PAGE 21

SORCERER'S APPRENTICE™

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A MESSAGE FROM THE PRESIDENT

It is with deep regret that I announce the resignation of our editor, Larry Kobylarz. Family and career obligations have made this necessary. On behalf of the Sorcerer's Apprentice Board of Directors, I wish to thank Larry for the extremely fine job he did. We all wish him well.

Our new editor, Ralph LaFlamme, should be familiar to you through the articles he has written over the past few issues. Good Luck! - Ralph.

Sorcerer's Apprentice Board of Directors and Officers

Don Gottwald	President & Treasurer (Chairman of the Board)
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The new Computer Software Copyright Act of 1980 protects the rights of those who develop, sell, and lease computer programs. The law gives the author exclusive rights to copy the work and to transfer ownership rights, including sale and leasing arrangements. Piracy is punishable by fines, civil damages, or criminal penalties. A work is protected once it is in any tangible medium of expression. We support the rights of programmers to protect their works and realize a reasonable profit from their efforts. However, we also recognize the need for the making of back-up copies by the purchaser for the protection of his/her investment.

ODDS AND ENDS- by Ralph LaFlamme, Editor, Sorcerer's Apprentice

In this column, I'll offer tid bits of general interest about the club, our members, the Newsletter and our plans for the future. I will also answer general questions that have either been asked frequently or would be of wide interest. I will also be seeking your assistance in helping fellow members with their problems and queries.

I would like to give you our publication dates (the dates we'll get the Newsletters into the mail) and the deadlines for article and advertisement submissions. Due to the slowness of bulk mail delivery, we are moving up our deadlines to allow for an earlier mailing of future issues. These dates are:

VOLUME.ISSUE		SUBMISSIONS		PUBLICATION
3.3	-	March 15	-	April 15
3.4	-	May 1	-	June 1
3.5	-	June 15	-	July 15
3.6	-	Aug. 1	-	Sept. 1
3.7	-	Sept. 15	-	Oct. 15
3.8	-	Nov. 1	-	Dec. 1

Submissions for articles are also being accepted via the SOURCE at TCF656 and MicroNet at 70150,365.

In an effort to improve the condition of the delivered Newsletter, we have again increased the weight of the cover to help ward off the ravages inflicted on our poor publication by the postal service.

We have had many requests to include program listings in each issue. Again, we'll be more than happy to do so, BUT, it will take your help to make this possible. So, if you have any cute, interesting, unusual or just plain useful programs, send them along to be shared with your fellow members (and get a little glory for yourself!). We are also interested in publishing any routines, "undocumented secrets", software fixes or enhancements that you may have developed. Consider this your invitation to send them in. We'll give you the credit.

In conjunction with this offer to publish your programming efforts, we are now using a NEC Spinwriter. Besides enabling us to maintain a high print quality to produce the Newsletter and answer correspondence, this printer will also allow the listing of programs with accompanying bar-codes. To accomplish this, however, we need the appropriate software and interfacing requirements. If anyone has already successfully accomplished this, please let us know. This project could really make the distribution of software as painless as possible.

Member, D. Lance Robinson of Santa Ana Cal., is employed by Vista Computer and has offered to answer your questions with regard to their Sorcerer disk system. Send your questions c/o this publication.

We do not operate a program exchange. However, we are presently arranging for non-proprietary software to be offered at nominal cost. This will include the CHESS program mentioned in the last issue. As soon as plans are finalized, we'll make an announcement.

(continued on next page)

(ODDS AND ENDS continued)

We have reciprocal exchange privileges with the following Newsletters ONLY:

E.S.C.
32, Watchyard Lane
Nr. Liverpool
ENGLAND L37 3JU

S.C.U.A.
P.O. Box 144
Doncaster, Vic. 3108
AUSTRALIA

Z-80 Microfans
P.O. Box 12504
Portland, OR 97212

Those interested in astronomy and satellite tracking software (w/graphics for the Sorcerer) contact: David G. Cooke, President, SAT TRAK INTERNATIONAL, Treasure Island, Rt. 1, Box 18, Kingston, ON CANADA K7L 4V1.

FLASH- Exatron FINALLY sent along a Stringy Floppy unit for our interfacing project. Happily, this impressive little unit has been successfully interfaced to a Sorcerer and is presently undergoing further hardware and software development. We'll have further news on this project in a future issue.

A number of us, who had been interested in the Stringy Floppy, have since purchased a Micropolis Mod II disk system from Priority One Electronics, 16723 Roscoe Blvd., Sepulveda, CA 91343. They can be reached by phone at (213) 894-8171 or outside California by toll-free number at (800) 423-5633. These units are being offered at exceptionally low prices. The Mod II's usually list at $1895 but are being offered at only $995! Even with the S-100 unit required for this system, you only wind up paying about the same as you would for many other disk systems that only give you about half the disk capacity offered by the Mod II's quad density. In addition, you wind up with 5 S-100 slots left over for other goodies!

We have been offered an article on how to make your own inexpensive S-100 unit. If received in time, we'll include it in the next issue.

To our knowledge, all advertisers in our Newsletter are reputable and trustworthy. If any of you have an unreasonable amount of trouble with any of them, please let us know.

The S.U.N. and the Sorcerer's Apprentice have been completely separate publications. This includes their contents. We simply honored the remainder of Steve Long's commitment to S.U.N. subscribers by completing publication of Vol. II of his newsletter. It is now official. The S.U.N. has set.

We can now announce that our data base is sufficiently established to begin exchanges of other Sorcerer users in your area. If you would like this information, please send along a self-addressed stamped envelope with your request and we'll get it off to you as quickly as we can. Once our data base is further established, we'll offer exchanges with others of similar interests.

Bob Hageman, our Librarian and Systems Operator, had promised to provide, in this issue, the access procedure as well as more details on objectives for our "on-line" system. Unfortunately, Bob was recently hospitalized due to an accident and so was unable to prepare his article. However, Don Gottwald did pitch in to finish wiring the main S-100 board involved. Thank you Don for helping out and speedy recovery to you Bob. We expect to have the system on-line and available to the general membership by April 1st. Details in the next issue.

(continued on next page)

(ODDS AND ENDS continued)

ERRATA- On page 6 of issue 3.1, the 1's in the serial driver routine and initialization routine were erroneously printed as L's. (While this routine worked fine for a Terminet 300, I understand it would not work for a Diablo since there were not the necessary timing loops to accomodate this printer. A routine for this machine will be published in a future issue.)

All long-standing orders for back issues should have been sent by the time you receive this issue. If you are still waiting for such an order, let us know so we can take care of it. (If you haven't yet received an answer to your correspondence, be patient. Your answer should eventually appear here or in your mail box). We have had a good deal of reassigning of responsibilities with some resultant problems in the interim.

There is a Sorcerer Users Group which meets in New York City on the fourth Thursday of each month in the back room of Amy's Restaurant at Broadway and 72nd Street. For more information, contact Steve Crystal: days at (212) 433-5768 and evenings at (212) 865-8290. All Sorcerer users welcome.

In the next issue, you'll find columns by two new contributing Editors, a HARDWARE column by Russ Frew and a CP/M column by Bryan Lewis. Both of these gentlemen are very conversant in their respective areas. Daniel Conde, our FORTH Editor, will continue his column with the next issue.

All memberships (and subcriptions to the Sorcerer's Apprentice) are for one calendar year. We'll remind you when time to renew is approaching.

Here are some member requests with which we hope you can help us:

Articles on using the SOURCE and MicroNet (software, procedures, pros & cons, etc.). (A bibliography of magazine articles on this topic would be appreciated. We don't want to duplicate what is already available.)

The names of dealers who KNOW the Sorcerer.

Any programs available similar to the Dow Jones Stock Pack, personal financial management or Stock Market Analysis? We have also had requests for programs in the following areas: income tax, interfacing to lab equipment, general business (all types), games, bowling league secretary, medical, aids for the disabled, simulations (e.g. flight), utilities (all types), instructional, Ham Radio, robotics, as well as scientific (engineering, stats, technical) programs.

Anyone know of a CP/M version of FORTH for the Sorcerer in a Micropolis disk configuration?

Anyone know whether or not the Rosetta Smalltalk software is available for the Sorcerer yet? (Reviews prehaps?)

Anyone interested in doing articles or acting as editor of a PASCAL column?

Is anyone aware of a modification to the RESET circuit which will allow a reset without destroying the program in the machine?

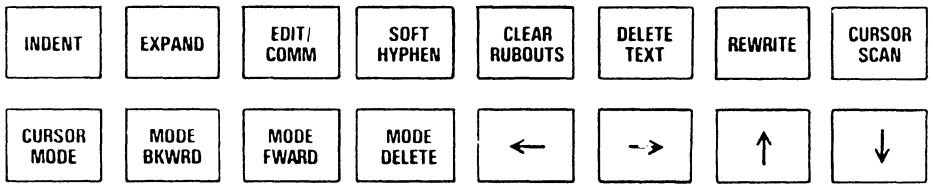
Does anyone have a smart terminal program running in an EPROM PAC?

EXIDY SORCERER USERS

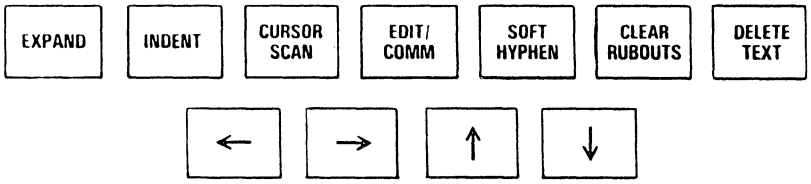
— ATTENTION —

We have custom engraved keytops for ***Spellbinder*** and ***Exidy's Word Processing ROM Pac.***

Spellbinder set consists of the following:



Word processing ROM Pac consists of the following:



Sets are available in *Red, Blue, Black, Beige and Charcoal, with or without front engraving of symbols originally on the top of the keytop (no graphic symbols replaced).

Pricing:	**Spellbinder**	**ROM Pac**
No front engraving	**$14.00**	**$10.00**
With front engraving	**$22.00**	**$15.00**

Sets shipped UPS COD unless accompanied by check or money order.

Also available for Spellbinder are the Y and U keytops (exchange basis only), **that are engraved** ENTER / ENHAN **and** ENHANCE **respectively.** (engraving on front face)

We also stock keytops for Cherry and Keytronic Corp. keyboards and other video data terminals and computers.

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* *We recommend RED for maximum visibility.*

"HEXPAD"...or is it "MEMORY CHANGE"?- reprinted from the Sorcerer Computer Users of Australia newsletter

This is a really first class program! Everyone who uses it wants it, and if you do any Z-80 coding at all, not only do you want it you need it! Paul Grimshaw, of the European Sorcerer Club, wrote the program, calling it "Memory Change", but somehow it has become known as "Hexpad". Alan Lyons, of SCUA, added the text. L. Kobylarz, of SA, has revised it so that you can use the program to enter the text.

Key in the first page of the program (addresses 6E00-6EFF) with the byte at address 6E01 changed to E0 and the byte at 6E02 changed to 6E. G0 6E00 to run the program. You will be prompted by "start :"; enter 6F00 with the numeric keypad as shown in the layout (entering F on the regular keyboard will not work). Enter the rest of the program using your Hexpad keyboard.

When you finish the program, change the bytes at 6E01 and 6E02 to 00, 6F as shown in the listing. Now when you G0 6E00 you will get the instructions.

A couple of items not covered in the instructions are:

1. (CR) restarts the program.
2. The start address must be keyed in with the full four digits (example- 007F not 7F).
3. The code must be keyed in with two digits (example- 0D not D).
4. After receiving the second digit of the byte the program automatically advances to the next address without waiting for a (CR).
5. For corrections, the RUB key works without shift.

MEMORY CHANGE by Paul Grimshaw

A program that converts the Numeric Keypad into a Hexadecimal Keyboard to facilitate the entry of Hex data into memory.

Copied for Sorcerer Users of Australia by Alan J. Lyons from Feb. 1980 Newsletter of the European Sorcerer Club (formerly SPEC), Liverpool, England.

INSTRUCTIONS:
1. Use keyboard to enter data (no need to hit 'RETURN').
2. Use 'SPACE BAR' to step thru memory.
3. Use 'RUB' to step back thru memory.
4. Use 'CLEAR' to enter '00'.
5. Control 'B' allows entry of string of ASCII direct.
6. Control 'C' escapes from (5) above.
7. 'RUN/STOP' returns you to the monitor.

KEYPAD LAYOUT:
A 7 8 9
B 4 5 6
C 1 2 3
D 0 E F

(continued on next page)

('HEXPAD' or 'MEMORY CHANGE' continued)

start:

ADDR	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
6E00:	21	00	6F	CD	BA	E1	0E	02	1E	04	CD	30	E0	28	FB	CD
6E10:	AE	6E	06	04	30	0F	FE	5F	20	F0	CB	3C	CB	1D	10	FA
6E20:	CD	F0	6E	18	E5	07	ED	6A	10	FB	1D	20	DD	CD	05	E2
6E30:	CD	45	E0	5D	54	CD	E8	E1	41	CD	D2	E2	7E	CD	ED	E1
6E40:	41	CD	D2	E2	50	59	CD	30	E0	28	FB	CD	AE	6E	38	11
6E50:	06	04	07	CB	12	10	FB	1D	20	EC	7A	CD	D6	6E	23	18
6E60:	CC	FE	0D	28	9B	B9	20	20	CD	30	E0	28	FB	FE	08	20
6E70:	05	2B	36	20	18	08	FE	03	28	B3	CD	D6	6E	23	CD	45
6E80:	E0	FE	0D	CC	05	E2	18	E0	FE	5F	20	0F	CD	85	E9	CB
6E90:	43	20	B1	2B	3E	0D	CD	45	E0	18	98	FE	20	28	BF	FE
6EA0:	1B	CA	05	E2	FE	0C	20	9E	AF	CD	ED	E1	18	AC	E5	21
6EB0:	E9	6E	06	06	BE	28	10	23	10	FA	FE	3A	30	15	FE	30
6EC0:	38	12	CD	45	E0	18	08	3E	40	80	CD	45	E0	D6	07	07
6ED0:	07	07	07	3F	E1	C9	77	56	BA	C8	2B	3E	3F	C3	45	E0
6EE0:	0D	0A	53	74	61	72	74	3A	00	3D	2E	2B	2A	2F	2D	00
6EF0:	1C	C3	85	E9	FF	00	FF	00	FF	00	FF	00	FF	00	FF	00

ADDR	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
6F00:	0D	0C	20	20	20	20	20	20	20	20	20	20	20	20	20	4D
6F10:	45	4D	4F	52	59	20	43	48	41	4E	47	45	20	62	79	20
6F20:	50	41	55	4C	20	47	52	49	4D	53	48	41	57	2E	0D	0A
6F30:	20	20	41	20	70	72	6F	67	72	61	6D	20	74	68	61	74
6F40:	20	63	6F	6E	76	65	72	74	73	20	74	68	65	20	4E	75
6F50:	6D	65	72	69	63	20	4B	65	79	70	61	64	20	69	6E	74
6F60:	6F	20	61	0D	48	65	78	61	64	65	63	69	6D	61	6C	20
6F70:	4B	65	79	62	6F	61	72	64	20	74	6F	20	66	61	63	69
6F80:	6C	69	74	61	74	65	20	74	68	65	20	65	6E	74	72	79
6F90:	20	6F	66	20	48	65	78	0D	44	61	74	61	20	69	6E	74
6FA0:	6F	20	6D	65	6D	6F	72	79	2E	0D	0A	20	20	20	43	6F
6FB0:	70	69	65	64	20	66	6F	72	20	53	6F	72	63	65	72	65
6FC0:	72	20	43	6F	6D	70	75	74	65	72	20	55	73	65	72	73
6FD0:	20	6F	66	20	41	75	73	74	72	61	6C	69	61	0D	62	79
6FE0:	20	41	6C	61	6E	20	4A	2E	20	4C	79	6F	6E	73	20	66
6FF0:	72	6F	6D	20	46	65	62	2E	20	31	39	38	30	20	4E	65
7000:	77	73	6C	65	74	74	65	72	20	6F	66	20	74	68	65	0D
7010:	53	6F	72	63	65	72	65	72	20	50	72	6F	67	72	61	6D
7020:	20	45	78	63	68	61	6E	67	65	20	43	6C	75	62	2C	20
7030:	4C	69	76	65	72	70	6F	6F	6C	20	45	6E	67	6C	61	6E
7040:	64	2E	0D	0A	49	4E	53	54	52	55	43	54	49	4F	4E	53
7050:	20	3A	0D	20	20	20	20	20	20	20	20	20	20	20	20	20
7060:	20	31	2E	20	55	73	65	20	6B	65	79	62	6F	61	72	64
7070:	20	74	6F	20	65	6E	74	65	72	20	64	61	74	61	20	3A
7080:	20	4E	6F	20	6E	65	65	64	0D	20	20	20	20	20	20	20
7090:	20	20	20	20	20	20	20	20	20	20	74	6F	20	68	69	74
70A0:	20	27	52	45	54	55	52	4E	27	2E	0D	20	20	20	20	20
70B0:	20	20	20	20	20	20	20	20	20	32	2E	20	55	73	65	20
70C0:	27	53	50	41	43	45	20	42	41	52	27	20	74	6F	20	73
70D0:	74	65	70	20	74	68	72	75	20	6D	65	6D	6F	72	79	0D
70E0:	20	20	20	20	20	20	20	20	20	20	20	20	20	20	33	2E
70F0:	20	55	73	65	20	27	52	55	42	27	20	74	6F	20	73	74

('HEXPAD' or 'MEMORY CHANGE' continued)

```
7100:  65 70 20 62  61 63 6B 20  74 68 72 75  20 6D 65 6D
7110:  6F 72 79 0D  20 20 20 20  20 20 20 20  20 20 20 20
7120:  20 20 34 2E  20 55 73 65  20 27 43 4C  45 41 52 27
7130:  20 74 6F 20  65 6E 74 65  72 20 27 30  30 27 0D 20
7140:  20 20 20 20  20 20 20 20  20 20 20 20  20 35 2E 20
7150:  43 6F 6E 74  72 6F 6C 20  27 42 27 20  61 6C 6C 6F
7160:  77 73 20 65  6E 74 72 79  20 6F 66 20  73 74 72 69
7170:  6E 67 0D 20  20 20 20 20  20 20 20 20  20 20 20 20
7180:  20 20 20 20  6F 66 20 41  53 43 49 49  20 64 69 72
7190:  65 63 74 2E  0D 20 20 20  20 20 20 20  20 20 20 20
71A0:  20 20 20 36  2E 20 43 6F  6E 74 72 6F  6C 20 27 43
71B0:  27 20 65 73  63 61 70 65  73 20 66 72  6F 6D 20 28
71C0:  35 29 20 61  62 6F 76 65  0D 20 20 20  20 20 20 20
71D0:  20 20 20 20  20 20 20 37  2E 20 27 52  55 4E 2F 53
71E0:  54 4F 50 27  20 72 65 74  75 72 6E 73  20 79 6F 75
71F0:  20 74 6F 20  6D 6F 6E 69  74 6F 72 2E  0D 0A 4B 45

ADDR   0  1  2  3   4  5  6  7   8  9  A  B   C  D  E  F

7200:  59 50 41 44  20 4C 41 59  4F 55 54 20  3A 0D 20 20
7210:  20 20 20 20  20 20 20 20  20 20 20 20  20 41 20 37
7220:  20 38 20 39  0D 20 20 20  20 20 20 20  20 20 20 20
7230:  20 20 20 20  42 20 34 20  35 20 36 0D  20 20 20 20
7240:  20 20 20 20  20 20 20 20  20 20 20 43  20 31 20 32
7250:  20 33 0D 20  20 20 20 20  20 20 20 20  20 20 20 20
7260:  20 20 44 20  30 20 45 20  46 0D 0A 73  74 61 72 74
7270:  20 3A 00 3D  2E 2B 2A 2F  2D 00 1C C3  85 E9 FF 00
7280:  FF 00 FF 00  FF 00 FF 00  FF 00 FF 10  FF
```

CONQUERING TAPE 'CRC' ERRORS- by Mark Northrup, 9212 North 70th St., Milwaukee, WI 53223

Remember those tapes which you've tried in vain to load but were always defeated by those nasty CRC errors? Well, here may be the answer to your problems.

The way to load these 'lost' programs is to turn off the Cyclic Redundancy Check (CRC) error. The idea is not new, but rather is a feature on the Sol-20 computer. Unfortunately, we cannot do it as easily as the owners of this computer, but we can do it. The secret is to move the loading routines into RAM, modify some addresses, and change the CRC error jump to the no-operation op-code.

I moved the loading routines to high memory for two reasons: the first is that most programs load into low memory and the second is that it was "out of the way" of most of the programs I wanted to run, leaving more working room. Using the monitor move command, MOve E71B E845 to 671B. Change the bytes at locations 671D, 6733, 67C1, 6806, 681F, 6841 and 6844 to 67. Enter zeroes at locations 6755, 6756 and 6757. Position your tape to the 'lost' program, type GO 678A and start your tape. The program will load almost like a normal LOad. It is important to remember that the data is not being checked for accuracy, so the program may not work even after you have loaded it. My experience to date with machine language programs has been very good. They have run very well, although, some of the text has been misspelled.

ARRINGTON SOFTWARE SERVICE

MUSIC SYSTEM

FEATURES -- Tempo control from slow to exceedingly fast.
Set the music's key signature by placing sharps or flats on the staves.
Select notes by moving cursor up and down musical staves. It's like copying what you see on music sheets.
Graphically select note durations and rests.
Full editing of inserting, deleting or overwriting chord sets in the song data file.
Hear a pitch in a chord before the note is entered into the data file.
Play the last ten chord sets to verify the accuracy of the data just entered. Or play the entire song.
Copy refrains for rapid duplication of repeated measures.
Transpose the playing of the song into another key. Adjust to suit your vocal range for singing along.
Automatic loading and saving of data files from and to cassette.
Restoration of data file notes to the screen for rapid editing and file verificatin.
Single step through the file listening to each chord. Aids in file editing.
User prompts and error protections. System includes the necessary hardware interface to your amplifier.
Select individual voices to play only their part. Example: hear the Bass and Soprano parts together.

EASY TO USE -- Customers, DON'T BE HESITANT because you feel you know nothing about music. You don't need to know all about music to enjoy this software. You can experiment with the editor, dabble in song writing, and enjoy prewritten music such as PIANO PLAYER, FANFARE, BACH, FINLANDIA and BOOGIE WOOGIE. Creating song data files is done graphically.

PIANO PLAYER

This program is option for the above music system and adds delightful graphical animation of a high resolution piano player tinkling the ivories. The little man's arms move in synchronization with the beat of the music. A large keyboard is displayed upon which four cursors jump around on the keys to the four notes being played. Piano player comes with another sample song file. Being both graphical and musical, this program is a crowd pleaser twice over.

MACHINE CODE TUTORIAL

Many have requested additional knowledge about your Sorcerer and help in learning to program in machine language. This package will help you understand video and keyboard routines, Z80 registers, instructions and flags, Monitor and Basic work areas and useful routines in ROM, and sound generation. I particularly like the interactive environment where one can immediately try the exercise ideas being presented. The eight programs lead the user step-by-step in their development. Highly recommended! (Even though I consider myself well versed, the author taught me some new tricks.)

DATABASE SYSTEM II

The program is written in machine language and stands alone as a complete database manager. Features include storing up to 500 records consisting of up to 9 fields. One can sort on any field, or search any field for either a partial or complete match. The powerful report feature allows one to arrange the placement of data fields for printing of mailing labels, for example. The RANGE options allow you to select one, ALL, or those records that satisfy the field match criteria. The database is cassette based. Files can be loaded, saved and merged. Edit features include ADD, DELETE, EDIT. One can elect to use their own printer driver, the serial driver, or the parallel printer driver. The latest feature to have been added is a Column TOTAL with a range of +-9999999999.99. (P.S. Owners of the first version who do not have the TOTAL feature can upgrade for $5.00.)

HI-RES GRAPHICS

Machine language routines manage all 128 Graphic characters to give the programmer ultimate flexibility in plotting in high resolution of 512x240. You pass to the routine the coordinates of the vectors to draw, and the routines do the rest with graphic characters until all 128 are used. As characters are freed up, they rejoin the pool of available characters, all of which is transparent to the user. If an existing character pattern matches the one needed, it is reused rather than defining a redundant character cell. The mileage one can get out of 128 characters is amazing.

ARRINGTON SOFTWARE SERVICE

CASSETTE FILES -- This utility enables your Basic programs to reliably write string records to cassette tape, and subsequently read the data back. It is also easy to store and retrieve numbers by converting them to and from strings using the STR$() and VAL() functions. The number of strings written or read is unlimited, and the length of each string may vary up to 254 characters. Just look at these powerful, yet straight forward features:

USR(O) -- OPEN file. Put the file name in TP$. Always use a 5 letter name. Files are written and read by this name.
USR(C) -- CLOSE file. Always the last statement when finished writing a file. Empties buffer onto tape.
USR(W) -- WRITE TP$ string into buffer. When the buffer is full it is automatically written to tape.
USR(R) -- READ next string from buffer and place in TP$. A file is read from tape when the buffer is emptied.
USR(S) -- Connects output to 300 baud serial printer.
USR(F) -- Connects output to 1200 baud serial printer.
USR(P) -- Connects output to centronics parallel printer.
USR(D) -- Disconnects printer.

SCREEN GENI -- This utility gives your Basic programs the following impressive capabilities:

1. It directs PRINT statements to any row and column on the screen. Just specify ROW # and COLUMN #.
2. Selectively erase any row or set of rows. Does not affect graphics, whereas CLEAR does.
3. Inverted printing can be turned on or off to highlight text. Prints black letters on white background.
4. Auto indentation to redefined left margin.
5. Selectively suppress any character on output. Suppress 'space' to print strings and numbers adjacent, etc.
6. Scroll a windowed set of rows instead of the whole screen.

Screen Genie includes a demonstration program that illustrates every feature. It shows how to imitate 'PRINT USING' formatted numeric printing. By adding only a few poke statements, these features are added to your existing programs.

CROSS REFERENCE -- This machine language routine prints a complete variable and line number cross reference for Basic programs. Reference statements such as: GOTO, GOSUB, THEN, RESTORE, ON-GOTO, ON-GOSUB, FNxx(), are also cross referenced. Having this alphabetized cross reference listing with line numbers is a great documentation and debug aid.

SUPER-X EDITOR -- This is the best editing tool for Basic programs for the price anywhere. It includes such powerful features as revive a lost program, block listing, block deletion, block renumbering, merge, string search, compact program, pause listing and resume, and execute Monitor commands from Basic mode. One can edit any line shown on the screen by moving the cursor to the edit location. Edit features include insert, delete, tab, truncate, copy and auto-line number generation. As a professional programmer, this program has saved me countless hours in editing.

GALAXIANS -- The author of the SPACE INVADERS that we market has produced another exceptional game. Galaxian spaceships peel out of formation at the top of the screen, and fire at you as they dive and zip across the screen. You constantly dodge back and forth trying to shoot down darting ships while avoiding them and their fire. The superb graphics and the fast-paced action make the excitement very real. Like SPACE INVADERS, it's addictive because it's fun.

SPACE INVADERS -- Have you been looking for the Sorcerer version of this popular game? Here it is in all its glory, excitement and with EXCELLENT graphics. Accepts both keyboard or joystick control as you dodge falling phasers or hide under the four bunkers. The game is addictive because it is so fun for both youngster and adult.

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SPACE INVADERS - Sorcerer version of the popular arcade game. Fast paced. EXCELLENT graphics. Very addictive game.
MUSICAL HORSERACE - Animated horses race while one-voice music plays. Quite an attractive betting program.
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CHESS 'BRUCE' - At last, an original chess program for the Sorcerer. It's GOOD, but hasn't yet competed against others.
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SPACETREK - Excellently controlled screen display of all scanners and status. Has sound, some graphics. Well written.
DATABASE SYSTEM - Add, Create, Delete, Edit, List, Load, Merge, Printer, Query, Report, Sort, Tabs, Write, Column TOTAL.
SCREEN GENI - Utility for inverse video printing. Enhancements give effect of print at, and print using control.
GALAXIANS - Truly the rival of all arcade games! Ships peel out of formation and zip across the screen firing at you.
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JOYSTICKS - Atari joystick pair modified to connect to Sorcerer' parallel port. Includes demonstration software.

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KEY: B-Basic M-Machine language U-Utility G-Game S-Sound J-Joystick or keyboard H-Hardware E-Education

This advertisement was printed on my Hewlett-Packard 2631A serial printer, using the Exidy Word Processor Pac and my VISTA 5 1/4 inch double density disk drive. The software offered is excellent, and I GUARANTEE continued support.

48K UPGRADE FOR SORCERER I- by Heinz Spiess, 3320 Cote Ste. Catherine, Apt. 12, Montreal, PQ, CANADA H3T 1C6

When I saw 48K versions of the Sorcerer advertised, I always wondered where they managed to plug in the third row of 16K RAMs, since in my Sorcerer there are only two rows of RAM sockets provided. Only recently, somebody told me that the new version of the Sorcerer is equipped with three rows of RAM sockets. So what do I do the have 48K on an old Model I Sorcerer? Buying an expansion unit and a 16K S-100 card was definitely too expensive for me, so I started looking for a cheaper way. Consulting the Technical Manual revealed two things that turned out to be very useful:

a) The pin connection for 4116 RAMs in different rows (16K slices) differs only in one pin: pin 4, RAS (row address select). This means that the third row of RAMs can be placed on top of an existing RAM row (piggyback technique). All pins except pin 4 (RAS3) are connected directly to the corresponding pin on the chip below it.

b) The RAS3 signal needed for the third row may be obtaind easily from signals already generated within the Sorcerer I (but are not used) by adding some NAND gates.

To upgrade your 32K Sorcerer I to 48K you need the following:

8 4116 (16K x 1 bit RAM) (300 ns will do)
2 74LS00 (quad NAND gate)
1 3.3k resistor
1 switch SPDT (optional)
1 small piece of perforated PC board
8 16 pin DIP sockets

The total cost was about $40. Figure 1 shows the kind of piggyback technique I used. Instead of soldering directly one chip on top of the other, I put a socket in between; thus, allowing the replacement of a single chip if needed and at the same time decreasing the risk of damaging the fragile RAM chips (of course avoid static electricity while working with the 4116s). Figure 2 shows the additional logic required to interface the third row of RAMs. It may be mounted on a small piece of perforated PC board and installed inside the Sorcerer using the same screws as the cassette interface board. Cut the conducting path between IC 11B pin 3 (see Technical Manual for notation of Sorcerer ICs) and IC 10A pin 10 with a sharp knife. The switch, S1, is not really needed, but it offers the convenience to make the additional RAM disappear if necessary (e.g. when running a program using absolute 32K stack addresses of the monitor).

Once everything is installed and you turn on your Sorcerer, the sign-on message of the monitor reads:

....
....
THE TOP OF RAM IS BFFF HEX
STACK BEGINS FROM BF90 HEX

and you are the proud owner of a "big" 48K Sorcerer!

(continued on next page)

(48K UPGRADE FOR SORCERER I continued)

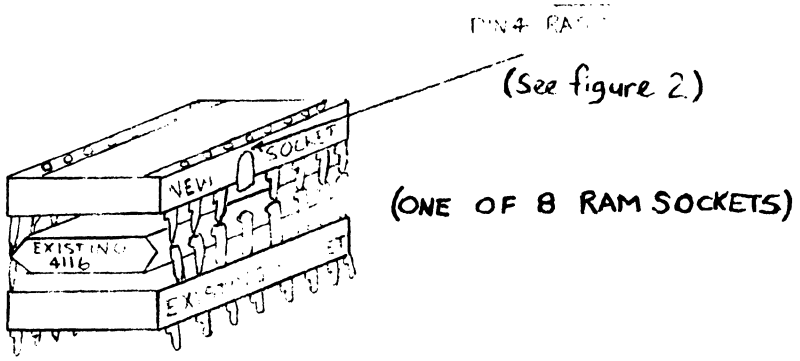

Fig. 1: Piggy Back Technique

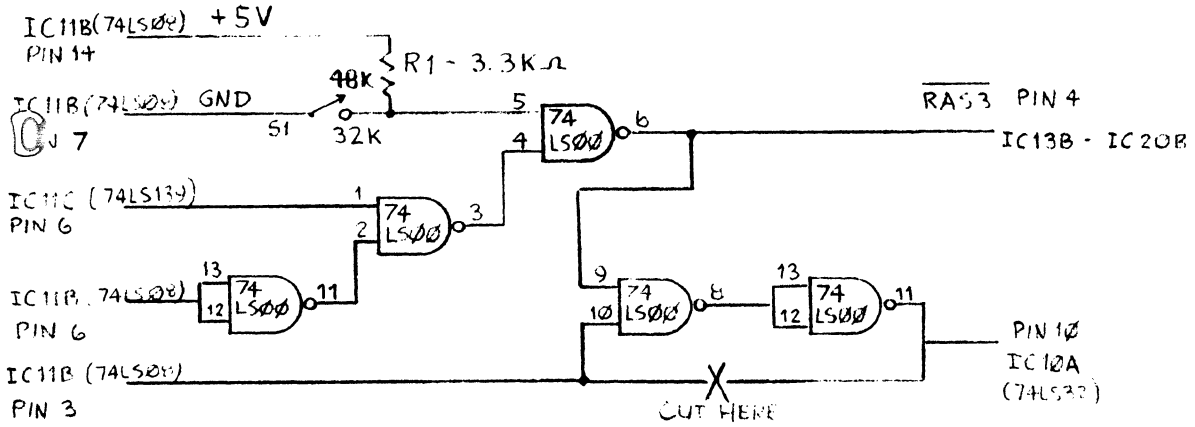

Fig. 2: Modification for 48K Sorcerer I

SCREEN 'TYPEWRITER'- by Frank Voss, P.O. Box 43, Wyandotte, MI 48192

Here is a short routine that allows you to use your computer screen like a typewriter. This is a great way to distract the kids for awhile or to practice your own typing skills. Simply enter the routine at 0000, hit the CLEAR key, then type GO 0. You can now type in whatever you want, using a CR at the end of each line. To erase, hit a SHIFT - left arrow, or any of the other arrow keys to move in the other directions. Enter no more than 29 lines and you can SAve the screen image after MOving the text from the video RAM to free RAM.

EN 0000: CD 18 E0 CA 00 00 FE 40 C8 CD 1B E0 C3 00 00/

I/O DRIVERS IN MDOS- by Bryan Lewis

The following input/output routines are written for the Micropolis disk operating system (version 4.0). They offer two improvements over those provided by Exidy (as published in the ARESCO Sorcerer's Source, issue 0, February 1979):

(1) The original check-keyboard routine, CDBRK, simply called the keyboard input driver in the Exidy Monitor. That slowed things down unnecessarily -- the entire keyboard driver isn't needed just to determine whether a key has been pressed. The new CDBRK calls the short QUIKCK routine in the Monitor. This speeds up BASIC by about 45%.

(2) The RUN/STOP key is substituted for CTL-S as the freeze-display key.

```
0541  1B                                ;Change references to CTL-S (13H)
                                         to ESC (1BH)
054C  1B

061B  CD 09 E0   CDIN   CALL E009       ;Call Monitor RECEVE
061E  28 FB             JR   Z,CDIN-$   ;Nothing? Keep looking
0620  47                LD   B,A        ;MDOS wants character in B
0621  AF                XOR  A          ;Clear flags
0622  C9                RET

063B  78         CDOUT  LD   A,B        ;MDOS gives in B
063C  CD 0C E0          CALL E00C       ;Call Monitor SEND
063F  AF                XOR  A
0640  C9                RET

0654  CD 15 E0   CDBRK  CALL E015       ;Call Monitor QUIKCK
0657  20 03             JR   NZ,YES-$   ;Is R/S, ESC, OR CTL-C pressed?
0659  F6 01             OR   1          ;No? Clear flags and return
065B  C9                RET
065C  47         YES    LD   B,A        ;Yes. Put in B
065D  CD 09 E0          CALL E009       ;Call Monitor RECEVE
0660  AF                XOR  A
0661  C9                RET

066B  AF         CDINIT XOR  A          ;No initialization
066C  C9                RET
```

Here's a Centronics printer driver:

```
04C8  01                                ;Change FORMFLAG

050A  CB 06                             ;Change jump vector

0511  01 84                             ;Change to 132 char., no nulls

06CB  78         LDOUT  LD   A,B        ;MDOS gives in B
06CC  F5                PUSH AF
06CD  C3 97 E9          JP   E997       ;Jump into Monitor's driver after
                                         the video echo
```

NEWS FROM EXIDY- by Fred Langhorst, Vice-President, Sorcerer's Apprentice

We Have more encouraging news from Exidy Systems, Inc., in that they are making steady progress toward their new business thrust. At the Chicago NCC (National Computer Conference) in May, two new disk products will be introduced:

Hard Disk System - 10 Mbyte, 8" Winchester system with CP/M 2.x and backup provided by floppy disks

Floppy Disk System - 1 Mbyte total on dual 8" drives (single-sided, double density)

North American distribution and support will reportedly be provided through a few major distribution centers. To date, four major centers have been arranged in the East and Midwest. Advertising campaigns are still being planned and should become apparent in the next few months.

A Sorcerer III is still planned for late 1981 and it may optionally include a 16 bit CPU. Other interesting hardware and software projects are apparently in process, however, only the above information was released at this time.

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****

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SOFTWARE REVIEW ** GALAXIANS ** from Arrington Software

Reviewed by Ralph LaFlamme

If you're an avid computer gamesperson, Galaxians is a must. It is not only fun but more challenging than other Sorcerer arcade games I've seen (and I've seen quite a number). The Galaxian invaders come in three varieties, two of which must have been have been chosen tongue in cheek. They're butterflies! (Excellent graphics!) However, they could be more aptly named "Kamikaze Butterflies from Space" since, unlike other 'Invader' games, they randomly drop out of formation and dive-bomb your lazer cannon rather than just move in orderly lines, back-and-forth across the screen, dropping one line per pass.

If the Galaxians from the bottom four rows are shot down while diving at you, their point value doubles. Miss them, however, and they'll reappear in formation to come back and haunt you again. The fifth (top) row only has two Galaxians. Their point value, when destroyed, increases the closer they have gotten to you. Remember, however, that I called them Kamikazes. With good reason, for if they can't shoot you down they try diving into you. Really keeps you on the edge of your seat!

One at a time, you are given three lazer cannons with which to destroy the Galaxians. You are totally exposed, with no blockhouses for safe cover so, some strategy is in order. Lateral movement of your lazer cannon is controlled by the left and right arrow keys on the numeric keypad. This is a lot easier to use than the ',.' keys of some other programs. Firing is controlled by the space bar. I find the hand separation of functions easy to use.

One feature built into this ML game is an ability to quit the game and return to the monitor by pressing the '4' & '7' key combination (numeric keypad) while depressing the space bar. Since this '4' key is used to move your cannon to the left and the '7' key is immediatedly above it, you can accidently hit this combo, 'bombing' yourself out of the program. Typing GO 100 will start the game over again but you lose your accumulated points. According to Mark Northrup, hitting the ESC key will stop the game after a play sequence has ended. He also attests to the addictive nature of this game.

One problem is found to occur when the lazer cannon is moved to left edge of the screen, and the Galaxians have shot away the cannon. Although no longer visble, your 'cannon' can still shoot and destroy the Invaders forever, as long as you don't move. This can lead to some high (though false) scores. A correction of this anomaly was provided by Howard Arrington after he called the author, in Australia! With program loaded, enter the following 18 byte fix:

```
>EN 1B80   C3 00 08/  (JUMP TO 'FIX')

>EN 0800   79 D6 36 D8 3A 81 0D 05 05 05 90 D8 FE 06 D0 C3 60 04/
```

An interesting enhancement for this game would be the use of the Music System for sound effects. How about it Howard? The use of a joy stick would also make this a more interesting game as well as save a lot af wear and tear on the keys. (Of course you would need a second parellel port to have both at once.) In conclusion I would rate this program very highly. It's fast, unpredictable and quite exciting. If I were going to buy only one arcade game, this would be it!

THE WORD PROCESSING CORNER #11

Steven Guralnick
15 Southgate Ave., Suite 246
Daly City, CA 94015

I thought today I would spend a little time with the Global Disk routines. They are very powerful and reduce the possibilty of user error quite a bit. The trick is to remember that you can use these commands in sequence, that is, you can mix them up to get a real variety of options. I have severe space limitations in this column so I may have to write about these routines in sections. Bear with me.

The underlying command is "G". When that command is entered, SPELLBINDER will immediately ask for a read filename. When that is entered, the program will prompt for a write filename. As soon as that is entered, SB will "get" text from the read file. It will bring in enough text to fill about one-half of your working space. At that point, you can do any editing you wish, including adding more text from the keyboard. When you are done messing around with the first batch of text, and with the editing cursor **anywhere** in the text, all you do is enter another "G". That immediately sends all text in the workspace to the disk write file. After emptying the workspace, SB "gets" another block of text from the read file. If you have come to the end of the read file and wish to append more text from more read files, you simply enter another "G". The program will ask you for another read filename and you enter the information. Since the write file is still open, SB will then "get" the text from the new read filename. You can keep this up for as long as the write disk has room. When you are done with the process, with the cursor anywhere in text, simply enter "GD". That command first sends all text in the workspace to the write file and then, checks to see if a read file is still open. If it is, it will then automatically chain all the text remaining in the read file onto the write file and then the program closes the write file.

There are options available to you in this process. For example, you do not have to just enter "G". You can enter "Gn", where "n" is a specific number of lines. If one of the "gets" is a few lines short of where you would like to be for editing purposes, then, for example a command "G5" will bring in five more lines of text. Up to a point, it will not produce a simultaneous write. You can tell right away because the message line will say "0 CHARACTERS", to indicate that no write has been performed. At some point, if the workspace gets too crowded, the write process will be triggered.

I am going to continue this in the next edition and make a series of it. I do not think that anyone can enjoy this program without a good understanding of these routines.

See you soon!

PROGRAM CONVERSION TO EXIDY EXTENDED CASSETTE BASIC
by Larry Stempnik, Technical Director, Sorcerer's Apprentice

For the last few months I have been working on program conversion from other computers to the Sorcerer. One computer system was a large timesharing network and another was a TRS-80 network with over 100 public domain programs available for downloading. It was very easy to save these programs in a Quality Software SMART TERMINAL file and then transfer the file to the Word Processor for editing. Some of the programs were successfully transferred to the Sorcerer ROM PAC BASIC after extensive changes. However, many other programs required so many changes it just wasn't worth the effort.

A quick review of the new Exidy Extended Cassette Basic (EXCAS) manual indicates these program conversions will be easier in the future. The best feature of all is the new allowable program line length of 255 characters, since more time was spent reducing line length to 63 characters, than any other aspect of program conversion. Other major improvements are INKEY$, PRINT USING, CURSOR, IF-THEN-ELSE, and VARPTR. These commands are frequent problems in program conversion. INKEY$ is very popular in game programs to input continuous commands without releasing the key. PRINT USING is used for formatting data. CURSOR replaces the PRINT@ used extensively for video displays. IF-THEN-ELSE is used for two-way branches and usually results in lines longer than 63 characters. VARPTR is used to find where a BASIC variable is stored in memory before jumping to a machine language subroutine which uses that variable.

Program conversion may be easier now, but it isn't automatic yet. Exidy has a program called RM2EX which converts Exidy Standard Basic (ROMPAC) programs to EXCAS. A RAM reader program is required to convert ASCII text, such as a Word Processor or Smart Terminal file. The following program is a minor modification of my "J" command program to transfer Word Processor files to ROM PAC BASIC. (see SA VOL III, No. 1)

There are four entry points from 00C8 to 00D7 depending on where the first character of ASCII text is stored. This first character informaton is stored in 00FE. As the program runs, 00FE points to the current RAM location as the text is read out. Next, the input is set to the RAM reader subroutine. EXCAS uses the Monitor Work Area SET commands, such as T, X, S, I and O. Then warm start Basic by a jump to 0103. A cold start can be accomplished by a jump to 0100. Warm start will result in a merge of the previous program with the new text from RAM. The RAM reader looks for a 03 at the end of text. Word Processor files have this feature, but Smart Terminal files do not. You must add a 03 to the ST files using the Monitor EN command. After the RAM reader reads a 03, a SET I=EB1C, or keyboard is performed and control is returned to Basic which is looking for a keyboard entry. You may want to save a new master tape from 00C0 to 4A59 if you plan to use this program frequently.

Here is the step-by-step procedure:

1. Download the program to be converted into a Smart Terminal (ST) file. Transfer the ST file to the Word Processor (WP) file for editing.
2. Remove the extra lines at the start and end of the ST file which are due to the communications over the phone line between computers.
3. Scan text in the EDIT mode for potential problems. For simple programs make any conversions required and for complex programs print the file using the "P" command for later study.

(CONVERTING PROGRAMS TO EXCAS continued)

4. Edit text until all known errors are corrected and save a backup WP copy. Type "X" to enter the monitor. DUMP 0740 074F. Note end of WP text at 074A/B.
5. Move text to high memory so it is above 4B00. For small programs in high memory, the text might be left undisturbed by BASIC and thus could be transferred more than once. Text starts at 080F in the WP and a FI command will list the ST file boundaries. For example, M0 080F 2000 780F will move the text from 080F to 2000 up to 780F to 9000. Then type G0 00D2 to transfer the file.
6. After the transfer, type LIST or RUN to find any hidden errors you missed during editing. For major revisions, go back to step 4 and use the WP to edit text. For minor revisions, retype the lines or use the built-in editor.
7. CSAVE the final revised version as an Extended Basic tape.

Here is a disassembly of the RAM reader for a 32K system (48k differences noted below right):

```
00C8: 210F58   LD     HL,580F          !?x      | START OF TEXT IN
00CB: 180D     JR     0D        (00DA) ??       | RAM:
00CD: 210F68   LD     HL,680F          !?h      | 580F  G0 00C8
00D0: 1808     JR     08        (00DA) ??       | 680F  G0 00CD
00D2: 210F78   LD     HL,780F          !?x      | 780F  G0 00D2
00D5: 1803     JR     03        (00DA) ??       |
00D7: 210F88   LD     HL,880F          !??      | For 48k system:
00DA: 22FE00   LD     (00FE),HL        "??      | 880F  G0 00D7
00DD: 21E600   LD     HL,00E6          !??      |
00E0: 22D27F   LD     (7FD2),HL        "?       | For 48k system:
00E3: C30301   JP     0103             ???      | EN 00E2: BF
00E6: E5       PUSH   HL               ?        | EN 00FB: BF
00E7: 2AFE00   LD     HL,(00FE)        *??
00EA: 7E       LD     A,(HL)           ~
00EB: 23       INC    HL               £
00EC: 22FE00   LD     (00FE),HL        "??
00EF: B7       OR     A                ?
00F0: E1       POP    HL               ?
00F1: FE03     CP     03               ??
00F3: C0       RET    NZ               ?
00F4: 3E0D     LD     A,0D             >?
00F6: 211CEB   LD     HL,EB1C          !??
00F9: 22D27F   LD     (7FD2),HL        "?
00FC: C9       RET                     ?
00FD: 00       NOP                     ?
00FE: 0F       RRCA                    ?
00FF: 78       LD     A,B              x
D O N E
```

```
ADDR  0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F

00C0: 00 00 00 00 00 00 00 00 21 0F 58 18 0D 21 0F 68
00D0: 18 08 21 0F 78 18 03 21 0F 88 22 FE 00 21 E6 00
00E0: 22 D2 7F C3 03 01 E5 2A FE 00 7E 23 22 FE 00 B7
00F0: E1 FE 03 C0 3E 0D 21 1C EB 22 D2 7F C9 00 0F 78
```

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