

SORCERER'S APPRENTICETM

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N.C.C. REPORT - by Ralph LaFlamme

Don Gottwald and I attended the last day of the National Computer Conference held in Chicago the week of May 4th. We quickly found that there was simply too much to see in one day to really do it justice! I won't attempt to cover the whole show for you. I'll let the major magazines handle that one.

The big news of the day at the Exidy booth was the reported sale of Exidy Systems Inc. to Biotech Inc. (Just before press time an Exidy representative advised that only a major share of the company had been purchased by an undisclosed interest. She would not confirm that it was Biotech.) The mood of the Exidy representatives at the show was definitely upbeat. The infusion of fresh funds should now permit the expansion of user and dealer support. We should also see some additional support from the company in the form of new software and hardware developments. To help with this, Exidy has just hired a new chief design engineer from Zilog.

The emphasis being taken by the company is the sale of complete systems to very small businesses. (The company seems to be moving in the right direction to support the end user. We are reassured this includes the 'hobbyist'.) In line with this business orientation, the following items were on display:

- 10 and 20 megabyte Morrow Winchester drives
- 8" floppy disk with 1.2 mb per disk
- Spellbinder - word processing software
- Spellguard - 20,000 word dictionary program
- MicroBiz - business software package
- FMS-80 - data management system
- SuperCalc - electronic worksheet
- Dumb Terminal ROM PAC
- Auto Program Load ROM PAC

An agreement has also been signed with CompuServe to provide purchasers of the Dumb Terminal Pac one hour's free time on the MicroNET database network. Work is also reportedly in progress to develop a disk based Smart Terminal program.

ODDS & ENDS - by Ralph LaFlamme, Editor

As you have probably already noticed, with this issue we have changed the type font to a more readable and attractive style. Additionally, we are now using proportional spacing. This helps us squeeze more material into the same space.

At printing time of the last issue, we decided not to provide a membership application form in the next few issues. They will be included again near the end of the present volume. In the meantime, if you need to advise us of a change of address, or need an application form for someone else, use a form from the first two issues or contact us indicating the number required.

Due to difficulties some members have had in accessing the Sorcerer's Apprentice Computer Bulletin Board Service, Bob Hageman, our librarian and systems operator, has changed the topic of his column in this issue from future goals to an amplification on how to use the CBBS system. He has also made changes to the system so that it will now only accept two valid drive names and no longer gets hung up when given an invalid drive option. The valid drives are A and B only. If you use anything else, you get a **BDOS ERROR**. To recover, use control C. This should put you back in control of the system.

We have been quite surprised, and pleased, with the number of you accessing the new CBBS! There are now dozens of files on the system for your use. There are also a number of messages from people needing help or answering cries for help. So, if you haven't tried it yet, give it a whirl. You may find the answer to one or more of your problems waiting for you!

An Australian group has reportedly built a **black box** that interfaces the Exatron Stringy Floppy to the Sorcerer. Only a picture of the box has been received thus far. Since the person primarily responsible for our Stringy Floppy project has changed work place, he no longer has access to the equipment required. Consequently, this project is being transferred to another group. We'll keep you advised of any further developments as they come to our attention.

Due to difficulties encountered in instituting the S-100 'phantom signal' that he mentioned in his last hardware column, Russell Frew has postponed this topic to a future issue.

Next month Frank Voss will have an article reviewing the MX-80 printer and how to hook it up to fully utilize it's graphic capabilities with the Sorcerer.

A local user group exists in the Knoxville - Oak Ridge, Tennessee, area. The club meets on the last friday of each month at 7:00 pm. Meetings are rotated between Knoxville and Oak Ridge. Contact Wm. E. Boys at 6507 Westland Drive, Knoxville, TN 37919 for more information.

Sorcerer I owners. If at times you have difficulty getting upper case letters, the problem may be an intermittant IC on your keyboard. The only way to check this out, is to replace the 74LS14 IC with a 7414. Your troubles should then be over.

Daniel Conde advises there is a CP/M version of FORTH available for \$150 from **Acropolis**, 17453 Via Valencia, San Lorenzo, CA 94580 (415) 276-6050.

Roger Hagan of **Roger Hagan Associates**, 1019 Belmont Place East, Seattle, WA 98102 (206) 324-5034 advises us that he is now a dealer for the Sorcerer and will be marketing all its peripherals and software. His emphasis will be on **word processing** and **small business programs**.

The deadline for submissions for the next issue is June 15th.

SORCERER VIDEO PROGRAMMING SHEET

The form on the next page was provided by Bob Roth, 207 Chestnut Ct., Sterling, VA 22170. He has found it useful in machine language programming and wanted to make it available to all of you.

STALEY'S SORCERER SOFTWARE

Our newest offering is **THE SORCERER'S SPELL**, a machine language program that proofreads your text. This program compares the text that you have written with your Word Processor Pac to the words in its dictionary. It displays the words that are not in its dictionary and waits for your command to either 1) highlight the word so that it can be corrected, 2) add the word to **SPELL'S** dictionary, or 3) accept the word but don't add it to the dictionary. **SPELL** comes with a dictionary of several thousand words, but the ease of adding words permits the user to readily add up to about 30,000 more. **SPELL** requires either a 32K or 48K Sorcerer (specify), at least one disk drive compatible with Exidy 77 track, and EXIDY CP/M. It has the attractive features of SPELLGUARD by Innovative Software Applications, but sells for \$100 compared to \$295.

Another program of interest to owners of the Word Processor Pac is **FOG**. This program analyzes your WP file for clarity of writing using the Fog Index which was developed by the Gunning-Mueller Clear Writing Institute. **FOG** is available on tape for \$15 and 77 track Exidy CP/M disk for \$20. It's **free** with **SPELL**.

The following game, educational, and statistics programs are on tape:

ASTEROIDS 16K	Machine language arcade game with sound. *
ACTION BOWLING 32K	The finest simulation of human movement. *
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STATPLOT 16K	Plots histograms and linear regression. %
SUB 8K	Arcade action as you sink the sub. +
PRESIDENTS QUIZ 16K	Won Exidy's contest for education program. +
FAMOUS AMERICAN 16K	Version of PRES QUIZ with blacks & females. +
FAMOUS CANADIAN 16K	For our northern neighbors. +
DOODL 8K	Turn your Sorcerer into Etch a Sketch. +
STARTREK 32K	Graphics version of time-share version. %
HOMERUN 16K	Baseball with moving runners. %
SALVO 32K	Action version of Battleship. %
RABBIT HUNT 16K	Graphic strategy game played by Napoleon. +
POLYPLOT 16K	Calculates & plots non-linear regression. +
KIDDO 8K	Lets youngsters calculate and type. +
BLACKJACK 16K	Get ready for Vegas. +
U.S.MAP 16K	Have fun while learning. +
FUNCTION PLOT 16K	Plot 'most any function. +
ATOM 16K	Test your skill at inductive reasoning. +
BIO 8K	An acclaimed version of Biorhythms. +
PERSONALITY 16K	Test your personality. Fun at parties. +
COMPUCARDS 16K	Fortune telling. Also party fun. +

+ = \$9.95

% = \$14.95

* = \$19.95

Order any 15 on tape or Exidy 77 track compatible disk for \$100. All orders postage paid in USA. Foreign add \$1 per tape or disk.

STALEY'S SORCERER SOFTWARE, 3497 School Road, Murrysville, PA 15668

THE WORD PROCESSING CORNER #13 - by Steve Guralnick

First off, and editors please note, effective June 1 we are changing our address, by moving to a sunnier suite. (Somewhat academic in Daly City.) The new address is shown below. Same phone.

Where was I. Oh yes, firedrills in global routines; i.e., what to do when you're in trouble in the middle of a global routine. The important thing is to understand what is happening so you don't start pushing panic buttons.

If you are in a straight read situation, no write file, then all you have to do is enter RD and the read file will shut down and you can start over again. If you are in the middle of a read/write situation, that is, both read and write files are open, all you have to do is enter RD/WD and then start over again **IF** you are using a **DIFFERENT** filename for the write than for the read.

The problem comes up when you are reading from a file and writing to a file, on the same disk, with the same file name. Let's also assume that there is a file on the disk called TEXTFILE.BAK

First, understand what happens. There are **three** files going at that point: the read file name, the write file name **and** a temporary filename called FILENAME.###. For example, if you want to do a global routine with a read file called TEXTFILE.WPF and you are going to call the write file TEXTFILE.WPF and it's all going on one disk, then the moment you open up the write file, SPELLBINDER has these files on the disk:

TEXTFILE.WPF (the original read file)
 TEXTFILE.### (the temporary file)
 TEXTFILE.BAK (the earlier backup file)

As you read from the read file and write to the write file, the temporary file starts taking in text. When you signify that you are done, either with WD or with GD, this is what happens:

1. The original read file will now be named TEXTFILE.BAK.
2. The temporary file turns into the finished write file, and will be named TEXTFILE.WPF.
3. The .BAK file will be lost.

Simple, no? Except that if you don't have this clearly in mind, you can lose the original file. If you get a crash and want to at least save the original file, try this: close the read file with an RD command. That is the critical first step. Then, clear your workspace and issue the WD command. Now you will have a new, smaller file called TEXTFILE.WPF. The read file will be named TEXTFILE.BAK. Read it back and make sure it's all there; re-name it as TEXTFILE.WPF and then start again.

Experiment with these routines on a non-essential file and then you will be ready for trouble if it comes.

See you soon!

Steven Guralnick, 375 South Mayfair Ave., # 205, Daly City, CA 94015

Programming Tip - by Ken Grimes, S.C.U.A.

To print the computer's response on the same line as an INPUT statement, use PRINT TAB(X); CHR\$(23); (Response), where X is length of the INPUT + 2. CHR\$(23) is the **cursor up** character. (Response) is whatever you expect the machine to print, i.e. A;B or X\$, etc.

Apprentice Port -by Don Gottwald, President

This month we will look into the various problems and possible cures for the Sorcerer's cassette interface. If you don't yet have Exidy's Technical Notes, you may want to write Exidy Systems Inc., 1234 Elko Dr., Sunnysvale, CA 94086, requesting **all** of them. The modification procedure will require someone familiar with soldering techniques and electronic troubleshooting. You will need an oscilloscope with a low capacitance probe and at least a 500KHz bandwidth, an isolation transformer, a 4" jumper wire with insulated clips on each end, a 35W soldering iron and associated tools. The following changes need to be made:

CHANGES TO BE MADE	MODEL I	MODEL II
13 Kohm resistor to 4.7 Kohm	R4	R62
270 Kohm resistor to 10 Kohm	R6	R35
1000 pf capacitor to 620 pf silver mica	C16	C67
1000 pf capacitor to 330 pf disc ceramic	C18	C66
Remove 3.3 Megohm resistor	R5	R34

Next disassemble the Sorcerer as follows (disconnect power first and remove any ROM-PAC!):

Remove the unit's top and stand it on its right end while keeping the keyboard plugged in. Connect the video monitor cable and apply power.

Next, connect the oscilloscope to the isolation transformer, and set the input voltage mode to "DC", the voltage attenuator to 2V/div (10V p-p) and attach a low capacitance probe. **NOTE:** Use the shortest possible ground path by **always** attaching the probe's ground as close to the point being measured as possible.

Check out the PLL (Phase Locked Loop) frequency as follows:
Connect probe to pin 4 of the PLL (IC-3C on model I and IC-14F on model II). Reset Sorcerer (hit both buttons simultaneously). Adjust VR1 for a square wave with a 60 to 65 microsecond pulse duration. (VR1 should be in the center third of wiper travel).

Check PLL lock-on range:

Set scope to 500us/div sweep. Connect the 4" jumper from the center pin of the "ear" jack to the junction of: R22 & R23 (model I) R43 & R65 (model II). Connect the low capacitance probe to pin 9 of the PLL (IC-3C model I, IC-14F model 2). Reset Sorcerer and type the following: >SA T 0 2FFF <CR>

Adjust scope for stable display. The signal should range from 0 Volts minimum to 3.5 Volts maximum. Adjust VR1 to the center third of mechanical travel. Remove jumper and reassemble Sorcerer.

If you **still** have a problem, very carefully clean the head of your cassette recorder using a cotton swab and some isopropyl alcohol (do not substitute). Most of the commercially available cassette head cleaners are not adequate for this. Be careful that no lint from the swab transfers to the head. Also clean the pinch roller and capstan (the little rubber wheel and the metal post that drives it).

Setting your volume and tone control to mid range, now try loading your program. If you still get CRC errors, you may have to make an attenuator plug for your recorder. This is very simple and is outlined in the Technical manual. If you don't have a copy of the Technical manual, send us a SASE and we will send you the information. If you don't have the expertise and you can't find anyone else that does, let us know and we'll try to refer you to someone in your area that does.

Another problem may be a misaligned recorder head. Most hobby stores sell a cassette for aligning heads in recorders. This is a simple procedure, but should not be attempted until you've talked with someone who is familiar with it. Good Luck! and remember - contact us if you have difficulties.

Hardware Notes - by Russell Frew, Hardware Editor

Most computer users very quickly see the need to have some form of hardcopy output for their Sorcerer. With the price of printers today, you want to choose one very carefully. The most important decision is, do I want slower Correspondence Quality or faster Super-Graphics capabilities. (That's not to say you can't have both but, before you pay for all that, make real sure you really need it.) The next question is, "Will it work with my Sorcerer and its internal Centronics driver?"

Two families of printers, which readily interface with the Sorcerer, might give you an idea of just how vague the phrase "Centronics Compatible" can be. The first and older family is the Integral Data Systems with its IP-125/225 and the newer Paper Tigers 440, 445 and 460. The second family is the Epson series MX-70/80.

The IDS system IP-125/225 came wired for either serial or parallel, not both. The owner can change this if he is able to read the circuit drawings but it is not an easy job for the uninitiated. Write me if you want information on this.

The Paper Tiger series was vastly improved and has both serial and parallel interfaces available on all machines. It uses an 8 wire head with 7x7 or 7x8 dot matrix characters. The Graphic models are capable of superb pictures. All print and graphic modes are available from the keyboard or program. IDS documentation is excellent.

The Epson series is a fairly recent entry to the printer market. Its print mechanism was developed by Seiko the Japanese watchmaker. It uses a 9 wire head with a 9x9 character giving a correspondance quality letter at about 80 characters per second. There is no standard serial connection and no dot-plotting capability. Epson has a standard set of graphic characters but they are not readily available. Manufacturer defined graphics are selected via DATA BIT 7 (the 8th bit). Normal computers however, only use 7-bit ASCII code with the 8th bit functioning in some support role. Sorcerer uses this bit as the data STROBE therefore making graphic selection impossible in its intended fashion. Epson provides good documentation, however they have reversed DIP switches 1 & 2 in figure 20 so watch out for that when you select these options.

The "Centronics Compatible" hook-up for these two families is fairly simple with a few cautions. Cable runs should be kept under 5 feet to reduce signal loss and attenuate noise. Note that parallel TTL signals and serial EIA signals are not compatible. Should you plug in the wrong port, serious damage to both systems may result. Exidy drivers do not support Fault, Paper Out, ACK RTN, BUSY RTN, or Online SLCT. Your parallel input port is free and should you wish to implement any of these signals, it would be easy task via a custom driver. Please note that Exidy pins 15 & 20, while labeled "Unused" in some Exidy literature actually carry +5 volts. This can be helpful in some situations. Most important is that all signals shown below must be connected.

Sorcerer Pin	Paper Tiger	MX-80
DATA 0	16	2
DATA 1	17	3
DATA 2	18	4
DATA 3	19	5
DATA 4	7	6
DATA 5	6	7
DATA 6	5	8
STROBE	4	1
ACK*	2	10
BUSY	25	11
GND	1	17
SIG GND	8	19-30

*ACK/BUSY are necessary signals with the Sorcerer. I've worked on several systems that didn't function because the owners thought these signals were optional. Not so!

DISK NOTES - by Bryan Lewis, CP/M Editor

Last month's column was rather lengthy. This month I'll show you two small but helpful tricks for CP/M.

(1) Re-running a program already in memory.

Let's say you're debugging a program in Microsoft Disk Basic, when something goes wrong (an infinite loop?) and you have to RESET. You'd like to re-start Basic without zeroing out your program (which is what will happen if you reload Basic from disk). Here's how to do it:

```

>GO 0      ;The RESET took us to the monitor. Warm-boot CP/M.
A>AGAIN   ;Give the magic command,
Ok        ;and you'll ease back into Basic.

```

Sure makes a strange-looking series of prompts, doesn't it? But where do you get the magic AGAIN command? It is merely a file of zero length, gotten by:

```
A>SAVE 0 AGAIN.COM
```

When you load this pseudo-file, you're loading nothing, so your previous contents aren't disturbed. CP/M then executes whatever is in the transient program area.

This also comes in handy with Spellbinder. When you re-run SB, it thoughtfully asks if you want to return to your old file (still in memory). In this case the AGAIN trick just saves you a little time -- Spellbinder would not have erased your file even if you had re-loaded it.

This idea is not mine. I've seen it written up several times, with names like RERUN.COM, @.com, and GO.COM. I think the original was in *Dr. Dobb's Journal*, January 1980, by Anthony Skjellum. (That article also gives a GO command for CP/M which duplicates the function of the Exidy Monitor's GO.)

(2) Loading a .COM file without running it.

This is the complement to the first trick. Suppose you have stored a non-CP/M file on disk, just for ease of storage. Examples are:

```

Machine-language games that start at 0000 (and hence need relocating
before running).
Programs that call on the Exidy Monitor, if your Monitor Work Area isn't
preserved (in a fully-packed Lifeboat system).

```

You can load such files with the DDT utility (A>DDT FILE.COM) but there's a quicker way (especially quicker if you don't happen to have DDT on your current disk).

```
A>FILE ^A
```

The control-A isn't magic -- you can use any control character that's invalid to CP/M. CP/M will proceed to:

```

Load FILE.COM into the transient program area.
Check the next word in the command buffer (in this case control-A)
Issue an error message (a simple question mark) when it doesn't
understand the word.

```

As a result, the file is loaded but not executed.

Programming Tip - by Ian Macmillan, S.C.U.A.

For instant keyboard response from **GRAPHIC**, **CONTROL** and **SHIFT**, use A=INP(254) AND 31. Test for A=21, 31 and 7 respectively with **SHIFT-LOCK** down.

Patching Lifeboat CP/M to Run with New Micropolis Drives - by Bryan Lewis

Micropolis has recently made a small revision to its Mod II disk controller board. Now, if the drive is not being accessed for several seconds, the disk rotational motor will turn off. (The previous Micropolis versions only lifted the read-write head; the rotation continued. Now everything rests, giving a welcome silence during periods of non-use.)

Unfortunately, this revision means that the motor needs a fraction of a second to get up to speed. This causes no problem for Micropolis's own operating system, MDOS. It waits that long after each new disk access. The version of CP/M sold by Exidy also takes the revision in stride. Lifeboat's CP/M, however, doesn't. It gives "bad sector" errors every time you try to read from a stilled drive.

Lifeboat, when asked about this incompatibility, refused to correct it. Their suggestion was to purchase CP/M Version 2.2, which supposedly doesn't have the problem. Taking that as a personal challenge, I fixed it myself. I found that only one byte needed to be changed, in order to increase the time delay after motor turn-on.

Use the DDT and SYSGEN utilities to make the change, just as you do whenever you modify or relocate CP/M. Here's an outline, with your entries underlined:

```
A>>MOVCPM * *
      .
      .
      .
A>>SAVE 40 CPMxx.COM
A>>DDT CPMxx.COM
-S23CD (the location of the byte
23CD 00 08 after DDT. Change to an 8.)
23CE CD .
-ICBIOS.HEX (continue adding your own CBIOS as usual)
      .
      .
-G0
A>>SYSGEN (as usual)
```

By the way, those of you with old drives might like to write to Micropolis for Product Bulletin No. FD-0014 (dated July 29, 1980), which gives clear instructions on how to add the motor-off feature. It entails adding three jumper wires and cutting two traces. If you make the change, you'll notice a half second more initial delay when reading a file, and the DISKCOPY utility won't work. To copy an entire disk, you'll have to use PIP *.* , not a big drawback.

Simply Cool - by Howard A. Higgins

My thanks to S.U.N. reader John Link for finding a fan that fits in the Sorcerer. I'd like to return the favor by describing a modification that worked well for me.

Heat and temperature are not the same thing. The temperature of an isolated object is proportional to its surface area, and the amount of heat it contains. A hot object, with twice the surface area of another, will be half the temperature of the smaller one if they contain the same amount of heat.

With this in mind, I replaced the large 5 ohm-10 watt resistor in the Sorcerer power supply. The replacement was a 5 ohm equivalent with over twice the surface area. I used two, 10 ohm-10 watt resistors in parallel, but other combinations would work too. Just remember to keep the total resistance 5 ohms.

This cost less than a dollar in parts and made a drastic cut in the temperature.

Howard A. Higgins, P.O. Box 2026, Santa Monica, CA. 90406

PASCAL PORT - by Daniel Conde

Here I am switching from FORTH to PASCAL. The reasons are:

- 1) I use Pascal often in school, so I am quite comfortable with it.
- 2) I have yet to get a disk version of FORTH running.
- 3) Concepts from Pascal are applicable to other languages.

The advantages of Pascal as opposed to BASIC:

- 1) Structured.
- 2) Portability.
- 3) Ability to use more complex data structures with clarity.

The disadvantages of Pascal:

- 1) Not many micro owners (even Sorcerer owners) own Pascal systems.
- 2) Non interactive nature. (You can't run, test, debug, run, etc, with ease. You have to call an editor, re-compile it....) But in the long run I believe that Pascal will win out.

Due to space considerations, I don't think this column should serve as a Pascal tutorial. Instead I will recommend a couple of books that do a good job:

Programming in Pascal by Peter Grogono, Addison-Wesley.

Pascal - An Introduction to Methodical Programming, by Findlay and Watt. Computer Science Press.

If your machine cannot get boosted up to 56K, which is the minimum for Pascal/M, you could use a C language system. It is similar to Pascal on the surface, but is quite permissive (i.e. it doesn't check for types stringently (characters are considered to be integers, etc.)). The one C compiler that is praised often is the BD Software C compiler. It is priced quite reasonably, and is quite close to the full C implementation.

I'll write a very small Pascal program here, and will try to explain some of the constructs.

```

program test(input,output);

var num: integer;
begin
  repeat
    write('Number? ');
    readln(num);
    if ( num>=0 ) then
      writeln('Root of x is ',sqrt(num):5)
    else
      writeln('I can't imagine imaginary numbers");
  until num = 0;
end.
```

The program starts with a **Program** statement. As you will learn later, its form is quite similar to a Pascal procedure, which is much like a BASIC subroutine. The Pascal program interacts with the surrounding environment via input and output, which is usually the user's console. A procedure may have a list of variables, or arguments in its place.

Pascal programs require all variables to be declared. It may seem bothersome, but it forces you to think of the program ahead of time. Since it allocates only the amount of memory you request of it for variables, there will be no "out of space" errors, (with exceptions). Here, we created a variable called **num**, which is declared to be an integer. It will probably be a 16 bit number on micros. Incidentally, Pascal allows you to create your **own** types. For example, a trek

(continued on next page)

(PASCAL PORT continued)

game may have a command type as:

```
type command = ( fire, warp, destruct, surrender, photon );
```

It allows for very readable programs, and ease of programming. Arrays may even be indexed by a user created type.

Next we see a **begin** in the program. Together with an **end** statement, these lines will block off your program into logical subsections. A **begin...end** block may then be treated as though it is a single Pascal statement. Our program here has a single set of these.

We now see a **repeat** statement. Together with a **while** statement, Pascal allows you to kiss goodbye to GOTO statements. It is quite easy to see that six statements enclosed within **repeat...until** are to be repeated six times. Also noted here is the free form of the language. Indentation is used liberally, although not required. The whole program may be written in one line, if desired, but use of indenting makes it easier to understand.

Without going into too much detail, **write** and **read** are much like the INPUT and PRINT statements in BASIC. The **write**, in particular, has formatting capabilities, and as seen in the line with the **sqrt** in it, shows that functions may be nested as arguments. Conceptually, you could consider the **writes**, **reads**, and **sqrt's** as OTHER programs, all designed to do a specific task.

Incidentally, you might wonder what allows the free form writing of Pascal programs. The answer is the semi-colon ';'. They act to SEPARATE statements, as opposed to TERMINATING statements in other languages, such as C.

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Dustings From The Library by Robert Hageman, Librarian and Systems Operator

In issue 3.3, **DIR** and **TYPE** were mentioned as especially useful commands for our remote CP/M (RCPM) system. In this column, I'll save you time (and some of your phone bill) by explaining the use of these commands.

The symbols **?** and ***** are special symbols in the CP/M vocabulary used with **DIR**ectory and **TYPE** to access disk file groupings. The **?** symbol is used to represent ambiguous characters in either a file name or file type [fn.ft] (up to 8 total in a name and 3 in a file type), eg. **LOOK??.BAS** could stand for **LOOK91.BAS**, **LOOKS.BAS**, or **LOOK.BAS** or all of these. Likewise, ***** represents an ambiguous file name or type, eg. **LOOK.*** could stand for **LOOK.ASM**, **LOOK.BAS**, or **LOOK.COM** or all of these. (???????? or ???=*)

Putting the symbols together with the commands, you can now scan a disk for those files in which you are most interested. For example, using **DIR *.TIP** will display a directory and sized listing of only the **TIP** files. Using other variations of this command, we can check for **BAS** files (**DIR *.BAS**), or all files beginning with the letter **L** (**DIR L????????.***), etc.

Knowledge of a file's size can be important when you're calling long distance since this information can provide an estimate of the time required to complete a file transfer. It takes about 2 min. 8 sec. to transfer 4K at 300 baud.

The **TYPE** command is a multiple file listing utility, e.g. **TYPE *.TIP** displays all the **TIP** files on the disk. If, however, you don't want to read every file from beginning to end, use **control X** to skip to the next file. For instance, in most cases, when you **TYPE** assembler files, you will only want to read the first ten or twenty lines since those contain most of the explanation of the program's purpose. If you want to stop the **TYPE** command entirely, simply do a **control C** to abort the program.

NOTE: **DIR** displays files in alphabetical order not in the order in which they are found on the disk. **TYPE** displays files in a different order than **DIR**.

Now for a few words about problems in using the system. If you have difficulty getting on the system, try letting the phone ring only once, hang-up, then immediately redial. Don't wait too long before redialing since the remote system has a reset timing loop which may see your redial as an entirely new call and not a call-back. If you have tried to **TYPE** that darn file five times and nothing seems to work, try a **DIR** command. The filename may be slightly different from what you were trying to get the system to **TYPE**. If you are in CP/M and have trouble, try **HELP**. It will give a brief explanation of all system commands. When all else fails, try **CHAT**. If I'm there and available, perhaps I can solve the problem.

Since we are not trying to duplicate other RCPMs or CBBSs you may also wish to call the following Detroit area systems:

(313) 288-0335 Computermart CBBS, (also known as SEMCO and Detroit CBBS).

(313) 588-7054 (ringback) Keith Petersen, no password. System has a MINICBBS.

(313) 846-6127 Technical CBBS.

(313) 294-8248 Download 80, I have had good reports on this system but have no experience with it. Understand this system requires 1 parity bit 7 data bits (number of stop bits - unknown).

\$2/line

<<<< CLASSIFIED ADS >>>>

\$2/line

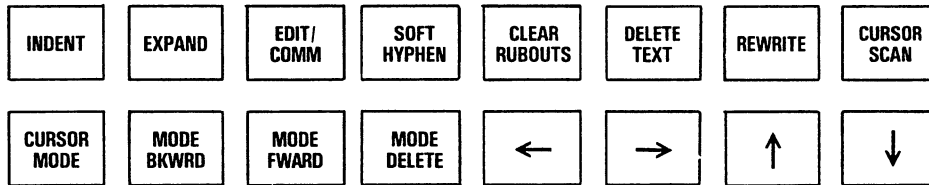
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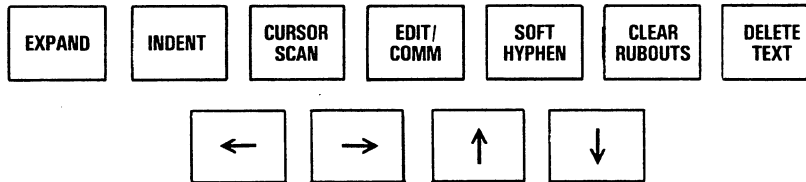
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Reading TRS80 Tapes With A Sorcerer

The following article was written by Steve Fraser and was originally printed in the Sorcerer Computer Users of Australia newsletter. Larry Stempnik has added a few minor comments. Program disassembly starts at 7500H. However, the program can be located anywhere below 0100H or above the BASIC program. Change all 75 and 76 bytes to the new location. The nine 75's and two 76's are addresses only, none are op codes. Type: >GO 7500, to read the tape into BASIC; >GO 7530 to read the tape to the monitor screen for volume adjustments; and >GO 7600 to convert the program to Sorcerer compatible tokens.

Note: TRS80 program lines longer than 63 bytes will be converted over correctly to Sorcerer BASIC. ROM PAC BASIC program lines are not limited to 63 characters as Exidy implies. Only the keyboard input routine limits the line length.

NOTE: Hardware is the same as published last issue except you need to add a wire directly from Z4, pin 10 to the DB-25P connector, pin 10.

If you have access to an oscilloscope, you can add a BNC connector to Z4-10 to monitor the correct volume setting. It is easy to observe the noise spikes when the volume is a little too high. Just record the optimum setting on the tape for later use.

It is possible to read TRS80 tapes with a Sorcerer with the help of a small amount of hardware and software. This article will show how to do it, concentrating on BASIC tapes, although TRS80 **SYSTEM** tapes can also be read.

First, though, there are a few caveats to be aware of, as follows:

(1) The method handles only Level 2 tapes. Tapes for Level 1 BASIC are written at a different baud rate.

(2) The recording method used by the TRS80 is much more critical than that used in the Sorcerer, which uses the phase locked tone method. I have found playing levels on the cassette to be extremely critical when reading TRS80 tapes.

(3) Not all commands and syntax convert exactly. The most obvious ones are: SET, RESET, CLS, ON ERROR, PRINT@, etc. These can all be "coded around", but it has to be done manually. This can be quite laborious in a big BASIC program that uses graphics.

Part 1 - Hardware Considerations

The cassette recording method used by the TRS80 consists of recording clock pulses at regular intervals of 1 ms; with 1 or 0 represented by the presence or absence respectively of another pulse halfway between the clock pulses.

Part 2 - Reading the Data

This code reads the data and stores it in memory but does not translate the BASIC tokens, or correct the line address pointers. This code can also be used to read TRS80 **SYSTEM** tapes, but the resultant data in memory has embedded error checking and block control characters, which could be removed in a separate program, which I have not written.

The code consists of a main calling section, which performs successive calls to a subroutine which returns one bit of data on each call. After the main program encounters the sequence of the sync, character A5 hex, groups of eight calls to the subroutine are repeated to get the data byte by byte.

Control-C is used to interrupt the process. After hearing the end of file on the tape monitor it is necessary to rewind the tape a little, press Control-C, and play some data.

(continued on next page)

(TRS80 TAPE READER continued)

Part 3 - Translating the Tokens

This program translates the tokens used for key words. Any byte not able to be translated as a token is assumed to be a remark. The program is run after using the Data Reading program in Part 2. After running this, it is still necessary to reset the line address pointers. This is done by entering a line (e.g. a REM, or :) at line 0, and then deleting it:

```
PP <cr> 0 REM <cr> 0 <cr>
```

Note: This will delete line 0 if it previously existed in the TRS80 program, so that it is best to check for this by dumping the start of the BASIC program, and if line 0 exists, re-enter it instead of the dummy line 0 shown above, and do not delete it.

Translation Table

The translation table for BASIC tokens is listed. It consists of pairs of bytes, the first of which is the TRS80 token, and the second the equivalent Sorcerer token. The table is terminated by a 00 hex in the first byte of the last pair.

Note... by altering the Translation table, this program could probably be used to translate the tokens to be used by Cassette Basic, as apparently these will be different than those used in the ROM-PAC BASIC.

Part 4 - Setting up and Running TRS80 tapes

A little trial and error is required to set the play back level correctly. If the level cannot be satisfactorily set, alter the data address loaded in the data reading program to F080 (or GO 7530), run the program, and you will be able to see what is being read on the screen. Tokens and line numbers will print as graphics, but numbers, literals, etc. will show up clearly.

7500:	21D101	ID	HL,01D1	TRS80 READ TAPE PROGRAM
7503:	00	NOP		SET START ADDRESS
7504:	0D5075	CALL	7550	
7507:	FEA5	CP	A5	SEE IF SYNC BYTE
7509:	20F9	JR	NZ,F9 (7504)	NO, LOOP AGAIN
750B:	00	NOP		
750C:	0D5075	CALL	7550	PERFORM 8 CALLS TO ...
750F:	0D5075	CALL	7550	GET 8 BITS OF DATA
7512:	0D5075	CALL	7550	
7515:	0D5075	CALL	7550	
7518:	0D5075	CALL	7550	
751B:	0D5075	CALL	7550	
751E:	0D5075	CALL	7550	
7521:	0D5075	CALL	7550	
7524:	77	ID	(HL),A	STORE THE BYTE
7525:	23	INC	HL	INCREMENT THE ADDRESS
7526:	00	NOP		
7527:	18E3	JR	E3 (750C)	GO AGAIN
7529:	THRU 752F:	=	00	NOP
:				
7530:	2180F0	ID	HL,F080	WRITE TAPE TO SCREEN
7533:	18CE	JR	CE (7503)	
7535:	THRU 754F:	=	00	NOP
:				
7550:	C5	PUSH	BC	SUB TO GET A BIT OF DATA
7551:	F5	PUSH	AF	
7552:	00	NOP		

(continued on next page)

(TRS80 TAPE READER continued)

7553:	064C	ID	B,4C		SET DELAY
7555:	10FE	DJNZ	FE	(7555)	AND WAIT
7557:	DBFF	IN	A,(FF)		CHECK PARALLEL PORT
7559:	EEFF	XOR	FF		INVERT IT
755B:	1F	RRA			SET FLAG
755C:	30F9	JR	NC,F9	(7557)	?
755E:	DBFF	IN	A,(FF)		?
7560:	EEFF	XOR	FF		?
7562:	1F	RRA			?
7563:	30F2	JR	NC,F2	(7557)	?
7565:	063F	ID	B,3F		?
7567:	10FE	DJNZ	FE	(7567)	?
7569:	00	NOP			?
756A:	00	NOP			?
756B:	00	NOP			?
756C:	0622	ID	B,22		?
756E:	DBFF	IN	A,(FF)		?
7570:	EEFF	XOR	FF		?
7572:	1F	RRA			?
7573:	3805	JR	C,05	(757A)	?
7575:	10F7	DJNZ	F7	(756E)	?
7577:	1817	JR	17	(7590)	?
7579:	00	NOP			?
757A:	DBFF	IN	A,(FF)		?
757C:	EEFF	XOR	FF		?
757E:	1F	RRA			?
757F:	3805	JR	C,05	(7586)	?
7581:	10EB	DJNZ	EB	(756E)	?
7583:	180B	JR	0B	(7590)	?
7585:	00	NOP			?
7586:	F1	POP	AF		?
7587:	C1	POP	BC		?
7588:	07	RLCA			?
7589:	CB87	RES	0,A		?
758B:	3C	INC	A		?
758C:	C9	RET			?
758D:	00	NOP			?
758E:	00	NOP			?
758F:	00	NOP			?
7590:	F1	POP	AF		?
7591:	C1	POP	BC		?
7592:	07	RLCA			?
7593:	CB87	RES	0,A		?
7595:	F5	PUSH	AF		CHECK FOR CONTROL-C
7596:	CD15E0	CALL	E015		?
7599:	C203E0	JP	NZ,E003		YES, EXIT PROGRAM
759C:	F1	POP	AF		?
759D:	C9	RET			DONE!
7600:	E5	PUSH	HL		TOKEN TRANSLATOR
7601:	21D501	ID	HL,01D5		?
7604:	23	INC	HL		?
7605:	23	INC	HL		?
7606:	23	INC	HL		?
7607:	23	INC	HL		?
7608:	7E	LD	A,(HL)		?
7609:	D600	SUB	00		?
760B:	2805	JR	Z,05	(7612)	?
760D:	FC3076	CALL	M,7630		?
7610:	18F5	JR	F5	(7607)	?
7612:	23	INC	HL		?
7613:	23	INC	HL		?
7614:	7E	LD	A,(HL)		?

(continued on next page)

(TRS80 TAPE READER continued)

```

7615: D600    SUB  00          ?
7617: 2802    JR   Z,02      (761B) ?
7619: 18EA    JR   EA        (7605) ?
761B: 23      INC  HL        ?
761C: 22B701  LD   (01B7),HL ?
761F: E1      POP  HL        ?
7620: E5      PUSH HL        ?
7621: 21D401  LD   HL,01D4   ?
7624: 3600    LD   (HL),00   ?
7626: E1      POP  HL        ?
7627: C303E0  JP   E003      DONE
762A: 00      NOP           ?
762B: 00      NOP           ?
762C: 00      NOP           ?
762D: 00      NOP           ?
762E: 00      NOP           ?
762F: 00      NOP           ?
7630: E5      PUSH HL        TRANSLATION SUB
7631: 215076  LD   HL,7650   ?
7634: F5      PUSH AF        ?
7635: 7E      LD   A,(HL)    ?
7636: D600    SUB  00        ?
7638: 280D    JR   Z,0D      (7647) ?
763A: F1      POP  AF        ?
763B: BE      CP   (HL)      ?
763C: 2804    JR   Z,04      (7642) ?
763E: 23      INC  HL        ?
763F: 23      INC  HL        ?
7640: 18F2    JR   F2        (7634) ?
7642: 23      INC  HL        ?
7643: 7E      LD   A,(HL)    ?
7644: E1      POP  HL        ?
7645: 77      LD   (HL),A    ?
7646: C9      RET           ?
7647: F1      POP  AF        ?
7648: E1      POP  HL        ?
7649: 3E8F    LD   A,8F      ?
764B: 77      LD   (HL),A    ?
764C: C9      RET           ?
    
```

TRANSLATION TABLE

ADDR	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
7650:	80	80	81	81	86	B7	87	82	88	83	89	85	8A	86	8B	87
7660:	8C	88	8D	89	8E	8A	8F	8B	90	8C	91	8D	92	8E	93	8F
7670:	94	90	A0	91	A1	92	B1	96	B2	97	B8	9A	BC	9E	BD	9F
7680:	BE	A0	CA	A2	CB	A3	CC	A4	CD	A5	CE	A6	CF	A7	D0	A8
7690:	D1	A9	D2	AA	D3	AB	D4	AC	D5	AD	D6	AE	D7	AF	D8	B0
76A0:	D9	B1	DA	B3	DB	B4	DC	B5	D0	B6	DE	B8	E0	B9	E1	BA
76B0:	E2	BB	E3	BC	E4	BD	E5	BE	F3	BF	F4	C0	F5	C1	F6	C2
76C0:	F7	C3	F8	C4	F9	C5	F8	C6	00	00	00	00	00	00	00	00

Programming Tips - by Terry Botterill, E.S.C.

To gain access to the **hidden** control characters, all you need to do is to move the whole block up into the user graphic area with the monitor command MO F800 F900 FE00. The following short routine prints out the value of the key just pressed. This is useful when you are defining your own graphics.

```

10 INPUT"Character";C$
20 A=(-1024+8*(ASC(C$)-128))
30 PRINT A
    
```

Z-80 RELOCATOR - by Bob Roth

This program will move other programs (or itself) in memory and fix the program so that it will run at the new address. I've found it useful in writing machine language programs.

When using this program, you have to give it some information: the first address to be moved, the last address to be moved and where the program is to be moved to. You then have to tell it if you just want to move, fix or both.

Move is done front first. Fix allows you to adjust a program to run at another location but not move it. This is useful if you want to write programs for the ROM.PAC. Last is Move & Fix. The program will be moved first then fixed thus leaving the original program intact. If you want to move the Relocator, answer the questions: 5000, 5353, where you want to put it, 2, 5000, 5184.

NOTE: Data strings should either be ahead or behind the main program (just good programing practice). This way, the Relocator program can be told not to fix them when you specify the first address to fix and the last address to fix. However, the entire range (first address to move, last address to move) will be moved and the first address to fix, last address to fix range will be adjusted for the new location. If you make a mistake in entering the information, you must start over. I didn't put in a "RUB" routine. It shouldn't be any problem. Just enter the information carefully.

Bob Roth, 207 Chestnut Ct., Sterling, VA 22170

5000:	CD	B1	E9	21	85	51	CD	8F	50	ED	53	70	51	21	4A	52
5010:	CD	8F	50	ED	53	72	51	21	62	52	CD	8F	50	ED	53	78
5020:	51	2A	70	51	7C	2F	67	7D	2F	6F	23	19	22	7A	51	00
5030:	21	7B	52	CD	8F	50	ED	53	7C	51	7B	FE	01	CA	5E	50
5040:	00	2A	70	51	ED	5B	72	51	E5	EB	ED	52	4D	44	0C	E1
5050:	ED	5B	78	51	ED	B0	3A	7C	51	FE	00	CA	5B	51	21	AE
5060:	52	CD	8F	50	ED	53	74	51	CD	7C	50	21	D4	52	CD	8F
5070:	50	ED	53	76	51	CD	7C	50	C3	B0	50	00	2A	7A	51	ED
5080:	5A	EB	1B	D5	21	C6	52	CD	BA	E1	D1	CD	E8	E1	C9	CD
5090:	BA	E1	21	68	51	06	00	CD	09	E0	CA	97	50	77	23	04
50A0:	CD	0C	E0	FE	0D	C2	97	50	2B	10	FD	CD	3D	E2	C9	00
50B0:	ED	5B	74	51	21	23	53	06	1A	1A	BE	CA	17	51	23	10
50C0:	F9	06	1D	21	06	53	BE	CA	D0	50	23	10	F9	C3	10	51
50D0:	FE	ED	C2	E6	50	21	3D	53	06	06	13	1A	BE	CA	17	51
50E0:	23	10	F9	C3	4C	51	FE	DD	CA	F5	50	FE	ED	CA	F5	50
50F0:	13	13	C3	4D	51	13	1A	06	06	21	4E	53	BE	CA	17	51

ADDR	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
5100:	23	10	F9	21	43	53	06	0B	BE	CA	10	51	23	10	F9	13
5110:	13	C3	4D	51	00	00	00	13	D5	2A	70	51	37	EB	4E	23
5120:	46	EB	ED	42	D2	64	51	D1	D5	2A	72	51	37	ED	42	DA
5130:	64	51	D1	2A	7A	51	09	EB	E5	3A	7C	51	FE	01	CA	47
5140:	51	ED	4B	7A	51	00	09	73	23	72	D1	13	13	ED	4B	76
5150:	51	7A	B8	DA	B4	50	7B	B9	DA	B4	50	21	EB	52	CD	BA
5160:	E1	C3	03	E0	D1	C3	4B	51	00	00	00	00	00	00	00	00
5170:	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
5180:	00	00	00	00	00	20	20	20	20	20	20	20	20	20	5A	2D
5190:	38	30	20	52	45	4C	4F	43	41	54	4F	52	0D	0D	20	20
51A0:	20	20	20	20	57	72	69	74	74	65	6E	20	62	79	20	42
51B0:	6F	62	20	52	6F	74	68	0D	0D	54	68	69	73	20	70	72
51C0:	6F	67	72	61	6D	20	77	69	6C	6C	20	61	6C	6C	6F	77
51D0:	20	79	6F	75	20	74	6F	0D	6D	6F	76	65	20	61	20	5A
51E0:	2D	38	30	20	6D	61	63	68	69	6E	65	20	6C	61	6E	67
51F0:	75	61	67	65	0D	70	72	6F	67	72	61	6D	20	69	6E	20

(continued on next page)

(Z-80 RELOCATOR continued)

ADDR	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
5200:	6D	65	6D	6F	72	79	20	61	6E	64	20	62	65	20	61	62
5210:	6C	65	20	74	6F	0D	72	75	6E	20	69	74	20	61	74	20
5220:	74	68	65	20	6E	65	77	20	61	64	64	72	65	73	73	2E
5230:	0D	0D	46	69	72	73	74	20	61	64	64	72	65	73	73	20
5240:	74	6F	20	6D	6F	76	65	3F	0D	00	0D	4C	61	73	74	20
5250:	61	64	64	72	65	73	73	20	74	6F	20	6D	6F	76	65	3F
5260:	0D	00	0D	57	68	65	72	65	20	69	73	20	69	74	20	6D
5270:	6F	76	69	6E	67	20	74	6F	3F	0D	00	0D	4D	6F	76	65
5280:	3D	30	20	46	69	78	3D	31	20	4D	6F	76	65	20	26	20
5290:	66	69	78	3D	32	0D	57	68	69	63	68	20	6F	6E	65	20
52A0:	64	6F	20	79	6F	75	20	77	61	6E	74	3F	0D	00	0D	46
52B0:	69	72	73	74	20	61	64	64	72	65	73	73	20	74	6F	20
52C0:	66	69	78	3F	0D	00	0D	4E	65	77	20	61	64	64	72	65
52D0:	73	73	3D	00	0D	4C	61	73	74	20	61	64	64	72	65	73
52E0:	73	20	74	6F	20	66	69	78	3F	0D	00	0D	0D	2A	2A	2A
52F0:	2A	2A	2A	2A	2A	2A	20	44	4F	4E	45	20	2A	2A	2A	2A
ADDR	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
5300:	2A	2A	2A	2A	2A	00	06	0E	10	16	18	1E	20	26	28	2E
5310:	30	36	38	3E	C6	CB	CE	D3	D6	DB	DD	DE	DF	E6	ED	EE
5320:	F6	FD	FE	01	11	21	22	2A	31	32	3A	C2	C3	C4	CA	CC
5330:	CD	D2	D4	DA	DC	E2	E4	EA	EC	F2	F4	FA	FC	43	4B	53
5340:	5B	73	7B	09	19	23	29	2B	39	E1	E3	E5	E9	F9	21	22
5350:	2A	36	CB	FF												

Key In Without Carriage Returns - by Scott Bussinger

Many times a BASIC program wants to input a single character from the keyboard without using the return key (moving objects in a game for instance). Here is a short BASIC-only solution which is fast and short enough for interactive programs and will work on any size machine. To use it, call this subroutine and on return, KY\$ has the character input.

```

32000 AD = PEEK(-4096) + 256 * PEEK(-4095 -2+ 65536 *(PEEK(-4095)>127)
32010 POKE 260, 24: POKE 261, 224
32020 POKE AD, 0
32030 IF USR(1) * PEEK(AD) = 0 THEN 32030
32040 KY$ = CHR$(PEEK(AD))
32050 RETURN

```

The first two lines of the subroutine are only for initialization and need only be done once rather than every time, as long as AD isn't used for anything else. AD is a pointer to where the keyboard routine stores the last key pressed.

As a side point, any program which accesses the monitor or BASIC workspaces should use a line similar to 32000 above to calculate the address to ensure that the program will run regardless of memory size or how it was booted. The only thing that would need to change is the -2 constant factor which is just the positon relative from the top of memory to the byte desired.

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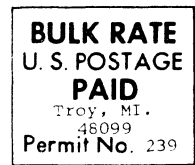
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