

JUNE 78

CLOAD

MAGAZINE

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Dear Folks:

Here we are again - late as usual. Our excuse this time is that we got our Level II 16K machine in and decided to "hold the presses" so that we could include the Level II translations of our programs. From now on, we'll be putting Level I on one side and Level II on the other. Since Level II takes up less room on the tape than Level I, there will be some "free space" after the Level II programs. This will be used to re-issue the old Level I programs in Level II, re-issue old programs that need major bug removal, and handle the Level I "spill-over" from side 1. The programs will be saved twice in Level I, and twice in Level II. As you can see, we are "space limited". We have tried going to a C-45 cassette, but reliability went down and expense went up simultaneously, which didn't seem like a good deal to us. What with the recent postage hike and costs in general escalating, our ability to justify additional losses is getting somewhat limited.

For those of you who have had trouble loading our cassettes, here are some tips:

1. Listen to the tape. With your ears, that is. We have had many people complain that programs wouldn't load, or would load only on one side. There is speech in there, folks - it won't load at any level. There won't be any speech from this issue on, because we're out of room on the tape.
2. While you're listening to the programs, note that there is a nice "sharp" tone to the general roar. If there isn't, try the tone control switch. It should be on high. (If you've made our modification, the tone is set to high internally.)
3. If you haven't made our modification, we've included a copy of the instructions. It's not absolutely necessary, but it is very convenient. For those of you who don't wish to rip into your cassette player, check out the pink flyer. It's an ad for a box which does the same thing (and more).

4. Unplug the AC cord to your cassette player. Cut it into tiny lengths (about 2" will do). Throw the pieces away. Go to your Radio Shack store and get four "C" batteries - while you're there, ask about his "Battery of the Month" deal. Put the batteries in the recorder. Running the recorder on AC will reduce the tolerance for error significantly. Call it ground loops, call it poor regulation, call it insufficient filtering. What it is is 60 cycle hum, and that's trouble. Most of the time it's OK; some of the time it's not. Use batteries.
5. Consider the possibility that you might be loading data instead of a program. Data can be saved and re-loaded under program control - it doesn't run as a program. Check out appendix "C" in the Level I manual.

Items of general interest:

Dick Fuller has left CLOAD Magazine as editor and is now flying Lear Jets for a major corporation. Turns out that flying Lear Jets for a large salary is more fun than editing a small magazine for a small salary. We'll all miss him - without his effort, the magazine would not have started up nearly as well.

We have two freebie announcements, one for beginners and one for more advanced hackers. David Lien, the author of the Level I manual, has written a book about - oddly enough - programming in Basic. If you want information about what lies beyond the Level I horizon, this is a good way to go. The pre-publication price is \$9.95, plus 50¢ handling, plus tax for Californians (\$10.45 total out of California, \$11.05 for residents). Orders must be post-marked on or before 31 August 78. After that, the price goes to seven million dollars, so hurry up. Address: Compusoft Publishing, 8662 Dent Drive, San Diego, CA 92119.

For you 01001010 types, a good selection of monitors/assemblers/machine language stuff is being announced by Small System Software, Box 483, Newbury Park, CA 91320. Send for their flyer - tell them CLOAD sent you. If you're really a hacker, the Computer Information Exchange Newsletter (Box 158, San Luis Rey, CA 92068) has info on modifying a TRS-80 for upper/lower case

graphics. Send them a legal size, self-addressed, stamped envelope.

We also have a club announcement: Those TRS-80 owners around Alliance, Ohio can contact Gary Fix, Alliance Microcomputer Club, (216) 823-8996. They have a club with about four other TRS-80 owners.

STATUS REPORT

One of the fun aspects of this operation is that we have no trouble finding space to stash the excess profits we're making. Our original concept was to lose a fair amount of money, then slowly get to a break-even point and eventually make money based on the supplementary income provided by advertising. It will probably not be news to you that the job has been a bit more involved than we thought, and that the costs are now known to be a bit different than we projected. It therefore is our sad but necessary duty to raise our rates to \$36 for one year or \$20 for six months, effective the first of September. All those who already have subscriptions will obviously not be affected.

Also, sometime this summer, we will be offering separate programs, which, because of their length or the amount of documentation required, cannot be put in the monthly issue. The projected cost of these is \$6 each, \$6.36 for California sales. Based on the market, the cost of writing the software, the cost of marketing and general overhead, this appears to be the optimum price that will generate the most sales and still keep the seller in business. Our admiration goes out to those companies which realized this from the beginning.

A BIT MORE ON BYTES

Last month we nibbled at the concept of bytes. I'd like to continue on for a bit, explaining how the machine looks at them (the Z-80 chip itself, that is). With an 8 bit width, 256 patterns of 1's and 0's can be formed. The most obvious way to refer to a given pattern is to number them all and refer to the number of the pattern. The numbers used are 0 to 255, inclusive - except we use hexadecimal so that people wonder what we're talking about - that's 00 (hex) to FF (hex). One side effect of using hex is that it's easy to convert from hex to binary and back.

Consider the following patterns:

BINARY	HEX	BINARY	HEX
0000	= 0	1000	= 8
0001	= 1	1001	= 9
0010	= 2	1010	= A
0011	= 3	1011	= B
0100	= 4	1100	= C
0101	= 5	1101	= D
0110	= 6	1110	= E
0111	= 7	1111	= F

If we want to specify the pattern 01001010, we break it up by groups of four and convert by the chart. It becomes 4A hex.

So what does 4A hex mean (besides 01001010)? Well, we could assign anything we wanted to it, like a type of flower out of a list of 256 flowers, but there are three major meanings given to it by computer types. One is that it is a number equivalent to 74 in the decimal (base ten or "normal") number system. Another meaning to the pattern is that it is a letter of the alphabet. Traditionally, computer engineers use the ASCII representation which is a list of 128 numbers, letters and control characters (such as carriage return and tab). They assign a pattern to each, and ignore the 128 patterns left over. The pattern 4A hex translates to a capital "J". Every time you type a "J" somewhere in your program, the pattern 01001010 is put into a memory cell in user space (the memory set aside for a TRS-80 user to put his program). If the program is listed on the screen, the pattern is read out of memory and the hardware puts the mark "J" on the screen.

The third meaning that the pattern 01001010 is commonly assigned is as an instruction. Turns out to be the instruction for the CPU (the Z-80 chip) to copy the pattern that happens to be sitting in register "D" into register "B" (they both now have the pattern that was in "D").

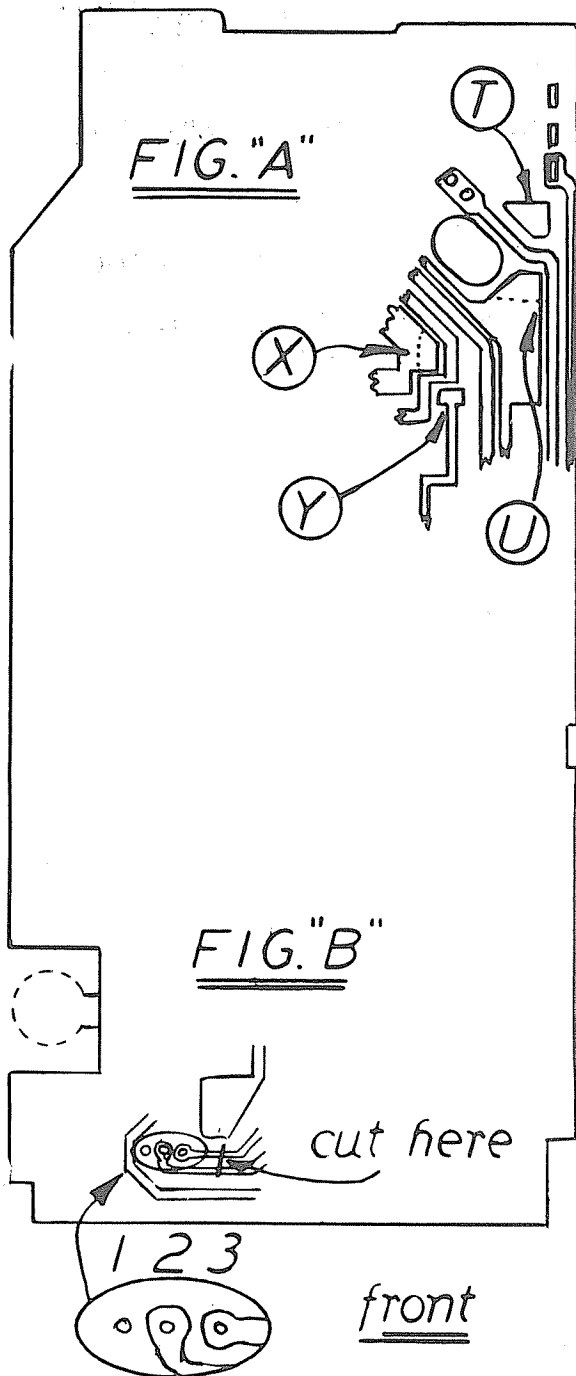
Tune in next month and we'll talk about the inside of the Z-80 chip and what it looks like to a programmer.

CLOADTM MAGAZINE'S CASSETTE RECORDER MODS FOR THE TRS-80

There are two modifications described here. The audio modification allows you to listen to the tape (at a comfortable volume) while loading its data into the computer. When the computer is disconnected, the volume control automatically returns to its normal function, for listening to music or voice.

The motor modification changes the function of the "tone hi-lo" switch. When the switch is toward the computer plugs, the computer has control of the motor. When it's away, the motor is always on (handy for fast forward and rewind). This modification permanently sets the tone control to "hi".

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1. Unplug all cords & plugs from the recorder. Take off the battery cover and if batteries are installed, remove them.

2. Turn the recorder upside down on a soft surface such as a towel, with the battery compartment facing up and away from you.

3. Remove five #2 Phillips (cross-point) screws. Three are on the main chassis, and two are in the bottom of the battery compartment.

4. Lift off the black plastic chassis and put it aside (the rear comes up first, then slides forward about 1/2 inch to clear the volume and tone controls).

5. Remove the chrome carrying handle (at the front of the recorder). Note: the "sharp" edge faces up.

6. For the audio modification, solder a 100 ohm, 1/4 watt resistor (blue-red-black) from point "X" to point "Y" on the circuit board. Keep the leads short, and the resistor against the board.

7a. For the motor modification, cut the two circuit traces shown in figure "B", which are connected to terminals 2 & 3 of the tone hi - lo switch.

7b. Solder a piece of insulated wire 5 1/2 inches long to point "U" on figure "A". Route the other end forward, slipping it underneath the wires crossing the circuit board at its center. Solder the other end to terminal 2 (center) of the switch.

7c. Solder a piece of insulated wire 6 inches long to point "T" on figure "A". There is a yellow wire on this point which should remain. Route similar to 7b above, and solder to terminal 1 (to the left - previously unused).

8. Reinstall the chrome carrying handle oriented as before ("sharp" edge up).

9. Reinstall the black plastic chassis. Hook the front edge over the volume and tone controls and lower the back. Ensure that it fits OK.

10. Reinstall the five screws. Two are pointed. They go to the holes in the battery compartment.

11. Happy C-loading ...

A word about submissions - we are presently sitting on about a bushel of submitted programs, and have been unable to get to them because the major priority has been toward getting this issue (and July's) out. Hopefully, we will be getting to them shortly.

Presently, most of the submissions to us are games, so if your submission is of the practical or educational variety, it will stand a very good chance of acceptance. Those games based on a new principle are also needed. We try to discourage traditional games such as Hurkle, Wumpus, Bomber or Biorythm.

Our rates vary widely, from \$25 or so for a front cover to \$250, maximum, for a well coded program of a practical nature. The average program submission which is accepted falls in the \$75 to \$100 category. We would like to pay more, but we are presently striving to "break even" and therefore justify our existence.

When we review your program, we will send you notification as to whether it has been accepted or not. If it is accepted, we will make an offer based on a formula we use to evaluate programs. This is the fairest way we have been able to think of. With the notification we will want you to sign a release claiming that the program is your work, and that all rights are assigned to CLOAD Magazine. This means that it cannot be sold to another source or published in another journal without CLOAD's permission. If you want to re-use certain programming concepts or give copies to friends, that's alright, but re-coding a few lines and offering it to another source is a no-no.

When we receive the letter back, we'll send you a check for the amount of the offer. If you do not wish to sign over all rights, or if you feel our offer is insufficient, you may (1) throw the letter away - we won't use the code without permission, or (2) negotiate. Presently our negotiator is in Brazil teaching advanced headhunting techniques to the natives.

Our (latest) policy is to return all cassettes submitted to us whether the material is accepted or rejected. This might take some time, so please bear with us.

See you next month!!!

TRD 711 "Elmy"