

Jr Newsletter

New Speedup Board Gives You 9.54 MHz

Speed isn't everything, but it's nice when you use your computer a lot. Especially for things like sorting databases or working on long word processing files.

PCjr's normally operate at 4.77 MHz, as do IBM's standard PCs, unless they are fitted with new "turbo boards." Many XT's were sold with switches that could make them run at 4.77 or 8 MHz. The IBM PS/2 Model 30 operates at 8 MHz. And now you can read articles in the major computer mags about speeds up to 25MHz. Five or six years from now, even this will seem snail-like to those who stay on the cutting edge of computer technology. What does all this mean to the average computer user?

For most of us, the PCjr's 4.77 MHz has been fast enough for most purposes. Especially once we've mastered the art of using a RAM disk, which vastly improves our computers' speed. But PCjr users are human, too. We like to participate in the technological advances that are taking place in the computer world just like everyone else. And greater speed often means not having to drum your fingers on the table while you wait for your computer to compute. So doubling the speed of our machines has a



"Wise Men Trying To Read DOS Manual"

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PCjr Lives!

certain attraction.

Last fall, Paul Rau Consulting developed a PCjr turbo board called the Nickel Express, which is software switchable from 4.77 to 8 MHz. The board is installed in the socket normally occupied by the clock chip and requires professional installation.

The new Speedup Board developed by PC Enterprises is quite different. It installs in the socket occupied by the PCjr's CPU, the 8088 chip, an installation procedure that can be performed by most PCjr users themselves. In addition to doubling your computer's clock speed from 4.77 to 9.54 MHz, the Speedup Board will also eliminate the need for memory recognition software. When you boot up with the Speedup Board installed, all memory up to 736K will automatically be recognized.

Pat Calabria at PC Enterprises reports that the Speedup Board achieves a Norton SI rating of up to 3.3, depending upon the type of memory expansion unit in-

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Beginner's Column:

Color Programming With Your PCjr

By Gary West

The PCjr is a color computer, which means that you can create color anywhere on the screen. To use your jr's color capabilities, you will have to understand the different types of screens that can be displayed. For the Entry PCjr model, you can use three kinds of screens:

- (1) text;
- (2) medium-resolution; and
- (3) high-resolution.

For the Enhanced jr, which is the one most people have, you can add up to four additional screens, including a low-resolution screen, two additional medium-resolution screens, and another high-resolution screen. Each of those screens provides varying numbers of colors.

The text screen is the screen that you see when the jr is first turned on. In the numbering system used by the jr for its screens, the text screen is screen 0 and it can display your typed characters either in black-and-white or in color. When first turned on, screen 0 is set for black-and-white only. To turn on its color capabilities you can type the direct command

SCREEN 0,1

and press <ENTER>.

Now, you can use any of sixteen colors to print your characters and any one of eight colors to print the background for each of those characters. Each character that is printed on the screen is in a rectangular box. Normally, the box is the same color as the blank screen and, thus, blends into that screen so that we don't see it. The character is printed in a different color; so we see only that character.

The color of the box around each character is the BACKGROUND color while the color of the character itself is the FOREGROUND color. After turning on the color capabilities of screen 0 (using SCREEN 0,1), we can assign colors to the foreground and the background for each character we print on the screen. ("Background" refers to individual characters and not to the entire screen. However, after setting the background color, if you use CLS and <ENTER>, the screen's entire background will change.)

To assign colors to each character, you can use the COLOR statement, which requires that you give a number from the following list:

0 BLACK	4 RED	8 GRAY	12 LT. RED
1 BLUE	5 MAGENTA	9 LT.BLUE	13 LT.MAGENTA
2 GREEN	6 BROWN	10 LT. GREEN	14 YELLOW
3 CYAN	7 WHITE	11 LT. CYAN	15 BT. WHITE

All sixteen of those colors may be used for the foreground of any character but only the first eight (0 through 7) may be used for the background of that character.

To assign the color ATTRIBUTES, you can use the

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This Is A Double Issue Of jr Newsletter

In order for some of your loyal jr Newsletter staff members to take a vacation, we decided to merge the September and October issues into one. The heavyweight issue you now hold in your hands is it.

Something else is different, too: Following up on requests by many readers, we are publishing a complete listing of the software in our Software Store in this issue. In order to minimize the space taken up by the Software Store, we have been printing some, but not all of the titles available in each month's issue. Although we add software to our Software Store every month, and therefore this listing won't be a complete one for long, it does represent all the titles we currently have, so you might want to look it over for any programs you may have missed.

Our vacation may cause a little backlog in letter answering (although there is always some delay in this area) and the correction of problems, but we will have enough staff on hand at all times to fill your software orders promptly.

We hope all of you had an enjoyable summer in spite of the weather, and we'll try to enjoy ourselves as the summer ends.

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Questions and Answers

By Rene Waldron



EDITOR'S NOTE: jr Newsletter gets questions in the mail from PCjr owners every day. So many, in fact, that we apologize for not being able to answer them personally. This Questions and Answers column is our way of responding to the questions readers ask about their PCjrs. We can't answer all of the questions we receive, but we try to answer those that are either asked by several readers or those we feel will be of interest to PCjr owners in general. If you have a question that you do not see answered here, or elsewhere in this newsletter, please feel free to write to us at jr Newsletter, Box 163, Southbury, CT 06488

Q. On copy protected software - how can I make a backup from 5 1/4" to 3 1/2" microdisk?

A. This is a difficult one, and the following techniques may not work but it's worth a try. One possibility is to use COPY II from Central Point Software Co. to try to make a copy without protection (or the need for a "key" disk) to another 5 1/4" floppy. COPY II properly insists that the copy will also be formatted identically to the original. You might have to try running the NOKEY program first which comes with this package to avoid the "key" disk problem. It can remove the need for a "key" file or diskette in order for the program to run. If the copy is successful then this second diskette would copy successfully to the 3 1/2" microdisk, after changing any hidden files to non-hidden for the copying process. Have you inquired about directly ordering your program(s) on 3 1/2" microdisks? Most manufacturers are getting on the band-wagon about both copy- protection and 3 1/2" microdisks.

Q. How can I transfer hidden files from 5 1/4" floppies to 3 1/2" microdisks? DISKCOPY will format the 3 1/2" to 360K and COPY *.* etc. will not copy hidden files.

A. Second part of question first: DISKCOPY is doing exactly what it is designed to do. It is "cloning", or making an exact reproduction (byte by byte, sector by sector) of whatever is on each track of the original 5 1/4" floppy to the 3 1/2" microdisk. This is the reason that even the hidden files are copied and that the microdisk is formatted for 360K. You see, even the format and its information is copied without change.

First part of the question now. The hidden files (IBMBIOS and IBMDOS are examples of "system" files with these attributes) which are part of the boot and initialization programs are set that way for good reasons. Two things make them special. By hiding them the user is not so apt to accidentally use them in a command or erase them. They are both "hidden" and "read only" and cannot be written over or erased in the ordinary operations of the computer user. If you want only to put the above two hidden "system" files on a new 3 1/2" micro then simply format it using the "/s" option and these two files are automatically put on the microdisk. Alternatively if the microdisk is already formatted then you only have to type SYS B:(or whatever drive the 3 1/2" is) and these two files will be transferred, but only if there is room at the beginning of the microdisk. They MUST be able to be physically positioned right after after the boot sector which is the first sector on the disk! Of course SYS.COM must be on the diskette in drive A: to do the transfer.

Now, some software producers also use hidden files. This may be what you are really asking about. There are ways to read and change the attribute bytes of any file, using DEBUG but it seems a bit too complicated to explain here. Perhaps the simplest and safest way to make files un-hidden and/or read/write would probably be to get a copy of **Peter Norton's Utilities** or one of the shareware equivalents. Disk # 65 from the Software Store called Power Pack II includes such a program. With most of these kinds of utility programs, you can change any file's attributes to what you want. Once un-hidden you can treat it exactly the same way as any ordinary file. COPY *.* will copy them etc. I would recommend for safety that after the COPY is made you change the attributes back to the original hidden and read only condition. The software which uses these files may only consider the file valid if these attribute bytes are set this way! All this may still not be enough for the program to run because some software may read the format of the disk and if it isn't the same as the original, nothing is valid and the program stops or crashes. Copy protection is such a pain... sometimes we can't even make back-ups for our own protection.

Q. I have a Procomm problem. Why can't I get to the DOS Gateway to use my word processor?

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Questions and Answers

(Continued from page 3.)

A. The simplest explanation is that you don't have enough memory left. This appears to be a SHELL which will try to re-load COMMAND.COM which will take up some RAM, then try to load your word-processor which will need more RAM and if it all cannot fit, DOS sees a signal flag and does an EXIT which returns you to the Procomm screen so fast you wonder what happened. A number of other programs will show the same actions. Word processors won't load optional speller dictionaries, or if they do, they are as slow as molasses and you are forever swapping diskettes. To try to avoid all this be sure your boot up configuration allows for enough free RAM. You won't want large sized low RAM or high RAM ramdisks or excessive video memory reserved to begin with. All those terminate-and-stay-resident (TSR) programs such as Sidekick and the various "menu helpers" are also off the list if you really want the maximum amount of free memory.

Q. Is anything, such as a cartridge, available to move the jr's video memory out of low RAM and into its proper place? Would this would make the jr more compatible?

A. What a wonderful idea! A cartridge (or a board to replace the internal 64K "upgrade") which has enough RAM, logically positioned at hex B8000 just like the PC video RAM and a device driver or ROM program to detour the VGA and Motorola video chip calls to this dedicated RAM! Sorry, but we don't know of anything that does this quite this way, yet. Come on, you entrepreneurs out there! Here's your million dollar chance!

Q. What can I do about noisy disk drives? They are getting worse every day. I'm worried. I get disk read or write errors sometimes.

A. First, if you are using DOS 3.xx you really SHOULD have either HUSH.COM or STEPRATE.COM (which is on JR POWER PACK II) or some program to adjust the rate at which the drive heads seek the proper tracks. Read on if this doesn't solve your problem(s)

If you have noisy drives with any DOS version then it is probably time for cleaning, lubrication or both. Repairs should be a last resort. Cleaning should be done first, even if you only think you want to lubricate. Look in that dusty red "IBM Guide to Operations" to familiarize yourself with the disk drive arrangement, it's in the book and it's illustrated. Pull the jr's top cover. Stand back and boot the machine while looking at the disk drive. Locate the head assembly by watching it move in and out as it reads the diskette. Now turn off and UNPLUG THE JR! Get the drive completely out and onto a clean piece paper. A brown

shopping bag, split open, is ideal. Now, using a Genuine "Q-Tip" ear swab (less likelihood of lint coming off) only DAMPENED with denatured alcohol, clean all the dirt and grease from the metal slide rails. These rails are the ones on which the heads assembly rides in and out as it moves from track to track. You can push the heads gently along the rails so you can clean both ends. Turn the drive over and look underneath. Aha! More support rails. Clean them. These are the tough ones to get at, so be patient and thorough. Remove and throw away all the dust-kitties and lint; get the drive off the paper and turn the paper over.

Only now do you want to think about lubrication. Lube can be a wonderful material or it can be deadly. Did you know that some ordinary oils attack, soften and degrade certain plastics? Do you see that the head assembly is a plastic block riding on the rails? Guess what kind of plastic it is... Right! The safe lubricants that we know of are: WGL Teflon (as used in sliding mechanisms and marine use, actually a stiff, slippery cream) made by Alegria Marine Products Co., Port Washington, NY 11050, and the precision oiler tube sold in all Radio Shack Stores (part number 64-2301). There is also a specially formulated lube in an oiler sold by a repair service in the Boston area, which seems to be similar to this last mentioned product.

To apply the liquid type - just barely wet, with LESS than ONE drop, each side of the plastic block where the rails enter the holes. Push the block to the center of its travel to get at both ends of the block. Wipe off any excess! The shaft and bearing of the stepper motor (the one that has been rotating as you move the head) gets less than ONE drop also if you can get at it. The shaft and bearings of the motor which spins the diskette should get nothing. The ones we have seen are "lifetime" lubricated. If the drive is belt-driven, be especially careful to avoid getting any lube on the belt or its pulleys!

The "cream" lube stays where you put it and probably tends to pick up less dust, once applied. Tiny amounts of it must be picked up onto a toothpick or something similar and then rubbed along the length of the rails. It can be a patience-trying job because you can hardly see the lube. This method is normally used during manufacture and assembly or by technicians. It's tough for us to recommend using this lube unless you already have some experience with the material.

Well, now you can put the drive back into the jr, connect the cables and put the cover on. Be sure that the flat cable is right side up and watch out for the orientation of the small power plug. Use a disk head cleaner kit at this time to be sure any lube which might have gotten on the heads is cleaned off. Try to boot with the cleaning disk a couple of times to do this. You don't want any trace of lube to get on your favorite booting diskette. Only now should you try booting with a system and configuration diskette. If

you still need ear-muffs and get disk errors, it's time for repairs. By the way, the above cleaning and lubrication applies to your printer, too.

Q. Are there any word - like games for the jr?

A. Yes. There are too many to list here, but a complete listing of all kinds of jr compatible games and other programs is on disk #60, PCjr Compatibility Disk, available from The Software Store. Included on the disk are comments, recommendations, information about memory requirements, patches and booting configurations where necessary.

Q. Will a DMA chip make my jr even more compatible with the rest of the IBM line?

A. First of all there is more than a "DMA chip" involved. DMA means Direct Memory Access which is not simply a chip, it is a system. In your jr the memory transfer, video information and disk drive operations are all carried out by the 8088 processor and each must take its turn. The DMA sub-system in a standard PC will allow, among other things, disk access while the rest of the computer, including the 8088 CPU, goes merrily on its way. What happens (simplified) is this; instructions are sent to the disk drive controller via the DMA route. The drive controller and data handling will now be handled by the DMA system, so control is immediately returned to the CPU. It is as if there is a second CPU handling the disk drive, the controller and the file buffers while the 8088 is freed up to simultaneously run other instructions required by the program. The same thing happens during buffered communications, printer operations and some internal memory manipulations. Notice that the sellers of PCjr DMA products usually call them pseudo-DMA or DMA emulator products. This means that they emulate the actions of a DMA system. This emulation does make more programs compatible with the jr. Also, you can continue to type at the keyboard while the disk drive is being accessed (instead of getting a "beep" and having to wait until the drive is finished); communications programs will continue to accept or send serial data while the drive is running and printer spooling is nearly 100% transparent. Most programs which are internally doing a lot of memory transfers via buffers will probably be seen to run more quickly as well. Yes, these DMA products do a good job of helping to put the jr in position with the rest of the IBM family.

Q. Why do only some programs and games run on my jr when the package says the memory needed is 256K and I have 256K RAM? My friend has 384K and these usually run on his jr.

A. We are looking at the problem of trying to understand the memory layout of the jr as compared to the rest of the PCs and compatibles. First of all, the memory in

your jr is not all "free" or "unused" because 16K is taken up by the video RAM, so less is available for the program. In a standard PC the video RAM is on a separate expansion card and has its own dedicated RAM, most of which, by the way, normally sits idle. The jr, on the other hand has a more flexible arrangement for video RAM. We can boot our machines reserving large OR small amounts of RAM for the video requirements of a given program. We have often felt that this is really a more efficient arrangement for RAM usage. The "some programs" you mention which will run are usually text - based programs which really need only a few K of RAM for the screens. The others which won't run, probably require more elaborate graphics screens or multiple pages of text and may need 32K or more of video RAM. This is taken away from your main RAM.

To make some kind of estimate of the RAM you need you must really read the package carefully. The memory requirements indicated are almost always for "free RAM", not for total installed memory. If the program uses only text, such as a word processor or a word game, then you must ADD about 64K to the figure on the package to approximate the memory your jr needs before you should be interested in trying the software. If the program is seen to use pictures and graphics then ADD at least 96K to the figure on the package for the jr's memory requirement. These figures are not to be taken as hard and exact. Here's why; some programs, such as word-processors include some room for the data files they produce while in memory, so they actually may load and run in less space. Be careful though, the data files you wish to write could be too small to be of much use. (32K - 64K is usually O.K.) Remember, all is not lost until you have at least tried booting up your jr with different amounts of memory reserved for video. The easiest memory management system we know of is JRCONFIG, which is on Disk #65, **Power Pack II**. With the programs on this disk you can reserve various amounts of memory for video RAM. This, of course, controls the amount of "free" RAM available. (See the above answer to the Procomm Gateway problem.) Once again we strongly recommend, if at all possible, that you buy programs which can be returned if they will not run on your jr.

A Self-Booting Disk Helper

Ed Strauss, the developer of the popular jr Hotshot memory expansion unit, has created a utility designed specifically to boot self-booting games and other programs that require more than 128K on PCjr's.

The utility is included in his latest version of jr Hotshot software, and can be obtained for \$10 from ES Quality Products, 767-B Redwood Place, Reno, NV 89502 (702) 786-4040.

Incredible Tales



Did you have a nice weekend?
Yes. The weather sure was beautiful, wasn't it? *Yes.* Did you get to the beach? *No.* Did you have a picnic? *No.* Did you work around the yard? It sure was beautiful weather for working outdoors! *No.* Were you sick? *No.* Well what the hell did you DO all weekend? *Sat.*
Sat? Yes, sat. In front of my computer. You sat in front of your computer on a gorgeous holiday weekend like this one? What did you DO with your computer? *Got pictures. By modem.* What kind of pictures? *Mice. Bunnies. Christmas stuff.* What did you do with the pictures when you got them? *Looked at them. Sized them. Saved them.* You mean you sat in front of a computer playing with pictures of Santa Claus and animals when the whole rest of the world was at the beach and having barbeques? *Yes.* Are you out of

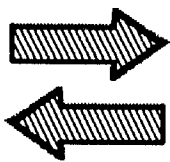
your mind? *Yes.* Well, at least you got some rest. It was great sleeping weather. *Didn't sleep much.* What do you mean you didn't sleep much? *I didn't get to bed before 3 a.m. Thursday, Friday, Saturday or Sunday night.* You're not well. *Maybe. But I enjoyed myself. Isn't that what holidays are for?*



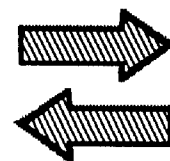
What's that ugly thing in the middle of the page? *A hobgoblin. A WHAT??? A hobgoblin.* Where did you get THAT? Or should I ask WHY did you get that? *I downloaded him. Took me half an hour. It took you half an hour to download that ugly thing? Yes.* Have you ever

thought of seeking professional help? *No. I can't afford it. My telephone bill is too high.*

Diana Fisher



Reader Feedback



Well Informed PCjr Power User Provides Numerous Hot Tips

The July jrNewsletter was the best yet! Full of informative articles and useful info from your loyal readers. Here are a few more tips and thoughts for fellow jrNewsletter devotees (along with my Software Store order):

1. Any Junior user out there not using Synectics Systems' **Dualfont** or **Thin Font** from PC Enterprises should have their head (and eyes) examined. At about \$20, it's the single cheapest and nicest thing you can do for your Junior and yourself. (Installation is a snap, even for low tech klutzes like me, with the clearest instructions I've seen to introduce you to the innards of your Junior, if you haven't met already.)

2. At the same time, you can treat yourself to Synectics' **Quicksilver Cartridge**, which is also less than the cost of most programs. The difference it makes is unbelievable! The bootup memory test is done practically before the screen can light up. I know other readers have recommended it, but I never imagined it would improve the quality of life with Junior so much. Once you have Quicksilver, you will cringe at the thought of doing without it. (PC Enterprises has the Quicksilver cartridge, too. And it is also available combined with jrVideo and Keyboard Buffer all in one cartridge. See article in July issue. -- ED)

3. And if you really want to be in hog heaven, try Paul Crumley's (Attic Technology) **EMS memory sidecar** (March 1988 jrNewsletter). Need a 512K ramdisk for word processing or spreadsheet files? No problem. Need 1070K working memory? Also no problem. It even works with Racore Drive Two with DMA. And although the memory chip cost debacle has forced Paul to up the ante a bit (current cost is \$350), he seems to be keeping the price down as much as possible.

I use the sidecar with Softlogic's **Software Carousel** which recognizes the EMS memory and allows you to load several programs in different partitions so you can switch between them quickly. The only glitch is that a bug in Carousel may inadvertently change border colors in Racore's PC mode. But the problem goes away in the Junior Mode.

4. **Weird Tip Department**: If you want a faster cursor in your programs, you may have tried **Hotkeys** or **Cruise Control**, only to find, if you are using your original Junior keyboard, that they have a schizophrenic effect on the "Fn" key combinations. The solution? Yes, you could buy

a new keyboard. But if your application has a macro facility or you use a program like Prokey, just create and save separate macros for [Fn1]-[Fn10] before you load the cursor speedup program. (I use [altq]-[altp].)

5. **Hot News Flash**: Paul Rau has finally succeeded in finding a power supply for his hard drive that will fit inside a Racore snap-on case. So those of us who waited for Racore's outrageous hard drive prices to come down, only to find out they stopped making hard drives, now have a choice of an integrated hard drive that looks just like the Racore unit. If space is no problem, Paul is still selling a larger external hard drive unit. Either of Paul's hard drives has the advantage of permitting cold boots from the C drive, with the addition of the MSC Hardbios cartridge, and are the only ones that will work with Racore (or Quadram) units with DMA.

6. **Another Flash**: The elves who develop new add-on products for Junior are reported hard at work on a new sidecar that will provide a standard IBM keyboard connection and also automatically recognize added memory. This is welcome news since Racore's keyboard adapter cable has been unavailable since last fall. The sidecar should hit the market soon.

7. **Hot Tip No. 3**: Rumor has it that work has also started on a device that will add additional cartridge slots to Junior good news for anyone with too many "essential" cartridges and too few places to put them. If all goes well, it will be ready in time for your holiday stocking, if not sooner.

8. **Amazing Screen Speedup**: jrNewsletter's advice in

(Continued on page 8.)

JrNewsletter Welcomes Questions

We enjoy hearing from fellow PCjr owners and will do our best to answer questions and help solve any problems you may have. Please, however, send your questions in writing. We are a part-time organization and are not set up to handle telephone calls. Please write to: jrNewsletter, Box 163, Southbury, CT 06488.

Reader Feedback

(Continued from page 7.)

the June '88 issue to a reader who wanted to use ANSI.SYS was positively antediluvian. As you noted, ANSI is as slow as a turtle and full of flickers and bugs.

Junior users who need ANSI's features or want an amazing screen speed-up should use ZANSI.SYS, with FASTSCRN. ZANSI is freeware, and worth using every time you boot up. It costs less than the jrSYNCRO cartridge, while providing screen writes that seem as fast or faster. It is 20% quicker than ANSI, and 27.5% speedier than no device driver. You install ZANSI by adding: "device=zansi.sys" to your config.sys file. FASTSCRN and its companion SLOWSCRN can be invoked in your autoexec.bat file or from the DOS prompt. (ZANSI.SYS is on JR POWER PACK (Disk #52)

9. Junior Protection Dept.: The free plastic socket protectors for Junior, mentioned in the June '88 issue of jrNewsletter, can also be obtained from IBM's central parts warehouse in Boulder, CO by calling (303) 924-4100. If they ask you for your account number, and refuse to accept your order unless you have one, ask for a supervisor or someone else who knows about Junior parts.

It may not be a recall, but the parts (and postage) are on Big Blue's tab. About time IBM did something for Junior owners. Delivery takes about two weeks, and the two protectors are a snap to install. It's just too bad they don't have a protector for the power cord socket.

10. Junior PeriFANalia: To get just the fan shroud noted in the May '88 jrNewsletter without the fan is impossible. If you're willing to buy a whole new fan just to get the shroud, order the "Fan Assembly," Part No. 8285982 from the IBM central warehouse. It costs \$19.00. On the other hand, if you have an old bicycle tire tube, or can get one free from the scrap heap of a bicycle repair shop, as I did, you can easily make a glue-on shroud that works just fine (and better than sticky electrical tape).

11. Less FANcy Options: The cheaper \$9.95 fan from Edmund Scientific reported in the May '88 jrNewsletter is actually item X37,436, and can be obtained by calling (609) 573-6250. Something happened to both numbers between pen and print.

Craig Tregillus, Washington, D.C.

Reader Provides Info On Software Compatibility

PFS First Publisher V. 2.0, unlike earlier versions of the software, does not work properly on my PCjr with one disk drive. I have written to Software Publishing Corpora-

tion about the problems I have had trying to get the program to recognize the "phantom" Drive B. I will let you know when I get a response.

Test Drive by Accolade is a tremendous car racing program that works extremely well with a 256K jr. I and my son highly recommend it.

Graph In A Box by New England Software does not work on the jr period. When the original copy is run it says "unauthorized copy."

Desq View (A multi-window integrator) by Quarterdeck, a special version for AST Research Inc. (1986) appears to work well with a jr. I'm using 640K -- whether it will work with less memory I don't know.

Keep up the good work with the newsletter -- I look forward to it each month.

Roger Holden, Glastonbury, CT

PCjr Runs Financial Planning Tax Service Business

Your Newsletter has been an indispensable tool in starting my own business! My jr is the main hub of my financial planning and tax service business, utilizing programs such as **Turbotax**, **PFS: First Publisher**, and **DBase III** to handle tax forms, newsletters and client information. Your newsletter has provided me with answers to countless questions in my quest to build my jr into a powerful PC. I sure hope you can help me in my latest crusade.

For jr owners who may like to dabble in the stock market, there is no better cost effective computerized stock evaluation service than the **Telescan Analyzer**. This Houston based company has a database on over 8,000 stocks and 1,000 mutual funds, providing excellent color graphics and timely news stories. The database covers insider trading, volume index, trend-line analysis, stochastics, composite overlays, and much, much more. Their 10-step analysis will provide you with a good overview of any selected stock. Their operations manual is clearly written, and their technical assistance department has been very helpful. The cost of their program is \$60.00, which is hundreds less than comparable services, and their on-line costs are relatively low. They also support the jr with its own version of the program disk. Interested jr owners can phone 713-952-1060 for a brochure.

Now to my latest problem. My jr configuration is as follows: IBM PCjr with Racore's drivell plus, 640K and US Robotics Courier 1200 external modem. When I purchased the Telescan Analyzer the jr version would not load on my jr. The disk just kept spinning in the drive. John Brown, the head of the technical assistance department at Telescan himself owns a jr, however is not familiar with the wide assortment of upgrades available for the jr. To date only 10 subscribers to Telescan are jr owners. He sug-

gested a PC disk version, which they sent at no charge. This also failed to load. After hours of prowling through my operations manuals, I changed config.sys file to device = jrvldma2.sys/c from device = jrvldma2.sys/e in order to only utilize Racore's expanded memory, eliminating its enhanced application capabilities. It worked! Both versions ran on my jr. However, another problem existed. The modem failed to dial the Telescan database number. Running Telescan's modem check, the program couldn't detect my modem. AH=HAH! A back issue of the jr newsletter informed me of the necessity of comswap when using an external modem. Searching through Compuserve's PCjr forum, I located and downloaded comswap and loaded it in front of Telescan. Now the program detects my modem; however, all I get is the dialtone out of my modem, still failing to dial through. I've called US Robotics and set the dip switches on the modem in every conceivable pattern, still no luck.

I've used the program from a PC at work, and it works fine. My business could stand to utilize this program from home, and I've talked to every computer store manager in the area with no success. Your sources are probably my last avenue of hope. Thanks for a great newsletter and any help you can give.

Mark McMahon, Naperville, IL

Editor's Note: Another business being run on a PCjr! This is a great example of someone who has put their PCjr to work and has found it able to perform all the necessary tasks. The modem you mention at the end of your excellent account of problem solving appears to be a minor one. Since you are getting a dial tone, your modem is hooked up properly and software, computer and modem are all communicating. It sounds as though your dialing command is not set properly. Check the ATDT - ATDP setting, which sets tone or pulse dialing modes to make sure it is set to match your phone system. If this isn't the answer, consult your software manual for clues to dial-out problems. This sounds like a software solvable problem to us.

Retired Electrical Engineer Is Active PCjr Enthusiast

I received my June and July copies of the jrNewsletter and would like to make some comments.

1. I am very impressed with same. I had received a complimentary copy, (Jan. 88) from you and had intended to send in my subscription order, but somehow didn't get around to it until June.

2. It is loaded with all of the material that I have been looking for, i.e., technical, source material, your special jr.

Disk Library, and a consulting service, plus more.

3. I am a 62-year-old retired electrical engineer and am primarily interested in the computer for uses relative to my various interests, such as amateur optical and radio astronomy, amateur (ham) radio, various math, music and scientific programs.

4. My wife, a retired nurse, is also into the optical astronomy bit plus anything in the graphics line of programs, since she is also an artist.

5. We received the jr from our son, who works for IBM Watson Labs, NY., on Christmas of '86. We have long since upgraded to 640K, speech attachment, parallel prn SC, Modem, 4 additional cartridges, IBM ProPrinter, PC entr. 2nd disk drive, and RGB 14" color monitor, plus muchos disks, about 325 at present, and all of the tech doc. that we have been able to find.

6. The great thing about the newsletter is that it is a great INTEGRATOR, of all the aforementioned items.

7. Out of the 300 + programs so far acquired, only about 7 have not run, and the latest Disk 56 is going to reduce that number by about 5.

8. I would be interested in finding out if any of the readership has encountered a program called "Smartwork." which will not run on the jr, straightaway, and if anyone has found a patch or other fix to cure same. This is a program

(Continued on page 10)

HOT SUMMER SPECIALS

IBM PCjr internal Modem with Software	\$ 29
PCjr Traveller Kit - Carrying case & TV Adaptor	\$ 39
New IBM PCjr Computers	\$350
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RACORE DRIVE II - with DMA and 512K Memory	\$509
20 Megabyte Hard Drive (complete system add on)	\$700
FREE: RAM Disk and Utilities with Memory Upgrades ROM Cartridge Clock	\$ 43

ACCESSORIES

IBM PCjr JOYSTICK (hard to find)	\$ 29
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Reader Feedback

(Continued from page 9)

for drawing/designing printed circuit boards. Any info would be greatly appreciated.

9. I would also like to say that I have a fair collection of scientific, math and statistics, optical and radio astronomy, ham radio, music and other specialized programs. If anyone out there would be interested in trading same. These programs are all either public domain or programs that I have written. All of my programming so far has been in BASICA.

10. Find enclosed my order for the listed diskettes which I look forward to acquiring. These should solve some problems that I have not solved for quite a while. Ever since acquiring PCjr Power Pack, I was hoping that similar programs would show up.

Don Morar, Great Lacapon, WV

Genealogy Buff Switched to Family History Shareware

Just a little feedback on your magazine and software program. I have had a PCJR for a couple of years but have always looked at someone else's copy from time to time. I finally stopped all other computer magazines and take just yours.

I am a believer in the Freeware, Public Brand Software, Public Domain or whatever name is attached to it. I purchased several disks from you. I do genealogy and have been using Families Ties (Received from Public Brand Software). I am a registered user. I saw **Family History** system in your software. I gave it a try. It is a big decision to change when you have over 800 names, all interconnected in a program. I put about 50 names in Family History for a test and thought it was so good that I sent in my \$35 to become a registered user and get a complete version.

I now have over 300 names in and tried the different reports and have become familiar with inputting the information. It is really a super program. Any problem that I got into I was able to correct and move on. It is easy to use, easy to understand, easy to recover from input errors and fantastic report. I haven't even received my Registered User Copy yet. The only problem could be if the version I am using is not compatible with the latest. I don't think this will happen.

I notice that you also have PCFILE and PCCALC by Jim Button. I am a registered owner of the latest version of both of them. They are both great and PCCALC never gets the praise it should get.

I may be the exception, but if I try a program and like it enough to use it, I then send the extra money as re-

quested. The most important thing to me with good Software is good Support. Jim Button has excellent support. I hope Family History is the same. My reason for changing from Family Ties is very poor support and a program that is very difficult to change if your research was wrong and ancestor lines change.

I hope you don't mind the long letter--I always start out thinking they will be short.

Edward J. Fillion, Dearborn, Michigan

Do Two Things At Once on Your PCjr

By Jonathan Pynchon

Dosamatic makes it easy to execute DOS commands, but its main claim to fame is that it is a "multi-tasking" application that will allow you to have more than one application just a keystroke or two away. For instance, suppose you wanted to have PC-Write and a game running at the same time, with the wordprocessor to take notes as you go. You run Dosamatic, execute PC-Write from within it and then load your game after PC-Write. Pressing <Alt F10> (or pick another keystroke combination in the setup) and you can jump back and forth between the two.

This has many possibilities for those with lots of memory; my latest experiment being with PC-Paint and Zork. I use the paint program to draw the maps for the game with (I always hated having to type maps). The combination is not bug-free, however with a little experimentation (and a few machine lock-ups) you will better understand the limitations of the program.

Most problems encountered are really pretty simple; there are two or three files on the distribution diskette which demonstrate the use of the set and path commands. These let Dosamatic know where to look for command.com, dosamatc.hlp (the help file), edlin.com (line editor), and debug.com. If you don't tell dosamatic where to find these oh-so-necessary files, your machine can lock up when you try to use the DOS commands, or ask for help. If you have enough memory for a 192K ram-disk plus 128K workspace (or 256K for PC-Paint), then you're set.

Addendum: Those PCjr owners who have the Impulse memory expansion may still have problems with DOSAMATIC, unless IMPFIX is used on boot-up. Without this, you are unable to open another DOS 'shell', which I assume DOSAMATIC tries to do.

(Dosamatic is Disk #49 in the jr Newsletter Software Store.)

DON'T BE SELFISH! Share your tips and experiences by sending them to jrNewsletter.

Computer Science Major Uses PCjr to The Max

EDITOR'S NOTE: When you are members of an orphaned computer society, as all we PCjr users are, it's encouraging to hear about people who prove the skeptics wrong by triumphing over their computers' supposed limitations. In fact, it can be downright inspiring. With that in mind, we thought you might like to read in some detail about how other PCjr users are using their machines for work, learning, fun, or whatever may happen to make their lives a little richer. We plan to have an article like this in each future issue. Hope you enjoy this new feature.

Antonio D.F. Martins of Bridgeport, CT, is studying for his degree in Computer Science, and using his PCjr extensively for both work and pleasure.

He bought his 128K PCjr and Color Display two years ago for \$1199 and he quickly built it into a powerhouse. His jr has 640K, one standard 5.25 floppy drive, two hard disk drives (a 20 and a 30 MB), a 1.2MB floppy drive which he configured and installed himself.

"I have a switch to use the 1.2 meg drive to switch from Drive B to Drive E, so, when it's drive B I have two 360K drives to work with and as Drive E it's a 1.2 meg," he says. Very clever.

Even though he has 50MB of storage space on his two hard drives, Antonio plans to add another hard drive soon. He points out that the maximum is 90MB, and it sounds as though he won't be satisfied until he's there.

He says his PCjr works very well for everything he wants to do with it. "Most people just don't realize what they have," he says of PCjr owners who are not aware of how good their computers really are.

His PCjr also has a V20 chip, a Legacy **8087 math co-processor**, a 2400 baud Courier modem, **thin font chip**, several cartridges, and two **speech synthesizers**.

Like many PCjr users, Antonio is unimpressed by those who belittle PCjrs, particularly when it comes to their ability to run a wide variety of software. "I can run anything," Antonio says, once he's figured out the correct configuration. He sometimes uses the Legacy memory configuration software, but more often JRCONFIG to get his PCjr in tune with the software he wants to run. "Since I've used jrconfig.sys, and later jrconfig.dsk, it seems that my jr overcame many compatibility problems," he says.

"I usually use DOS 3.3 with config.sys set to Device=jrconfig.dsk -c -d2 -j -p -t3 -w79 -x. But sometimes I boot from drive A: using DOS 2.1 and config.sys set to Device=jrconfig.dsk -c -d2 t3 -w79. I get the same excel-

lent results every time. As you see there is no setting for video memory and I do not run any other program that does."

The popular game, **Thexder**, won't run on his system with the Legacy software, but with JRCONFIG it runs beautifully in 16 colors and three voice sound.

He's got most of the top games, which he and the kids in the family play regularly -- all three of the **King's Quest series**, **Flight Simulator**, **Police Quest**, and many others. He readily points out that he has seen Thexder running on a computer with an EGA card and "on the PCjr the colors are exactly the same quality. Exactly."

He says **Autocad**, the powerful drawing software, benefits from his 8087 co-processor, as does **Quick Basic v.4**, which automatically supports an 8087 unless you instruct it otherwise.

Antonio has experimented with two speech attachments on his PCjr -- the one manufactured by IBM and another one he spotted in the pages of Computer Shopper. The IBM is limited to its list of preprogrammed words

(Continued on page 12)

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PCjr Power User

(Continued from page 11.)

(unless you use PC Enterprise's "Make Talk", which Antonio doesn't have) whereas the second speech board is capable of saying any word he types. It does, however, make some odd mistakes. When it said the word "negative", it rhymed with "hive".

After buying the **Text to Speech Board** along with a special power supply (combined cost, \$90) from B.G. Micro in Dallas, Texas, (214) 271-5546, Antonio found that all he had to do to make it work on his PCjr was write a short program to send text to his serial port. After that, his PCjr was speaking to him. Somewhat to his surprise, he found that ELIZA, the pioneer interactive program, works with this unit. He gave us an example, asking his computer, "How are you?"

His computer replied: "Why are you interested in whether or not I am?" Hardly your average human response.

With his modem, Antonio occasionally connects with several BBSs around the country, but usually restricts himself to local boards. Reason: he once had a monthly telephone bill that topped \$200. He recently tapped into the databases available through Compuserve when doing some research for a college project. That stung a bit, he says. "It cost me \$50 for four screens of information. I think I better stick with the Library."

For his programming, Antonio uses **Turbo Pascal v.3**, **QuickBasic v.4** and **Micro Assembler**. He says he loves working with computers and hopes to land a job in one of the many computer fields after he gets his degree. Will he keep using his PCjr when he becomes a computer professional?

"Some day I may need a 386 machine, but I'll never dump my jr!"

Ultima IV and Wizardry Win Gaming World Honors

Ultima IV won top honors in Computer Gaming World's Hall of Fame, Action/Adventure category. Wizardry came in a close second in the contest which is based on votes of the magazine's readers.

The ratings are based on reader polls conducted monthly for over a year, proving that these games are long term favorites. Just behind the two top games were Ultima III and Bard's Tale.

All of these highly rated games are PCjr compatible.

OOPs! We Forgot To Tell You How to Get JRCONFIG and PCjrXTRA

We have written so much in past issues about the fact that no PCjr user should be without JRCONFIG and PCjrXTRA that we assumed everyone knew they were on JR POWER PACK II (Disk #65).

Our article in the July issue entitled "All Your PCjr Needs to Know" page 11, was devoted entirely to the many uses of JRCONFIG. But after telling you all the wonderful things you can do with it, we failed to mention how you can get a copy of it for your own use.

We did the same thing with PCjrXTRA in the June issue.

To those of you who scratched your heads wondering how to track these programs down, we extend our apologies.

A Glossary of Memories

By James Martin

Last year, Lotus Develop Corp., Intel Corp., AST Research, Inc., Ashton-Tate and Microsoft Corp., announced LIM 4.0, a new version of the EEMS expanded memory specification. If you don't think you're confused, try this quick quiz. Explain extended memory, expanded memory, LIM, EMS, EEMS and conventional memory. I sincerely doubt that many of us know all these terms. Well, the wizard to the rescue! Here is a glossary of EMS.

Conventional memory -- The first 640K of memory in your IBM-compatible computer. Directly accessed by the system processor for both programs and data.

Extended memory -- Memory beyond the first megabyte (approximately 1,000,000 bytes) in an AT-compatible system. Used by multiuser operating systems, print spoolers and RAM disks.

EMS -- Expanded Memory Specification. A specification written by Lotus, Intel and Microsoft to let ATs, XTs and compatibles use memory beyond the 640K limit of DOS.

EEMS -- Enhanced Expanded Memory Specification. A superset of EMS written by AST, Quadram and Ashton-Tate to allow more flexible use of memory.

EMS 4.0 -- A combination of EMS and EEMS announced in August, 1987.

RAM disk -- An area of memory treated as a floppy or hard disk.

Minimize Wear and Tear on Those Disk Drives

By Dick Page

Why change Drive A to Drive B and make Drive B into Drive A? Here are some possibilities.

1. **ROTATING TIRES:** The way I use my Junior, Drive A gets a lot more use than Drive B. Just like you rotate car tires to get even wear out of them, so too, would it be good to alternate drives.
2. **ACCESS:** I find it easier to use my top drive than my bottom one because the large keyboard I have (a Key Tronic KB 5151jr) gets in the way when inserting and removing diskettes.
3. **COMFORT:** My newer second drive is quieter than my original IBM Qume drive, so switching decreases the sound irritations.
4. **DEPENDABILITY:** By using the disk drive test that is part of COPY IIPC, I found out which drive runs at the best speed with the least erratic behavior. I have made that my primary drive.

Installing the changes:

Switching is no big deal if you have ever taken apart your Junior for cleaning. (If you haven't tried exploring inside, maybe now is the time to both clean it and rotate drives!)

First and foremost, unplug all power cords to the Junior. Make sure you're grounded as well. (You may have a static charge and accidentally touch a chip and zap it.) Don't wear polyester clothing. It's also best if your shoes are rubber-soled.

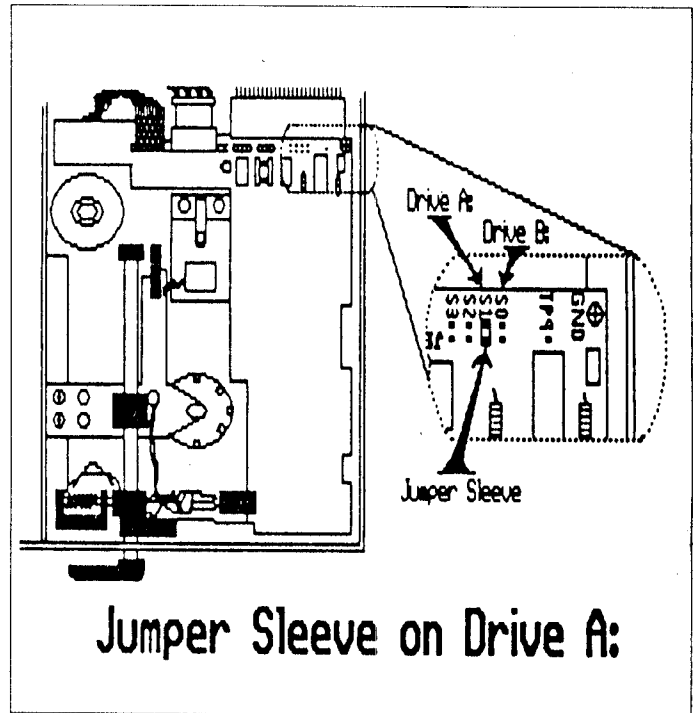
Remove the sidecar and the top. Disconnect the cables to the sidecar. Take off the whole snap-in upper section containing the second drive. Using the accompanying diagram of the disk drive, locate the back where the large ribbon cable connects to Junior's drive. To switch drives, move the metal sleeve (called a jumper) from SO to S1 or from S1 to SO--depending on which set of pins it came with. Reverse the sleeve on the second drive as well. (Otherwise you could end up with two Drive B's.)

Put Junior back together and you are off and running! Just remember that you have a new Drive A. So make sure you start Junior with your DOS disk in that drive.

Good luck and long may your two drive spin!

(The above article was originally published in the Eugene PCjr Club's Newsletter.)

CHECK OUT THE NEW ADDITIONS TO OUR
SOFTWARE COLLECTION.
GREAT SOFTWARE FOR UNDER \$10!



How To Tell If Your PCjr Has Soldered Or Socketed Chips

Some PCjrs were made with their chips soldered in place, making them difficult to remove and replace. Those who contemplate buying a jr Hotshot memory expansion unit are particularly affected by this problem. Fortunately, most PCjrs have socketed chips which can be rather easily lifted out, leaving sockets ready to accept new ones.

It's quite easy to tell whether your PCjr is socketed or soldered. The jr Hotshot goes in where the 8088 chip is located. This is directly under your original disk drive, which must be removed to install a jr Hotshot or a V-20 chip. This is not difficult, but there is an easier way to check before you order a jr Hotshot or V20 chip.

Follow these steps:

1. Turn your computer off and unplug it.
2. Gently pry up the rear edge of the top cover. There are three notches for this purpose.

3. Look closely at the chip directly behind the infrared sensor (just behind the hole in the front of your PCjr to the left of the cartridge slots). If you see solder on the edges of this chip, your PCjr is soldered throughout and will require professional installation of new chips or a jr Hotshot. If there is no solder on this chip you can be sure your 8088 chip is not soldered either, making it a simple matter to install a jr Hotshot or V20 chip.

How to Stop DOS from Begging for COMMAND.COM

By Randy Stowe

"Place COMMAND.COM in drive A and press any key"

Does your computer ask this of you? If your answer is yes, then I will attempt to show you a way to avoid putting COMMAND.COM on every disk you use.

COMMAND.COM is a command interpreter needed by DOS and must remain in memory. Some programs overwrite a portion of this memory resident program and when DOS is activated again, it must have COMMAND.COM available. If it has been overwritten then it must load itself again. This is when you get the message:

"Place COMMAND.COM in drive A and press any key"

Hard disk users usually have no problem with this because the default setting for COMSPEC is C:\COMMAND.COM and that is where COMMAND.COM is usually found.

What is the significance of COMSPEC? This environmental variable tells DOS where to find the command interpreter and that is what I am going to show you how to do.

Did you know that COMMAND.COM does not need to be in the root directory of the boot disk? It can reside anywhere, and that is the key to this article.

Let's do three things here:

- 1.. Make a RAMDISK (make the computer think you have a drive C:).
- 2.. Put COMMAND.COM on this RAMDISK.
- 3.. Set COMSPEC to that RAMDISK.

The VDISK directive creates a virtual disk. When you install VDISK.SYS you install what is apparently a floppy disk drive.

In reality you are using a portion of your RAM as though that RAM were a disk drive. VDISK.SYS is the device driver found on versions 3 and above of MS-DOS.

(EDITOR'S NOTE: PCjr owners who have expanded their memory beyond 640 K all have virtual disk or ram disk software that came with their expansions. Ram disk software for PCjrs is also available on both versions of Jr Power Pack (Disk #52 and #65))

The syntax for VDISK is:

```
DEVICE=d:path\VDISK.SYS bbbb sss ddd /
```

Emax

bbbb is the size of RAM disk in K's (range 1k to available mem-64k for DOS)

sss is the size of ram disk sectors

ddd is the number of directory entries for the RAM disk.

[The label takes one entry so be sure to count it.]

(range 2 - 512 entries default = 64)

/Emax is a switch used for extended memory.

Since this is not a tutorial on RAMDISKs, let's just

show you what you need to know in order to create a RAMDISK and place COMMAND.COM there.

1. Make a backup of your boot disk and copy VDISK.SYS to that disk if it isn't there already.

2. Copy ANSI.SYS to that disk too.

3. Place this disk in drive A:

4. Now type in the following lines as shown:

```
COPY CON CONFIG.SYS
```

```
DEVICE=ANSI.SYS
```

```
DEVICE=VDISK 50 512 10
```

```
FILES=10
```

```
BUFFERS=15
```

```
F6 <ENTER>
```

You have just created a CONFIG.SYS file to make a RAMDISK. Now lets make the AUTOEXEC.BAT file:

```
COPY CON AUTOEXEC.BAT
```

```
ECHO OFF
```

```
COPY COMMAND.COM C:
```

```
SET COMSPEC=C:\COMMAND.COM
```

```
F6 <ENTER>
```

Now your computer will never again ask for the COMMAND.COM as long as you boot with this disk.

To make a long story short, all we did was to add this line to your CONFIG.SYS file:

```
DEVICE=VDISK 50 512 10
```

And add these lines to your AUTOEXEC.BAT file:

```
COPY COMMAND.COM C:\
```

```
SET COMSPEC=C:\COMMAND.COM
```

If you really want to spice things up, try the following:

Change the line to make your RAMDISK to:

```
DEVICE=VDISK 150 512 10
```

and your AUTOEXEC.BAT to:

```
SET COMSPEC=C:\COMMAND.COM
```

```
COPY COMMAND.COM C:
```

```
COPY LIST.COM C:
```

```
COPY FORMAT.COM C:
```

```
COPY DISKCOPY.COM C:
```

```
COPY PKXARC.COM C:
```

```
COPY Q.EXE C:
```

```
PATH=A:\;C:\
```

JUST BE SURE THAT THESE FILES ARE ON YOUR BOOT DISK! You can use other utilities that you may need or like better, but keep in mind that these files will always be at your disposal even though you take out the boot disk and replace it with another. In fact, I recommend that you do take this disk out and put another disk in drive A. You no longer need your boot disk in drive A.

(The above article was originally published in the Humbolt PC Users Group Newsletter.)

PCjr Lives!

MindReader The Uncanny Shareware Word Processor

By Carl Haub

Brown Bag Software's MindReader must qualify as the world's most unusual word processor. Not only does it try to read your mind by guessing what word you're typing, but it uses Artificial Intelligence (AI) to learn how you think. On top of all that, it also contains a bundle of handy "desktop" features. And, it's shareware, which means you can try it before you buy it.

Here's how MindReader works: As you type, **MindReader** anticipates the word you are typing before you get to the end of the word. For example, type "corp" and a small window will pop open with a subtle "beep" suggesting that the word you're thinking of is either "corporation" or "corporate." The word can be completed by simply tapping a key. The most likely word is completed by tapping the semicolon key, a very convenient way to complete the word. Other suggestions appear in the frequently-appearing windows. Each word has a number, so if "corporate" is what I really wanted, tapping "2" would complete that word.

*"As you use it, it learns
the word patterns you use."*

You don't have to use the word completing feature if you just want to keep typing in the normal way. But if you are unsure of your spelling or you want to save keystrokes on longer words, this unusual system of writing can come in quite handy.

In addition to finishing the word, MindReader also inserts one space, putting the cursor in position for the next word. If you had actually wanted a comma in that position, the program backs up, inserts the comma, and positions itself for the next word. Neat. If you insert a period, MindReader puts that in and then thoughtfully jumps two spaces for the beginning of the next sentence.

Sound like a gimmick? Well, it does seem like a gimmick with the initial use. The first time you use MindReader, your impression will be that the thing actually slows you down with its bombardment of pop-up suggestions. And, for a while, it will. The beauty of this program lies in its special talent: as you use it, it adapts its vocabulary to yours, learning the word patterns you use. This is accomplished each time you exit the program. Upon exit, the program uses its "AI learn" feature ("Artificial Intelligence") to adapt itself a little more to your writing patterns for the next session.

But, it also does this during a session. If, for example,

you selected the secondary choice "corporate" in the example above, rather than the first choice "corporation," MindReader would figure that you use "coporate" more often and give that the higher priority the next time. You can also force it to set a particular word to the highest priority by hitting the Shift-F1 key combination after typing a frequent word. If, for example, your writing requires the frequent use of "capacitor," you can type "capa" and then hit the semicolon key. This assumes you told MindReader to assign "capacitor" a high priority with Shift-F1 first.

The F2, F3, and F4 keys will also make nouns plural, add "ing" to verbs, and change verbs to past tense. Skeptical? I was, so I asked MindReader to give the plural of "peony." It responded with "peonies." So far, so good. Keyboard? Keyboards. Calamity? Calamities. Mouse? Mouses. Ah Ha! Got it. Adding "s" or changing "y" to "ies," seems not to be a problem but watch irregular forms. Past tense works rather well, too. The past tense of consider? Considered, according to MindReader. Fly? Flied, it said. OK, irregular forms are a problem, but you'll get accustomed to the quirks quickly.

(Continued on page 16)



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MindReader

(Continued from page 15)

An initially limited spell checking capability is also included. The spelling checker stops on every unrecognized word, but does not suggest replacements. But, as MindReader learns your word usage, things speed up considerably. Beyond that, the program's normal word completion function acts as a de facto spelling guard anyway - presuming the words you add to its dictionary are spelled correctly in the first place.

You're probably already wondering if MindReader does more than mere words. Absolutely. You can also teach the program phrases with the Shift-F2 key, set up "boilerplate" text in the glossary, and enter its macro-learn mode by hitting Alt-F8 and selecting keyboard macros. The boilerplate text is selected by hitting F8 and then selecting the appropriate sentence from the pop-up window.

As supplied, MindReader comes with a rather small 10,000 word dictionary of basic words and assumes that you will be primarily interested in typing a typical business letter. But only a few uses will adapt the program to your writing style. Why not go all out? Keep multiple copies of the program in your disk box. One favors the vocabulary you use in your business or profession, the other keeps track of the phrases you use when typing a newsletter for your organization. (Wouldn't it be nice to be able to type "Boy Scout Troop 1762 of Minnetonka" with only three keystrokes?).

MindReader requires 256K of memory and will work with one disk drive; simply run the program and replace the program disk with your data disk. MindReader will let you know that it's different when it boots with some interesting sound effects. Many of its actions are accompanied by sound, much in the style ProComm. They can be turned off, however.

The program shows all function key assignments on-screen, unshifted function keys at the top and Shift/Alt combinations at the bottom. This setup keeps the most important functions visible, helpful in an unusual program such as this.

And, MindReader's features go far beyond the norm. A keystroke or two pops up an array of features usually found only in an assortment of other programs: a calculator with one memory, type to printer and move result to document capabilities, a pop-up rolodex with a very fast search function, a calendar with or without diary, math operations on columns of figures (totals and subtotals), a draw mode to place lines and boxes in your text, split screen, name and address database, undo (the "oops!" key), the encoding/decoding of sensitive documents, a typewriter mode, simple file saving in ASCII format, even a pop-up window which gives an instantaneous reading on

word count, lines, number of session keystrokes, document size, character count, and typing speed in words per minute. And that's only a partial list!

MindReader works in RAM and that means that it is FAST, among the fastest wordprocessors around. For example, replacing the letter "e" with the word "Redskins" in this document took MindReader five seconds -- and that's a large number of search/replace operations. Scrolls to the top and bottom of a document are lightning fast. Speed seems to have been one of the programmer's main priorities.

There are some complaints, as with any program. MindReader will assume that some periods end a sentence; typing "U.S." will require a backspace after the first period - but single periods such as "Mr." cause no problems. The program also insists on inserting an extra space after some uses of quote marks. And, while moving the cursor to the left of a line is quickly accomplished with Ctrl-left arrow, Ctrl-right arrow only moves one word at a time. Finally, two spaces are inserted after each comma, just as with periods, a style which may not fit all users' needs.

This shareware program is worth a look by those who can use a fast, feature-laden word processor and can benefit from its unique capability to complete words and phrases. Science-types may thrill to have the machine type "photospectroscope" for them at a keystroke. And, while many of MindReader's functions are available elsewhere, such as in Sidekick, Turbo Lightning, and data base programs, none provide it in such a neat and tidy package.

It has another good thing going for it - it's rather fun!

MindReader is shareware and, while available for trial purposes through the jr Newsletter Software Store (Disk #74), those deciding to use the program must become registered users. Registered users receive the full manual, telephone support, and notice of updates. At \$49.95 plus \$5.00 shipping and handling, MindReader is one of the better buys around.

Attention Mouse Users!

In order to do a complete and informative article on the use of mice with PCjrs, we need some feedback on your experiences with mice that work and those that have problems. We have accumulated a great deal of information already, but if you are currently using a mouse we would like to know how you have it set up, what driver you use, what software you use it with, and whether it has caused any problems. Since specific details are important in this kind of research, we ask you to be as specific as possible when you describe your setup and experiences.

Please send details to: jr Newsletter, Box 163, Southbury, CT 06488. We hope to publish the results of this research in our next issue. To those who take the time to respond, we thank you.

Drawing: CAD vs. Paint Programs

By John King

The graphics display on an IBM PC with CGA (Color Graphics Adaptor) or a PCjr is composed of 200 lines of 640 dots each in high resolution mode. Each dot or pixel can be black (off) or a color (on). In two color mode, one bit in memory is needed to store each pixel. A full screen can be stored in $640 \times 200 = 128,000$ bits. We usually measure memory in bytes, and there are eight bits in each byte. Therefore, a full screen requires 10,000 bytes.

Paint programs simply record which bits are on and which are off on the screen. This approach to storing an image is called bit mapped graphics. It gets somewhat more complicated when data on several colors must be stored, but the principle is the same: record the screen image as the on or off state of all the pixels.

In contrast, CAD programs use vector graphics. Each line or curve you draw is recorded first as a mathematical equation. Then the CAD program calculates which pixels should be turned on or off to make the 640 x 200 display

Each Type has Distinct Strengths and Weaknesses

show the proper lines and curves. The file on disk for a simple drawing will be very small, perhaps only two or three thousand bytes. However, to file to store hundreds of equations for a more complex drawing may be more than a hundred thousand bytes.

These two approaches to creating a screen or printed image have distinct strengths and weaknesses. Usually one or the other will be better suited to a particular type of drawing. Let's examine some of the differences which would influence our selection of one type of program over the other.

Drawing lines, boxes, arcs and circles is easy in both types of programs. Drawing a very squiggly line, your signature for instance, is easy with a mouse and a paint program. However a single equation for such a line would be extremely complex. Therefore, CAD programs require you to enter several points along the line, and the program fits a curve to the points with a series of simpler equations. Entering points is not nearly as convenient as drawing a continuous line with a mouse in a paint program.

On the other hand, measuring distances and angles is easier and more precise from equations, so CAD programs really excel for this. Changing the scale of objects accurately for exact size relations is also easier in a CAD program.

Paint programs usually allow drawing in several colors on the screen and filling in areas with colors or patterns such as crosshatching. This only requires setting the right memory bits on or off, so it is a natural for bit mapped paint program. With vector graphics, coloring in areas is more complicated than just turning bits on and off, and cross-hatching involves a large set of equations to draw all the individual lines. As a result, these features are only offered in high priced CAD programs.

The resolution of a bit mapped paint program is limited by the resolution of the display device. For the CGA display this is a maximum of 640 dots horizontally on the screen. Paint programs may even use the lower resolution 320 x 200 graphics mode in order to use more colors.

Image Resolution

We can illustrate the importance of image resolution with an example. Imagine a diagram of a room which almost fills the screen. A horizontal line that represents a wall 25 feet long might use 600 dots or pixels. Since 25 feet equals 300 inches, each pixel represents 0.5 inches. This is the resolution of this drawing. Nothing can be measured more accurately than 0.5 in., and nothing smaller than 0.5 in. can be drawn. If you enlarge (zoom in on) a small portion of this paint program, the pixels of the original drawing will become larger, but still represent 0.5 in. No finer detail exists. If you want more detail you have to draw a whole new close-up picture. Furthermore, if you create the close-up and then zoom out, the details are lost since no image can have more than 640 x 200 pixels.

The situation is very different with a vector graphics of a CAD program. AutoSketch uses seven significant figures in the equations representing objects. The line to represent the wall in our example is handled as 25.00000 feet or 300.0000 in. The resolution is 0.0001 in.

(Continued on page 18)

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CAD vs. Paint

(Continued from page 17)

We can zoom in and draw very small and intricate details as part of the original drawing. Since everything is saved as an equation, these details are not lost when we zoom back out.

Of course, the details smaller than 0.5 in. will not be visible on the monitor when we zoom out to show the whole 256 foot wall, because the CGA display is still only 640 x 200 pixels. However, the details are not lost. We can enlarge a section of the drawing at any time to see them. If we zoom in to make a 6 in length of the wall nearly fill the screen, we will be able to see details as small as 0.01 in. (6 in. divided by 600 pixels).

Instead of having to do several separate drawings in a paint program to show several levels of detail, a single CAD drawing can provide all the views we need. The whole drawing or just a small portion with specific details can be viewed on the monitor or printed out on a plotter or dot matrix printer.

CAD Gives Higher Resolution, But is Slower than Paint

There is a price which must be paid for the high resolution of CAD programs. Due to the time spent by the computer calculating which pixels to turn on or off for any given view of the drawing, CAD programs are slower than paint programs. The more complex the drawing, the greater will be the difference in time to rewrite the screen. On a Jr., it may take several minutes to redraw a very detailed CAD picture... frustrating since a paint program could do the same apparent drawing in a few seconds.

Conclusion

Now, you should be able to decide whether you are a candidate to purchase a CAD or paint program. If fine details, accurate measurements, or multiple views are what you need, a CAD program will do the job better than a paint program. For drawings of very irregularly shaped objects and when areas need to be filled with crosshatching or other patterns, a paint program will be easier and faster to use than a CAD program.

If on-screen colors are important to you, a paint program is likely to be your best choice. Because CAD programs use the highest resolution display possible, colors cannot be displayed on a CGA system.

I boiled the selection process down to the following two test:

1. If you'd reach for a ruler and T-square or graph paper to do the drawing, chose vector graphics, a CAD program.

2. If you'd do the drawing free hand, use shading extensively, or want colors on screen, use bit mapped graphics, a paint program.

As you can tell from this article, I am intrigued with the capabilities of CAD programs and AutoSketch in particular. Since most of my drawing is done on graph paper, this program is just what I've been looking for.

Of course, price is no object when it comes to software happiness, but it is nice to know that AutoSketch sells for only about \$50 at computer shows and discount houses.

(The above article was originally published in the San Francisco PCjr Users Group Newsletter.)

How To Use JRCONFIG.NRD For Maximum Available Memory

If you like to use JRCONFIG for all your boot-ups but do not want to create a ram drive, use JRCONFIG.NRD.

Although the documentation for JRCONFIG states that JRCONFIG.NRD will not create a ram drive, many jr users have noticed that when using the NRD option, a chunk of memory is missing. This is because the NRD option really does create a ram drive. It just doesn't assign a letter to it. This is a convenience for hard drive users whose hard drives must be drive C.

The NRD option occupies about 90K in order to speed up your PCjr's processing. But what if you want that memory to be available?

Carl Haub of the Metro PCjr Users Group supplied this solution: Use /s1 in your config.sys file. This will set the ram drive at 1K.

Carl reports that on his PCjr, which has a total of 754K, the use of the /s1 option leaves him with 701K available. Since DOS 2.1 takes up 24K and video takes 16K, there are still 13K unaccounted for. But that's an improvement over 90K.

The Encyclopedia of DOS Weighs In at 5.3 Pounds

If you are one of those people who want to know absolutely everything there is to know about certain subjects, the new Encyclopedia of DOS may satisfy your yearnings.

Published by Microsoft, the 1570 page book has a complete DOS history, covering all versions to date, complete data on commands, interrupts, error messages and even some information on the original codes used by DOS programmers. Depending upon where you get it, it will cost between \$98.50 discounted and \$134.50 retail.

How Come Computers Are So Dumb?

By Terry Haines

The computer is no longer just a large, complex, expensive object that major corporations blame when they screw up your order. Thanks to the miracle of electronics, today's computer is a large, complex, expensive object that you can have in your own home.

If you read your major trend-spotting magazines such as *Time* or *Newsweek*, you know that in recent years virtually every man, woman and child in the United States has bought a personal home computer. You constantly see articles explaining how ordinary people like yourself are finding all sorts of handy uses for computers around the home.

Doris and Bob Pullet of Full Horse, Texas, use their computer for many things, such as keeping track of what kind of soup they have in their pantry.

"It has been a real boon to us," reports Doris. "In the old days, we would have to open the pantry door and manually look inside to see whether we had, say, chicken gumbo. But now all I do is turn on the computer and enter my secret password and punch in a few simple commands, and within a matter of seconds the computer says "CHKN GMB/2;.87;.74" which lets me know that we have two cans of chicken gumbo with a depreciated value of 87 cents or 74 cents adjusted for inflation. And Bob is working on a program that will keep track of the good forks."

After I read about thirty articles like this, I bought a personal home computer. I originally planned to use it to organize my data. I have a lot of trouble keeping my data straight.

Here's my system: Let's say I get a piece of data in the form of a letter from the telephone company explaining that, just to keep its legal staff busy, it is applying for one of its bi-weekly rate hikes. I put the letter in a manila folder, mark it "Phone Company" and put it in my filing cabinet. I have about three hundred file folders, maybe two hundred of which say "Phone Company" and I can never find anything. That's why I figured I needed a personal home computer.

The man at the computer store told me that not only could my computer straighten out my files, but it would also figure out all my tax deductions. This struck me as a terrific bonus, because in previous years I have been so bad at keeping track of my tax deductions that I have had to make them up. So within a matter of minutes, I purchased a computer for little more than it would cost me to buy a lengthy vacation in Hawaii. I think I got a fairly stupid computer. This is usually the way it goes with me.

Several years ago, I got a German Shepherd, which is supposed to be an intelligent brand of dog, the kind of dog that recognizes unfriendly intruders and attacks them

fiercely. But through some one-chance-in-a-million quirk, our German Shepherd attacks only empty plastic milk jugs. If we ever have an unfriendly intruder who happens to have some old milk jugs tied to his belt, our dog will be a powerful deterrent, but otherwise, I doubt she'd be much use.

Well, my computer makes my dog look like Albert Einstein. I plugged it in and turned it on, and instead of going to work on my telephone company letters, it started asking a lot of idiot questions, such as what day it was.

So I typed in the following computer program: NEVER MIND WHAT DAY IT IS. WHAT I WANT YOU TO DO IS STRAIGHTEN OUT ALL MY FILES AND COME UP WITH A NICE, HEALTHY LIST OF TAX DEDUCTIONS, TAKING PAINS TO GIVE ME, RATHER THAN THE INTERNAL REVENUE SERVICE, THE BENEFIT OF THE DOUBT, BUT NOT CLAIMING ANYTHING THAT WOULD LAND ME IN THE FEDERAL SLAMMER, IF YOU GET MY DRIFT.

And the computer said, "SYNTAX ERROR."

Can you believe this? This machine that doesn't even know what day it is tells me, the paid-professional writer, that I have a syntax error. So I went back to the computer

(Continued on page 20)

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When Trouble Strikes Follow These Steps

By Mr. Glitch-Wrench
Picture City PC PC

Murphy's law says your computer will act up when you need it most. The objective is to get it fixed as soon as possible. Here are some steps so you can enjoy troubleshooting your computer, your printer, your car, etc.

Calm Down: Yelling at the computer won't work. The PC only speaks computerese. And don't hit your computer. That's not what we call being user-friendly.

Assess Your Situation: Rethink the procedure. Did you miss any steps? Rethink the problem. Is there another way to complete the project? Rethink your decision to use a computer on this project in the first place.

Check The Obvious: Is there any power in the outlet? Are printer paper, ribbon and cables properly in place? If you're using a new disk, is it formatted? If using a working copy of the software, did you copy all the files that are needed by the program?

Read The Documentation: One third of all calls for technical support involve problems that are explained in the users manual. Better yet, don't wait until you have a problem or do something wrong to read the directions.

Boot The System: With the on/off switch, not your foot. Electronic equipment will flake out, on occasion, due to cosmic rays, magnetic fields or witchcraft. These problems always disappear when you turn off the power. Only rarely do they reappear when the power is turned back on. But beware, unsaved data will be lost when you shut off the power. Note that Ctrl-Alt-Del will not reset all problems that might occur. You'd better turn the power off instead. Always pause for ten seconds before turning the power back on to let the electronics drain completely.

Analyze The Problem: Has this problem occurred before? When was the last time the software or hardware worked properly? Has anything been added or moved since then? Has the problem grown worse progressively? Can you reconstruct the events that preceded the problem? Can you make the problem repeat itself? Well, don't do that again, silly.

Look For Clues: Record error codes or messages that appear on the screen. Does the red light on the disk drive go on when the program is supposed to be reading the disk? Do you hear any strange sounds coming from the hardware? Do you see any smoke coming from the hardware?

Isolate The Problem: Do you have the same problem when using other files and the same program, or other programs and the same hardware? Redo the procedure using the other disk drive. Have someone else run it on his

computer.

Be Prepared When Calling For Help: If possible, jot down the model number of the hardware and version number of the software involved. Run the program while you are on the phone.

Explain Your Problem Clearly: What are you trying to do, what is the hardware doing, what is the software supposed to be doing that it is not doing and what is it doing that it should not be doing, what are you doing that you shouldn't be doing, what is all this doing to your mental health and what are you doing about it?

Protect Yourself Ahead Of Time: Back up your hard disk and important diskettes. This way you can use your data on someone else's computer if your XT is out of service or if you accidentally damage or erase your disk.

Smile: The computer is your friend.

Stupid Computers

(Continued from page 19)

store, and the salesman told me that if I want my computer to organize my data, I would have to buy a program that costs several hundred dollars.

Since I had spent virtually all my money on the computer, I decided instead to buy a program called Defense Command, which cost only fifteen dollars. Defense Command does not organize my data, but it does enable me to play this computer game wherein I shoot an atomic laser cannon at little alien beings who are trying to steal my fuel cells so their mother ship can come down and wipe me out with the Solar Waster.

I brought this game home and the computer just loved it. It didn't ask me what day it was or anything; it just started playing. The night I got it, my neighbor, who is thinking of getting a computer to organize his data, came over and we fought the aliens for six straight hours and drank a case of beer.

Overall, I'd say my computer has greatly increased my personal productivity. At first my Defense Command scores were in the 4,000 range, which means the aliens were having no trouble stealing my fuel cells. They would just swoop down, chortling, and steal them with ease. But I have become so productive that nowadays I routinely score over 20,000, a tremendous increase in personal productivity that would have been impossible without my computer. I have begun to sense a new respect on the part of the aliens.

I am beginning to wonder how I ever got by without my personal home computer. I'm also beginning to wonder if I can use my atomic laser cannon against my files, or even the phone company.

How to Utilize Koala Pics

By Rene Waldron

So you have a Koala Pad and would like to either get a hard-copy dot-matrix or laser print-out or import your fabulous art work to some other program to work on it further. Well, here's one way to do that and to learn a little about how screen images are saved and loaded in BASIC.

If you look at one of the Koala files using LIST.COM from disk #52 the POWER PACK, (example, FOX.PIC as Koala has saved it) you would see that there is only direct screen pixel information starting with byte one at the very beginning of the file. BASIC and some other programs need a "header" of information in order to BLOAD this file back into screen memory. Let me explain: A BSAVED program is simply a copy of the screen storage RAM, byte by byte, to a disk file. It is a Binary SAVE. In order to get this file back into the same place in RAM, and therefore on the screen, two things need to be done.

First, the screen storage RAM must be ready to accept the bytes. This is done in BASIC by setting up the proper SEGment of RAM for the screen buffer. The BASIC statement DEF SEG = &HB800 is the way to do this.

The second thing that must be done is to give some testing information to the BASIC interpreter or compiler about the file to be put into that particular RAM segment. This is done with the "header" information mentioned above. After all, we don't want to load a text file into this part of RAM, it would look like gobbledy-gook on the screen. Remember, this will be a mirror image of the pixel information that was in RAM and on the screen originally, with no interpretation or instructions. During an attempt to BLOAD a file, BASIC and some other programs, read the first 7 bytes of the file to be sure it is a BSAVED file and is intended to be put back into memory in a direct binary (byte by byte) placement. Without this proper header, internal error testing prevents loading the file. The Koala-pad .PIC files do not have this header. (They don't have any header at all!)

Okay, so let's make a header for the Koala .PIC files.

This is such a short program it isn't worth compiling, so use Cartridge BASIC, BASICA, GWBASIC, or JRBASIC.. Anything at all will work. HDRMKR.BAS follows, type it in exactly as shown.

```
10 SCREEN 0,0,0: COLOR 14,1: CLS
20 INPUT "Press ENTER to produce HEADER.CHG
file..", GO$
30 F$ = "HEADER.CHG"
40 OPEN F$ FOR OUTPUT AS #1
50 FOR I = 1 TO 7
60 READ HDR: PRINT #1, CHR$(HDR);
70 NEXT: PRINT
80 CLOSE #1
```

```
90 INPUT " one! Press ENTER to return to DOS.",
GO$
100 CLS: SYSTEM
110 REM
120 REM This data will be the new header ( 7 bytes! )
130 DATA &HFD, &H00, &HB8, &H00, &H00, &H00,
&H40
140 END
```

SAVE the program BEFORE running it! It will disappear each time it is RUN. I used the name HDRMKR.BAS to remind me of its purpose.

After RUNning the program you should do a DIR in DOS and a new file called "HEADER.CHG" will be on the default disk. It will be 8 bytes long, the additional byte is simply the End Of File marker.

Now comes the fun! How can we put this on the desired .PIC file which Koala saved? We can do it with a seldom used implementation of the DOS COPY command. (Be sure copies of both HEADER.CHG and your .PIC file(s) are on the same diskette.) While at the DOS prompt type the following as shown. (FOX.PIC is an example, use your own kpad.PIC name after the +)

COPY HEADER.CHG+FOX.PIC FOX.BIN then press <Enter>

Now you have a new file consisting of the 7 byte HEADER.CHG file with the FOX.PIC file attached to it. (That's what the + is for.) The name of your new file is FOX.BIN and the original FOX.PIC is still untouched. FOX.BIN is now compatible with the BLOAD command of by many programs, including BASIC. This new file can be renamed anything at all to be agreeable with programs which automatically look for some other extension.

I've included the following BASIC program for you to test the new .BIN file(s). You will see that the new header is all-purpose, as it will allow you to load your pictures either in the original full 16 color format, or 4 color format for printing out to a printer. Remember, you MUST run GRAPHICS.COM from DOS before you can print any graphics screens with Fn-PrtSc! This BASIC program will allow screen dumps to any compatible printer when the picture is complete on the screen.

Type this program in Cassette BASIC, and save it as BINTEST.BAS before you run it. It will also work on a standard PC if only screen 1 (4 color) is used.

```
10 CLEAR,,, 16384: KEY OFF REM Clear enough video
memory for 16 colors in screen 3
20 SCREEN 0: WIDTH 80: COLOR 14,1: CLS
30 PRINT
```

(Continued on page 22)

How to Clean Your IBM PCjr Keyboard

By John Schwab

1. Disconnect your keyboard from the computer, remove cable from keyboard, or remove batteries if you are not using the cable.
2. Place keyboard upside down on a table. You should see 6 Phillips head screws. Carefully remove these with a small screwdriver.
3. Gently pry two plastic halves apart and remove the top half. This is really the underside of the keyboard. You will see the underside of the green circuit board. Gently brush off any visible dirt particles with a lint free cloth or small soft brush.
4. Pick up circuit board and remove dust from the other side.
5. Beneath the circuit board you should see a gray rubber sheet, about the same size as the circuit board, and about 1/8th of an inch thick. It appears to have craters about a half inch wide all over it with little black posts in the crater centers. Remove this rubber piece gently and clean. You will notice on the other side of it as you peel it off that it has what looks like little suction cups (or tiny mounds) that act as springs for the keys below.
6. All you have left now is the inverted top half of the keyboard. You can see the bottom of each key resting in a small crater with the center of the key (looks like a round post) sticking out of the middle. If you lift the keyboard off the table, the keys will slide down, but they will not fall out, except maybe the space bar and the enter key. These are easily slid back into place.

Use a small brush, or Q-tip to clean the craters the keys rest in, and make sure to remove all dust from around the posts of the keys. This will ensure easy traveling of the keys and help prevent sticking.

7. Re-assembly: First replace the rubber mat on top of the keyboard. The three small holes on the rubber should be on top, and fit comfortably over the three posts for the screws. Also, the black dots should be face up.

Next, replace the circuit board. The chips on the board should be face down and on top. Once again, the three holes on the circuit board should fit over the screw guide posts. Finally replace the bottom of the keyboard. The part of the keyboard that holds the batteries should be on top on the left.

To ensure proper refitting, hinge the top of the bottom piece under the other half of the keyboard and lower the front gently towards you. Hold the bottom shut and replace the bottom center screw. You can now replace the remaining five screws. Tighten equally until snug. You can now re-attach the cable or replace the batteries. This

should not take more than a half hour to do, and it will also give you an inside view of how your keyboard works.

**** A Note of Caution ****

Please be careful not to scratch the circuit board, it could result in keyboard failure. As to lubricants for the keys, I did not use any. If you wish to, please check with someone who could tell you if it is safe to, and if it is, which brand to use. Good luck!

(The above article was originally published in the San Francisco PCjr Users Group Newsletter.)

*Wondering how to run new
Software on your PCjr?
Get the COMPATIBILITY DISK --
Disk #60, page 47.
It has compatibility info on more then 600 titles!*

Koala Pics

(Continued from page 21)

40 PRINT "Remember, touch any key when picture is loaded to continue."

50 PRINT

60 PRINT "Choose screen:" : PRINT

70 PRINT "

(1) For 4-color display and printing."

80 PRINT "

(3) For full-color display."

90 INPUT "

", SC

100 IF SC > 3 OR SC < 1 THEN BEEP: GOTO 90

110 IF SC = 2 THEN BEEP: GOTO 90

120 PRINT: INPUT "Enter the full name of the (picture) file.", FL\$

130 SCREEN SC, 0, 0: CLS: K\$ = ""

140 DEF SEG = &HB800 REM Here's the video address again

150 BLOAD FL\$, 0

REM Now the Binary Load from disk

160 K\$ = INKEY\$: IF K\$ = "" THEN GOTO 160 REM Hold for printout

170 CLS: SCREEN 0: WIDTH 80: COLOR 14, 1: CLS

180 PRINT: INPUT "Do another? (Y)es (N)o ", CH\$

190 IF CH\$ = "N" OR CH\$ = "n" THEN GOTO 210

200 GOTO 10 REM Go back to do another

210 CLS: SCREEN 0: WIDTH 80: CLS: END

One other thing, be sure to boot-up with plenty of Video Memory, at least 16k, to run the test program! Have fun...

The Ultimate Music Maker

By Bob Magnuson



My Junior has learned how to play the piano! In fact, not only the piano, but any MIDI compatible synthesizer. And when I say my Junior can play the piano, I mean it makes the piano sound as if somebody were pressing the keys. I am NOT talking about the tones that issue from the Junior's internal 3-voice sound chip.

Are you intrigued? Are you a musician with MIDI capable keyboards, and are you also a Junior owner? This article describes how I realized my dream to use my computer to perform on electronic musical keyboards.

I have owned two musical keyboards for some time now, a Roland "D-300" electronic piano, and a Casio "CZ-101" synthesizer. The Casio unit is a smallish, slim keyboard with 49 miniature keys. I purchased it though JC Penny for about \$250.00 It does not have speakers and it can run on batteries. It is very portable and can produce some very sophisticated sounds.

*With a MIDI on your PCjr
You'll have "Magic Fingers"*

The CZ will generate 4 or 8 voices separately, depending on the "patch" used. When I say voice, I refer to the number of individual tones that can sound together when pressing keys. "Patch" means the combinations of different sounds and effects built into the keyboard itself. Keep in mind that the PCjr internal sound chip produces only 3 voices at any one time.

The Roland electronic piano is a large, heavy (and expensive) keyboard with 88 piano sized keys, and MIDI capability like the Casio. It has 3 grand piano sounds, harpsichord, vibraphone, clavinet, and 2 "electronic" piano sounds. These are selected by buttons pressed by the performer, similar to selecting a "patch" on the Casio.

I have mentioned "MIDI" a number of times, but what is a "MIDI" anyway? MIDI (Musical Instrument Digital Interface) is an electronic and software based method of interconnecting musical keyboards, computers, and even guitars and other instruments, as long as the instrument has a MIDI connector built in.

Most MIDI instruments are of the "synthesizer" class, and if you are not familiar with synthesizers, listen to the phonograph record of "Switched On Bach" by Walter Carlos. My Roland and Casio both support MIDI interconnection, via a 5 pin DIN cable. The "software based" idea I mention means that, transmitted over the MIDI cable, the information is in the form of bits and bytes, as are stored

on your floppy disk. How does this all apply to the PCjr?

I unearthed an article describing the "MIDI Output Interface to a Parallel Printer Port" by D.M. Gualtieri (Computer Music Journal, Vol 10, No. 3, Fall, 1986). After reading this article describing the building of an electronic circuit to convert the data output from a parallel printer port (most of us own a printer connected to the parallel port:), I was determined to build it and see if it could actually play my keyboards, using the Junior as the "magic electronic fingers" of MIDI. Simply, I built the circuit, found a minor problem, fixed it, wrote some preliminary software to drive it, and it WORKS!!! My PCjr can play either one or both the Casio and Roland, depending on the notes I enter in my test software.

An additional article, by Gareth Loy, "Musicians Make a standard: The MIDI Phenomenon" (Computer Music Journal, Vol. 9, No. 4, Winter, 1985) has become my bible in knowing the code structure of the MIDI connection. For a brief example, the decimal numbers "144 60 64" transmitted over the MIDI connection from out of the parallel port will electronically "press" middle C on the keyboard receiving on Channel #1 (Channels are beyond the scope of this article) That note will continue to sound until a "128 60 64" series of values are transmitted.

The MIDI protocol is somewhat similar to a modem: serial transmission. The circuit to be built, therefore, is more or less just a parallel to serial converter that additionally matches the MIDI connector spec.

Why not hook up Junior's serial port, and avoid the circuit outright? The Junior serial port has a maximum transmission rate of 4,800 baud, and the MIDI transmission rate is 31,250 baud, almost 7 times as fast! Plus, the programming of the serial port is substantially more complicated than a simple "LPRINT" in the BASIC language. More on programming later.

Building the Circuit

The circuit described by Mr. Gualtieri will cost around \$50.00 depending on how much of an electronic hobbyist you are. Approximately 20 electronic components, connectors and parts make up the circuit. It is fairly complex, as you might imagine, being that it receives its information from the computer and converts it to MIDI signals. But the bottom line for me was, 1) build the circuit or 2) purchase something like an Atari 1040 computer that has a MIDI interface built in. Not deserting my Junior, I chose the first option, it being much less expensive.

There are two words of warning I must convey about this whole project. First, as presented, the circuit refused

(Continued on page 24)

Another Kind of Virus?

I just returned from the doctor who said I was in the last stages of advanced COMPUTERITIS. It's too late for me but, in hopes of helping others, here's a list of early-to-advanced symptoms. Please, if you have any of these symptoms, see your doctor today!

General Symptom	Beginning	Intermediate	Advanced
Staying up late computing	Until Midnight	Until 2:00 a.m.	Don't go to bed; doze at computer
Eating at the computer	1 meal	2 in a row	Intravenously
Seeing your children infrequently	Once a day	Once a week	At weddings and graduations
Saying "just a second" when spouse is waiting	For 5 minutes	For 2 hours	Your spouse has already left you.
Poor personal hygiene	No longer shaving on weekends	No longer bathing on weekends	EPA declared your body a toxic dump site last weekend
Gaining weight from too much sitting at the computer	10 lbs. in hips and bottom	Hips & bottom growing over chair.	Chair will have to be surgically removed

MIDI Interface

(Continued from page 23)

to work. I determined an electronic component (a capacitor) was the culprit, and removed it from the design. Second, the circuit in and of itself will do NOTHING without the correct signals issued from the printer port, and that means PROGRAMMING!!!

The programming of this project could be done in BASIC, I imagine, or almost any language. I use the "C" language because it allows for more flexibility in getting the bytes out to the parallel port. I use "Bank Street Music Writer" extensively on my Junior, this being a fine example of musical composition using standard "lines and notes" as seen in printed music. BSMW will NOT drive this MIDI project, much to my despair. I find BSMW's screen presentation excellent for writing (and performing) music. However the MIDI project I have described requires YOU to get the MIDI codes out to the parallel port, and leaves it totally in your lap how to do that with whatever (computer) keyboard input and screen presentation. My intention is to mimic Bank Street Music Writer as much as my programming skills allow, right down to the music notation of quarter notes and accidentals.

This is a very big programming task if you are interested in exploiting the MIDI capability of musical keyboards to the fullest musical extent. For comparison, I have expended about eight hours just building the hardware circuit, and have easily spent twice that long writing test software to make it go. I persevere on this point of programming because, (I have hinted at this), just getting one note on the piano to sound involves 6 pieces of data (decimal 144 60 64 128 60 64), and that does not automatically describe a musical "eighth note" or "quarter note." Duration of sounds generated is a whole other element of the MIDI "music" performance.

In summary, I am very excited by the potential of the MIDI connection of my Junior to my keyboards. I have keyed in some short song examples, and it is fascinating to see the computer play the keyboards. (the keys DON'T go down, as in a player piano). Time and resources permitting, I hope to write the software package that allows me to (easily) compose and perform music.

Musically speaking, what I can write using music notation is far more complicated than what I can physically play on the piano (sorry, music teacher in 3rd grade...). This project will help me realize my compositional talents. And the MIDI concept is a growing and diverse part of computing. Get the articles I mentioned, and think it over!

New Software Provides Total RAM Disk Control

By Craig Tregillus

EDITOR'S NOTE: For those of you who are unfamiliar with using a RAM disk, let us first say you are in for a wonderful surprise the first time you use one. All you need is enough memory on your PCjr. RAM disk use is ideal for PCjrs with one disk drive and more than 256K. Basically, RAM disk software allows you to allocate a part of your PCjr's memory to act like a disk drive. RAM drive means a drive in Random Access Memory. Once the software has set one up for you, you can use it like any other disk drive by copying files to it, running programs from it, etc. There is one BIG difference between a RAM drive and a normal disk drive -- a RAM drive is super fast! Faster than a hard drive. Your PCjr becomes a speed demon, doing disk accesses in a flash.

Craig Tregillus sent us a copy of a public domain program designed to set up a RAM drive for you and then allow you to adjust it at any time -- something most other RAM drive software can't do. We tried it out and it works like a charm, so we added it to our Software Store this month. Here is what Craig has to say about it:

The Amazing Shrinking and Expanding Ramdisk: If your Junior uses a ramdisk, and you're tired of rebooting when you switch to a new program just so you can change the ramdisk size, the program AMDISK/ADJRAM is an essential utility. It will let you increase or decrease the memory allocated to your ramdisk without rebooting. It is now on Disk #75 in the Software Store.

To use adjram, you install amdisk.dvd as a device driver by adding "device=amdisk.dvd" to your config.sys file one or more times. The first entry will create a Drive C with 64K; subsequent entries will create Drives D, E, etc. of the same size. Then, with adjram.exe on your program disks, or copied to one of the ramdrives, you can enter "adjram" at any time and get full instructions about your options to add, subtract or set minimum memory levels for each ramdisk.

The biggest advantage of adjram is that it lets you maximize ramdrive size depending on program memory requirements, and can be manipulated with CED synonyms in batch files. There's even a version for expanded memory users (above 640K). And you don't have to worry about accidentally losing important data when subtracting ramdisk memory, because adjram refuses to remove any memory until you have erased any data occupying that space. Its drawback is that it loads in low ram, which may conflict with some programs. Users of Larry Newcomb's jrconfig.dsk will need to switch to jrconfig.nrd and use the "-s" or "-s1" switch.

Here are the instructions for using adjram, provided by Gary Cramblitt, the author:

Usage:

ADJRAM drive size option

Where:

drive = memory disk drive letter, A to I

size = size of memory disk in K, 64 to 2043, in following format:

xxx = set memory disk size to xxx

+xxx = increase memory disk size by xxx

-xxx = decrease memory disk size by xxx

Fxxx = adjust size so there is xxx free space

Mxxx = ensure there is at least xxx of free space

Size will be rounded to the next highest 32K

If size is omitted, current drive size is displayed.

option= optional /E if INTEL/LOTUS/Microsoft

Expanded Memory is to be used for any expansion

Examples:

ADJRAM C: 250

will set memory disk C to 256K

ADJRAM I: +60 /E

will increase memory disk I by 64K, using expanded memory

ADJRAM C: m64

will ensure there is at least 64K free space on drive

C.

To order ADJRAM, along with information on creating and using RAM disks, select Disk #75 in the Jr Newsletter Software Store, page 47.

The Powerful FORMAT Command

The DOS FORMAT command is used to initialize a diskette to accept DOS information and files. It can be issued as a command on its own, or automatically invoked when using the DISKCOPY command.

When used on its own, it will tell you if there are defective tracks on a target diskette. This does not mean that the diskette is unusable, just that those tracks should be avoided (which the COPY *.* command will do, but DISKCOPY will not).

If you add /s after the drive specification, you will have a copy of the operating system on the target diskette, making it bootable.

The addition of /1 will format only the first side of the target diskette.

Adding /v enables you to write a volume label, to appear above the directory.

*Jr Users Groups --Write to us
about membership subscription discounts!*

Checking Your Computer Clock

By Colin Tuttle

I am constantly amazed by the great deal of useful programs there are out in the public domain. I recently found a program that will call the U.S. Naval Observatory Computer for the correct time and then sends it to your DOS clock. If you have use for the exact time, or would like to set all your clocks to the correct standard time, here is a very easy and relatively inexpensive way to do it.

You will need a Hayes or compatible modem, and basic for this to run. The modem and the computer will do the rest. The program logs onto the U.S. Naval Observatory Computer for just a few seconds, just long enough to get the time and reset your DOS clock and quickly disconnecting. Although it is a long distance call, it will be about a 30 second call.

If you have a semi-Hayes Compatible modem which doesn't recognize all of the Hayes commands, you will have to make one revision to the program. I have an Avatex 1200 and had to change line 540 to the following:

```
540 PRINT 31, ATDT12026530351
```

One of the strings in line 540 tells the modem to activate the speaker and when it sees such a command it aborts the whole dialing string. Also, this is set up to use 1200 baud, so if you are using 300 or 2400 baud you will need to change line 520. I wish I knew who the author of this program is, as it is such a simple and slick program that I would like to give him or her credit for a job well done!

```
10 KEY OFF
20 CLS
30 LOCATE 5,20:PRINT "THIS PROGRAM CALLS WASHINGTON DC 202-653-0351"
35 LOCATE 6,25:PRINT "WARNING--THIS IS A TOLL CALL!!!"
40 LOCATE 7,20:PRINT "AND UPDATES YOUR COMPUTER'S DOS CLOCK"
50 LOCATE 10,20:PRINT "CURRENT DOS TIME=":TIME$
60 LOCATE 11,20:INPUT "ENTER LOCAL HOURS (00-23):":TEMP$
70 LOCATE 13,20:PRINT "FETCHING MINUTES AND SECONDS FROM WASHINGTON DC"
80 GOSUB 500: REM COMM SUBROUTINE
90 LOCATE 15,20:PRINT "US NAVAL OBSERVATORY UNIVERSAL COORDINATED TIME=":USNO$
100 LOCATE 16,20:PRINT "UPDATED DOS LOCAL TIME =":TIME$
110 LOCATE 22,2:PRINT "PRESS THE SPACEBAR TO LEAVE THIS PROGRAM"
120 LOCATE 23,20:PRINT "OR PRESS ENTER TO CALL AGAIN."
130 G$=INKEY$
140 IF G$=CHR$(32) THEN 170
150 IF G$=CHR$(13) THEN 10
160 GOTO 130
170 SYSTEM
500 REM COMM SUBROUTINE
510 USNO$=""
520 OPEN"COM1;1200,E,7,2" AS #1:REM SET COMM PARAMETERS
540 PRINT #1,"AT EO QO V1 X4 DT12026530351";REM INIT. MODEM & CALL USNO
550 WHILE LEFT$(USNO$) "4"
560 INPUT #1, USNO$
570 WEND
580 USNO$=MID$(USNO$,11,2)+";" +MID$(USNO$,13,2)#MID$(USNO$,15,2)
590 TIME$=TEMP$+MID$(USNO$,3,6)
610 CLOSE
620 RETURN
```

(The above article was originally published in the OKC jr Orphans Chronicle.)

This May Be Your "First Choice"

By William F. Lathom

I've had occasion recently to use a program called **First Choice**. It's by the same people who brought you the **PFS** series of "integrated" software. After using a number of highly hyped programs that are "powerful" you'll never again need another piece of software, and finding otherwise, one is wary.

After a week or two with First Choice, I can say that it does approach living up to its name, particularly at a commonly discounted price of \$99. What does it do? It's a word processor, a spreadsheet, a database manager, a report generator, and a bare-bones communication program. All of this with the capability of moving the same data to the other parts of the software.

The word processor can handle documents up to 33 pages of 54 lines. It can join and print documents limited only to your disk space. It easily accepts more or less plain English embedded printer commands. It has a relatively fast editing, as the program help files and editorial material are all in memory. It boldfaces, underlines, sub and superscripts, centers and all of those good things. It finds text strings and has a spell checker you can add to to your hearts content.

*"User friendly software
does most of the basics
for home and business."*

You can merge documents and print form letters with addresses and other material from database files. You can print correctly formatted addresses on envelopes or labels, and you can send your finished copy to whatever printer or port you have or wish.

The spreadsheet is what one expects of such animals. It has a maximum of 768 columns by 1024 rows which should easily handle all but the most advanced professional needs. It adds, subtracts, multiplies and divides like all the others with the usual formulas and does averages, log, variance, NPV (net present value), lookup, if...then....else, and so on.

The database or "folder" permits designating whatever record format you require. It sorts and finds even if you can't remember exactly what you're looking for. It will do calculations like the big boys.

The report module lays out and prints the database data as per your design. These reports, like any other data, can be moved to a "clipboard" and then inserted in

the wordprocessor for further editing.

I haven't mentioned the communications module, because there isn't much to mention. It autodials, reads, downloads or uploads with Xmodem protocol only, and does an auto disconnect. It's useful in a pinch, but best get a registered copy of Procomm and have all the bells and whistles.

So what does all this mean? Well, one is continually asked what use a computer is for the home or small business. Well, with this program you can supplant the typewriter, the dictionary, the calculator, the bookkeeping journal, and the address files. And since it is menu driven with nearly endless help files at your command, you will not spend excessive time learning how to use it.

OK, what the mags always leave out -- what doesn't it do? The spreadsheet doesn't sort. No graphs (Editor's note: the latest version does do graphs). You can't program the database. You can't format and print dual column letter or document files. You can't draw. You can't easily change line spacing and pitch within a document. You can't write and edit more than one document at a time. It's pretty slow when it's looking for data if you don't have a hard disk. However, that's true for a lot of other higher priced programs. You can't go to DOS, run something else, and come back (though you can get directories and delete files within the program).

In short, as its name suggests, this program should be given serious consideration as a First Choice. It's a "user friendly" menu driven program that does most of the basics, for the home and business.

PFS: First Choice is manufactured by the Software Publishing Company, 1901 Landings Drive, Mountain View, CA 94039-8910. The suggested retail price is \$149.

*(The above article was originally published in
the Diablo Valley PC Users Group Newsletter.)*

\$29 PCjr Auto Phone Dialer

We wouldn't recommend the PCjr internal modem for anything other than a handy phone dialer, but as such, it works well -- and for \$29 it might be worth it.

It might be especially handy if you are using a relatively recent unprotected version of Sidekick, which supports the PCjr internal modem. Other communications programs will work with the 300 baud beauty, but it's not called the "infernal modem" for nothing. Check ads in this issue for this possible bargain.

Understanding TSR Programs

By Ray Stroud

After we have become acquainted with our computers and have used a few application programs we begin trying to enhance what we have. One way of doing this is by adding some Terminate and Stay Resident (TSRs) programs to our autoexec batch file.

For me, the first such program was one to change the color of my screen from white on black to white on blue. To me, this seemed like a great leap forward. At the present time, I have 15 TSRs in my autoexec.bat file and all of them are used.

What are TSRs? Terminate and Stay Resident programs are programs (usually fairly short) that are loaded after command.com and reside in memory. These programs just sit in memory waiting to be called. Application programs can be run (they are loaded) on top of the TSRs, but if a user needs to use one of the memory resident programs, he or she taps a hotkey (generally Alt, Shift or Ctrl in a combination with an alpha key) to call up the program.

What kind of programs can be found among TSRs? Almost anything useful—calendars, clocks, ASCII charts, notepads, programmers tools, keyboard cursor controls, communications, screen controllers, thesaurus, drawing programs and others.

DOS originally provided one memory resident program, MODE. With the introduction of DOS 2.1, PRINT was added. However, DOS was not designed to support TSRs as we know them today because the original DOS was designed for computers with a memory of 64K which was considered a lot of memory in 1980.

In the technical manual of DOS 1.1 was a statement that caught the attention of some smart programmers, "terminate but stay resident." This vector is used by programs that are to remain resident when COMMAND regains control. After initializing itself, the program must set DX to its last address plus one in the segment in which it is executing (then execute an INT 27h).

COMMAND then considers the program as an extension of DOS, so the program is not overlaid when other programs are executed. This concept is very useful for loading programs, such as user-written interrupt handlers that must remain resident.

Technical Translation

Here is a short explanation of the above paragraph. Buried deep in DOS is the "kernel" of DOS. The kernel is the real controller and consists of dozens of commands that are executed through assembly language.

All languages, such as BASIC, C, Pascal, etc. are translated into assembly language before they communicate with DOS. Many programs, especially the fast ones, are written in assembly language. The DX referred to

above is a "register" in DOS where commands are loads. The primary function of the DX register is to communicate with and/or control certain input-output operations. All of the assembly language is written in lines and can be found by its "address" plus the "offset." The offset is simply part of the address. In a way this is similar to the line numbering of BASIC or EDLIN.

"Interrupts" (Int) are the gateways to the "functions" which actually issue the commands. Int 27h (the h is the abbreviation for hexadecimal) is DOS's specific program for Terminate and Stay Resident. This short discourse should make it clear to everyone just what Microsoft did to create this very useful tool when it designed DOS.

One further comment about interrupts. Frequently in articles about the PC and/or programming, you will see a reference to an interrupt. All major actions are accessed by interrupts. Here are a few of them: 09h, keyboard; 10h, video driver; 13h, diskette driver; 17h, printer driver, etc. There are 19 interrupts which can contain from one to 68 functions.

The first commercial success of a TSR was Borland's Sidekick which is a desktop utility that contains a word processor, phone directory, autodialer, calendar, calculator, and ASCII table. Other programmers quickly followed the lead and today, there are all kinds of TSRs, some for sale, others that are free.

If you have not yet added any TSRs to your autoexec.bat file, you should get one or two and try them. TSRs are one more level to attain in order to become a power user.

BASIC Patch Needs Revision To Work On DOS 3 and Up

If you've been trying to run BASICA without a cartridge using DOS versions above 2.1, don't despair. The patches on Disks #40 and #56 which allow you to run BASIC without having Cartridge BASIC need to be revised slightly in order to work with DOS 3.0 and higher.

Apparently the higher versions of DOS operate BASIC from a different address, so the patch has to be modified to go to that address. Craig Tregillus is working on these modifications for us and we'll be reporting on the results in a future issue.

Use your PCjr to learn a Japanese Art form!
ORIGAMI, Disk #39 on page 47, will take you step by step through the art of Japanese paper folding. It demonstrates how to make amazing animals and other objects right on your screen.

Color Programming

(Continued from page 2)

above numbers with the COLOR statement:

```
COLOR f,b
```

where f is a number from 0 to 15 (for foreground) and b is a number from 0 to 7 (for background).

The normal screen--white letters on a black background--can be obtained with the command

```
COLOR 7,0
```

where the 7 indicates the white foreground and the 0 indicates the black background.

Try this program so that you can see the colors you can use:

```
1 REM SCREEN 0 COLORS
2 SCREEN 0,1:WIDTH 40
5 A$="12345678901234567890"
10 FOR Y=0 TO 7
20 FOR X=0 TO 15
30 COLOR X,Y
40 PRINT A$;" FORE=" ;X;" BACK=" ;Y
50 FOR Z=1 TO 250:NEXT Z
60 NEXT X
70 NEXT Y
80 COLOR 7,0
RUN
```

In the above program, line 2 sets screen 0 with the color on (the 1 following SCREEN 0 does that).

The WIDTH statement sets 40 characters per line, which is all you can get with the "ENTRY" jr. However, the "Enhanced" jr can also print 20 and 80 characters per line (in addition to 40). We set the width at 40 to best show the colors.

Line 5 simply defines a "word" for the computer to print. So that you can see the different foreground colors with each of the background colors. Lines 10 and 20 allow for all the possible combinations of colors in line 30.

Line 40 prints the "word" defined in line 5 and also prints the numbers for the foreground and background colors. Line 50 creates a short pause--it counts to 250 before going on to the next line.

Type RUN and press <ENTER>.

You are seeing the "word" in line 5 printed on the screen. The first set of sixteen words is printed with black backgrounds for each character printed. You can see that the "BACK" number (for "background") is 0 and that each of the "FORE" numbers (for "foreground") changes the color of the characters. As you watch the screen scroll, there appears to be at least one blank line for each set of background colors. Actually, it's not a blank line; in each of those cases, the foreground color is the same as the background color--thus, the characters appear to be invisible.

Run the program as many times as you would like; but, each time, note the background and foreground colors and their numbers. And, although it appears that the whole background is one color, remember that "background" refers only to the little box for each individual character and does not refer to the whole screen. The whole screen is made up of individual characters, each of which--in this program--happens to have the same background color.

The following program will show you the background colors that are available for screen 0:

```
1 REM BKGRND.PGM
2 KEY OFF
5 SCREEN 0,1:WIDTH 40
30 FOR X=0 TO 7
35 FOR Y=0 TO 15
37 LOCATE 25,1:PRINT
40 COLOR X,Y
42 FOR Z=1 TO 200:NEXT Z
45 NEXT Y
50 NEXT X
60 COLOR 7,0
RUN
```

After running the program, you can change line 40 to be

```
40 COLOR Y,X
```

to see broader bands of background colors.

For either of the two programs given so far, you can use <FN+BREAK> to stop the scrolling of the screen. When you do, you will (most of the time) see the "Break in X" message, where X is the line number in which the break occurred. If you do not see that break message--and the screen stops scrolling--then your foreground and background colors are the same. That means that the break message is there; it's simply written in the same color as its background.

Whether or not you see the break message, the odds are that you have stopped the program at a point where the colors are not the normal white-on-black of the text screen. If you would like to return to that normal color combination, you can key in the following direct command:

```
COLOR 7,0
```

which sets the foreground to white (color 7) and the background to black (color 0). To convert the entire screen, use CLS and <ENTER>.

Besides screen 0, you may use at least two graphics screens. Unlike most other computers, your jr allows you to write on your graphics screens in addition to drawing,

(Continued on page 30)

Color Programming

(Continued from page 29)

coloring, scaling, and lots of other graphics-related things. Screen 1 is the medium-resolution graphics screen on which you may display up to four colors. Screen 1 allows you to set a background color and then to select a group of three colors that can be used with that background. Those groups of three colors are called PALETES--like the boards a painter uses to mix colors--and, for screen 1, you can select one of two available palettes.

Each of the palettes provides three colors for use with graphics. For text on screen 1, you will be able to see only the third color of each palette, described below:

PALETTE PALETTE COLOR 0 1
0 background background
1 GREEN CYAN
2 RED MAGENTA
3 BROWN WHITE

The colors from these palettes may be shown only in drawing certain graphics figures--and only in drawing those figures on screen 1.

There are several differences between screen 0 and screen 1. One of the most important is that the "color-on" commands are opposites. To turn on the color for screen 0, you can enter the direct command

SCREEN 0,1

and the 1 turns on the color for that screen. However, for screen 1, the direct command is

SCREEN 1,0

where the 0 turns on the color for that screen.

That's one difference between the screens; it is not the only difference. Probably the most important difference is that the COLOR command, in screen 1, controls the color for everything printed on the screen, included everything that was printed prior to the COLOR command.

Try this command:

SCREEN 1,0

and press <ENTER>. Then try this, followed by <ENTER>:

COLOR 1

The whole background turned blue and the lettering remained white. That can be compared to this:

SCREEN 0,1

(which takes us back to screen 0 and turns on the color). Then type in

COLOR 1

and press <ENTER>. Only the "Ok" turns blue. That's a little different from what happened with screen 1.

While we have screen 0 up, let's try this:

COLOR 4, 14

The first thing you noticed was that the command was

printed in blue. Then, when you pressed <ENTER>, the lettering turned to red on yellow (colors 4 and 14, respectively).

Now, let's go back to screen 1 (with color turned on):

SCREEN 1,0

and, then, let's try this:

COLOR 4,14

You will immediately notice that the screen becomes red and the lettering looks a little brown. Try this:

COLOR 4,9

The screen is still red but the lettering is now white.

The table that lists the palette colors indicates that color number 3 in each palette is one of the two colors that we just saw for our lettering. So, on screen 1, we can have a background color (which can be from 0 to 15) and one color for the lettering (which is color number 3 from one of the palettes).

There are only two palettes, numbered 0 and 1; yet, we used the number 14 and 9 in our examples above. Your jr will convert all of our odd numbers to palette 1 and all of our even numbers to palette 0 so that we get fewer error codes in some of the things we do.

Another difference between screen 0 and screen 1 is the "border"--the area around the part of the screen on which our writing is put as we type. On screen 1, the border is automatically made the same color as is the background; however, on screen 0, the border may be different from the background and from the text. Try this:

SCREEN 0,1

and, then, enter

COLOR 1,4,6

and

CLS

You can see that the main background area of the screen is red (color 4), the border is brown (color 6), and the letters "Ok" are blue (color 1)--and those letters may be difficult to read (because of the contrast in the generated colors).

As a summary of the differences between screen 0 and screen 1, the following chart indicates the features and formats for each:

FEATURE	SCREEN 0	SCREEN 1
COLOR ON	SCREEN 0,1	SCREEN 1,0
COLOR OFF	SCREEN 0,0	SCREEN 1,1
SET COLORS	COLOR f,bk,bd	color bk,p

NUMBER OF COLORS:

FOREGROUND	16	3
BACKGROUND	8	16
BORDER	16	-
PALETES	0	2
CURSOR	FLASHING LINE	SOLID BLOCK

COLOR ON SCREEN
FOR TEXT (MAX.) 16 2

COLOR ON SCREEN
FOR GRAPHICS (MAX.) N/A 4

NOTES: f=foreground, bk=background, bd=border,
p=palette

(1) each palette has 3 colors accessible by graphics
commands,

(2) for screen 0, try f=16 to 31 (it's a surprise).

* * * * *

HERE'S A LITTLE SOMETHING TO TRY BEFORE GOING ON

This program will show you the colors available on
both palettes for screen 1. We will discuss this program on
our graphics feature.

```
5 REM SCREEN 1 PALETTES
10 P=0
15 CLS
20 SCREEN 1,0
25 COLOR 1,0
30 CIRCLE (160,90),100,1,-1,-3.2
35 CIRCLE (160,90),100,1,-3.2,-5.3
40 CIRCLE (160,90),100,1,-5.3,-1
45 PAINT (170,100),1,1
50 LOCATE 12,28:PRINT "1"
55 PAINT (160,80),2,1
60 LOCATE 7,17:PRINT "2"
65 PAINT (160,110),3,1
70 LOCATE 17,17:PRINT "3"
75 LOCATE 23,1:PRINT "Press <SPACE BAR> for other
   palette."
80 P$=INKEY$: IF P$<>" " THEN 80
85 S=S+1
90 COLOR,S
95 IF S/2=INT(S/2) THEN P=0 ELSE P=1
100 LOCATE 1,1: PRINT "PALETTE ";P
105 GOTO 80
RUN
```

If you'd like to experiment with the background colors,
try changing the first number in line 25. It can range from 0
to 15. Then, start changing all the numbers (but do them
one at a time, so you can see what happens).

To stop the program, use <FN+BREAK>.

By using the program above, you have been able to
see that screen 1 allows only four colors on the screen at
one time: one background color and three palette colors.
You have also seen, as you've pressed the <SPACE
BAR>, that the lettering (the text) has changed back-and-

forth from white to brown (which are the respective palette
colors numbered 3). For screen 1, those are the limits.

For screen 2, the number of colors is even more lim-
ited. Screen 2 is the high-resolution (hi-res) graphics
screen and, in order to get hi-res graphics, some of the
colors had to be sacrificed. On screen 2, you are limited to
black (color 0) and white (color 1). Screen 2 also provides
80 columns for text, which may mean that you will have
some difficulty in reading the text if you are using a televi-
sion screen instead of a monitor.

Screen 3 is the low-resolution screen. It can be ac-
cessed only if you are using "cartridge" BASIC. In lo-res,
you can print only twenty characters per line, but you can
print those characters in any combination of foreground
and background colors (expect that the foreground can-
not be 0). If you would like to see all of the possible com-
binations of colors for screen 3 (remember! you must
have "cartridge" BASIC), then you can key in the following
program:

```
1 REM SCREEN 3 COLOR 5 SCREEN 3
7 KEY OFF
10 FOR X=0 TO 15
30 FOR Y=1 TO 15
35 CLS
45 COLOR Y,X
48 LOCATE 25,1:PRINT "PRESS <SPACE BAR>": LO-
   CATE 12,2
49 IF X=Y THEN COLOR 15,X: PRINT "SAME BKGRD &
   FRGRND"; TAB (10);X: GOTO 60
50 PRINT "BKGRND: ";X
55 PRINT "FRGRND: ";Y
60 K$=INKEY$:IF K$<>" " THEN GOTO 75
65 NEXT Y
67 IF X=15 AND Y=15 THEN GOTO 75
70 NEXT X
75 COLOR 1,15: PRINT "THE END"
RUN
```

As you run this program, you will see 240 different
combinations (although you won't really see all of those
because, fifteen times, the foreground and the background
colors will be the same).

Screen 4 is similar to screen 1; both are med-res
screens with four colors available for display at one time.
You can experiment with the formats described for screen
4 in the "cartridge" BASIC manual (since screen 4 can be
displayed only if you are using "cartridge" BASIC).

Screen 5 is another med-res screen; however, it re-
quires not only "cartridge" BASIC but also 128K RAM. The
additional RAM is necessary so that screen 5 can display
16 colors (rather than the four allowed for screen 1 and

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How To Avoid Costly Printer Repairs

By Mike Slay

Printers break more often than any other computer-related hardware (with the possible exception of some brands of hard disks). Fortunately, most printer failures can be fixed without a trip to the shop. The key is understanding what the printer is trying to do and then imagining what is stopping it. I can't give you step by step procedures for every possible fix, but I can tell you how to look for problems.

Most problems will be due to either the cable or the ribbon. The fixes for both of these are generally inexpensive. Another common problem is incorrectly loaded paper, especially with Epsoms, and the fix for this is free. There are even a few tricks and adjustments you can try if the problem is more serious. All told, you can probably fix about 90% of the things that go wrong with printers.

Cable Causes

I never cease to be amazed at the things that can be caused by a bad or loose cable. For example, I have seen a loose cable cause a printer to not always advance the paper while still printing all characters correctly. (This is theoretically ridiculous.) In any case, if your printer is misbehaving, check your cable connection.

Even if the cable is securely connected, it may still be the problem. Frequently, cables are smashed up against the wall behind a PC until one of the wires breaks. If your printer is behaving erratically, borrow a cable from one that works and see if that fixes it. If it does, buy a new cable. (And try not to pay more than \$15-\$25 for it; cable prices vary wildly from vendor to vendor.)

Ribbon Problems

Ribbon problems are easy to spot, because they affect print quality and nothing else. The most common ribbon problem is some kind of jam that keeps the ribbon from moving. When that happens, the print fades quickly to braille. The easiest fix is to simply replace the ribbon. However, it is possible to unstick some ribbons; generally, the key is to pop the ribbon cartridge open without destroying it. However, if the print head has worn a hole through the ribbon, trash it.

There are two specific ribbon fixes I'd like to mention. First DIS Prism ribbons can be easily destroyed by being placed in the printer incorrectly. When installing a ribbon, the end of the case should slide off the little red button so that it pops up in short steps. It should make a "Brup" sound, not a single click. If its installed wrong, the gears that pull the ribbon around its loop will not work right, shredding the ribbon. If you watch to see if the ribbon is moving properly, you can prevent serious damage. If it isn't feeding smoothly, stop the printer immediately and reinstall the ribbon. Keep trying until it sounds right.

Second, NEC SpinWriter "Multi-strike" ribbons have

some idiosyncrasies. Besides jamming a lot, they sometimes print light in spots. The fix is to lubricate the rubber belt on the cartridge (that's right, lubricate). The problem is that the drive belt must slip some to allow the take-up reel to wind the ribbon correctly. If it can't slip the whole system binds for a few characters until the pressure builds up enough to pop everything free. If your NEC prints about 20 light words per page of text, this is your problem. Just take the rubber belt off, smear a little soap on it, and reinstall it. (Use very little soap; the belt must still have some traction to turn the take-up reel.)

Paper Problems

Loading paper into a printer is easy if you are familiar with that particular printer but loading paper into an unfamiliar one can be a mess. Often, someone will load the paper into the wrong place, which causes the "paper out" light to stay on. The key is to find the little switch that senses the paper (it feels like a finger). Without paper, the switch sticks through a hole and makes a connection that turns on the light. The paper must be inserted so that it goes between the switch and the hole, holding the switch back and keeping the "paper out" light off. Epson ships its printers with a piece of paper in this spot so the switch, which is fragile, will not bounce excessively during shipment. You should do likewise if you have to move your printer.

Other Tricks

Another common problem is a dot matrix printer missing some dots. This usually means that the print head needs replacing. However, you might try moving the head closer to the paper (this is also a way to darken the print). I've found this often fixes IDS Prisms. If all else fails, try taking the printer apart and cleaning it. Also, reseal any integrated circuits that are plugged in, and loosen any plug-in chips and then push them back in. Then put the printer back together. I have personally seen this work on an Epson RX-80 that was acting very strangely.

Color Programming

(Continued from page 31)

screen 4, the other med-res screens).

Likewise, screen 6 requires "cartridge" BASIC and 128K RAM. It is a hi-res screen that allows you to use four colors (instead of only the two offered by screen 2).

Screen 5 and screen 6 use a 32K page size (all the other screens -- except 0 -- use only 16K for displays. Because there is the need for the extra display memory, you must use

CLEAR,,,32768

followed by <ENTER> before using either screen 5 or screen 6.

Where does that Garbage Come From?

By Robert K. Rickets

Many people have left messages on my bulletin board asking me why there are so many 'garbage' characters on their screens and why file transfers are riddled with errors. These garbage characters are really line noise and can be introduced in many different places.

One of the more common and familiar introduction points of line noise is in the telephone company's system, and even here there are several ways noise is introduced. A signal is routed through multiple stations before it eventually makes it to the other end, and some of these stations are not exactly new. Older areas may have older, less sophisticated equipment that is more apt to be affected by ambient (surrounding) noise. This is one reason some

Don't Blame Your Modem for Line Noise

people continue to have noise problems even after hanging up and calling back multiple times. Also, a given physical connection at one of these junctions may not be up to snuff. If your particular bout of line noise is solved by hanging up and calling back, then it is probable that you were previously connected through an intermittent or "dirty" connection. Some of these trunk lines (large, multi-caller "pipes") may pass through an area that has a lot of ambient RFI (Radio Frequency Interference) present, although this is not usually the case.

Another common noise introduction point is in your home. Most residential homes have televisions, radios, microwave ovens, VCRs, and if you are reading this, a microcomputer. All these devices radiate radio waves that can (and often do) get into the phone lines and cause noise. Electric motors and mechanical dimmer controls can introduce noise into the electrical wiring in your house and cause problems. If your line noise problem does not go away after repeated hanging up and calling back, then you may be suffering from one of these household problems. If you are suffering from this problem, you can take steps to eliminate it. First of all, turn off everything except the fridge (IF it IS the fridge, then you are out of luck. Can't live with your ice box unplugged.), and see if the noise persists. If it goes away, then start turning things back on, checking the computer each time until you see the noise start up again. It may be that a single device is not bugging you, but several devices are plotting together to annoy you. This eliminating tournament may take awhile.

Another area to check is your wiring at the computer.

Use noise suppressors on your connections to both the PC and the modem (if external). Use a shielded RS-232 cable to connect your modem to the PC. Ribbon cables (especially long runs of it) are great antennas and will cause problems. Reroute the RS-232 cable so it does not run next to the PC power supply or any other transformer. Many "clone" monitors do not have internal metal shielding and can radiate lots of noise. Make sure the cable does not run near the monitor. If you are particularly adventurous, you can line the interior of the monitor with foil and ground it with a ribbon grounding strap. Be very careful if you attempt this. Monitors generate thousands of volts of electricity and can knock you clear into next week. You'd best not attempt this unless you are experienced in electronics. If you live near a freeway or highway, then interference from CB radios can present a problem. Many interstate truckers have 100+ watts of power (illegally) on their CB rigs and frequently have sloppy amplifiers which can emit spurious radiation all over the radio spectrum.

Now a little discussion about the modem itself. First of all, I would like to clarify a commonly misused term--BAUD. The term "Baud" is actually a man's name--J.M.D. Baudot (pronounced Baw-doe), a French telegraphy expert. 1200 and 2400 Baud is not the same as 1200 and 2400 BPS (Bits Per Second). The usage of "Baud" to describe line speed in terms of data throughput is incorrect. 1200 and 2400 BPS modems both operate at 600 BAUD. Basically, without getting too technical, a Baud is a "blip of information, 1200 BPS modems use four states per blip (or baud) and 2400 BPS modems use 16 states per blip." If you want more information on what Baud and BPS mean, and a full explanation of how data is actually represented and transferred by the modem, please refer to PC Magazine, Volume 6, Number 9 (May 12, 1987).

Modems operating at 2400 BPS are much less tolerant of line noise than are modems operating at 1200. Conversely, modems capable of 2400 BPS operate better at 1200 BPS than do 1200 BPS only modems. If you are being hopelessly attacked by noise at 2400 BPS, try calling back at 1200 BPS. It's very possible that the noise will be greatly reduced or disappear altogether. I know you didn't buy a 2400 modem just to retard it to 1200 BPS.

The brand of the modem plays a part in its immunity to line noise. Some modems can digest more noise (lower signal to noise ratio) than others. PC Magazine (the same issue mentioned above) ran a test on 87 different modems. You might check the results to see how your modem ranks. Most 2400 BPS modems operating at 1200 BPS have approximately 8 to -109 db error threshold, while the same modem has about -16 to -20 db threshold operating at 2400 BPS. For this reason, line quality is much more critical at 2400 BPS operation.

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Line Noise Sources

(Continued from page 33)

Additionally, a friend of mine who runs a bulletin board from the office has been plagued with line noise problems at 2400 BPS but very little noise at 1200 BPS. The culprit is the office's centralized telephone system. Many office buildings have a given number of trunks that actually enter the building while there may be many, many more extensions within the building. These type of telephone systems have their own controllers and line assignment devices and are frequently not as high in quality as a hard wired Ma Bell line. The acceptable signal to noise ratio in some of these interoffice phone controllers is lower than necessary for reliable 2400 BPS operation, but not too low for 1200 BPS.

If you get transmission errors while downloading or uploading a file, don't fret it. The Xmodem protocol (or whatever protocol you use) incorporates an error checking/correction mechanism that automatically detects and corrects any errors that may occur during transmission. The very fact that Xmodem reported the error in the first place means that it caught it and corrected it. The only errors you have to worry about are the ones that Xmodem does not report. Any reported error has already been corrected. Xmodem, especially the CRC flavored one, is a very reliable file transfer protocol. Even if you get 100 errors during transmission, chances are still pretty slim that the file got corrupted. Occasionally, a file will be corrupted after transfer, but many times this may be due to a bad arcing of the file or perhaps a disk error that may have occurred sometime during the file's past.

Avoid Fragmented Files

If you use the same diskette often, saving and deleting many files, chances are those files are stored in bits and pieces all over the diskette. This is because DOS saves files beginning with the first empty sector it finds. The result of extreme fragmentation can be slower disk access times and, possibly, the loss of a file.

In order to avoid this problem, it's a good idea now and then to copy the files on your much used diskette to a new one, using the *.* command, which will put the files together on the new diskette.

Do you have any tips or interesting jr experiences you'd like to share with fellow jr owners? If so, send them to **Jr Newsletter**, Box 163, Southbury, CT 06488.

A Tip On Chip Removal

We do not recommend trying to remove a soldered chip from your PCjr unless you are an expert at doing so. Too many PCjr users have ruined their motherboards trying to remove a soldered CPU.

But, if you are determined to try it, don't add to the difficulty by trying to salvage the chip you are removing. Get yourself a pair of good diagonal wire cutters designed to remove chips. Radio Shack and other electronic suppliers have them. Then cut the chip out and proceed to clear the sockets out with a good soldering iron.

About five percent of all PCjrs have soldered rather than socketed chips. The jr Hotshot memory expansion unit, the V20 chip, and the new Speedup Board from PC Enterprises are all installed in place of the 8088 chip. This is easy when your chips are socketed. But owners of PCjrs with soldered chips have tried to unsolder their 8088s, which have 40 wire legs, and wiped out their motherboards.

This is really a job for someone with experience anyway. So if you find yourself with one of the few soldered PCjrs and you want to unsolder your 8088, you will probably be better off if you take it to someone who knows how to do these things right.

If you want to know whether your PCjr has socketed or soldered chips, take the top off and look closely at the chip directly behind the infra red sensor. If that chip is soldered, then your 8088 is soldered, too. as the segment is set in line 20.

Facts About PCjr's Video System

Here is the way the IBM Technical Reference Manual describes the PCjr Video Color/Graphics Subsystem:

"The video subsystem is designed so that the IBM Color Display, composite monitors, and a home television set can be attached. It is capable of operating in black-and-white or color. It provides three video ports: a composite-video, a direct-drive, and a connector for an RF modulator to be used with home televisions. In addition, it contains a light pen interface.

"Note: The IBM Personal Computer Monochrome Display cannot be used with the PCjr system.

"Note: An IBM Connector for Television option must be obtained to attach to a home TV."

Here's How a Modem Works

By Dick Carricato

A few years ago a discussion of telephone modems for personal computers would have required only a few paragraphs. There was really only one kind, a 300 baud, acoustically coupled device that cost about three hundred dollars -- when you could buy one. But those days are past.

Now most modems are directly coupled to the phone lines using standard modular plugs, and the speed has been increased to 1200 and 2400 bps. Further, the cost of a 1200 bps modem has dropped from over six hundred dollars to just under one hundred dollars.

The two most popular types of modem today are the 300 bps and 1200 bps "Smart Modems," however, the 2400 bps device is becoming more popular all the time. We live in a world of "faster is better," but the faster the data rate, the more susceptible it is to errors.

A 0 to 300 baud modem provides a communication path between a terminal and a computer. The terminal modem sends its data using the frequencies 1270 Hz for "Mark" and 1070 Hz for "Space," while listening for the

*"A smart modem is always
in the command or on-line State."*

computer at 2025 and 2225 Hz. This is known as the "Originate Mode." The computer sends its data on the frequencies 2225 Hz for "Mark" and 2025 Hz for "Space," while listening on 1270 and 1070 Hz. This is known as the "Answer Mode." This entire process is a relatively simple application of a technique known as "Frequency Shift Keying." Simple electrical filters are used to separate the two frequency bands, and it all fits easily within the bandwidth capabilities of the telephone transmission system.

A bandwidth of about 1.5 times the baud rate is required to send data in one direction over the phone lines. For two-way transmission of 300 baud data about one half of the capability of the standard phone line is needed. If the baud rate were increased to 600, almost the entire capability of the line would be used. At 1200 baud, there would be little chance of error-free transmission. (It is possible over specially conditioned--and paid for--lines.)

In order to increase the speed to 1200 bps, entirely new techniques had to be employed. The system that was developed used 600 baud, two bits per baud, Phase Shift Keying. It transmits synchronous data over the telephone lines, which requires that the modem convert the terminal's asynchronous data into synchronous data prior to transmission. This system is defined by Bell specification 212A,

which describes a dual modem capable of operating at either 1200 bps, using Phase Shift Keying, or 0 to 300 bps, using Frequency Shift Keying, like the 1Q3 type modem.

Another major departure from the 300 baud system is that all data sent by the 1200 bps system is scrambled, and then unscrambled by the receiving modem. Because the transmission is synchronous, timing information must be extracted from the data. This is easiest to accomplish when the data bits are random, so a randomizing algorithm (scrambler) is applied to the data bits before transmission. Of course, this scrambling also increases the effect of errors.

In the "originate mode," data is sent by Phase Shift Keying (modulating) a 1200 Hz frequency, and data is received by Phase Detecting (demodulating) a 2400 Hz frequency. The "answer mode" sends on the 2400 Hz frequency and listens to the 1200 Hz frequency. Of course, as we have all heard many times, MODEM stands for modulator-demodulator, the two original functions performed by the modems.

What does all this mean to the user? Really only two things that I can think of: 1) The 1200 bps modem goes four times as fast as a 300 bps modem with more susceptibility to noise. But it can't be too bad or nobody would be using it. 2) If you listen to a pair of 300 bps modems on the phone, it sounds possible for the modems to detect the differences in tones that you hear. When you listen to the rasping hissing sounds from a pair of 1200 bps modems, you are quite sure that no intelligence will ever be extracted from whatever is going on.

Smart Modem's Talent

The outstanding feature of a Smart Modem is its ability to communicate with its operating software using the same communications channel as its data. It accepts and responds to commands, and returns status information. This was first accomplished about 1980 by Bizcomp, and then expanded and standardized by Hayes. Today, virtually all modems are Hayes compatible, Bell 212A compatible, smart modems. Some manufacturers have gone beyond Hayes in the functions performed by their modems, but they still maintain compatibility with Hayes.

It would require about twenty pages to fully describe the Hayes command set. Since this is usually covered in the user's manual included with the modems, we won't attempt it here. What we will do is discuss the kinds of things that can be done with the commands and responses, and try to become familiar with some of the more common commands.

The smart modem is always in one of two states, the "command state" or the "on-line state." At power-on, the modem is reset to the command state. It sits there waiting to be told what to do. It switches to the on-line state as a

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How Modems Work

(Continued from page 35)

result of either answering a call when in answer mode, or by originating a call (dialing a number and detecting a carrier) when in the originate mode. Although the important task of sending and receiving data is done in the on-line state, our concern here is mainly with the command state.

(AT) All Commands to the modem begin with AT, attention, and end with a carriage return (cr). The command AT alone is valid and gets a response of OK from the modem. Really, if you walk up to a terminal connected to a smart modem, and it is not on-line with another modem, and you type AT(cr), it will flash back on the screen "OK". The modem actually uses the A and the T to determine the mode of operation it should be in. The baud rate of the sending equipment is determined from the timing of the bits in the A of AT. The word length and parity are determined from the T. All commands must be in uppercase.

(A/) An exception to the rule that all commands begin with AT is the command A/ (no carriage return) which repeats the last command. The last command could have been a simple AT, a twenty-five digit phone number, or up to forty characters of other commands. The last command is stored in a forty character buffer in a Hayes modem. Some other manufacturers have increased the size of the buffer.

(D,T,P) From now on, when we talk about commands, it should be understood that there is always an AT at the beginning. Multiple commands can follow the AT, but they should be limited to 40 characters and end with a carriage return. D puts the modem into originate mode ready to dial a call. T and P stand for tone and pulse mode dialing. The command ATDT 12345 will dial 12345 using touch tones, and ATDP 12345 will pulse dial 12345. ATD by itself will take the phone off-hook and, as in each of the other cases above, the modem will listen for a carrier from an answer modem. If one is heard within a reasonable time, the modem goes into originate mode. If one is not heard, the modem responds with "NO CARRIER." The Dialing command, if used, must be the last command sent. Spaces don't count in the forty character limit. Other punctuation does count, and some punctuation marks are used for commands. Check your documentation before separating area codes with commas or semicolons.

(,) By default, each comma that is sent causes the modem to pause for two seconds. But the pause time for each coma is also programmable within the modem.

(E,Q) The E command determines whether commands are echoes back from the modem or not, while Q determines whether result codes are echoed back or not. Result codes are the responses that the modem returns such as OK< RING, NO CARRIER, CONNECT, and so on. E0 turns off command echoes while !0 turns on result codes. (Who said we needed consistency in this world?) E1 turns the command echoes back on and Q1 turns the result codes off. At least it is consistently inconsistent.

(M) The M command controls the speaker in the modem. M0 shuts the speaker off, M1 allows the speaker to be on until carrier detect and then shuts it off, and M2 turns the speaker on continuously. Unless you have nerves of steel, I suggest M2 only for short test periods.

(R) Most dialing is done in the originate mode. If it is ever necessary to dial in the answer mode, put R at the end of the number. This puts the modem into the answer mode of modulation and demodulation, but leaves the phone handling in the originate mode. That is, the modem will dial normally, but instead of waiting for an answer tone, it will generate one. If there is an originate modem at the other end of the line, communications will be established.

In addition to these commands, there are many others that allow the programming of time delays and defaults for special characters. Some of the time delays include wait time for dial tone, wait time for carrier detect, pause time for the comma command, delay time between loss carrier and hang up, and durations of spacing of touch-tones. The default character set includes the escape character, the character recognized as a carriage return, character recognized as line fee, and back-space character.

To use what we have been discussing here, just put any communications software into terminal mode and type "AT(cr)." If you have a smart modem connected, and the software is talking to the correct serial port, the modem will respond with "OK." With the phone line connected or disconnected you can command it to dial numbers, listen to them being sent and watch the various return codes come to the screen. Again, you can't hurt anything, so play until you really understand what is going on.

(The above article was originally published in the UCLA PC Users Group Newsletter.)

Now's the time to do your Family Tree!

All the help you'll need is on FAMILY HISTORY (Disk #33). See the Software Store for a full description of its features.

Helpful Tips for Using Lotus 1-2-3

By E. Michael Lundsford

1. Single Cell Recalculation.

Do you have a large spreadsheet, set for manual recalculation, that takes forever to calculate using <F9 CALC>? If so, you may be interested in a little trick to recalc a single cell. Simply press <F2 EDIT> <CR> at the cell you want to recalculate. Take note, however, this only works in cases where the cell is not dependent on serial calculations. How does it work? Hitting <F2 EDIT> <CR> is like entering the cell's formula for the first time. So in a sense, you're not recalculating, but calculating that cell for the first time.

2. Changing a Formula to a Value

Perhaps you've had this situation: you have a cell with a formula in it, it gives you the value you want, but now you want to "permatize" the value so that it's not subject to later changes of the spreadsheet. It's simple: just put your cursor on the cell in question and press <F2 EDIT>, <F9 CALC>, <CR>. The cell will change from a formula to just a straight value. This tip can also be used to change the @TODAY or @NOW cell you may have entered on your spreadsheet (and which will update itself automatically tomorrow, whether you want it or not) to "permatize" it into an unchanging record of today's date on the spreadsheet.

3. GOTO Another Part of the Spreadsheet and Return

This has happened to everyone using an electric spreadsheet: you want to "visit" another part of the spreadsheet, just to look at a number of a formula. After several pagedowns, tab rights, down right down, you're finally there. But then you have to go through the same exercise in reverse to return to your original starting point. Take heart, there is a solution: from your original starting point, use your <F5 GOTO> key. The panel will prompt you with the message: "ENTER ADDRESS TO GO TO:", at which time you simply move your cursor to move to your destination. Once you're there and you've seen what you want to see, just press <ESCAPE>. You will be transported immediately back to your starting point. But wait--you've decided you want to stay at the visited cell? No problem, simply press <CR> instead of <ESCAPE> and the <F5 GOTO> command will leave you at your destination.

4. Moving Past Locked-In Titles

Without Using Titles Clear, another little-known feature

of the <F5 GOTO> key is its ability to move past locked-in titles. Suppose you're happily entering data on your newly designed spreadsheet. You have your titles all nicely locked in and you're pages and pages into your data entry. Suddenly you realize that one of your title-blocks is misspelled, or perhaps worded incorrectly. If you clear your titles, it's very time-consuming to move to the "corner" cell, establish the titles again, and return where you left off. The solution is simply to use your <F2 GOTO> key. This key will not only allow you to "visit" a location and return, it will also ignore locked-in titles and do so. This means you can "visit a cell above your titles to just look at it, or press <F5 GOTO> move about the titles, press <CR> to remain there, make the required changes, and finally return to the right of your title by hitting <END> and <HOME> and then the <HOME> key again.

5. Put a <BEEP> into your Calc Button.

You have a large spreadsheet, which takes forever to CALC, and what bothers you the most is the fact that you have to just wait there, starting at an annoying WAIT message. How about putting a <BEEP> into your <F9 CALC> button? Simply press <F9 CALC> then press the following keys: /bb <ESC>. As soon as the calculation is complete, the computer reads the next keystrokes, which: 1) call up the worksheet menu, and 2) select the choice starting with the letter b. But since there is no choice starting with the letter b, the computer beeps at you, which is your cue that the calculations is over!

6. Go To a Named Range

One often overlooked trick of 1-2-3 is its ability to display Range Names for you after you've press the <F5 GOTO> key. Simply use the following sequence: <F5 GOTO>, <F3 NAME>. All of your range names will be displayed in the panel, and you can then use your cursor to "point" to the range you want to select. This is a useful trick for viewing the names of ranges, even if you don't want to GOTO the range locations.

7. Check Out All 4 Corners of a Range

This is another obscure feature of 1-2-3 buried in the bowels of the 1-2-3 manual. You're about to print out a portion of your spreadsheet. You press /Print Printer Range, and now you're staring at the lower right corner of the last designated print range. But is it really right? If you could look at the lower LEFT HAND CORNER and the UPPER RIGHT HAND CORNER, you could be sure. Ah well, guess you'll just have to back out of the print commands to check it out. But wait, there is another way. Once

(Continued on page 38)

Tips on Lotus 1-2-3

(Continued for page 37)

you're staring at the Range, simply press the PERIOD [.] key again and the cursor moves to the upper left corner. Again, and it moves to the lower left corner. Once again, and you're back where you started.

8. How to Change Ranges

For the longest time I had a problem with Print Ranges. After placing my cursor at the upper left corner of the range I wanted to print, I would press /Print Printer Range and to my chagrin the range was already established, but at the last range I had selected. Unfortunately, the last range was not the range I wanted now. So I pressed <ESCAPE>. But that would put my cursor at the upper left corner of the last range, to the new range. My solution - for the longest time - was to back out of the /Print command, determine the coordinates of the range I wanted (such as A7..N23) go back into /Print Printer Range, and type in the correct range. Fortunately, there is an easier way. It is simply to type /Print Printer Range <BACKSPACE>. Using the <BACKSPACE> key will locate the cursor at the upper left corner of the cell you were in when you started the Print command.

9. Using the <F4 ABS> Key

Have you ever wondered how to use the <F4 ABS> key - but never quite enough time to look it up? Fear not, here is your handy <F4 ABS> lesson, sprung upon you when you least expect it. Suppose you want to copy the information from cell C2 into cells C3..c15, but C2 has a formula that turns into a "relative" formula when you try to copy it. No problem. Move to cell C3. Press the PLUS [+] key. Now press the UP CURSOR key. You are now in the POINT MODE (Check the upper right hand box). This is where the <F4 ABS> key comes in handy. Press the <F4 ABS> key and <CR>. Now cell C3 shows the formula. Simply copy this formula to cells C4 to C15, and you're done. But wait, there's more. Instead of pressing the ABS once after the PLUS [+] key and the UP CURSOR key, try pressing it twice. Now cell C3 shows the formula +\$C2. Try THREE times. Now the formula is +\$C2. The Fourth press returns you to the original +C2.

10. Using the Copy Command in Reverse.

Have you ever wanted a Copy command that works starting from the "TO" cell, rather than the "FROM" cell You've had the situation many times: you want to copy FROM some place else, TO the cell your cursor is on now. So you 1) move your cursor to the FROM cell, 2) copy to the TO cell - after which you're returned to the FROM cell,

so you 3) move back to the TO cell. All very complicated and time consuming. Try this instead: /Copy <ESC>. At the prompt, "ENTER RANGE TO COPY FROM:" move to the FROM cell (or cells), "paint" the cells if required, and hit <CR> twice. It's done, and you've only moved the cursor once.

[Editor's note: Some of these tips require 1-2-3 Ver. 2x and will not work with Ver. i.a. (i.e. #6).]

A Handy List Keeper

By Ray Stroud

I maintain several lists of things that are of interest to me. For example, lists of authors I like, movies I want to see and books that I want to read.

The personal computer made it easy to keep alphabetical lists of these subjects. These lists can be made in a batch file with EDLIN or a word processor. A batch file can look like this:

```
Name:AUTHOR.BAT
EDLIN AUTHOR.LST
SORT AUTHOR.LST PRN
```

When you type AUTHOR, the batch file is loaded with EDLIN and you get the EDLIN prompt. You can use the "L" command to list the file so you can study it or you can edit the file by deleting, changing or adding an author. When you exit, the file is automatically sorted and redirected to the printer.

This routine assures you of an up-to-date list of things that are important to you. Until I began using a desktop utility, this is the way I maintained my telephone directories, one for personal friends and one for business. This simple little technique is just one more way that a personal computer can make life a little easier and more productive.

The DOS Internal Commands Are Always At Your Fingertips

DOS 2.1 has 20 internal commands, which means you can put them to use any time you see the DOS prompt - without putting the DOS diskette in your drive.

The twenty commands, which are invoked by typing their names, are: BREAK, COPY, CHDRI, CLS, CTTY, DATE, DIR, DEL, ERASE, MKDIR, PATH, PROMPT, RE-NAME, RMDIR, SET, TIME, TYPE, VER, VERIFY, AND VOL.

Catalogs All Gone

The management of PC Enterprises announced just before publication of this newsletter that they have run out of their Spring 1988 catalogue. They have asked for patience on the part of those PCjr owners who have requested catalogues, since they will have to wait for the Fall 1988 catalogue to be printed and mailed. They estimate this will take place by the end of September.

New SpeedUp Board

(Continued from page 1)

stalled. The board includes a 10 MHz V20 chip, which provides lower power consumption and improved performance.

When installing the Speedup Board, the user can set a jumper to enable the PCjr to boot up in fast mode (9.54 MHz) or slow mode (4.77 MHz). Once booted, the board can be set to either mode by hitting three keys on your keyboard. This is what is meant by "software switchable" speeds. For instance, you may want to operate in the fast mode while working on a spreadsheet, but when you try to play a game, the fast mode may be so fast you can't keep up with it. No problem -- just press three keys and you're back at the speed your PCjr used before the Speedup Board was installed. You will be able to tell which speed you are in by the size of the screen cursor, which is larger in the high speed mode.

Another side benefit of the board is that it replaces the 16K of RAM that is usually reserved as a video buffer in PCjrs. This, in effect, gives you an additional 16K of memory to use.

The Speedup Board is installed by removing the disk drive, pulling out the microprocessor chip, pushing the Speedup Board into the sockets left open by the microprocessor, and attaching an "easy hook jumper" to a nearby chip.

Compatibility With Expansion Units

Because the Speedup Board goes in the same socket where the jr Hotshot is installed, the two are physically incompatible. But the Speedup Board is compatible with IBM, Microsoft, Tecmar, Racore, Quadram, Impulse and, of course, PC Enterprises' memory expansion units. Tecmar owners will have to activate a wait state, which reduces its Norton SI rating to 2.9, but it is otherwise compatible. Some of the older Racore 384K expansion units may require some extra installation procedures to make sure they operate properly with the Speedup.

As with the jr Hotshot, those whose computers have soldered chips will have to have their microprocessor removed professionally to make room for installation. About five percent of all PCjrs have soldered chips. You can tell whether yours is soldered or not by lifting the top off your PCjr and looking at the chip directly behind the infrared sensor. If that chip is soldered, your microprocessor is soldered, too. Pat Calabria says that PC Enterprises is not prepared to perform installations for those with soldered chips, but that local computer technicians should be able to do the job without difficulty.

As we went to press with this issue, the Speedup Boards had just completed testing and were not yet available to the PCjr public, but Pat Calabria said he expected

to have them ready for shipment by mid September. PC Enterprises can be reached by calling (800) 922-PCJR or (201) 280-0025.

A Good Source For Low Cost Quality Educational Software

Most commercially produced educational software costs between \$20 and \$50. At that rate, few can afford to build up an extensive library of programs to help their children learn on the family PCjr.

Quaker Enterprises offers a choice for those who want to see their kids using the computer for more than King's Quest without having to blow the family bank account -- a series of excellent programs, two in math, one US geography, one Civil War and one early learning disk, for \$8.95 each.

Mathprac is a menu driven math tutorial for children ages six to twelve. The user can specify the level of difficulty. The program covers arithmetic, plane geometry, fractions, solid geometry algebra, measures and money. Instructions for using the programs are on the disk. Mathprac II covers decimals, percents, metrics and roman numerals.

For reviewing the states, lakes, rivers, state capitals, mountains and regions of the United States, Geograph is a pleasant, though less detailed, alternative to studying a textbook or an atlas. Using both is probably advisable.

The disk entitled U.S. Civil War reviews the politics, battles, generals, armies, economics and geography of the war. Each answer is provided with additional information for the student's benefit. It is recommended for children ages 10 and up.

Children ages four to six can enjoy Building Blocks, a disk that teaches color discrimination, shape recognition, counting, and visual discrimination (sizes and matching shapes).

Several of the disks contain an optional reward system which can be invoked by the parent or the child to accumulate imaginary money for correct answers. This can add interest and motivation, but may not be appropriate for all children.

These fine, budget priced educational disks all run well on PCjrs with 128K and can be obtained from Quaker Enterprises, P.O. Box 133, Leetsdale, PA 15056 (412) 728-7637. The company's catalogue, available free of charge, also contains many of the most popular commercial learning programs from other publishers.

Want to get your child excited about writing?
Try WORD PROCESSING FOR KIDS
Disk #41 in the Software Store

Updated Printer Software Works Wonders

As you can see from the printout below, Image Print v.1.5, which is an update of the version we've had in our Software Store for a while, can make your dot matrix printer produce high quality type in many fonts. We've replaced the older version with the new one for your enjoyment. If you're interested, order Disk #50, page 47.

FONT TABLE

FONT1 - CUBIC
 ABDEFGHJKLMNPT 12357
 abcdefghjklmnp RfCÆ½

FONT2 - ELITE
 ABDEFGHJKLMNPT 12357
 abcdefghjklmnp RfCÆ½

FONT10 - SMALL
 ABDEFGHJKLMNPT 12357
 abcdefghjklmnp RfCÆ½

FONT3 - ITALIC
 ABDEFGHJKLMNPT 12357
 abcdefghjklmnp RfCÆ½

FONT8 - OCRB
 ABDEFGHJKLMNPT 12357
 abcdefghjklmnp RfCÆ½

FONT9 - OCRB
 ABDEFGHJKLMNPT 12357
 abcdefghjklmnp RfCÆ½

FONT0 - COURIER
 ABDEFGHJKLMNPT 12357
 abcdefghjklmnp RfCÆ½

FONT6 - ROMAN
 ABDEFGHJKLMNPT 12357
 abcdefghjklmnp RfCÆ½

FONT11 - PICA
 ABDEFGHJKLMNPT 12357
 abcdefghjklmnp RfCÆ½

FONT12 - BLOCK
 ABDEFGHJKLMNPT 12357
 abcdefghjklmnp RfCÆ½

FONT4 - ORATOR
 ABDEFGHJKLMNPT 12357
 abcdefghjklmnp RfCÆ½

FONT7 - OUTLINE
 ABDEFGHJKLMNPT 12357
 abcdefghjklmnp RfCÆ½

FONT13 - GRAPHICS
 (1 2) ▶ ◻ ◀ ◻ ↻
 (3 4)

FONT5 - TYPEWRITER
 ABDEFGHJKLMNPT 12357
 abcdefghjklmnp RfCÆ½

Qty	Price	Total
4	\$885.00	\$3540.00
50	\$49.95	\$2497.50
33	\$1.99	\$65.67

FONT15 - CLIFTON
 ABDEFGHJKLMNPT 12357
 abcdefghjklmnp RfCÆ½

SPECIAL EFFECTS

Courier **Bold** Cubic Hair High Small Proportional Block *Italic*

OCRB ten characters per inch (cpi) OCRB twelve characters per inch

Courier *Italic* / Italic Underlined Roman Subscript Superscript

Outline Double Wide (5 cpi) Roman Double Wide (6 cpi)

Clifton Double Wide Bold

Program Allows 6 Video Pages To Be Available At All Times

By Clive C. Whittaker

```
10 ' "A:SIXPAGE          "A
20 KEY 10,"LIST10"+CHR$(13)+CHR$(30)+CHR$(30)+"SAVE"+CHR$(13)
30 THIS IS A TEST TO SHOW HOW TO USE EXTENDED MEMORY AND CARTIDGE BASIC
40 WITH CONFIG.SYS=>DEVICE=PCJRMEM.COM /C AND HAVE 6-16K VIDEO PAGES
50 HAS NOT BEEN TESTED WHEN COMPILED WITH V2.0 OF COMPILER
60 DEFINT A-Z:KEY OFF
70 ** DETERMINE IF INTERPRETED OR COMPILED**
80 DIM DUM$(1):INTER=3 AND VARPTR(DUM$(1))-VARPTR(DUM$(0)) '0=COM. 3=INT.
90 ** SCREEN 1 TEXT AND GRAPHIC CIRCLE **
100 FOR SCREENNUM=1 TO 4 STEP 3
110 FOR VPAGE=0 TO 5:APAGE=VPAGE
120 IF INTER=0 THEN SCREEN SCREENNUM,0, APAGE,VPAGE:GOTO 200
130 'THIS SECTION FOR CARTRIDGE BASIC WITH PCJRMEM.COM /C
140 SCREEN SCREENNUM,0,0,0
150 VMODE=&H40 'MODE MEDIUM RESOLUTION
160 VBUFFER=VPAGE+2 '+2 TO START AT 32k MEMORY
170 ABUFFER=APAGE+2 '+2 TO START AT 32k MEMORY
180 VIDEO=VMODE+&H8*ABUFFER+VBUFFER
190 DEF SEG=0:POKE &H48A,VIDEO:OUT &H3DF,VIDEO
200 CLS:PRINT "Screen ";SCREENNUM;" text          and graphics":CIRCLE (150,56),40
210 PRINT "This is Visual Page ";VPAGE
220 COLOR0=(0+VPAGE) MOD 4
230 COLOR1=(1+VPAGE) MOD 4
240 COLOR2=(2+VPAGE) MOD 4
250 COLOR3=(3+VPAGE) MOD 4
260 LOCATE 15,3 :PRINT "COLOR";COLOR0
270 LOCATE 15,13:PRINT "COLOR";COLOR1
280 LOCATE 15,23:PRINT "COLOR";COLOR2
290 LOCATE 15,33:PRINT "COLOR";COLOR3
300 (10,120)-(70,170),COLOR0,BF
310 LINE (90,120)-(150,170),COLOR1,BF
320 LINE (170,120)-(230,170),COLOR2,BF
330 LINE (250,120)-(310,170),COLOR3,BF
340 LOCATE 24,1
350 PRINT "PRESS ANY KEY TO CONTINUE TO NEXT TEST";:WHILE INKEY$="":WEND
360 NEXT VPAGE
370 'NOW SHOW SWAPPING BETWEEN SCREENS
380 FOR X=1 TO 100 'SHOW 100 TIMES THE PAGE SWAPS
390 FOR VPAGE=0 TO 5:APAGE=VPAGE
400 IF INTER=0 THEN SCREEN SCREENNUM,0 APAGE,VPAGE:GOTO 440
410 SCREEN SCREENNUM,0,0,0:VMODE=&H40 :VBUFFER=VPAGE+2:BUFFER=APAGE+2
420 VIDEO=VMODE+&H8*ABUFFER+VBUFFER
430 DEF SEG=0:POKE &H48A,VIDEO:OUT &H3DF,VIDEO
440 NEXT VPAGE
450 NEXT X
460 NEXT SCREENNUM
470 WIDTH 80:CLS
```

* * * **PCjr CLASSIFIEDS** * * *

PCjr 256K - V20, 2 disk drives and parallel printer port. Color monitor, serial cable and keyboard cable included. \$550. Brother M1009 w/cable \$110. (214) 907-6716 days, (214) 985-9772 eves & weekends (8)

PCjr, 640K - Racore 2nd Drive (Panasonic), NEC V-20 Chip, clock, PC ID Cartridge, Keytronic Numeric keypad, Princeton HX-12 RGB color monitor, Cartridge BASIC, PCjr ColorPaint Cartridge, games, spare power supply and 3 keyboards. \$900, you pay shipping. Contact: David Chin, (516) 599-7238 after 6PM EST (8)

WANTED - Desperately seeking PCjr Color Paint cartridges for small elementary school. Traded up to something more powerful or simply letting yours collect dust? Let me know, I'll buy it! Call Mike at (215) 566-4640 anytime and leave message. I'll answer promptly and gratefully (8)

PCjr 128K - color monitor, parallel printer port - \$550. jr keyboards \$25 each, jr power expansion attachments - \$30 each. Neil Dobry (405) 848-9672 (8)

PCjr 640K - on Quadram Board, 2 joysticks, internal 300 baud modem, jr parallel printer port, jr color monitor, cart. BASIC, keyboard and keyboard adapter, new 360K drive, 2nd power supply, manuals. \$500. T. Ruane, 50 Ludlowville Rd., Lansing, NY 14882 (607) 533-7671 after 6pm (8)

WANTED - Racore PC Keyboard Adapter for the PCjr. Call Chris Kelley (617) 570-5362. (8)

PCjr 256K - Color Monitor; Tecmar jr Captain; Clock/Calendar; Parallel Port, 2 PCjr joysticks; Keyboard w/cable; DOS 2.1; Cartridge Basic; all manuals, cables and software. \$400 or offer. Bob Fuchs (616) 676-0391 or (616) 531-5300. (8)

300 BAUD INTERNAL MODEM - For sale. Asking \$40 will

pay UPS. Like new. Have upgraded to a 1200 baud. Mike Kennedy: Home (314) 869-5534 Work (314) 234-1396. (8)

640K PCjr - Tecmar Capt. & Cadet, Jr Color Monitor, Legacy controller for 2 drives, Int. modem, V-20, numerical keypad, BASIC & JrSync carts., Manuals: tech, maint, Dos and users, much software - \$650. New Racore 128/384K Board-\$50, New IBM power expansion \$30. Greg Kuzma (617) 628-2016. (8)

WANTED - Unmodified Microsoft memory expansion sidecar w/128K for PCjr. Mouse preferred but not essential. Contact K.A. Edmunson at (205) 895-5250 days and (205) 353-7395 after 5PM CDT. (8)

Complete 128k jr, jr color monitor, parallel side, internal modem, speech side, keyboard & serial cables, 1-joystick, carrying case. All for \$460.00 & I'll pay shipping. Or will sell these and other parts separately. Hank Kennedy 813 Chisholm Vly. Dr. Round Rock, TX. (512) 255-2812 (9)

Want to trade a used PCjr 128K memory sidecar. I have BASIC cartridges, display cable, 8087, Clock Cartridge, and many more. Jerry Young, 105 Serra, #230, Milpitas, CA 95035.408-262-8640 (9)

IBM PCjr 256K - Color Monitor w/power & parallel & sidecars, 2 keyboards, Brother 25 printer w/cut sheet attachment, DOS 2.1 basic, 28 blank diskettes, IBM Filing, Writing, Reporting Assistant, Joy Stick, Scuba Venture Game, Bumble Games, Microsoft Flt. Sim., Guide to oper. Asking \$800.00 (914) 638-4696. (9)

PCjr Items: Parallel printer attachment \$35; Connector for TV, \$10; Adaptor cable for IBM color display \$10.00; mouse systems PC mouse w/special PCjr adapter and software; Also PC Paint Plus. Paid \$140 for both, will sell for \$80. All prices include UPS. Pat Delahanty, 53893 Delany Ln. Elkhart, IN 46507 219-264-0627 (9)

Classified Ads are free to subscribers of jr Newsletter. Just send us your typewritten ad (no more than five lines on an 8 1/2 X 11 typed page) and we'll run it for you for two months. Ads are \$10 per issue for non-subscribers. Send to jr Newsletter, Box 163, Southbury, CT 06488



jr Newsletter Software Store



This software is the best public domain and user-supported software for the PCjr we've been able to find. All the programs in this collection have been tested on our PCjrs and are highly recommended. Some of these programs are equal to or better than commercial programs costing hundreds of dollars. The programs in this collection are available for \$5.95 per disk.

*** NEW * RAMDISK.** Use ADJRAM to create a RAM disk of any size and adjust it's size at any time without losing the contents. Or use JRCONFIG to set up your PCjr. Both programs with complete instructions for creating an using RAM disks on your PCjr. Need 256K. (Disk #75)

*** NEW * MIND READER.** Experience the wonders of artificial intelligence! Use a full-featured word processor that guesses the words you're about to type. Works like a charm! 128K ok. (Disk #74)

*** UPDATED * IMAGEPRINT V1.5.** Produces near letter quality print on dot matrix printers: IBM Graphics Printers, Proprinters, Epsoms and compatibles. Contains many format features, three quality levels, interfaces with word processors. 128K ok. (Disk #50)

THE BEST OF JR NEWSLETTER. The best and most informative articles from twelve issues of jr Newsletter (June 1986 through May 1987 issues) are contained on this disk. More than 50 articles on compatability, problem solving, software, maintenance, memory expansion, how-to projects, tips on using DOS, and more! 128K (Disk #54)

JR POWER PACK II. Disk full of programs to make your PCjr more useful and powerful. Fix compatibility problems, set up ram disks, tiny wordprocessor, set up 3.5" drives, use DOS easily, and more. Need 256K for some, 128K ok for most. (Disk #65)

BEST OF JR NEWSLETTER II. All the major articles and columns from June 1987 through May 1988 issues of jr Newsletter. Subjects cover most aspects of PCjr operations with tips on compatibility, DOS, expanding and speeding up PCjrs, best software, etc. Easy search function finds subjects quickly. 128K ok. (Disk #66)

AS EASY AS. Excellent, easy to use, spreadsheet program. Works like Lotus 1-2-3, with all spreadsheet functions. Can load and operate 1-2-3 files. 256K ok (Disk #67)

PC-WRITE. This extremely popular word processing program is both powerful and easy to use. A review in PC World said " PC-Write may well be more versatile than WordStar; it's certainly more straightforward." Version 2.5 runs well on 128K. Version 2.7 has more features, comes on two diskettes and requires 256K to run without the spelling checker, which requires 384K. (Order Disk #1 for 128K V2.5. Order Disks #2A and 2B for V2.7)

PC-FILE III. This excellent database manager will handle up to 9,999 records, such as names and addresses, notes, product descriptions, etc. Uses generic, embedded, soundex and wildcard searches. Global updates and deletes. Sorts on any field. Too many features to mention. (Disk #3 runs on 128K, Disk #4 needs 256K)

PC-CALC. A versatile spreadsheet program that can do up to 26 columns of adjustable size and 256 lines. Features on-screen prompts, many math and statistical functions, hidden column capability, many formatting options, 64 character cells, automatic global recalculation, and more. Has some limits on 128K, but still very useful. (Disk #5 runs on 128K, Disk #6 requires 320K and two drives)

CHECK PROCESSOR - Easy to use software for financial record keeping. Balance checkbook, print expenses by category, etc. 128K (Disk #59)

PROCOMM. This powerful, yet easy to use telecommunications program has become the one favored by more PCjr users than any other. Dialing directory, auto redial, XMODEM, Kermit and other file transfer protocols, auto logon, DOS gateway, keyboard macros, exploding windows and many other features. The editor of PC Magazine called Procomm "competitive with the best comm programs on the market." Manual on disk. 256K (Disk #15)

PC-TOUCH. Designed to teach and practice touch typing. As you type, an on- screen line shows the number of erroneous keystrokes, and your accuracy rating as a percentage of keystrokes. 128K. (Disk #18)

FAMILY HISTORY. Includes complete manual on disk with how-to info on tracing and setting up your family



Jr Newsletter Software Store



tree with detailed genealogical information. Easy to use and modify as you gather more data. New compiled version runs faster than previous version. 128K order Disk #33 alone. 256K order #33 and #33A.

PIANOMAN. A great music program! Allows you to write your own music, store it and play it on jr's terrific sound system. 128K. (Disk #36)

JR MUSIC MACHINE. If you want to write and play music on your PCjr, this program allows you to do it. Displays music as you write it using jr's 16 colors, and plays music back in three voice harmony. Features allow you to adjust key, tempo, note values, etc. Color Display required. 128K ok. (Disk #62)

PC-KEY DRAW. A powerful graphics program that allows you to draw, paint, produce slide shows, store and print your work. 256K, two drives. (Disk #37)

PC-KEY DRAW DEMO. Contains a slide show demonstration which allows you to see the amazing results you can get with PC-KEY DRAW. Helps to learn the many graphic capabilities of PC-KEY DRAW. (Disk #38)

JR POWER PACK. A collection of particularly useful programs for PCjr owners. Set up RAM disks, address memory to 736K, turn a joystick into a mouse, set screen colors, keyboard click, scan and search text files, screenblinker, print spooler, and more. 128K. (Disk # 52)

PCjr COMPATIBILITY DISK. lists over 700 software titles, along with info on how they run (or don't run) on PCjrs. Also tips on how to make software PCjr compatible. 128K. (Disk #60)

BOYAN. Selected Best of the Year by PC Magazine, this outstanding telecommunications program will astound you with its smooth functioning and innovative features. Supports all protocols. Need 384K. (Disk #61)

DOS 2.1 FIX. Patches to fix the bugs in DOS 2.1. Cures most problems encountered when running memory intensive programs. Also patches to run BASIC and BASICA on DOS 2.1 without having Cartridge BASIC installed. 128K ok. (Disk #40)

BAKER'S DOZEN. 13 powerful utilities by shareware star Jim Button. Recover zapped files, save screen to files, print sideways, sort files, file management, locate text, pop-up calendar, powerful one screen spreadsheet, set screen colors, and more. (Disk #73)

DOSAMATIC. A nifty way to view the contents of disks, easily manipulate files and carry out DOS commands. Features a Mac-like "point and press" interface which allows you to select the commands you want from pull down menus. Also permits loading several programs at once and jumping from one to the other. 128K ok, but more memory needed for "multi-tasking." (Disk #49)

HOME BUDGET MANAGEMENT SYSTEM. Easy-to-use system for keeping track of income and expenses. Create separate accounts for income tax categories and get a summary at end of year. Provides chart of accounts, transaction reports, sorted ledger entries, etc. 128 K. (Disk #57) Or v. 3.13 for improved screen-writing and disk access speed. 256K. (Disk #57A)

HOME INVENTORY. Taking an inventory of your home might even be fun with this easy-to-use software that takes you through the process step by step. Gives a complete record for insurance purposes. Also good for listing collections. 128K. (Disk #58)

GALAXY. One of the easiest to use word processors we've ever seen, Galaxy has all the features you need to write letters and do most word processing. It has many, but not all, advanced features. Its strength is its simplicity, with help menus always ready to assist you. You probably won't even have to read the manual. 128K ok. (Disk #69)

PCJR PATCHES V.2.0. Patches to fix software that ordinarily won't run on PCjrs. V.2.0 adds patches for Arctic Fox, Managing Your Money 3.0, Autocad, King's Quest II, updates Turbo C and QuickBASIC patches. Also patches for Starflight, Advanced Flight Trainer, Double DOS, Bard's Tale (16 colors), Turbo BASIC, and BASICA. (Disk #56)

NAMEPAL. An excellent utility program for maintaining and printing name and address lists, address books or mailing labels. Keeps business and personal references and allows user to maintain free-form notes as well. Requires 128K Memory. (Disk #70)



Jr Newsletter Software Store



CROSSWORD CREATOR. Helps crossword fans design their own puzzles. Handles puzzles up to 200 words and clues. Makes a standard cross-word puzzle print-out, or can save the puzzles for solution on disk. Requires 256K and Epson or IBM compatible printer for printouts. (Disk #71)

3 X 5. An information management program that works just like a 3 x 5 card file. It offers speed, versatility and simplicity in entering, indexing and retrieving data. Has an integrated word processor, powerful search commands, multiple windows so you can edit in one and search in another, etc. Requires 256K. (Disk #19)

PC-DESKTEAM. Provides memory resident notepad, alarm clock, appointment calendar, typewriter, calculator, phone book, auto-dialer. Some say better than Sidekick! Quick, easy, powerful. (Disk #22 V1.04)

PC-PROMPT. A memory resident program that provides the format for DOS commands in an on-line mode. Help screen toggles on and off Also help screens for BASICA, Turbo Pascal, Debug and EDLIN. 128K. (Disk #23)

PC DOS HELP. Similar to PC-Prompt, but takes up less memory (16K) as a resident program. Geared to DOS 2.1 with special PCjr commands included. 128K. (Disk #24)

PC-CHECK MANAGER. A menu-driven program that can handle multiple checkbooks, unlimited payees and ledger account assignments. Requires 256K. (Disk #25)

NEW KEY. Powerful popular program that allows you to redefine keystrokes and assign series of keystrokes to one or two keys. Customize software to meet your needs. Many other useful features included. 128K. (Disk #35)

EASYRITE AND LABLFILE. EasyRite makes your jr perform like a typewriter, without learning complicated commands. On screen prompts are easy to follow. Lablfile is also easy to use for printing labels and storing information. Runs well on 128K with Epson/Gemini coded printers. (Disk #7)

PC-OUTLINE. Review in PC Magazine called this program "really fine" and it outperformed many commercial programs. Word processing functions are merged, allowing greater control. Many customizing features. Nine windows. Many useful features. 128K. (Disk #17)

PRINT HANDLER. Excellent software for printing banners, sideways, etc. Contains custom font generator, print spooler, and other useful print control utilities for Epson and compatible printers. 128K (Disk #51)

MINICALC. A small, easy to use, spreadsheet program. 11 columns by 22 rows. On-line help function and manual on disk. In addition to performing calculations, will generate bar graphs. (Disk #27)

BATCH FILE UTILITIES. A tutorial on how to create batch files and six utilities to use. 128K (Disk #26)

SUPER UTILITIES. The 15 utilities in this collection include Undelete, to recover a mistakenly deleted file; a powerful command editor; a clock, notepad, time and calendar; another to redirect file contents from printer to disk...and many more useful utilities. Under 128K ok. (Disk #28)

MORE SUPER UTILITIES. A collection of excellent screen and keyboard enhancements, useful file managers, color selectors, and more. Under 128K ok (Disk #29)

EDUCATIONAL SOFTWARE

ORIGAMI. Learn the art of Japanese paper folding. This program shows you how, step-by-step, to create amazing animals and other objects just by folding paper. Fun for kids and adults, too. 128K. (Disk #39)

PLAY AND LEARN. Educational games for kids 5-12. Word match games, find-a-word puzzles, word scrambles, and many more made by teachers. 128K, need Cartridge Basic. (Disk #32)

EQUATOR. An excellent way to learn and review 35 basic equations used in math, finance and science. Learn to compute the volume of a cylinder, compound interest, or average velocity and much more. Manual on disk. 128K (Disk #20)



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TIME TRAVEL IN HISTORY. A maze adventure game in which you have to answer questions about different periods of American History in order to get gold pieces--and save your life! 128K (Disk #21)

BRAIN BOOSTER. Includes IQ Builder, a program that both teaches and tests your ability to solve number, analogy, synonym and antonym problems like those on IQ and SAT tests. Also includes Algebra and Chemistry programs. For high school and up. 128K (Disk #43)

WORD PROCESSING FOR KIDS. Simple, fun and easy-to-use word processor designed especially for beginning writers. Allows children to express their ideas easily and then print them out in large type on your printer. Colorful opening menus make learning the simple commands very easy. Parents/teachers manual is on the disk. 128K. (Disk #41)

MATH FUN! A great way to get kids learning how to add, subtract, multiply and divide. Includes a program called Math Tutor which has cleverly designed exercises for kids in Grades 1-6. Also Funnels and Buckets, a nifty math game that makes learning math fun. 128K. Need Cartridge BASIC (Disk #42)

EARLY LEARNING. A collection of colorful educational games for ages 6-8. Sing-along alphabet, letter match, counting game, maze, pattern matching and more. 128K, need Cartridge Basic. (Disk #48)

GAMES FOR EARLY LEARNERS Young children like Teach Tot's alphabet and counting games. Other activities teach spelling and telling time. For Preschool through grade 3. Cartridge BASIC, 128K. (Disk #63)

LANGUAGE TEACHER. Helpful exercises for both French and Spanish language students. Hundreds of vocabulary words and verb conjugations. 128K ok. (Disk #72)

GAMES

GAMES. An assortment of games for hours of fun and excitement. Includes Spacewar, Airtrax, Life, Wumpus, Wizard and more. All good with 128K. Need Cartridge BASIC (Disk #8)

PINBALL RALLY. A colorful collection of amazingly realistic pinball games. Using the Shift keys as flippers, the games get more and more complex until you get to Twilight Zone, the hardest one of all. Runs on 128K. (Disk #10)

ARCADE GAMES. Includes Kong, Pango, PC-Golf, Pyramid and other exciting, colorful games for hours of fun. 128K. (Disk #30)

GAMES, GAMES, GAMES. A wild assortment of games to test your wits and skills. Includes Slither, Xwing, Torpedo, ABM2 and Overreact, where you are in charge of a nuclear plant. 128K. Need Cartridge BASIC (Disk #34)

DUNGEONS & WARS. In Dungeon Quest you can choose to be a dwarf, elf, magic-user, fighter or other type of character. You select your strengths and weapons, too. Then you enter the dangerous dungeons on your Quest. Thermonuclear War pits the US vs. the Soviets in a very real demonstration of what a nuclear war might be like. Combat is a strategic battle on the ground. 128K ok. (Disk #9)

REFLEX POINT. Patterned on the TV show Robotech, this game follows the show's storyline, with the Freedom Fighters trying to reach the Reflex Point and destroy the evil Invid Prince. 128K ok. (Disk #12)

ADVENTUREWARE. Six different text adventures with titles like "Island of Mystery," "Terror in the Ice Caverns," and "Moon Mountain Adventure," all test your wits and take you to strange mysterious places. 128K (disk #14)

BUSHIDO. Test your skills in martial arts combat. Fighters kick, spin, duck, punch, etc. Requires 256K and keyboard with function keys (Disk #16)

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PC-CHESS. A full color many-featured chess program, with four levels of play. You can play against the computer or another human, save games to disk, set up the board yourself and switch sides if you want. It has two clocks for elapsed time for each player, allows castling, en passant and pawn promotion with validity checking, plus other features. 128K. (Disk #44)

ZAXXON/GALAXY TREK. Two exciting high tech shoot-em-up games. In Zaxxon you fly through an obstacle course, shooting while you go, up and over walls, and eventually through space. Galaxy Trek makes you the commander of a Star Ship which you maneuver through the universe seeking to destroy a fleet of Megaton warships before they conquer the planets. 128K. (Disk #45)

PHRASE CRAZE. Based on the TV show Wheel of Fortune, you get to be the guest who guesses the mystery phrases and wins piles of money! The wheel spins to select the amount of money you win for correct guesses. It gets harder with each round you play. You can add your own phrases to this game or try to guess the ones provided on the disk. Lot of fun for adults as well as older kids. 128K. (Disk #46)

GOLF/SAILING. Two great games for sailors and golfers! The golf game has three courses, user definable club ranges and a swing control that determines whether you hit a slice, hook or straight shot. Three nine hole courses (Novice, Pro, and Sadistic). In the other game, you try to sail the three legs of the Bermuda Triangle avoiding, if you can, the creeping mists, alien crystals, vortexes and storms. Your boat is equipped with radar, rudder and sail (all of which you control) and an engine for emergencies. 128K ok for sailing. Need 256K for golf. (Disk #47)

BOARD GAMES. Eleven different games on one disk! Hours of fun with Monopoly, Yahtzee, Cribbage, Backgammon, Othello, and others. All run great on your PCjr! 128K. Need Cartridge BASIC (Disk #31)

CASTAWAY/S. AMERICAN TREK. Test your survival skills as the survivor of a shipwreck in the South Pacific. Or as an explorer of South America. Two novice text adventures from Jim Button. Ages 12 and up. 128K. (Disk #53)

SUPER BOARD GAMES. Excellent versions of two popular board games Monopoly and Risk. Very much like the board versions, except your computer keeps track of everything for you. All you have to do is make the right moves and have fun. 256K. Need Cartridge BASIC (Disk #55)

COMPUTER JOKER. Disk full of jokes, wisdom, and visual tricks to play on your computing friends. 128K ok (Disk # 64)

DOUBLE TROUBLE. Two of the most challenging, highest quality arcade style games we've seen -- Amazing Mazes and Willy the Worm. Ten different mazes and five levels of play will tie your brain in knots. And Willy, who is the fastest, jumpingest worm you'll ever see, will beat you for sure! You can even modify Willy to give yourself more (or less) trouble. 128K ok. (Disk #68)

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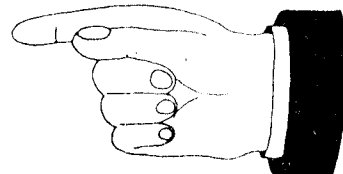
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