CLOAD
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Boom!

Well, the Radio Shack TRS-80 has now been tested to withstand earthquakes up to 5.1 on the Richter Scale. The recent Santa Barbara earthquake had an epicenter about six to eight miles from our building. One computer was knocked off the table it was sitting on, bounced to the floor, and had a bottled water stand (full of water) break over it, a little to one side. Drying it out and plugging it back in was all that was necessary to start it up again. We sustained very little overall damage other than the clean-up-the-mess variety, with the possible exception of our brand new, high-gloss professional two-track tape deck that we are using (did use?) to make the master tapes for CLOAD. It fell off a four-foot bench, landed on its upper left corner, and bent the takeup reel shaft. We hope that's all, but we haven't checked it out completely. The July master, incidentally, was not done on this machine. We've had a lot of trouble with it, as have quite a few of our subscribers. The hum on the tape should not be a problem with this (August) issue - it's the first (maybe last?) issue done with our new equipment.

As always, if a tape is so bad as to be "unloadable", send it back for a new copy. In the case of July, it may take some time while we get some new issues "printed up". We still have a few loadable copies, however.

Has anyone had trouble locating blank cassette labels? We have had a call from a subscriber who wanted some completely blank labels, so he could have more writing surface and also re-label on occasion. We get ours done on special order, and will send 96 completely blank, white labels to anyone who sends us $5.00 ($5.30 in California). Most of the cost is handling. If several people pool their orders, most label houses carry these, but at a minimum quantity of several thousand labels.

In this issue, one of the most interesting programs we've carried was submitted by Mr. Charles W. Evans, of Sun City, Arizona. It's called Yield-to-Maturity and is used to compute the "percentage interest" you could expect if

you purchased a given bond. A bond is a "loan" of sorts, where a large company borrows money by selling a promissory note (the bond). With the bond comes a promise to pay interest as time goes along (the coupon). At a certain time, (maturity) the company will buy back the bond for its face value (usually $100). These notes are bought and sold freely on the open market. Let's say a company issued a bond with a 5% coupon rate, to mature to $100 in the year 2003 (that's 25 years away, folks). With inflation at 10% these bonds are not too valuable, and not too many people want them at $100. So - like everything else - the market price then tends to drop. $100 face value bonds quite often sell for around $60 or so. When this happens, the facts that (1) it will eventually get bought back for $100 by the issuing company, and (2) the coupon rate is a constant dollar amount ($5 a year in this case), the bond becomes worth buying.

The total complex question is this: If I bought this bond now for X dollars, and it has a coupon rate of Y%, and held it for Z years, selling it back for $100, what total percentage per year increase would that be equivalent to? This is complicated by the fact that sometimes at a certain midpoint in the bond's life, the company can "recall" it by buying it back (the call date and amount). What is the yield to maturity? What is the yield to call? You'll find the program indexed as "YTM".

Some miscellaneous notes on miscellaneous things:

The screen printer won't print double wide characters - just normal characters double spaced. This is due to the way that the "memory map" is set up for the display.

You can reduce program size by omitting the second quote mark if it's the last character on the line.

You can listen to your tape loading (as well as many other things) by tuning an AM radio to a blank spot and putting it near the computer. Quite nice for attention-getting for a display (Radio Shack managers take note).

You Level II types are probably onto this, but when listing a program, push and hold down the shift key, then use the "@" key as a toggle. Push once to move the screen list, once again to stop, etc.

New TRS-80 Group in the Chicago area - contact John Longstreet at (312) 743-7335 or (312) 761-2742.

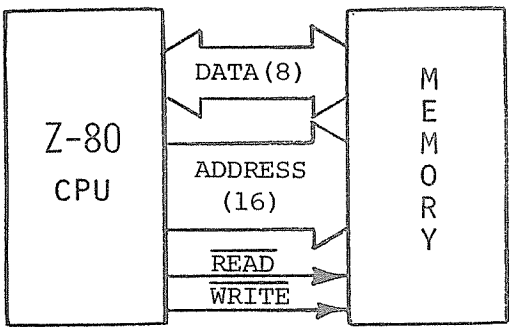
Apparently, the screen printer must be unplugged before power-up on the Level II machine. One way around this is to hold the "break" key (not the inter-

rupt button) down while turning the CPU on. We're not sure if this is a problem with our computer, but it appears to be common.

We have all our Level I programs converted to Level II and will be putting them in the upcoming issues as space permits.

If you have a friend who purchased a "PET" computer instead of the Radio Shack TRS-80, tell him/her about CURSOR^{tm} Magazine. It's a lot like CLOAD, except it's for the "PET". It is a completely separate company, of no relationship to us, except that we are friendly and sometimes share equipment and labor. CURSOR Magazine, P.O.Box 550, Goleta, CA 93019 - (805) 967-0905.

We have had several requests for listings. We are looking for the best way to handle this. Our equipment for printing is here, but needs some modifications before we'll be happy (we're incorrigable re-designers around here).



Now for our gee-what's-inside-it fans, here comes the next thrilling episode of the Compleat Computer. The drawing on the left shows the basic concept of a computer. The CPU reads patterns from memory, one byte at a time, transforms them to new patterns, and writes them back into memory.

Let's take a read cycle in detail. When the CPU wants a byte from memory, it must supply the address. It does this by putting a pattern of high and low voltages (1's and 0's in the argot of the trade) on the 16 wires (called the address bus) leading to the memory. (Since there are 16 bits in the pattern - one per wire - then there are 65,536 [2^{16}] possible addresses.) The Z-80 also has to put a "0" on the "read" wire which also goes to memory. This instructs the memory to take the contents of the memory cell which has wires (the data bus) leading back to the Z-80. The whole cycle of events takes less then .000003 seconds. That's 3 microseconds, or 3 millionths of a second. That's faster than looking it up in a book.

Essentially, what has happened is that the Z-80 chip has wanted the byte of information at a certain address, gone out to the memory, and read it. The byte of information appeared on the data bus in due course, and the Z-80 grabbed the data as it appeared. The original pattern of information is still in the given memory cell. Nothing destroyed it, it was just "copied".

How about writing into the memory? It's the same process with two exceptions. One is that the Z-80 chip puts a "0" on the write line instead of the read line (these lines float up to a "1" unless actively pulled low). The other is that the Z-80 puts the data (byte, pattern, information, etc.) on the 8-bit data bus and the same wires now act as information carriers the "other" way. The memory sees this "0" on the "write" line and puts the pattern on the data bus into the 8 cells that correspond to the address on the address bus. Note that "information" flow has nothing to do with current flow of electrons. We just test the voltage at a different point.

What happens to the data byte that was in the cell before it got a new data byte written over it? It went to that land beyond the moon where all data has always existed. Bye-bye.

The next step (in our thrilling episode...) is to take a closer look at that memory block and see what it consists of. Among other things, the TV screen looks like memory to the CPU, except it's visible to the user as well. The keyboard looks like a memory cell, too, except that it doesn't listen if you try to write to it - reading it gives you the ASCII representation of the letter that's depressed (almost).

Next month!

R. D. McElroy
Publisher