

## TYPING NIBBLE LISTINGS IN 4 EASY STEPS

There are 4 main steps to typing in a program:

1. Create a work disk.
2. Type in and save the CHECKIT program.
3. Type in the listing with CHECKIT installed.
4. Save the program to disk.

### STEP 1: CREATING A WORK DISK

Most *Nibble* programs work with either DOS 3.3 or ProDOS. If you have one particular program in mind, check the article for operating system compatibility.

If you are using ProDOS, copy the files PRODOS and BASIC.SYSTEM from a ProDOS master disk or from your System Utilities disk to a newly formatted disk. Apple IIGS owners should copy the file P8 from the subdirectory /SYSTEM.DISK/SYSTEM and rename it PRODOS.

If you choose DOS 3.3 as your operating system, first boot your DOS 3.3 system master disk, then remove the disk from the drive and follow these steps:

1. Type NEW and press Return.
2. Type 10 HOME and press Return.
3. Type a blank disk into the disk drive, type INIT HELLO and press Return.

### STEP 2: TYPING IN CHECKIT

You're ready to type in the CHECKIT program shown on the following page. But before you type any program, clear the Apple's memory by typing NEW followed by Return. Remember, computers are very picky about how programs are typed. Be sure to type the program exactly as it is listed, including punctuation and spacing. After you've typed the program, save it on disk with the command

SAVE CHECKIT

### STEP 3: USING CHECKIT TO ENTER A PROGRAM

CHECKIT watches your typing to see if you type a program line correctly. When you press Return at the end of a line, CHECKIT prints a number that will match the one published in the magazine if you've typed the line correctly. If the line is mistyped, the number printed won't match. CHECKIT runs only in the 40-column mode.

Once you've entered the CHECKIT program and saved it to disk, install it by typing:

RUN CHECKIT

The first time you run CHECKIT, you

may get the message "ERROR IN DATA STATEMENTS." If this occurs, recheck the data statements at and before the line listed. Correct any errors and save CHECKIT to disk before running it again.

If there are no errors in CHECKIT you'll be given the option to choose whether you'll type an Applesoft or hexadecimal listing. Some articles have more than one listing and may contain both hex and Applesoft BASIC listings. You must RUN CHECKIT before typing in each separate listing. The article will describe the listings and identify them as either hex code or Applesoft BASIC code. The following two sections describe the process of entering an Applesoft BASIC listing and a hex listing.

#### Applesoft Programs

If the listing you wish to enter is identified as Applesoft BASIC, answer N to CHECKIT's question "Are you entering a hexadecimal file?" and the Applesoft BASIC version of CHECKIT will be installed. Once it is installed, you may begin typing in the Applesoft BASIC listing. Applesoft BASIC lines listed in *Nibble* begin with a CHECKIT code, followed by a line number and the Applesoft commands. Do not type in the CHECKIT code! Type in the line number and all of the characters up to the next line number before pressing Return.

Be careful to maintain spacing between quotes. Also, avoid resetting the Apple II when CHECKIT is installed. You can omit the comments after REM statements, although they usually contain useful information when reading the listing.

Let's enter a sample Applesoft BASIC listing. Boot your work disk and run the CHECKIT program. Since you're not entering a hex program, answer N to the question asked and CHECKIT will be installed in your Apple. Now you're presented with an Applesoft BASIC prompt character and a flashing cursor. You're ready to begin typing the listing. To enter the program shown in Example 1, type

```
10 REM RING THE BELL
```

followed by a Return. The CHECKIT code for that line (37) will be printed if you've typed the line correctly. If the code doesn't match, type the line again, paying careful attention to detail. Now type lines 20 and 30. After you've typed in the entire program, enter Control-Z (hold down the Control key and press Z) for the final check code. If the code you get doesn't match the printed code, you've probably skipped a line or have an extra line in your program.

#### EXAMPLE 1: BASIC PROGRAM

```
37 10 REM RING THE BELL
54 20 FOR J = 1 TO 5: PRINT
    CHRS(7): NEXT J
91 30 END

TOTAL: 1CB9
```

#### Hex Programs

If the listing you wish to enter is identified as hex code, answer Y to the question asked by CHECKIT and the program will ask two other questions. It asks "What is the starting address of the file?" and "What is the length of the file?" These numbers will be included at the top of the hex listings. You'll have to enter the System Monitor with the command CALL - 151. (The System Monitor is simply the part of your computer used for entering machine language.)

Machine language programs are published in a "hex dump" format. This means that an address is displayed followed by bytes stored in those addresses. The numbers may look unfamiliar because they are in hexadecimal (base 16) notation. For example, in Example 2, the number stored in address 0300 is A2. In address 0301, the value 05 is stored.

To type in Example 2, you should boot your work disk and run CHECKIT. Answer Y to the first question asked. As you can see from the beginning of Example 2, the starting address is 0300 and the length is C. These numbers should be entered at the next input prompts. CHECKIT will be installed and you should see a System Monitor prompt. Now enter

```
0300 A2 05 20 00 FB CA F0 03
```

followed by a Return. The number 73 should be printed below your line. If it's not, re-type the line. Now enter the second line in similar fashion and press Control-Z for the final check code. Again, if this final number doesn't match, you've probably skipped a line in your typing.

#### EXAMPLE 2: HEX PROGRAM

```
START 300          LENGTH: C
73 0300 A2 05 20 00 FB CA F0 03
80 0308 4C 02 03 60

TOTAL: E52E
```

To check your typing by listing the program, first type the address you want to check and press Return. This will display

the address and the byte entered at the address. To display a range of addresses, type the first address you'd like to see, followed by a period and the last address. For example, to see addresses 0300 to 03A0, type

```
0300 03A0
```

followed by a Return.

**Special Note for IGS owners:** When displaying an area of memory, an additional number followed by a slash (/) will appear before the address in your display. To the

right of the eight bytes listed in the line, there will be eight additional characters displayed. These have no relationship to the numbers produced by CHECKIT and may be ignored.

#### STEP 4: SAVING THE PROGRAM ON DISK

You should save the program to your work disk periodically while entering the listing and after completing a program. Saving a program on disk is simply a matter of

giving the correct command. This command is always given in the article accompanying the program listings.

#### Technical Support

If you run into a problem with a *Nibble* program that you can't solve, send your questions and a SASE to the *Nibble* Technical Support Department at 52 Domino Dr., Concord, MA 01742. Phone support is available on the Tech Support line from Monday through Friday between 2 and 5 EST at (617) 371-1669.

#### LISTING 1: CHECKIT

```
10 REM .....
20 REM * CHECKIT .....
30 REM * COPYRIGHT 1988 BY MICROSPARC, INC.* .....
40 REM * CONCORD, MA 01742 .....
50 REM .....
60 TEXT : HOME : NORMAL : PRINT "CHECKIT": PRINT
   "COPYRIGHT 1988 BY MICROSPARC, INC."
70 ONERR GOTO 90
80 FOR I = 0 TO 377: READ ML:CS = CS + ML: NEXT
   : RESTORE : IF CS = 48127 THEN 100
90 PRINT : PRINT "ERROR IN DATA STATEMENTS:"
   : PRINT "PROBABLY LOCATED ON OR BEFORE L
   INE " : PEEK (123) + PEEK (124) + 256: END

100 POKE 216,0 : POKE 768,0: DIM H(3):H(0) =
   1:H(1) = 16:H(2) = 256:H(3) = 4096
110 VTAB 6: PRINT "ARE YOU ENTERING A HEXADE
   CIMAL": PRINT "FILE?": GET AS: POKE -
   16398,0: PRINT AS
120 IF AS = "N" OR AS = CHR$(110) THEN GOSUB
   370: POKE 34218,128: GOTO 210
130 IF AS < > "Y" AND AS < > CHR$(121) THEN
   110
140 POKE 768,1: VTAB 10: CALL - 958: PRINT
   "WHAT IS THE STARTING ADDRESS OF THE": PRINT
   "FILE (IN HEX)": INPUT HS: GOSUB 290:A =
   H
150 IF A < 735 OR A > 39424 THEN PRINT : PRINT
   "INVALID ADDRESS. PLEASE DOUBLE-CHECK": PRINT
   "AND RE-ENTER": GOSUB 350: GOTO 140
160 VTAB 13: CALL - 958: PRINT "WHAT IS THE
   LENGTH OF THE FILE": PRINT "(IN HEX)":
   INPUT MS: GOSUB 290:B = H
170 IF B < 1 OR B > 32000 THEN PRINT "INVAL
   ID LENGTH. PLEASE DOUBLE-CHECK": PRINT
   "AND RE-ENTER": GOSUB 350: GOTO 160
180 TEXT : HOME : NORMAL : POKE 34,1: VTAB 2
   : PRINT "INSTALLING CHECKIT..."
190 IF A > = 6144 THEN GOSUB 320: POKE 579
   9: INT (A / 256): POKE 5798,A - 256 + PEEK
   (5799): POKE 5801, INT (B / 256): POKE 5
   800,B - 256 + PEEK (5801): POKE 5802,0:
   GOTO 230: REM ABOVE $1800 SOMEWHERE
200 IF A < 6144 THEN GOSUB 370: POKE 34215,
   INT (A / 256): POKE 34214,A - 256 + PEEK
   (34215): POKE 34217, INT (B / 256): POKE
   34216,B - 256 + PEEK (34217): POKE 3421
   8,0: GOTO 210: REM BELOW $1800 SOMEWHER
   E
210 IF PEEK (48896) < > 76 THEN POKE 56,0
   : POKE 57,133: CALL 1002: GOTO 250
220 PRINT CHR$(4):"INHA8500": GOTO 250
230 IF PEEK (48896) < > 76 THEN POKE 56,0
   : POKE 57,22: CALL 1002: GOTO 250
240 PRINT CHR$(4):"INHA51600": GOTO 250
250 TEXT : HOME : NORMAL : POKE 34,1: VTAB 2
   : PRINT "CHECKIT INSTALLED"
260 IF PEEK (768) = 1 THEN PRINT : PRINT "
   ENTER THE MONITOR BY TYPING: PRINT " CA
   L<151"
270 NEW
280 END
```

```
290 H = 0:L = LEN (HS): ON L < 1 OR L > 4 GOTO
   300: FOR I = 1 TO L:D = ASC ( MID$( HS,
   I,1)): H = H + (H(L - I) = (D - 48 * (D <
   58 AND D > 47) - 55 - (D > 64 AND D < 71
   )): NEXT
300 RETURN
310 REM $1600 VERSION
320 FOR I = 0 TO 377: READ ML: POKE 5632 + I
   ,ML: NEXT I:C = 5632
330 FOR I = 0 TO 18: READ ML: POKE C + ML, PEEK
   (C + ML) - 111: NEXT
340 RETURN
350 VTAB 21: PRINT "PRESS RETURN TO CONTINUE
   ": GET CHS: PRINT CHS: POKE - 16368,0
   : RETURN
360 REM $8500 VERSION
370 FOR I = 0 TO 377: READ ML: POKE 34048 +
   I,ML: NEXT I
380 RETURN
390 DATA 216,32,27,253,201,154,240,31,201,1
   41,208,26,134,224,32,178,133,32,251,218,
   32,128,254,56,165,8
400 DATA 229,9,32,218,253,32,132,254,166,22
   4,169,141,96,32,106,134,44,170,133,16,43
   ,169,1,133,6,169
410 DATA 8,133,7,160,0,177,6,133,251,200,17
   7,6,133,252,240,63,200,177,6,32,79,134,2
   00,177,6,32
420 DATA 79,134,165,251,133,6,165,252,133,7
   ,208,221,173,167,133,133,7,173,166,133,1
   33,6,160,0,177,6
430 DATA 32,79,134,230,6,208,2,230,7,230,25
   1,208,2,230,252,165,251,205,168,133,165,
   252,237,169,133,144
440 DATA 227,162,0,189,171,133,32,237,253,2
   32,224,7,144,245,44,16,192,32,128,254,16
   4,8,166,9,32,64
450 DATA 249,32,251,218,32,132,254,169,152,
   96,0,0,0,0,20,15,20,1,12,58,32,32,106,
   134,133
460 DATA 6,169,2,133,7,160,0,177,6,201,176,
   144,73,201,186,176,69,177,6,44,170,133,1
   6,53,201,210
470 DATA 208,4,166,251,240,61,201,162,208,8
   ,72,169,1,69,251,133,251,104,201,160,208
   ,6,166,251,208,25
480 DATA 240,26,201,191,208,19,132,226,160,
   0,185,117,134,32,79,134,200,192,5,144,24
   5,164,226,176,3,32
490 DATA 79,134,200,196,224,144,188,96,166,
   224,104,104,169,141,96,132,226,136,177,6
   ,201,160,240,249,201,186
500 DATA 240,8,201,176,144,36,201,186,176,3
   2,164,226,200,177,6,201,197,208,73,200,1
   77,6,201,205,208,16
510 DATA 169,210,32,79,134,169,197,32,79,13
   4,169,205,32,79,134,96,164,226,177,6,24,
   144,135,162,8,10
520 DATA 38,8,38,9,144,14,172,165,8,73,33,13
   3,8,165,9,73,16,133,9,104,202,208,232,96
   ,169,0
530 DATA 133,8,133,9,133,251,133,252,96,208
   ,210,201,206,212
540 DATA 16,41,44,73,79,92,97,106,123,128,1
   35,180,203,246,249,261,316,321,326
```