end up with the display in **Figure 1**. If the display matches **Figure 1** (with the cursor over the 5 and the same data), you have entered the first portion properly. Note: If you do not have an Apple IIGS, IIe or IIc, the lower-case characters will appear as upper case.

The first column, Doubler Choices, lists the choice numbers from 0-9 that you enter at the cursor. The second and third columns, DOS 3.3 Sectors (Tracks), contain the number of usable DOS 3.3 sectors or tracks that will be reserved. The fourth column, ProDOS Blocks, is the number of usable ProDOS blocks. Although the actual allocation is greater, the usable allocation is more meaningful (to determine the actual allocation, add 8 to Sectors column, .5 to (Tracks), and 7 to Blocks).

Assuming everything is correct, enter any number from 0-9 that corresponds to the sectors and blocks you wish to reserve (in preparation for the following test, do not enter 5 or Return for now, since this is the default that's on the original DOUBLER program).

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Once you have entered your choice (or pressed Return to accept the default), the display changes to the one shown in **Figure 2**.

Figure 2 assumes you've entered the number 0, which gives you the maximum usable ProDOS blocks and minimum usable DOS 3.3 sectors allowed in this program. (See the Enhancements and Modifications section to get even lower.)

If this wasn't what you wanted, or you're unsure of the choice, press the N (upper-case or lower-case) and you'll return to the opening menu. There, the default number will be changed to the number you last used (which in this case would be 0).

Once you have confirmed your choice by entering Y, you'll enter the DOUBLER program. Note that you need the other programs presented with the original Doubleboot article for the system to work properly.

ENTERING THE PROGRAM

Enter the Applesoft program **(Listing 1)** into memory. After checking your typing, enter:

SAVE ALTER.DOUBLER

FIGURE 1: Alter Doubler Selection Screen

```
              DOUBLER by Ken Manly
          Copyright (C) by MicroSPARC, Inc
         DOUBLER will create a DOS 3.3/ProDOS
      hybrid disk from a newly formatted ProDOS disk.
   DOUBLER        DOS 3.3                        PRODOS
   CHOICES      SECTORS (TRACKS)                 BLOCKS

     <0>           80           (  5)             229
     <1>          112           (  7)             213
     <2>          144           (  9)             197
     <3>          176           ( 11)             181
     <4>          208           ( 13)             165
     <5>          240           ( 15)             149
     <6>          272           ( 17)             133
     <7>          304           ( 19)             117
     <8>          336           ( 21)             101
     <9>          368           ( 23)              85

            <ESC> ENDS PROGRAM
          ENTER DOUBLER CHOICE <5>
```

TABLE 1: Byte Values for Address $2063 Corresponding to Choices		
Number Chosen	**Pattern Starting Address**	**$2063 Byte Value**
<0> (80/229)	$245A	$1E (#30)
<1> (112/213)	$2452	$1C (#28)
<2> (144/197)	$244A	$1A (#26)
<3> (176/181)	$2442	$18 (#24)
<4> (208/165)	$243A	$16 (#22)
<5> (240/149)	$2432	$14 (#20)
<6> (272/133)	$242A	$12 (#18)
<7> (304/117)	$241E	$0F (#15)
<8> (336/101)	$2416	$0D (#13)
<9> (368/ 85)	$240E	$0B (#11)

on the same diskette DOUBLER is on. Now, instead of BRUNing DOUBLER, you need only type:

RUN ALTER.DOUBLER.

For help with entering *Nibble* listings, see the Typing Tips section.

TESTING THE PROGRAM

Whenever you add an enhancement to a program, you should always test it to ensure it's operating as expected. This is especially critical if you don't have Key Perfect or the Key Perfect Table has not been provided. When you've confirmed your choice and entered DOUBLER, the following message appears:

```
Put the disk to be altered in drive 1
and type "Y" to continue
Escape returns you to the menu.
```
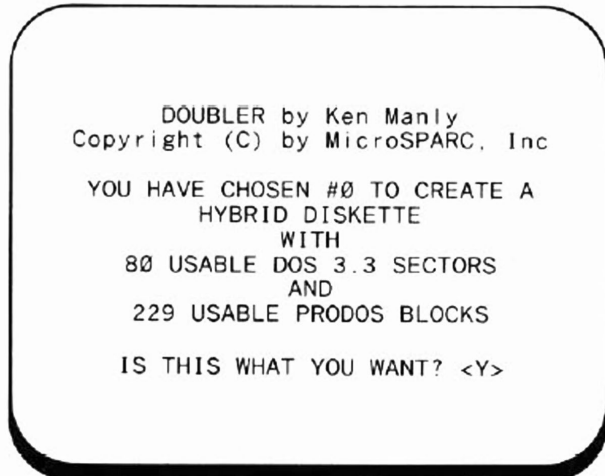
For this test, enter any other key except the Y and return to the ALTER.DOUBLER menu. Now press Escape to exit this program. Enter the monitor with CALL −151 and type:

23E0.246D

to display the contents of these memory locations on your screen.

Memory locations $2426 and $2427 should always read 00 00 (this is track $11 for the DOS 3.3 catalog), and the first line of the dump should read:

```
23E0- 00 01 00 00 00 00 00 00
```

FIGURE 2: Alter Doubler Confirmation Screen

```
           DOUBLER by Ken Manly
     Copyright (C) by MicroSPARC, Inc

     YOU HAVE CHOSEN #0 TO CREATE A
             HYBRID DISKETTE
                  WITH
        80 USABLE DOS 3.3 SECTORS
                   AND
        229 USABLE PRODOS BLOCKS

       IS THIS WHAT YOU WANT? <Y>
```

Now look for the first occurrence of the sequence FF FF and compare the memory location where it occurs to the appropriate Pattern Starting Address corresponding to the Number Chosen in **Table 1**. If you find that the first FF does not start at the specified address for the number you've chosen, you'll need to double check your typing for program errors.

Assuming it matches, you now need to ensure you have a consistent sequence of two $FF bytes followed by two $00 bytes (FF FF 00 00), except in memory addresses $2426-$2427 (which must contain zeros) and $246C-246D (which can contain anything since they're not used by DOUBLER). Naturally, if this sequence is not present, double check your program for errors.

Now look at byte $2063 and make sure its byte value matches that in **Table 1**. If so, you have entered ALTER.DOUBLER correctly and should be able to use it now; however, at least one more formatting choice, at the opposite extreme, should be tried before you continue. Of course, if a Key Perfect Run is both available and usable, you won't need to do this.

HOW IT WORKS

Since DOUBLER must reside in memory in order to alter, it is BLOADed in by line 110, which also initializes the backspace and default variables. The three POKEs allow ALTER.DOUBLER to use DOUBLER's copyright and opening remarks messages.

Next, the message "return to the menu" is POKEd into memory, replacing the "end program" message in DOUBLER (line 170). The program then jumps over the two subroutines, adjusts for centering, and prints DOUBLER's copyright and opening remarks message in line 360. The CALLs are to DOUBLER's MSGPRINT subroutine, which checks the machine ID to determine whether to print in upper-case or mixed case.

After the headings are displayed in inverse (line 420), the 10 choices are printed along with the calculated number of sectors, tracks, and blocks in line 480.

Line 490 establishes a default value for the variable CHOICE.

Lines 560-590 print your choice number, indicate the usable sectors and blocks, and then ask you to confirm this choice.

TABLE 2: Alternate Allocation Schemes			
DEFAULT$ Choices	**DOS 3.3 Sectors (Tracks)**	**DOS 3.3**	**ProDOS Blocks**
< -2 >	16	1	261
< -1.5 >	32	2	253
< -1 >	48	3	245
< -.5 >	96	6	221
< -1.5 >	128	8	205
< 2.5 >	160	10	189
< 3.5 >	192	12	173
< 4.5 >	224	14	157
< 5.5 >	256	16	141
< 6.5 >	288	18	125
< 7.5 >	320	20	109
< 8.5 >	352	22	93
< 9.5 >	384	24	77
< 10.5 >	416	26	61
< 10.5 >	416	26	61
< 11 >	432	27	53
< 11.5 >	448	28	45
< 12 >	464	29	37
< 12.5 >	480	30	29
< 13 >	496	31	21
< 13.5 >	512	32	13
< 14 >	528	33	5

The ProDOS loop amount is calculated and then POKEd into DOUBLER at line 650.

Line 710 marks the calculated number of DOS 3.3 tracks used, and line 780 marks the remaining tracks as free. The last two POKEs in this line mark track $11 as used.

Line 850 clears the screen of everything except the copyright message, calls DOUBLER, and, upon its return, goes to the opening menu at line 360.

ENHANCEMENTS AND MODIFICATIONS

With ALTER.DOUBLER, you don't need the very last portion of DOUBLER. If you want to merge DOUBLER into ALTER.DOUBLER in the form of DATA statements, delete these unneeded areas with the following steps:

1. RUN ALTER.DOUBLER
2. End the program at the menu by pressing Escape.
3. BSAVE TEXT.DOUBLER,A$2000,E$23E1
4. Run your favorite binary-to-DATA converter on TEXT.DOUBLER (See the two-liner by Scott Alfter in the October 1987 issue.).
5. EXEC the created text file into ALTER.DOUBLER.
6. Replace the BLOAD DOUBLER statement (as well as the POKE statements) in line 110 with a GOSUB to the FOR-NEXT POKE routine the text file created.
7. Delete TEXT.DOUBLER and the created text file.

Should you wish for even more exacting choices, you can assign another number in increments of .5, ranging from −2 to 14, by entering that number into DFAULT$. For example, to reduce the DOS 3.3 allocation even more, enter the new line:

```
115 DFAULT$="-1"
```

into ALTER.DOUBLER. Now, when running this program, accept the default of −1 by pressing Return in response to Enter Doubler Choice prompt. Table 2 contains 23 additional choices with their respective allocations, which you may assign to DFAULT$ to more closely match your exact needs.

LISTING 1: ALTER.DOUBLER

```
10   REM     *************************
20   REM     *                       *
30   REM     *    ALTER.DOUBLER       *
40   REM     *   BY SHERMAN PADDOCK   *
50   REM     *   COPYRIGHT (C) 1987   *
60   REM     *   BY MICROSPARC, INC   *
70   REM     *   CONCORD, MA. 01742   *
80   REM     *                       *
90   REM     *************************
100  ONERR  GOTO 870
110  PRINT  CHR$ (4)"BLOAD DOUBLER": POKE 865
     4,0: POKE 8202,96: POKE 8774,0:H$ =  CHR$
     (8) +  CHR$ (8):DFAULT$ = "5"
120  REM
130  REM  *****************************
140  REM  *  CHANGE MESSAGE IN DOUBLER *
150  REM  *****************************
160  REM
170  FOR I = 1 TO 25: POKE 8850 + I, ASC ( MID$
     ("returns you to the MENU. ",I,1)) + 128
     : NEXT : GOTO 360
180  REM
190  REM  *****************************
200  REM  *  RIGHT JUST DOS 3.3 SECTOR# *
210  REM  *****************************
220  REM
230  PRINT  RIGHT$ (" " +  STR$ (I * 16 - 8),
     3);: RETURN
240  REM
250  REM  *****************************
260  REM  *  RIGHT JUSTIFY PRODOS BLOCK# *
270  REM  *****************************
280  REM
290  PRINT  RIGHT$ ("   " +  STR$ ((560 - I *
     16) / 2 - 7),3);: RETURN
300  REM
310  REM  *****************************
320  REM  *  CENTER AND PRINT COPYRIGHT *
330  REM  *     MESSAGE FROM DOUBLER    *
340  REM  *****************************
350  REM
360  TEXT : HOME : POKE 32,1: HTAB 3: CALL 81
     95: PRINT : HTAB 3: POKE 8198,207: CALL
     8195: POKE 8198,179: POKE 32,0: PRINT : POKE
     34,3
370  REM
380  REM  *****************************
390  REM  *  PRINT HEADINGS IN INVERSE *
400  REM  *****************************
410  REM
420  INVERSE : HTAB 3: PRINT "DOUBLER";: HTAB
     12: PRINT  SPC( 4)"DOS 3.3"; SPC( 5);: HTAB
     30: PRINT "PRODOS": HTAB 3: PRINT "CHOIC
     ES";: HTAB 12: PRINT "SECTORS (TRACKS)";
     : HTAB 30: PRINT "BLOCKS": NORMAL : PRINT
430  REM
440  REM  *****************************
450  REM  *   CALCULATE & PRINT OPTIONS *
460  REM  *****************************
470  REM
480  FOR CHOICE = 0 TO 9:I = CHOICE * 2 + 5.5
     : PRINT  TAB( 5);"<";CHOICE;">"; SPC( 6)
     :: GOSUB 230: PRINT  SPC( 5);"(" +  RIGHT$
     ("  " +  STR$ (I * .5),2) + ")"; SPC( 5):
     : GOSUB 290: PRINT : NEXT
490  PRINT : PRINT  TAB( 9)"<ESC>  ENDS PROGR
     AM": PRINT :CHOICE =  VAL (DFAULT$): PRINT
     TAB( 7)"ENTER DOUBLER CHOICE  <";DFAULT
     $;">";H$;
500  GET DFAULT$: ON DFAULT$ =  CHR$ (13) GOTO
     560: ON DFAULT$ =  CHR$ (3) OR DFAULT$ =
     CHR$ (27) GOTO 860: ON DFAULT$ < "0" OR
     DFAULT$ > "9" GOTO 500:CHOICE =  VAL (DF
     AULT$)
510  REM
520  REM  *****************************
530  REM  *       VERIFY CHOICE TAKEN   *
540  REM  *****************************
550  REM
560  DFAULT$ =  STR$ (CHOICE): HOME : VTAB 7:I
     = CHOICE * 2 + 5.5: PRINT  TAB( 5 -  INT
     ( LEN (DFAULT$) / 2))"YOU HAVE CHOSEN #"
     ;CHOICE;" TO CREATE A": PRINT : HTAB 12:
     INVERSE : PRINT "HYBRID DISKETTE": NORMAL
570  PRINT : PRINT  TAB( 17);"WITH": PRINT : HTAB
     6: INVERSE : GOSUB 230: PRINT " USABLE D
     OS 3.3 SECTORS": PRINT : HTAB 17: PRINT
     "AND": PRINT : HTAB 7: GOSUB 290: PRINT
     " USABLE PRODOS BLOCKS": NORMAL
580  VTAB 22: PRINT  TAB( 8)"IS THIS WHAT YOU
     WANT?  <Y>";H$;
590  GET A$: ON A$ =  CHR$ (3) GOTO 860: ON A
     $ = "N" OR A$ = "n" GOTO 360: ON A$ < >
     "Y" AND A$ < > "y" AND A$ < >  CHR$ (1
     3) GOTO 590
600  REM
610  REM  *****************************
620  REM  *  CALCULATE ProDOS ASSIGNMENT *
630  REM  *****************************
640  REM
650  CHOICE = 30 - 1 - (CHOICE > 6) - CHOICE *
     2: POKE 8291,CHOICE
660  REM
670  REM  *****************************
680  REM  *  MARK DOS 3.3 TRACKS AS USED *
690  REM  *****************************
700  REM
710  FOR I = 9186 TO 9186 + CHOICE * 4: POKE
     I,0: NEXT
720  REM
730  REM  *****************************
740  REM  *   MARK DOS 3.3 TRACKS FREE  *
750  REM  *  NEXT, MARK TRACK 11 AS USED *
760  REM  *****************************
770  REM
780  FOR I = I - 3 TO 9323 STEP 4: POKE I,0: POKE
     I + 1,0: POKE I + 2,255: POKE I + 3,255:
     NEXT : POKE 9254,0: POKE 9255,0
790  REM
800  REM  *****************************
810  REM  *        CALL DOUBLER         *
820  REM  *     THEN RETURN TO MENU     *
830  REM  *****************************
840  REM
850  HOME : VTAB 10: CALL 8215: GOTO 360
860  TEXT : END
870  E =  PEEK (222):EL =  PEEK (218) + 256 *
     PEEK (219): POKE 216,0: CALL  - 3288
880  HOME : VTAB 12: IF E = 6 THEN  PRINT "DO
     UBLER NOT ON THIS DISK": GOTO 900
890  IF E = 8 THEN  PRINT "I/O ERROR--CHECK D
     RIVE DOOR"
900  IF E = 6 OR E = 8 THEN  VTAB 21: PRINT "
     ESCAPE TO QUIT, RETURN TO TRY AGAIN";: GET
     Z$: PRINT : ON Z$ < >  CHR$ (27) GOTO 1
     00: END
910  PRINT "ERROR "E" IN LINE "EL: END
```

END OF LISTING 1